4.0 Airport Alternatives Analysis

This section includes the development of graphical alternatives which depict methods to either resolve deficiencies or to construct new facilities as necessary to meet future demand expectations at Rickenbacker International Airport (LCK). The alternatives include potential improvements to both airside and landside facilities and also include a review of land use compatibility.

This chapter introduces the preliminary alternatives for the Rickenbacker International Airport, which are intended for discussion purposes between the various stakeholders including CRAA, the Stakeholder Advisory Committee (SAC) for this Study, and the public. The individual components of each preliminary alternative were evaluated to aid in the selection of a preferred alternative that represents the desired development plan for the 20-year planning period. For that reason, the preliminary alternatives should be viewed as flexible development plans that may be refined or combined to best satisfy the needs of the airport's stakeholders. The main intent of the preliminary alternatives is to evaluate realistic airfield development options that would satisfy the facility requirements identified in the previous chapter and to analyze the aviation and non-aviation development and redevelopment possibilities for vacant parcels on the airport property. The preferred alternative, as presented in Chapter 5, will illustrate the recommended layout of all landside developments, such as air cargo facilities, the passenger terminal, hangars, aprons, and support facilities. The preliminary alternatives should subsequently be viewed as a broad examination of relationships between required and desired airside and landside developments in order to provide a clear understanding of the airport's possibilities and limitations.

The following elements are covered within this chapter:

- Development Constraints
- Airfield Analysis
- Instrument Approach Analysis
- Land Use Analysis
- Passenger Terminal
- Air Cargo
- General Aviation
- Support Facilities

4.1 Alternatives Analysis Process

The alternatives analysis process is based on guidance provided in the Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5070-6B, Airport Master Plans. The development and analysis of alternatives incorporates input from CRAA, stakeholders, and the general public. An organized approach to identifying and evaluating a variety of alternatives is essential to effective planning. This includes identifying a standard set of evaluation criteria based on the goals and objectives of CRAA and existing constraints which will impact the development of alternatives.
4.1.1 Evaluation Criteria

In AC 150/5070-6B, the FAA recommends a standard set of criteria to evaluate development alternatives according to an airport’s unique situation. The evaluation process should feature “generally accepted planning principles, be replicable, consistently applied, and documented.” As a result, a set of evaluation criteria were established for use in this alternatives analysis. The criteria are strategic, qualitative, and quantitative to ensure that the evaluation process remained at a master planning level of detail. The selected criteria include:

**Table 4-1 Evaluation Criteria**

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achievement of Objective</td>
<td>This criterion is based on achieving the specific need identified in the Facility Requirements chapter. Alternatives are assessed based on the degree to which they satisfy the objective.</td>
</tr>
<tr>
<td>Airport Design Standards</td>
<td>The proposed development should satisfy applicable airport design standards and maintain or improve the safety and efficiency of the airport.</td>
</tr>
<tr>
<td>Flexibility</td>
<td>The alternative should support a reasonable level of flexibility to accommodate changes in demand and include the ability to expand in the future.</td>
</tr>
<tr>
<td>Collateral Impacts</td>
<td>This criterion evaluates the extent to which an alternative requires changes or improvements to existing airport facilities which otherwise would not require changes or improvements (e.g., Relocation of a road that is impacted by a cargo alternative is considered a collateral impact).</td>
</tr>
<tr>
<td>Probable Cost</td>
<td>The preferred alternative should be cost effective, within the means of CRAA to secure funding, and minimize the long-term financial commitment by the Authority or its tenants.</td>
</tr>
<tr>
<td>Efficiency of Construction Phasing</td>
<td>Construction of the proposed improvements should be implemented without undue interference to existing operations.</td>
</tr>
<tr>
<td>Environmental Compatibility</td>
<td>The preferred alternative should be consistent with environmental regulations and minimize impacts to the environmental impact categories identified in FAA Orders 1050.1F Environmental Impacts: Policies and Procedures Desk Reference and 5050.4B, National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions. Future development should support growth while minimizing impacts to the environment.</td>
</tr>
</tbody>
</table>

Source: AC 150/5070-6B; Michael Baker International, 2017

4.2 Development Constraints

Land uses on and near the airport property consist of airport-related infrastructure, commercial and industrial developments, warehouse, agriculture, institutional features, and open space. There are few land uses surrounding LCK that would be incompatible with the continued expansion of the airport’s airfield and landside facilities (e.g., residential development). However, the current runway configuration is adequate and further expansion is not required. There are also vehicular and utility access limitations to some portions of the airport property that would need to be addressed in order to maximize the development...
potential of the property. As shown in **Figure 4-1 Development Constraints**, there are several wetlands and streams within the project area. These elements in addition to other environmental concerns are more fully discussed in **Appendix A, Environmental Overview** (Section A.16, A-26). If possible, new development should be avoided within these areas and expansion of some of the drainage features would likely be necessary in order to maintain sufficient stormwater capacity. Specific development areas identified in this analysis are more fully addressed in **Chapter 5, Refinement of Alternatives**. In addition, there is the potential for threatened and endangered species to be present in these areas. Other potential constraints considered during the alternatives analysis phase include previous ordnance activities, fuel investigations, hazardous waste contamination and monitoring sites.

All airport development actions must also avoid floodplain impacts whenever there is a practicable alternative. In addition, the design must also minimize the adverse impacts to the floodplain’s natural and beneficial values and minimize the likelihood of flood-related risk to human life, health, and welfare. Based on a review of the current FEMA Federal Insurance Rate Maps (refer to **Figure 4-1**), portions of the project area are located within a 100-year floodplain and additional portions of the property boundary are located within a 500-year floodplain. Efforts to minimize impacts to those floodplain areas must be considered with any proposed development action. A more in depth analysis of potential environmental impacts is provided in conjunction with the preferred alternative.

### 4.3 Airfield Analysis

This section presents a series of airfield improvements that address the capacity, efficiency and safety requirements identified in **Chapter 3, Facility Requirements**. In addition, the following improvements, also shown in **Figure 4-2 Airfield Pavement Analysis**, are recommended to achieve compliance with FAA Airplane Design Group (ADG) VI and Taxiway Design Group (TDG) 5 design standards associated with the Boeing 747-8F critical aircraft:

**Runway Width:** In order to meet ADG VI design standards, portions of Runway 5L-23R will need to be widened by 50 feet to a total width of 200 feet. This improvement will be incorporated into the preferred development plan.

**Runway and taxiway stabilized shoulder pavement:** Paved shoulders are recommended by the FAA for runways and taxiways which accommodate ADG III or higher. Runway and taxiway shoulder improvements are shown for ADG VI aircraft and will be incorporated into the preferred development plan. In addition to the taxiway shoulder improvements shown, shoulders are needed for portions of Runway 5L-23R and for the full length of Runway 5R-23L.

**Taxiway Fillet Geometry:** In order to meet TDG standards, taxiway fillet improvements are shown for TDG 5 aircraft and will be incorporated into the preferred development plan.

**Runway Blast Pads:** As identified previously in this Study, blast pads will be improved to meet the 280 feet wide by 400 feet long requirement as part of the preferred development plan.
Note: Remediation site SD025 is a system of ditches that is still undergoing remediation for sediment contamination associated with polycyclic aromatic hydrocarbons (PAHs), and has not achieved unrestricted closure.
Figure 4-2  Airfield Pavement Analysis
4.3.1 Parallel Taxiway Alternatives

In the Facility Requirements chapter of this Study, the Planning Team determined that the existing parallel Taxiway A did not entirely meet the design standards associated with Airplane Design Group (ADG) VI aircraft. As discussed in Chapter 3, Facility Requirements (Section 3.9, p.3-14), converting the existing taxiway to meet ADG VI taxiway object free area (TOFA) standards would impact the row of existing military aircraft parking positions closest to Taxiway A. As such, this section considers two taxiway development concepts designed to meet current FAA airfield design requirements.

