CONTENTS

FIGURES

TABLES

6 DEVELOPMENT CONCEPTS

To satisfy the facility requirements and land use recommendations identified in the previous chapters, the study team considered numerous concepts, site configurations and development options. Only those that were most reasonable to support the long-term operational sustainability of the Airport were carried forward as the Preferred Development Strategy, summarized at the end of this chapter. This strategy will be further refined into actionable projects and presented as a phased Financial Plan in **Chapter 8**.

6.1 CONCEPT EVALUATION

Regardless of time frame or activity level, the overarching principals guiding these recommendations are to provide a high level of customer service and promote regional economic health, while accommodating the ever-changing business model of the airlines. For some functional areas – like the airfield – the logical recommendations were distinctly apparent as they are driven largely by FAA design standards and existing infrastructure. However, improvements related to the terminal building and automobile parking had more variability in their viable concepts and are considered the driving factors of the Preferred Development Strategy. This is due to their existing and forecasted space deficiencies, the large land requirements, potential financing and implementation challenges, and their influence on surrounding Airport facilities.

In order to compare these concepts and identify the preferred strategy, the evaluation criteria presented in **Table 6-1** were developed through collaboration between the study team, CAK staff and the Authority. Weighting factors that reflect the Authority's low-cost, customer-centric management philosophy were assigned. A development program focused on the end users (business and personal travelers) would likely garner the most positive effect on the economic health of the region. To maximize return on investment and to emphasize concepts that would be more financially viable, implementation cost and flexibility were weighted more heavily in the evaluation criteria.

Table 6-1 – Evaluation Criteria

Evaluation Criteria	Weighting Factor	Parameters
Implementation Cost	6	Estimated total program development costs including design, environmental approval, construction and impact costs (i.e., demolition and replacement of displaced facilities). Does not account for inflation related to project phasing.
Potential for Maximized Revenue	4	Provides opportunities for increased Airport revenue through additional leasable space and/or optimized rate structures. Includes ability to attract new tenants and users to new, expanded or redeveloped landside facilities.
Disruption to Surrounding Facilities	1	Quantitative and qualitative impacts related to the displacement and/or relocation of surrounding facilities including apron space, automobile parking, hangars, etc. The more facilities/tenants displaced, the higher the chance of increased project complexity, inconvenience and duration.
Passenger Convenience	8	Supports the safe, efficient and comfortable movement of passengers. Allows easy access, low wait times, minimizes walking distances and protects passengers in inclement weather conditions.
Operational Convenience	3	From an Airport employee and tenant perspective, provides facilities that support efficient daily operations including movement of aircraft and baggage, security and emergency access, facility maintenance and snow removal.
Development Phasing	6	Ability to develop the concept in phases consistent with demand growth in a manner that does not overburden the financial resources of the Authority and funding agencies.
Flexibility	7	Ability to be scaled, or adjusted, to meet changing market conditions and passenger demand well into the future.
Environmental Considerations	2	Provides opportunities for sustainable, or green, initiatives and minimizes potential long-term impacts to the natural environment (i.e., energy use, air quality, water quality, wetlands)

Source: CHA, 2013

6.2 PASSENGER TERMINAL BUILDING

As described in **Chapter 3**, CAK experienced significant enplanement growth over the early part of the new century. Between 2001 and 2011, enplanements more than doubled, increasing from 361,000 to 788,000 – an increase of 118 percent.[1] Airport records indicate this trend continued through 2012 with another 10.5 percent growth for total annual enplanements of 921,000.[2] However, in 2013, Frontier Airlines' decision to cease service at CAK and market changes – due to the Southwest-Air Tran merger – resulted in an overall decrease in passenger activity. Through November 2013, CAK enplanements were down approximately 6.4 percent from the previous year. Until the route structures stabilize and the travelers become accustomed to the newly merged airlines, Airport staff anticipates that seat capacity and enplanements will continue to decline through 2014 and return to a growth phase in 2015.

Flexibility has been a key component in accommodating the periods of rapid growth. It is important for the Airport to maintain ability to adjust to these traffic fluctuations and preserve the capability to accommodate potential long-term demands. Therefore, the development strategy for the terminal building was prepared in two phases. The first evaluated terminal concepts intended to meet PAL 4 activity levels. This established the long-term vision and development envelope for the passenger terminal. The second phase focused on the priority development areas of the terminal building. These are the areas of deficiency found to have the greatest effect on efficient passenger travel and should be addressed in the short-term portion of the planning horizon. The priority development areas are discussed in **Section 6.3**.