North Parallel Taxiway Alternative 1

Figure 4-3 North Parallel Taxiway Alternative 1, is designed to accommodate ADG VI/TDG 5 aircraft and take advantage of the portions of Taxiway A that currently meet the ADG VI TOFA requirement of 193 feet. This alternative maintains a runway centerline to taxiway centerline separation of 860 feet to the southwest. In addition, a partial parallel taxiway is provided near Taxiways E and G at a runway centerline to taxiway centerline separation of 550 feet. This separation preserves the future capability of establishing Category II approaches to Runway 5L-23R and eliminates direct access between the cargo ramp areas and the runway. The centerline of this partial parallel taxiway is located 310 feet from the centerline of Taxiway A. This spacing would allow for the simultaneous movement of Boeing 747-8 and AN-124 aircraft on these taxiways. Additional taxiway connections and pavement removal on Taxiways D, E and G are shown to eliminate direct access to the runway from the cargo ramps.

Although portions of this concept exceed the required minimum runway centerline to taxiway centerline separation of 550 feet, it results in a solution requiring less pavement overall. As a result, the TOFA associated with the new taxiway development remains clear of existing aircraft parking positions located in the military cantonment area. However, implementing this alternative will require closing a portion of the existing Taxiway A and establishing individual taxiway connectors to the military cantonment area and removal of pavement as the taxiway centerline to taxiway centerline separation requirement for ADG VI aircraft cannot be achieved.

North Parallel Taxiway Alternative 2

Figure 4-3 North Parallel Taxiway Alternative 2 depicts a new full length parallel taxiway capable of accommodating ADG VI/TDG 5 aircraft. By maintaining a minimum runway centerline to taxiway centerline separation of 550 feet, this alternative meets the prescribed design standards associated with the critical design aircraft while preserving for future Category II approach capability to Runway 5L-23R. Under this alternative, existing Taxiway A would continue to be used as a taxilane to serve the military cantonment area and cargo ramps. Similar to Alternative 1, direct access between the cargo ramp areas and the runway are eliminated by providing additional taxiway connections and removing pavement on Taxiways D, E and G as shown. Compared to North Parallel Taxiway Alternative 1, Alternative 2 requires additional pavement and taxiway lighting. However, additional connectors to the military cantonment area and pavement removal is not needed in this area under this
alternative. The primary benefit of Alternative 2 over Alternative 1 is the ability to continue using Taxiway A as a taxilane without impacting operations and having to construct additional taxiway connectors leading into the military cantonment area.

**South Parallel Taxiway Alternative**

The South Parallel Taxiway Alternative shown in Figure 4-3 Parallel Taxiway Alternatives, depicts a new full length parallel taxiway system south of Runway 5R-23L. This concept is designed to meet ADG VI/TDG 5 aircraft requirements and provide access to new airport facilities anticipated for the currently undeveloped south side of the airport. Development of the future parallel taxiway will likely involve consideration of previous military ordnance activities (referenced in Figure 4-1 Development Constraints) and removal of several abandoned facilities and pavement areas.

### 4.4 Instrument Approach Analysis

As part of the refined airfield alternatives analysis, the associated instrument approach procedures and implementation of new instrument approach technologies, such as Ground Based Augmentation System (GBAS), will be evaluated for the existing ends of both runways. The analysis focuses on identifying any existing or potential Threshold Siting Surface (TSS) obstructions. Unlike the Federal Aviation Regulations (FAR) Part 77 surfaces that are primarily used to adopt building height and land use restrictions around airports, the TSS is the surface that is evaluated to determine if one or more of the following actions are necessary:

- Obstacle clearing, marking, or lighting within the TSS.
- Displacement of the runway threshold because obstacles cannot be cleared from the TSS, resulting in a shorter landing distance.
- Modification of the approach glide path and/or threshold crossing height.
- Prohibition of nighttime operations unless an approved Visual Glide Slope Indicator (VGSI) is in use.

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North Parallel Taxiway Alternative 1

North Parallel Taxiway Alternative 2

South Parallel Taxiway Alternative
4.5 Land Use Analysis

Considering the airfield development shown under the Airfield Analysis and Parallel Taxiway Alternatives, the remaining vacant sections of the airport property were analyzed in terms of their potential use, aircraft and automobile access, and feasibility of development. The intent was to evaluate the best use for the developable areas, as well as to determine if additional property should be acquired to accommodate the airport’s growth initiatives. Furthermore, this land use analysis should provide the airport with a plan to maximize development opportunities on the property and to generate additional revenues. The information included in this analysis places priority on reserving as much space as possible for aviation development and expansion. Ongoing CRAA business development activities should be viewed in conjunction with this analysis in order to determine practicable methods of encouraging both aviation and non-aviation development on the airport property. The areas are illustrated in Figure 4-4 Land Use Analysis and evaluated in Table 4-2 Land Use Analysis.

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Table 4-2 Land Use Analysis

<table>
<thead>
<tr>
<th>Landslide Zone</th>
<th>Approximate Acreage</th>
<th>Current/Potential Use</th>
<th>Access</th>
<th>Feasibility of Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>350</td>
<td>Military</td>
<td>Vehicle access is provided via Rickenbacker Parkway and 2nd Street.</td>
<td>To be developed as determined in the current Base Area Development Plan (by others).</td>
</tr>
<tr>
<td>2</td>
<td>11</td>
<td>Aeronautical-Related</td>
<td>Vehicle access would be provided from 2nd Street and Reserve Road.</td>
<td>It is anticipated that this area will continue to be used in support of MRO activities or other aviation-related use due to its proximity to existing airfield facilities. To be developed as warranted by demand. Hazardous materials potentially present that would require coordination with Ohio EPA.</td>
</tr>
<tr>
<td>3</td>
<td>4.26</td>
<td>Aeronautical-Related</td>
<td>Vehicle access would be provided via Alum Creek Drive and the John Circle Drive.</td>
<td>It is anticipated that this area will continue to be used in support of MRO activities due to the remaining useful service life of the existing facility and its proximity to existing airfield facilities. To be developed as warranted by demand. Hazardous materials potentially present that would require coordination with Ohio EPA.</td>
</tr>
<tr>
<td>4</td>
<td>15.5</td>
<td>Aeronautical Support</td>
<td>This site is accessible from 2nd Street and Club Road.</td>
<td>This area is well-suited for continued airport maintenance use.</td>
</tr>
<tr>
<td>5</td>
<td>37</td>
<td>General Aviation</td>
<td>Vehicle access to this area could be provided by 2nd Street and Jerrie Mock Avenue.</td>
<td>This area is well-suited for general aviation development given the FBO improvements that are currently underway. It is anticipated that facilities for general aviation and corporate aircraft would be constructed in this area. To be developed as warranted by demand. Hazardous materials potentially present that would require coordination with Ohio EPA.</td>
</tr>
<tr>
<td>6</td>
<td>29</td>
<td>Passenger Terminal Area</td>
<td>The site is accessible from Alum Creek Drive and the John Circle Drive.</td>
<td>This area is well suited in its current role. Roadway access, curbside and parking improvements are anticipated in this area. Hazardous materials potentially present that would require coordination with Ohio EPA.</td>
</tr>
<tr>
<td>7</td>
<td>61.6</td>
<td>Commercial/Non-Aeronautical</td>
<td>Vehicle access to this area could be provided from Rickenbacker Parkway W, Club Road, 2nd Street, Alan Schwarzwald Street, Jerrie Mock Avenue, and Alum Creek Drive</td>
<td>Area has good accessibility to Rickenbacker Parkway W. Due to the location, this area is capable of accommodating multi-story structures. To be developed as warranted by demand. Hazardous materials potentially present that would require coordination with Ohio EPA.</td>
</tr>
<tr>
<td>8</td>
<td>1.5</td>
<td>Government/ Airport Traffic Control Tower</td>
<td>Vehicle access is provided via Alum Creek Drive.</td>
<td>This area is well-suited for its current use.</td>
</tr>
<tr>
<td>9</td>
<td>2.75</td>
<td>Recreation/Open Space</td>
<td>Vehicle access is provided via Alum Creek Drive.</td>
<td>Members of the local community desire to establish a public viewing area/park in this location. This area is well-suited for park development and the proposed use is compatible with adjacent uses. Hazardous materials potentially present that would require coordination with Ohio EPA.</td>
</tr>
<tr>
<td>10</td>
<td>311</td>
<td>Cargo/Logistics</td>
<td>Vehicle access to the western portion of the area is provided via Alum Creek Drive. Central portion of the site is accessible via Port Road. Northeast portions of the site are accessible from George Page Jr. Road. Vehicle access to undeveloped areas could be provided from George Page Jr. Road and London Groveport Road.</td>
<td>Continued development of this area for cargo/logistics facilities is recommended due to availability of existing airfield pavement facilities, developable land, and utility infrastructure. Environmental - Wetlands present that could potentially require wetland permitting and mitigation with Ohio EPA and USACE. Potential to impact endangered species that would require coordination with USFWS, potential studies, permitting and mitigation. Hazardous materials potentially present that would require coordination with Ohio EPA.</td>
</tr>
<tr>
<td>11</td>
<td>9</td>
<td>Aeronautical Support</td>
<td>Vehicle access is provided via Port Road and Tarawa Drive.</td>
<td>Due to the centralized location and proximity to the existing hydrant fuel system, continued use of this area for fuel storage is recommended. Above ground fuel tank storage is recommended as existing underground storage tanks reach the end of their useful service life. There is potential for petroleum hydrocarbon impacts that would require coordination with Ohio EPA.</td>
</tr>
<tr>
<td>12</td>
<td>9</td>
<td>Commercial/Non- Aeronautical</td>
<td>This site is accessible from Alum Creek Drive and Port Road.</td>
<td>To be developed as warranted by demand. There is potential for petroleum hydrocarbon impacts that would require coordination with Ohio EPA.</td>
</tr>
</tbody>
</table>
### Table 4-2 Land Use Analysis

<table>
<thead>
<tr>
<th>Landside Zone</th>
<th>Approximate Acreage</th>
<th>Current/Potential Use</th>
<th>Access</th>
<th>Feasibility of Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>376.3</td>
<td>Aviation-Related</td>
<td>Access could be provided by planned Rickenbacker Parkway extension.</td>
<td>This area is suitable for aviation-related development (i.e. cargo/logistics, MRO) due to its accessibility to airfield facilities. This site should be reserved to accommodate long-term demand for cargo/logistics facilities. To be developed as warranted by demand. Utility infrastructure does not currently exist in this area. Environmental – Wetlands present that could potentially require wetland permitting and mitigation with Ohio EPA and USACE. Potential to impact endangered species that would require coordination with USFWS, potential studies, permitting and mitigation. Hazardous materials potentially present that would require coordination with Ohio EPA.</td>
</tr>
<tr>
<td>14</td>
<td>1,169.6</td>
<td>Warehouse</td>
<td>Site is accessible via Rickenbacker Parkway W., Airbase Road and planned Rickenbacker Parkway extension.</td>
<td>To be developed as warranted by demand. Utility infrastructure does not currently exist in this area. Environmental – Wetlands present that could potentially require wetland permitting and mitigation with Ohio EPA and USACE. Potential to impact endangered species that would require coordination with USFWS, potential studies, permitting and mitigation. Hazardous materials potentially present that would require coordination with Ohio EPA.</td>
</tr>
<tr>
<td>15</td>
<td>322.9</td>
<td>Warehouse</td>
<td>Site is accessible via Rickenbacker Parkway W.</td>
<td>To be developed as warranted by demand. Environmental – Wetlands present that could potentially require wetland permitting and mitigation with Ohio EPA and USACE. Potential to impact endangered species that would require coordination with USFWS, potential studies, permitting and mitigation. Hazardous materials potentially present that would require coordination with Ohio EPA. (Note: these constraints have already been cleared for the Rail Campus; however, a cell phone antenna exists.)</td>
</tr>
<tr>
<td>16</td>
<td>167</td>
<td>Open Space</td>
<td>Site is accessible via Rickenbacker Parkway W.</td>
<td>This site contains a former landfill with development restrictions and should be left as open space.</td>
</tr>
<tr>
<td>17</td>
<td>34.8</td>
<td>Open Space and Non-Aeronatical</td>
<td>Site is accessible via Rickenbacker Parkway W.</td>
<td>This site contains drainage facilities and could be developed for non-aeronautical (space permitting) or left as open space. Environmental – Wetlands present that could potentially require wetland permitting and mitigation with Ohio EPA and USACE. Potential to impact endangered species that would require coordination with USFWS, potential studies, permitting and mitigation.</td>
</tr>
<tr>
<td>18</td>
<td>127.1</td>
<td>Warehouse</td>
<td>Site is accessible via Alum Creek Drive.</td>
<td>To be developed as warranted by demand.</td>
</tr>
<tr>
<td>19</td>
<td>141.4</td>
<td>Warehouse</td>
<td>Site is accessible via Alum Creek Drive.</td>
<td>To be developed as warranted by demand.</td>
</tr>
<tr>
<td>20</td>
<td>17.75</td>
<td>Warehouse</td>
<td>Site is accessible via Alum Creek Drive.</td>
<td>To be developed as warranted by demand.</td>
</tr>
<tr>
<td>21</td>
<td>52</td>
<td>Open Space</td>
<td>Site is accessible via Rickenbacker Parkway W.</td>
<td>Site should be left as open space to protect approaches.</td>
</tr>
</tbody>
</table>


The remainder of this page has been intentionally left blank.
4.6 Passenger Terminal

The passenger terminal building at LCK faces the opportunity of accommodating simultaneous arrivals or departures of narrow body aircraft, as large as the Airbus A320. This represents a total of 372 seats. With average load factors (the number of occupied seats) for planning of 90 percent as identified in Chapter 3, Facility Requirements (Section 3.13, p. 3-17), this represents 335 passengers during a peak period. Presently, the LCK passenger terminal experiences peak conditions (two aircraft at terminal) 3-4 times per week. Based upon the FAA-approved forecast of aviation demand discussed in Chapter 2, Forecasts of Aviation Demand (Section 2.9, p. 2-61), this is anticipated to increase to 5-7 times per week. The terminal should provide an acceptable level of service throughout the process, including check-in, checked baggage screening, passenger security screening, vertical and horizontal circulation, passenger waiting and seating area, concessions, and amenities. Some other factors considered in development of the terminal concepts include:

- Similar to other airports across the industry that are served by low-cost air carriers, the majority (about 95 percent) of passengers at LCK currently travel for leisure and recreation. This tends to increase the amount of checked baggage, the length of dwell time in the terminal prior to flights, and subsequently the demand for concessions and amenities.
- LCK does not have, and will not have a dedicated TSA Pre-Check lane. However, Pre-Check passengers do receive the expedited screening process associated with that status.
- Future development should consider arrivals of groups via transit (bus or shuttle).
- The baggage claim is a shared-use facility for domestic passengers as well as international arrivals.
- The size (capacity) and condition of the restrooms (lighting, wayfinding) are noted as concerns.
- Facilities for rental car transactions may be needed in the terminal and near the landside parking area.
- It is preferred to maximize the use of the existing facilities and building envelope before any additions are considered.