As recommended in **Chapter 4**, all terminal building concepts account for the following programmatic elements:

- Accommodate PAL 4 programmatic space requirements of approximately 347,000 square feet and up to 17 gates.
- Remove pier concourse to relieve Part 77 concerns and improve apron circulation.
- Replace aging and undersized pier concourse gates with second story gates capable of accommodating aircraft as large as the Boeing 737-800 and improving customer service.
- Expand the terminal building to meet existing and forecasted demands. The major areas of expansion include:
    - Checked Baggage Inline Screening (CBIS) and outbound baggage handling areas
    - Passenger gate lounges and associated amenities, concessions, restrooms and corridors
    - Baggage claim area
    - Future U.S. Customs and Border Protection (CBP) facility
    - Transportation Security Administration (TSA) administrative space.
- Expand terminal apron commensurate with the number of gates in the terminal.

[1] Federal Aviation Administration Terminal Area Forecast, 2013; Annual enplanements were reported at 361,107 in 2001 and 788,158 in 2011.

[2] CAK website, http://www.akroncantonairport.com/newsroom/passenger-stats, accessed 1-30-2014

Order-of-magnitude cost estimates for these concepts were prepared using costs from comparable projects (at CAK and similar airports) and local industry knowledge and experience. The per-unit costs presented in **Table 6-2** include design services, materials, construction, construction administration and a contingency factor. Because some concepts would impact the surrounding facilities at CAK – apron, de-icing pad, south side hangars, etc. – the cost of demolishing or replacing those facilities is also factored into the evaluation. The existing employee and rental car parking lots would also be impacted, but the costs of replacing these lots is not included in the evaluation because their relocation is recommended in the automobile parking concepts, described in **Section 6.4**. These preliminary estimations are generalized and should be used for concept comparison purposes only. Depending on the eventual final design and level of fit and finish, the actual costs could be higher or lower.

Table 6-2 – Order-of-Magnitude Cost Estimates (Terminal Building Concepts)

Project Component	Cost Assumption
Terminal Building Demolition	$35 (per SF)
Terminal Building Rehabilitation/Reconfiguration	$173 (per SF)
Terminal Building Expansion/New Construction	$504 (per SF)
Passenger Boarding Bridges	$793,728 (per unit)
Terminal Apron Expansion	$281 (per SY)
Terminal Apron Rehabilitation	$62 (per SY)
Access Road Improvements	$232 (per SY)
Impact Costs	**Cost Assumption**
Building Demolition (Low Cost)	$20 (per SF)
Building Demolition (High Cost)	$60 (per SF)
Building Construction (Low Cost)	$158 (per SF)
Building Construction (Medium Cost)	$240 (per SF)
Building Construction (High Cost)	$360 (per SF)
General Aviation Apron Construction (Low Cost)	$260 (per SY)
General Aviation Apron Construction (High Cost)	$292 (per SY)
De-Icing Pad Construction	$295 (per SY)

Sources: CHA, McGuiness Unlimited, 2013

6.2.1 Concept 1: Maximize Existing Building

The premise of this concept is to maximize use of the existing terminal infrastructure and incrementally expand it to meet traveler and user needs. Expansion of the gates and passenger hold rooms would be predominately to the south and moderately to the north. The airside face of the building would be located to conform with Part 77 transition surface and taxiway object free area (TOFA) restrictions, provide circulation space for ground support equipment and minimize impacts to existing taxiways and the southern de-icing pad. Providing the full 17 gates with adequate spacing for Boeing 737-800 aircraft would impact Building 16 (Goodyear), Building 2 (Old ARFF / Maintenance) and rental car and employee parking.