4.6.1 Current Improvements

The current conditions noted during the inventory phase of this Study are indicated in Figure 4-5 Existing Terminal - Floor 1. Since the beginning of this Study, CRAA has implemented several improvements to better accommodate the current and projected peak period traffic. These include the installation of an automated scanner (CT-80DR) for checked baggage inspection screening (CBIS) in the ground floor lobby. Based upon industry standards, the automated screening via the computed tomography (CT) scanner can handle the majority of the checked baggage (approximately 180 bags per hour), with the relocated explosive trace detection (ETD) machines and tables handling additional demand to meet peak period requirements (335 peak passengers x 0.70 bags average = 234 bags per hour).
LEGEND

AIT  Advanced Imaging Technology
AVS  Alternate Viewing Station
BVS  Baggage Viewing Station
BLS  Bottle Liquid Scanner
CEIA Costruzioni Elettroniche Industriali Automatismi (Most common WTMD)
CT  Computer Tomography Scanner
CT-80FX  Explosive Detection System (Mfg. By Reveal)
ETD  Explosive Trace Detection
FDRS  Field Data Recording System
WTMD  Walk Through Metal Detector

US CUSTOMS AND BORDER PROTECTION AREA

CHECKED BAGGAGE INSPECTION SYSTEM (CBIS)

VESTIBULE

PASSENGERS ENTER

SECURITY SCREENING QUEUES

TO GROUND TRANSPORTATION

BAGGAGE CLAIM

SECURITY SCREENING CHECK POINT (SSCP)

EXIT

BEDROOMS

BESTROOMS

TICKETING QUEUES

1 2

TICKETING

OUTBOUND BAGGAGE

CurbFront

OFFICE SPACE (920SF)

TO GROUND TRANSPORTATION

BAGGAGE CLAIM

Figure 4-5 Existing Terminal - Floor 1

Rickenbacker International Airport

4-14
Also, a second screening lane and an advanced imaging technology (AIT) body scanner at the passenger security screening checkpoint (SSCP) was recently installed on the first floor. The total capacity of the two-lane checkpoint will meet the demand requirements. The layouts of these improvements are shown in Figure 4-6 Terminal Concept 1 – Floor 1. The current provisions for seating and queuing in light of these improvements are also shown in Terminal Concept 1.

Advantages of Terminal Concept 1 include the increased capacity to meet requirements for checked baggage screening and passenger peak volumes. However, there are areas of concern related to the queuing and circulation paths. The indicated queuing area at the check-in counter is approximately 320 square feet or approximately 27 passengers (at 11.9 square feet/person). This represents less than 10 percent of the 335 peak hour passengers. There is also potential conflict of cross traffic as passengers exit the Checked Baggage Inspection System (CBIS) bag drop area to move to the SSCP versus those that may still be queuing for the check-in counter. Similarly, the SSCP queue area is approximately 420 square feet, or approximately 35 passengers, representing just 10 percent of the peak period passengers. Finally, the aisles between the seating and the queues are only 5 to 6 feet wide, allowing only single file circulation and can easily be blocked by a person stopping while in the pathway.

Figure 4-7 Terminal Concept 2 – Floor 1 looks at improvements to the queuing and circulation in the ground floor lobby. Also, it is suggested that some of the administrative uses in the northeast corner of the lobby be located near the U.S. Customs and Border Protection portion of the terminal where additional office space is currently available. This would provide room for ground floor mixed use concessions (food/beverage/retail), which could serve the passengers as well as other on-airport tenants. Terminal Concept 2 retains the capacity improvements of Terminal Concept 1. The check-in queues are expanded horizontally to increase the capacity to 460 square feet/39 passengers. The SSCP queue entry is relocated to minimize cross traffic across the lobby seating, and the area is increased to 848 square feet/71 passengers. With the added seating in the lobby and in the snack bar, there is enough space for queuing, waiting, or seating for 65 percent of the peak hour passengers simultaneously (218 out of 335 peak hour passengers). This exceeds the industry standard of providing seating for 60 percent of peak hour passengers.

Terminal Concept 2 still retains the weakness related to the cross traffic exiting the check-in area, and to a lesser extent, the narrow aisles between seating and queuing noted in Concept 1. Advantages include increased capacity due to better definition and use of the lobby space, and an increased level of amenities for passengers (and other airport users) in the non-secure area of the terminal.

Figure 4-8 Terminal Concept 3 – Floor 1 retains the benefit of improved queuing at the SSCP as shown in Concept 2. However, it suggests that the ticket counters be relocated to the west side of the lobby. This eliminates the cross traffic conflict and consolidates the TSA CBIS area and bag drop function next to the outbound baggage conveyor. The check-in queues are expanded further to increase the capacity to 600 square feet/51 passengers.
With the added seating in the lobby and in the snack bar, there is enough space for queuing, waiting, or seating for 60 percent of the peak hour passengers simultaneously (202 out of 335 passengers).

It further suggests that the concessions amenity be placed in the lobby for better visibility and access. At the request of CRAA, two rental car kiosks/desks are included in this concept to support rental car operations. The lounge/seating/waiting area is consolidated away from the circulation paths to reduce potential conflicts with circulating versus seated passengers.

Terminal Concept 3 removes the weakness related to the cross traffic exiting the check-in area, and the narrow aisles between seating and queuing noted in Concepts 1 and 2. Compared to Concept 1, advantages include increased capacity due to better definition and use of the lobby space, and an increased level of amenities for passengers (and other airport users) in the non-secure area of the terminal, including consideration of rental car activity.

Once passengers have cleared security on the ground floor, they move via escalator, elevator, or open stairs up to the secure airline holdroom and concourse located on the 2nd floor. The current conditions are indicated in Figure 4-9 Existing Terminal - Floor 2. The agent desks and loading bridges are located near the ends of the concourse with seating between them. A small snack bar area and some table seating is located at the west end of the concourse. The limits of the carpeted versus polished concrete area generally define the waiting (hold room) and circulation (walk) areas.
OPEN TO BELOW

SNACKS

19'-7"

RESTROOMS

* *

ELEVATOR

MACHINE

ROOM

PASSENGER

CONCOURSE

GATE 1 GATE 2

ESCALATORS / STAIRS

PASSENGER

BOARDING

BRIDGE

STAIRS TO FIRST FLOOR

STAIRS TO FIRST FLOOR

1951960

-665

LEGEND

USCBP U.S. Customs and Border Protection

SUMMARY TABLE

ELEMENT | AREA (SF) | PASSENGERS
SEATING | 1960 | 195
CONCESSIONS | 665 | -
**Figure 4-10 Terminal Concept 4 - Floor 2** shows the capacity to increase the seating areas to better meet the requirements of the two peak hour departures. The proposed seating consists of 9-foot double rows, consisting of seating facing each other and approximately 5 feet clear for circulation. A total of 365 seats represents 109 percent of the peak hour passengers (335). Peak hour passengers were determined to be 335 in **Chapter 3, Facility Requirements**, (Section 3.13, p. 3-17). It should be noted that people often leave gaps or store bags on adjacent seats to increase their personal space to a more comfortable level. The International Air Transport Association (IATA) recommends at least 65 percent of passengers be seated.

The concept shows circulation aisles away from seating at least 10 feet, which corresponds to an industry standard of 2 or 3 persons walking abreast. The circulation paths shown exceed the requirements referenced in FAA AC 150/5360-13, Planning and Design Guidelines for Terminal Facilities (Table 5-2). Due to the limited nature of flights and number of gates, there is minimal cross traffic/two-way traffic.

Terminal Concept 4 indicates that accommodation of seating and circulation of passengers for the peak hour can be achieved within the current space available. Based on recommended standards for Level of Service C, contained in the IATA Airport Development Reference Manual, 9th edition, a minimum of 65 percent of the passengers can be seated using a minimum of 18.3 square feet per seated passenger.

For the minimal costs of increased seating units and perhaps some redefinition of space use via floor finishes, the requirements can be met. This option addresses future seating requirements; however, the solution is somewhat unbalanced, since almost 20 percent of the seats are at one end. Also, there is a trade-off in that the level of amenities has not been increased in an effort to better serve the added passengers.

**Figure 4-11 Terminal Concept 5 - Floor 2** recommends that the current gate counters and associated equipment be shifted to the far ends of the concourse. This provides capacity for seating equivalent to Concept 4, but is balanced between the gates. Space in the northeast corner of the concourse could be used to add other concessions or vending options for the passengers. Again, this is a fairly simple option relating to seating and floor finishes, but with the added costs of relocation of the gate equipment.

**Figure 4-12 Terminal Concept 6 - Floor 2** preserves the improvements suggested in Concept 5 as to balancing the seating between the wider spaced gate locations. However, it suggests two further improvements to take full advantage of the space available. The seating capacity is more than needed for a good level of service (i.e. 65 percent of peak hour passengers). As recommended in ACRP Report 55, Passenger Level of Service and Spatial Planning for Airport Terminals, it is suggested that the concessions be enlarged into a single location with added seating, taking advantage of the airside view.

The proximity and visibility to all passengers as they enter the space should enhance sales. Furthermore, the far northeast and northwest corners of the concourse would be freed up for work stations or small group table seating to offer options beyond the typical rows.
Concept 6 is preferred as it offers a variety of seating options and the highest level of amenities. It does require work similar to Concept 5, plus the costs of the snack bar relocation and expansion. Specific work items include;

- Relocation of snack bar (includes associated plumbing and electrical)
- Establish lounge areas (includes associated electrical)
- Relocation of agent desks counters (includes associated electrical and communications)
- Hold room improvements (includes seating, electrical and communications)

4.6.2 Alternative Uses of the Passenger Terminal

In recent years, LCK has enjoyed substantial growth in passenger service with its current tenant, Allegiant Air. However, airline service has come and gone at LCK since the opening of the terminal. To better plan for such changes in the future, this section will consider alternative uses of the terminal facility in the event existing passenger service were to leave LCK. The key aspect of this discussion is to consider uses that support continued use and economic development of the facility while preserving CRRA’s substantial investment in the passenger terminal.

This section will be updated as part of the alternatives refinement process following future discussions with stakeholders.

4.7 Parking and Access

4.7.1 Public Parking

As mentioned in the Facility Requirements chapter, vehicle parking is reported by CRRA operations staff to be constrained during peak operational periods due to the frequency and nature of Allegiant Air and passenger charter operations. In response to this situation, CRRA recently completed Lot #3 which provides an additional 338 parking spaces in a new surface parking lot located east of Lot #1. The additional parking spaces and sidewalk improvements shown in Figure 4-13 Parking and Access are designed to meet future 20-year parking requirements for 769 public parking spaces as identified in Chapter 3, Facility Requirements (Section 3.13.3, p. 3-30).

4.7.2 Rental Car Parking

During the planning period, rental car activity is projected to increase in response to increased passenger enplanement activity, as shown in Chapter 2, Forecasts of Aviation Demand (Section 2.4.5, p. 2-22). Therefore, demand for 10 rental cars per agency was confirmed. As shown in Figure 4-13 Parking and Access, an area capable of accommodating parking demand for 20 rental cars (10 per rental agency), as determined in Chapter 3, Facility Requirements (Section 3.13.3, p. 3-29), is provided adjacent to the airport traffic control tower parking lot. Additional parking may be added when actual demand is demonstrated to exceed this amount.
4.7.3 Curbside Access

Based upon the results of the curbside analysis shown in Chapter 3, Facility Requirements (Section 3.13.3, p. 3-30), it was determined that the existing curbside is not long enough to accommodate passenger loading and unloading during peak periods. In addition, this deficiency limits the flow of traffic directly in front of the terminal. Due to the physical constraints associated with the area, such as limited area to extend the lane and the existing roadway configuration, it was determined that widening the curbfront roadway is the only practicable solution to address this need. As shown in Figure 4-13 Parking and Access, an additional 12-foot lane is proposed northeast of the existing lanes for a total of four lanes directly in front of the passenger terminal. This additional lane is recommended to address a deficiency in curb frontage and improves the flow of traffic by reducing double/triple parked cars and provides additional curb frontage for commercial vehicle loading and unloading on the northeast side of the roadway.

4.8 Air Cargo

A total of up to seven new cargo facilities are required over the 20-year planning period as determined in Chapter 3, Facility Requirements (Section 3.13.6, p. 3-35). Three cargo forecasts, shown in Chapter 2, Forecasts of Aviation Demand (Section 2.5.12, p.2-46), were presented for consideration, and the Aggressive Cargo Forecast was recommended and approved by the FAA for use in this Study. The Aggressive Forecast was based on the growth of the current scheduled international cargo freight activities that have been operating since 2014. This growth has been well received by the freight stakeholders in the region, and already the volumes are exceeding the early projections for growth. The records for the airport (provided by the CRAA) indicate that over 75 million pounds of international scheduled freight was processed in 2016. In addition, in 2017 over 124 million pounds of cargo was processed while the cargo forecast predicted 97 million pounds of cargo would be processed in 2017. This is projected in the master plan forecast to become 1.8 billion pounds of freight over the planning period. Utilizing the Airport Cooperative Research Program’s (ACRP) recommended tons per area ratio as contained in ACRP Report 143, Guidebook for Air Cargo Facility Planning and Development, and submitted in Chapter 3, Facility Requirements (Section 3.13.8, p. 3-37), the milestones for when new cargo facilities would be required were identified. For the benefit of this Study, it is recommended that the growth occur in increments of facilities sized at 100,000 square feet for cargo operations. These increments were based on the economic growth factors reported in the 2014 Economic Impact Study prepared for Air Cargo Terminal 5 (ACT5) by Regionomics of Columbus and IMS Worldwide.

Based on the current mix of cargo, it was determined in Chapter 3, Facility Requirements (Section 3.13.6, p. 3-35), that the first new facility would need to be delivered for utilization in the 2024 timeframe when ACT5 is fully utilized. Even in the short time since the forecast was created, the product mix in exports has shifted toward materials and commodities that require significantly more space and handling than bulk air cargo. Therefore, the forecast for the next delivery will need to be closely monitored to ensure that the facility schedule for construction and occupation is updated to properly support this new requirement.
The Study also considered the requirements for additional ramp/aircraft parking space to support the new volume of operations projected in the forecast, along with required access to facilities for truck and private vehicle parking. Applying the ACRP-recommended model, referenced in ACRP Report 143, Guide Book for Air Cargo Facility Planning and Development, produced the accompanying demand for ramp/aircraft parking space and landside parking for trucks and private vehicles. These models and the application of the ratios were presented earlier in sections 3.14.4 and 3.14.5. However, strong emphasis was placed on identifying which sites would produce the best utilization of existing ramp and parking space whenever possible, in order to minimize the need for new infrastructure.

A guiding principle during the planning process was to develop solutions that aggregated cargo handling and processing—both inbound and outbound—in the same area of the airport. This will result in much of the ground support operations and related build-up or break-down of cargo occurring in adjacent or near-by facilities. One of the benefits of the LCK gateway over competing traditional gateway operations (such as those at ORD, JFK or ATL) is that cargo throughput is much faster. This speed of throughput is one of the key factors behind the growth of cargo volumes. The global freight forwarders, moving goods for retailers or manufacturers, recognize that compressing the supply chain between origins and destinations produces a distinct benefit that can be monetized for both the producer, the third-party services provider, and the air cargo carrier. One effective way to continue this competitive advantage for the users at LCK is to find solutions that aggregate cargo activities together.

### 4.8.1 Cargo Concept 1A

ACT5 was constructed and became operational in 2016. At the time the facility was built, it was done so in a manner to leave space for a “mirror” facility to be constructed next to ACT5. This strategy reduces the cost of new architectural input requirements and utilizes lessons learned in the construction and operation of ACT5. ACT5 has 100,000 square feet of cargo operations space and approximately 40,000 square feet of office and meeting space. In addition, the facility has a small security cage for segregation of high-value merchandise and a small environmental facility for handling cold chain products. This model can be easily replicated to create the next scheduled facility requirement in the cargo forecast. Figure 4-14 Cargo Concept 1A, shows the expansion to the southwest of ACT5 and demonstrates that parking and ramp space can be accommodated on the airside utilizing existing ramp capacity. New parking and storage for trucks and private vehicles will be required, but there is land readily available to meet this requirement. The ACT5 “mirror” expansion should be constructed to meet the delivery requirement for the new facility in the 2023-2024 timeframe unless the cargo mix and throughput pace requires an earlier delivery for the next facility. The proposed facility is located in an Area of Concern (AOC 9) for petroleum contamination. Regulatory closure has not been achieved for these sites.
Figure 4-14  Cargo Concept 1A - Maximize Development of Areas Near ACT 4 and ACT 5
Required actions associated with development for this area are addressed in **Chapter 5, Alternatives Refinement** (Section 5.2.2, p. 5-13). This should be considered during design and construction activities. This would typically require:

- Coordination with Ohio EPA regarding activity on the site
- Monitoring of excavated soils
- Disposal of potentially impacted soils

Cargo Concept 1A also provides a future alternative for growth after the ACT5 mirror expansion is complete and fully occupied. This new construction, shown to the northeast of the existing ramp and north of existing Building 1004 requires new facility, ramp, parking and access considerations. This future ACT expansion is shown in a 200,000 square foot facility. However, it is recommended that this facility be delivered in two stages of 100,000 square feet per delivery stage unless the demand for cargo facilities is accelerated. Developing this project in two separate phases will improve CRAA’s ability to more readily implement the improvements.

This concept demonstrates that it is also possible to provide up to a 50,000 square foot pole barn facility for parking aircraft loading equipment in a nearby location that minimizes the distance the loaders must travel between the storage and operations areas. The ground handlers who support aircraft operations have confirmed that such a facility in close proximity to loading operations is favorable over a location that requires the loaders to travel significant distances specifically impacted by inclement weather. This action will reduce equipment maintenance costs and enable CRAA to improve aircraft turnaround times by being more operationally responsive. This new concept requires creation of significant new ramp/aircraft parking space and re-alignment of an interior airport perimeter road to support truck and private vehicle parking and access. There are potential stream/wetland impacts and permitting requirements associated with the relocation of the road which will require diligence in advance of implementing this alternative. As such, there may be associated threatened and endangered species concerns. Further environmental study will be required to determine their presence in the area. This concept also requires the removal of Buildings 1004 and 1005.

In the event that CRAA contemplates expansion of this new facility beyond 200,000 square feet in the future, consideration may be given to the relocation/demolition of the general aviation facility (Building 1001). This would allow an additional 100,000 square feet of expansion in this area, and further support the guiding principle of aggregation of activity concentrated in this area of the airport. This scenario would require additional construction between the facility and the existing ACT4 facility along with expanded landside access. However, this proposed scenario would require relocation of the proposed cargo equipment storage building and minimize the ramp and aircraft parking availability.

A more detailed discussion of the deicing pad shown in both Cargo Concepts 1A and 1B is provided as part of the alternatives refinement process in **Chapter 5, Alternatives Refinement** (Section 5.2.2, p 5-16)
4.8.2 Cargo Concept 1B

Depending on the choice of alternatives for Cargo Concept 1A and the decision to implement either a 200,000 square foot or 300,000 square foot solution, there is another option for future facilities that matches the guiding principle of aggregation of activities in close proximity to existing cargo operations. **Figure 4-15 Cargo Concept 1B** provides new facilities of up to 300,000 square feet to the east of existing Cargo Ramp 3.

Building a facility in this location will in effect limit future expansion to the east of Cargo Ramp 3, and will require construction of new ramp/aircraft parking, new facilities, new truck and private vehicle parking and access. It will also require the re-alignment of George Page Jr. Road and an interior airport perimeter road. There are potential stream/wetland impacts and permitting requirements associated with the relocation of the road. As such, there may be associated threatened and endangered species concerns which must be considered before this alternative is implemented. Further environmental study will be required to determine their presence in the area. While this alternative also requires the demolition of Building 1004, it preserves the general aviation facility (Building 1001) while also accommodating the requirement for a facility to locate ground handling and loading equipment in close proximity to the campus of air cargo operations.

4.8.3 Cargo Concept 1C

During the planning process, members of the Stakeholder Advisory Committee inquired about the potential of relocating the current Air Cargo Terminal (currently occupied by FedEx) off the cargo ramp area in an effort to increase the utility of Cargo Ramp 2 for additional aircraft parking and air cargo related activities. In response to this request, **Figure 4-16 Cargo Concept 1C** is designed to maximize use of the existing apron and the developable area between the existing fuel farm and Building 2865, Forward Air. As shown, it is possible to construct a total of 450,000 square feet of Air Cargo Terminal facilities and approximately 449,600 square feet of parking and access facilities while reconfiguring approximately 1.22 million square feet of the adjacent apron area to accommodate the movement and parking of Airplane Design Group (ADG) IV to VI aircraft. This would also require the reconfiguration and addition of fuel hydrant positions and the demolition of the existing Air Cargo Terminal located in the center of the apron. This development concept accommodates parking for five Boeing 747-8F aircraft, five ADG IV aircraft, and an area suitable for parking smaller feeder aircraft. An additional 265,700 square feet of area is provided for the storage of cargo containers and ground support equipment.

Aircraft fuel storage facilities will be located adjacent to the proposed development. Three 356,000 gallon vertical tanks are shown to meet the future requirements for Jet A fuel storage, settlement, and additional expansion capability. The aircraft fuel storage facilities would be connected to the existing hydrant system. The proposed concept would allow fuel off-load lanes to be separate from fueling lanes by a secured fence.
Figure 4-15  Cargo Concept 1B - Maximize Development of Areas Near ACT 4 and ACT 5
Figure 4-16 Cargo Concept 1C - Maximize Development of Cargo Ramp #2
Cargo Concepts 1A, 1B and 1C produce a solution for the facilities to accommodate forecast growth until the 2031-2033 timeframe. The forecasts are subject to the mix of cargo and any automation or technology enhancements that may impact cargo throughput within the facilities. Should high volume package (e-commerce) throughput become part of the cargo activities, these higher volume levels must also be reviewed to determine the preferred strategy for performing these sortation activities, whether on or off the ramp.

In addition, as the CRAA constructs new facilities, key milestone decisions must be considered regarding the occupation and leasing of these facilities. Several global freight forwarders in the region have been identified, who are already engaged in retail and logistics activities and have indicated a desire to participate in occupying facilities that offer ramp and aircraft access. These freight forwarders understand the incremental value of compressing the supply chain and taking advantage of the increased throughput benefits that could be gained with airside access for their distribution and future fulfillment business.

4.8.4 Cargo Concept 2

Figure 4-17 Cargo Concept 2 occurs mid-field in the area where the original ACT1, ACT2 and ACT3 exist. These facilities were designed to support lower volumes and throughput, and were not constructed to meet the requirements of the current array of cargo freighters that are serving LCK. ACT3 remains useful as it provides the smaller user with both ramp and truck loading capability. It is a “dual-loaded” facility, which means that it can be accessed from the airside with cargo and from the landside by trucks with cargo or private vehicle access. ACT1 and ACT2 were constructed away from the ramp. These facilities are single-loaded, which means that cargo arriving or departing occurs only on one side of the facility. The other side of the facility is only used for private parking and employee access. Cargo from the landside of ACT1 and ACT2 cannot directly access the ramp; it must be trucked through a secure gate for access to the cargo operations and aircraft loading activities. To the southwest of ACT3 there are three legacy facilities, Cargo Buildings 1090, 1091 and 1092. These facilities have ramp access and are located between the ramp and the current ACT2. In order to accomplish the future alternative for enhanced cargo operations at LCK, the existing electrical vault (Building 1093) would need to be relocated, and the three legacy facilities (Buildings 1090, 1091, and 1092) and ACT2 would need to be demolished so that a new state of the art cargo facility can be constructed in this location. This would create a new 200,000 square foot facility over the footprint of ACT2, and would require additional construction of new private vehicle/truck parking and access between this new facility and Alum Creek Drive at John Circle Drive. There is an old hydrant fuel system that is closed in place near the vicinity of the proposed ACT and associated vehicle parking area. Potential impacts of this system upon the proposed development will be considered during the design and construction phases of development.
Figure 4-17  Cargo Concept 2 - Redevelopment of ACT 2 Area

Legend

- Airport Property Line
- Military Property Line
- Existing Building
- Proposed Building
- Proposed Airfield Pavement
- Proposed Road / Parking
- Pavement Removal
- GSE Apron
- USACE AOC's Fuel Investigations
This concept also depicts expansion of new ramp space to support aircraft parking and cargo operations. This expansion strategy aligns with the guiding principle of cargo activity aggregation as it keeps all current cargo operations on the north side of the airport and does not require the freight forwarder, the retailer or the ground handler to segregate, sort or manage cargo from two locations on opposite sides of the airport. By keeping the freight operations on the north side of the airport, CRAA can continue to offer prospective tenants the value and benefits of a compressed supply chain. If in the future, cargo operations are located to the south side of the airport, this separation would significantly impact the pace of activity and effectively equalize operations with similar segregation and separation of cargo activities occurring at the larger gateways such as ORD or JFK.

This Study has made every effort to develop a long-term strategy for the CRAA and freight stakeholders to preserve, to the greatest extent possible, an aggregation of cargo activities to maintain LCK’s competitive advantage.

From a phasing perspective, Cargo Concept 2 could occur upon completing the expansion west of ACT5, and prior to implementing the northeastern component of Cargo Concept 1A or 1B. Cargo Concept 1C is not currently recommended in the earlier portions of the Study (short-term and intermediate-term planning periods). This is due to the higher cost associated with developing new apron facilities and associated infrastructure.

### 4.8.5 Cargo Concept 3

This future concept should be considered by CRAA when all other alternatives on the north side of the airport complex are fully constructed and all alternative space considerations and enhanced cargo handling protocols have been implemented. While Figure 4-18 Cargo Concept 3 demonstrates that an entire campus of three cargo facilities could be constructed, it also requires new taxiways (including a full-length parallel taxiway south of Runway 5R-23L), ramp/aircraft parking construction and utilities infrastructure in order to access the facilities from the south side of the airport. In the present forecast, all three of the indicated facilities are not required unless the CRAA chooses not to fully implement the earlier noted alternatives on the north side of the airport. Proposed development of this area will create some stream and wetland impacts. As a result, there may be associated threatened and endangered species concerns. Further environmental study will be required to determine their presence in the area. It is recommended that CRAA preserve space for future air cargo operations so that when demand levels are met, there is available land to the south for new industrial users who contribute to the future growth of cargo and logistics activities. As there is no available utility infrastructure to the south of the airport today, this concept is the least desirable alternative to be recommended for development. However, as new industrial users occupy space to the southwest within the Air Cargo and Intermodal South Campuses, considerations should be taken to preserve space for future air cargo requirements.
4.8.6 Air Cargo Summary

The concepts provided in this narrative offer alternatives that support air cargo growth through the forecast period, 2016-2036. The resounding value of the Rickenbacker advantage of a compressed supply chain is resonating around the world, not only with the air carriers but also with global retailers and manufacturers who realize how competitive this advantage is in their global systems. The freight forwarders and third-party logistics service providers who support the freight owner’s supply chains will continue to aggregate at LCK and Columbus because this advantage cannot be duplicated anywhere in the region. Thus, the catchment area for freight in Pittsburgh, Detroit, Cleveland, Cincinnati, Louisville and Indianapolis will expand as LCK is already drawing freight from greater distances in order for users to take advantage of the value proposition for throughput at LCK. Additionally, as global e-commerce volumes increase, those carriers supporting cargo rotations at LCK will operate in routes that align with the demand for high volume package distribution between LCK’s origins and destinations. This will drive a significant increase in future cargo volumes at the airport.

The alignment of the airport with two of the largest intermodal terminals in the region for Norfolk Southern and CSX Transportation provides a strong foundation for the expansion of new global manufacturing and production in/near Columbus and potentially in the Rickenbacker area. Global trade seeks locations where advantages in supply chains create a competitive differential and accelerate goods movements between origins and destinations. LCK produces that competitive advantage. The growth of new cargo, given these alternatives, can support future growth in global trade at LCK and within the Columbus region.

Table 4-3 Evaluation of Cargo Alternatives summarizes and compares the alternatives based upon the evaluation criteria identified in Table 4-1 Evaluation Criteria. It is important to note that the “Achievement of Objective” ratings are reflected as partial because no single alternative satisfies this criterion alone. As a result, the selected course of development will likely be a hybrid of the concepts shown.

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<th>1B</th>
<th>1C</th>
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<tr>
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<tr>
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<td>Mitigation Required</td>
<td>Mitigation Required</td>
<td>In place fuel line considerations</td>
<td>Mitigation Required</td>
</tr>
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</table>

Source: Michael Baker International, 2017
4.9 General Aviation

The recommended facilities for general aviation operations include additional aircraft storage and parking facilities. Due to the diverse mix of commercial, military and general aviation aircraft activity at LCK, it is important to consider how this diverse mix of aircraft activity will interact in the future. Therefore, it was determined that the area located near the FBO complex would aid in providing a buffer between larger commercial and military operations from smaller general aviation aircraft activity.

As noted in Chapter 3, Facility Requirements (Section 3.14.2, p. 3-44), demand for hangars is based upon the approved forecast of aviation demand. Recommendations for aircraft hangar storage include providing T-Hangar storage for approximately 22 units (one small general aviation aircraft per T-hangar unit), adding space for up to seven conventional hangars (larger, multi-aircraft capability) and making taxilane fillet improvements to facilitate the movement of larger charter aircraft Taxiway Design Group (TDG 4) through the FBO ramp area. Although forecast general aviation needs are addressed in this section, phasing and development of proposed facilities will ultimately be market driven.

As shown in Figure 4-19 General Aviation Development Area – Concept 1, the general aviation complex is proposed in an underutilized area of land located northwest of the FBO hangar. In addition to taxilane connector and fillet improvements associated with operating TDG 4 charter aircraft (i.e. Boeing 757) on the FBO apron, this development option requires the construction of additional taxilanes capable of accommodating general aviation (ADG II/TDG 2) aircraft. The existing pavement can accommodate an occasional pass of the Boeing 757; however, pavement may experience advanced deterioration and should be monitored by CRAA staff. Concept 1 provides two T-Hangar buildings (12 units each) and three 10,000 square foot hangars. This alternative minimizes pavement required due to reduced apron area adjacent to the conventional hangars. Additional conventional hangar needs can be accommodated in the recently renovated FBO hangar. The area makes use of existing roadway infrastructure for parking and access needs, and is accessible via 2nd Street and Jerrie Mock Avenue. The area also has expansion capability to meet future aircraft hangar storage needs beyond the 20-year planning period.

Similar to the previous alternative, Figure 4-20 General Aviation Development Area – Concept 2 provides similar taxilane access to the FBO apron and the 24 units of T-Hangar parking. However, this development option is configured to accommodate additional apron area associated with three 6,400 square foot conventional hangars. This option was provided with a focus on accommodating smaller jet or multi-engine piston aircraft. Additional conventional hangar needs can be accommodated in the FBO hangar.

The area makes use of existing roadway infrastructure for parking and access needs, and access can be provided via 2nd Street and Jerrie Mock Avenue. The proposed development can be expanded to meet future aircraft hangar storage needs beyond the 20-year planning period.
Table 4-4 Evaluation of General Aviation Alternatives summarizes and compares the alternatives based upon the evaluation criteria identified in Table 4-1 Evaluation Criteria. Like other comparisons discussed in this chapter, several criteria are subjective in nature. For example, both general aviation alternatives provide the flexibility to meet future needs beyond the 20-year forecast period and have limited collateral impacts. Also, construction of each concept can be phased efficiently.

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<td>No Impacts Anticipated</td>
</tr>
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</table>

Source: Michael Baker International, 2017
4.10 Support Facilities

As described in earlier chapters of the Study, support facilities include a wide range of functions intended to ensure the smooth, efficient, and safe operation of the airport. The FAA provides design guidelines for these facilities in the Advisory Circulars and ACRP reports. However, the requirements for these facilities were also based on interviews with airport staff, airport tenants, and users which facilitated a better understanding of the existing and future facility requirements.

4.10.1 Aircraft Fuel Storage

Based upon the analysis contained in Chapter 3, Facility Requirements (Section 3.15.2, p. 3-47), it was determined that approximately 354,960 gallons of Jet-A storage would be required to provide an average five-day supply of fuel at LCK by the end of the 20-year planning period. The current fuel farm is capable of providing an adequate average five-day fuel supply throughout the 20-year planning period. The five-day supply used in this analysis reflects the current conditions and was confirmed by the CRAA Director of Operations. However, considering the age of the existing underground fuel storage facilities, the use of above ground fuel tanks tied into the fuel hydrant system was recommended in conjunction with the future expansion of fuel farm capacity.

In an effort to remain in close proximity to the hydrant fuel system and accommodate future Jet A fuel storage needs over the 20-year planning period, it was determined that 356,000 gallons of above ground tank storage would be needed, as shown in Figure 4.21 Fuel Storage. The benefit of constructing a vertical above ground tank in this area allows for expansion to occur within a smaller site footprint. It is important to note that underground tank removal must be performed in accordance with the Ohio Bureau of Underground Storage Tank Regulations (BUSTR). In addition, potential petroleum contamination should be considered during design and construction activities as this area is identified as an active fuel investigation site. The three alternatives shown are capable of meeting the future needs and provide flexibility for future expansion, if needed. Each concept has limited collateral impacts; however, the construction of Option 3 would allow fuel off-load lanes to be separate from fueling lanes by a secured fence. This option also provides ample expansion capability and improves the future development potential of the area northeast of the site.

The existing 20,000 gallon above ground AvGas tank was determined to be sufficient in meeting future needs. During the long-term development phase of the Study, additional above ground Jet A fuel storage will be needed in support of cargo facilities proposed for the south side of the airfield. The location of the south side fuel facility will be addressed in the alternatives refinement phase of this Study.

4.10.2 Airport Maintenance

Airport maintenance facilities are located within the maintenance complex off Club Road, southeast of the existing CRAA administrative offices (Building 440). The complex includes facilities for the storage of maintenance equipment, a maintenance garage, fueling station
and a triturator for disposing of airline waste. Recommendations for future maintenance facility improvements are incorporated into Figure 4-22 Airport Maintenance.

**Maintenance Storage Facilities**

CRAA has two maintenance storage facilities (Buildings 556 and 557, 8,220 square feet and 8,260 square feet respectively) that are currently used to store sand, sodium formate and salt materials used for snow and ice control. The buildings are severely deteriorated, in poor condition and the heating systems are not functional. The recommendation for a larger 24,400 square foot heated facility is depicted in Figure 4-22 Airport Maintenance. This proposed expansion was determined based upon on site discussions with CRAA maintenance and operations staff. This space allocation is designed to replace the site footprint of the existing storage facilities.

**Maintenance Garage**

The existing 7,560 square foot Maintenance Garage (Building 558) consists of three maintenance bays (including one drive-on lift), one bay with a 7.5-ton crane, and one wash bay. As the airport operation continues to grow, expanding this facility to provide an additional larger service bay capable of accommodating current equipment is needed. An 8,700 square foot expansion to mirror the existing facility is shown in Figure 4-22 Airport Maintenance. This proposed expansion was determined based upon on site discussions with CRAA maintenance and operations staff.

**Snow Removal Equipment Building**

The Snow Removal Equipment (SRE) building (40,540 square feet) is used to store large snow removal equipment. In the future, additional snow removal equipment storage capacity may be needed in support of future airfield expansion. This would occur if the snow removal priority areas increase in size. Based upon the availability of developable area within the airport maintenance complex, approximately 24,400 square feet of future SRE storage capacity is depicted in Figure 4-22 Airport Maintenance. This proposed expansion is tied to future airfield expansion and was determined based upon on site discussions with CRAA maintenance and operations staff.


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Figure 4-21  Aircraft Fuel Storage Alternatives

Legend
- Proposed Facility
- Proposed Pavement
- Airport Property Line
- Existing Fence
- Future Fence
- Fence To Be Removed
- USACE AOC's Fuel Investigations

Port Road

ACT1

ACT3

Tarawa Drive

Future Above Ground Fuel Tank Option 1 (45’ Diameter)

Future Above Ground Fuel Tank Option 2 (45’ Diameter)

Area of Concern 11

Circulation

BLDG. 1076 Fuel Farm

Future Fence

Fence To Be Removed

Existing Fence

Future Fence

USACE AOC’s Fuel Investigations

0 200’ 400’
Existing Snow Removal Equipment Storage

BLDG 559
FBO APRON Maintenance Garage Expansion
2nd Street

Future Snow Removal Equipment Storage

Future Maintenance Storage Facility

8,700 SF

BLDG 558

24,400 SF

BLDG 556 BLDG 557

Reserve Road

Figure 4-22 Airport Maintenance Facilities

Legend
- Military Property Line
- Existing Fence
- Fence To Be Removed
- Existing Building
- Proposed Building
- Proposed Road / Parking
- Military Cantonment Area

Rickenbacker International Airport

Master Plan

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