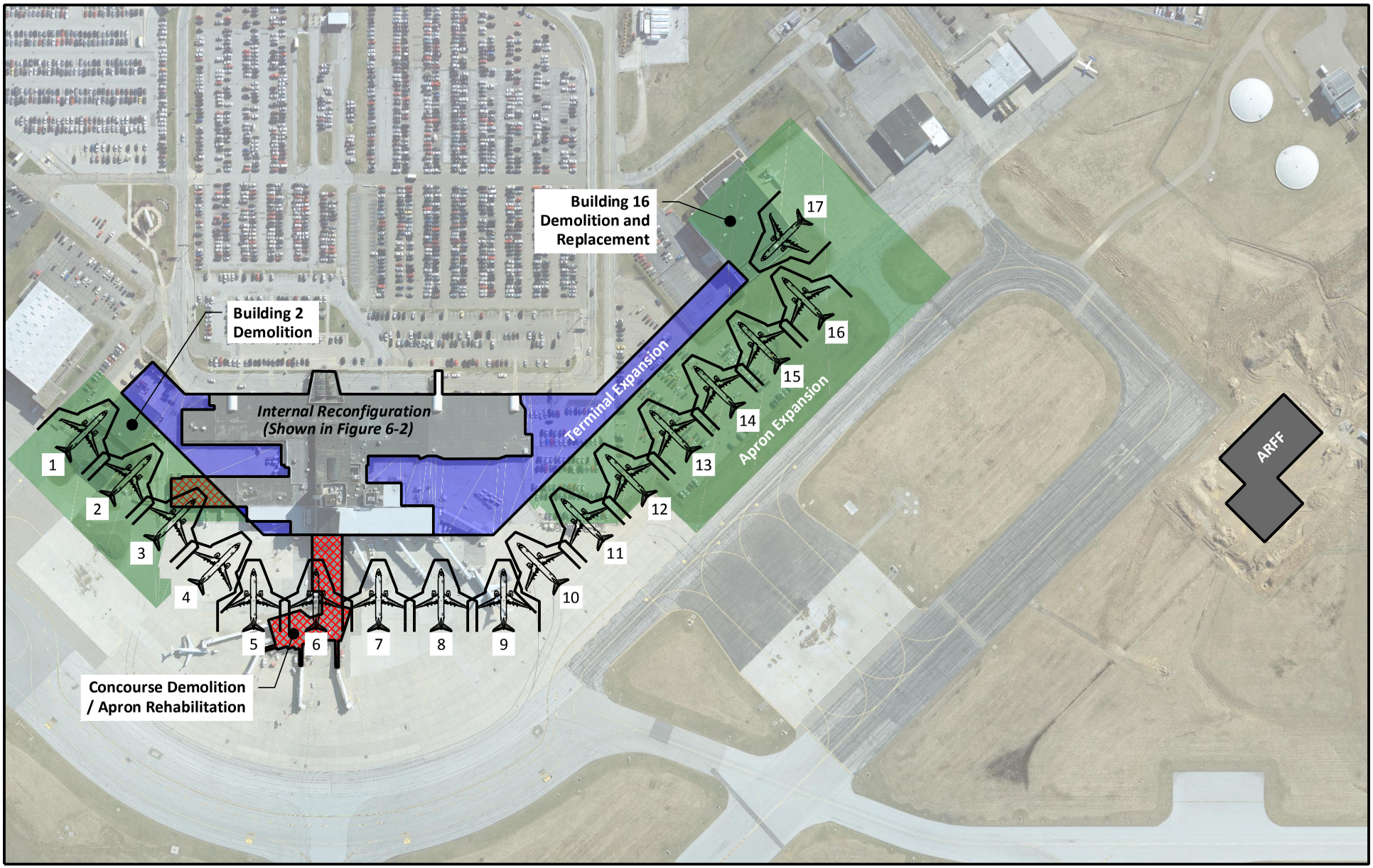
Key first floor improvements would include expansion or renovations to the following areas: airline ticketing, CBIS and outbound baggage makeup and baggage claim. A Federal Inspection Services facility for processing international passengers would also be located on the lower level, in close proximity to the baggage claim. On the second level, the existing CAK administration space and upper level gates would remain. The relocated gates from the lower level Y concourse and any new gates would be developed in the expanded second level concourse. With the airfield, landside roadways and parking and, with the needed concourse expansion establishing the overall building footprint, the other terminal facility growth would be contained as infill projects.

The estimated cost of Concept 1 is presented in **Table 6-3**. A graphical depiction of this concept is shown in **Figure 6-1. Figure 6-2** presents a logical configuration of the interior functions.

Table 6-3 – Terminal Concept 1 Cost Estimate

Primary Project Component		Units	Cost ($)
Terminal Building Demolition		27,453 SF @ $35/SF	960,855
Terminal Building Rehabilitation/Reconfiguration		21,486 SF @ $173/SF	3,717,078
Terminal Building Expansion/New Construction		193,628 SF @ $504/SF	97,588,512
Passenger Boarding Bridges		13 units @ $793,728/each	10,318,464
Terminal Apron Expansion		50,500 SY @ $281/SY	14,190,500
Terminal Apron Rehabilitation		6,700 SY @ $62/SY	415,400
TOTAL PROJECT COSTS			**127,190,809**
Impact Costs		**Units**	**Cost ($)**
Building 2 (Old ARFF/Maintenance)	*Demolition*	19,400 SF @ $20/SF	388,000
Building 16 (Goodyear)	*Demolition* *Building Replacement* *Apron Replacement*	33,700 SF @ $60/SF 33,700 SF @ $158/SF 4,600 SY @ $292/SY	8,689,800
TOTAL IMPACT COSTS			**9,077,800**

Source: CHA, McGuiness Unlimited, Gresham, Smith & Partners, 2013



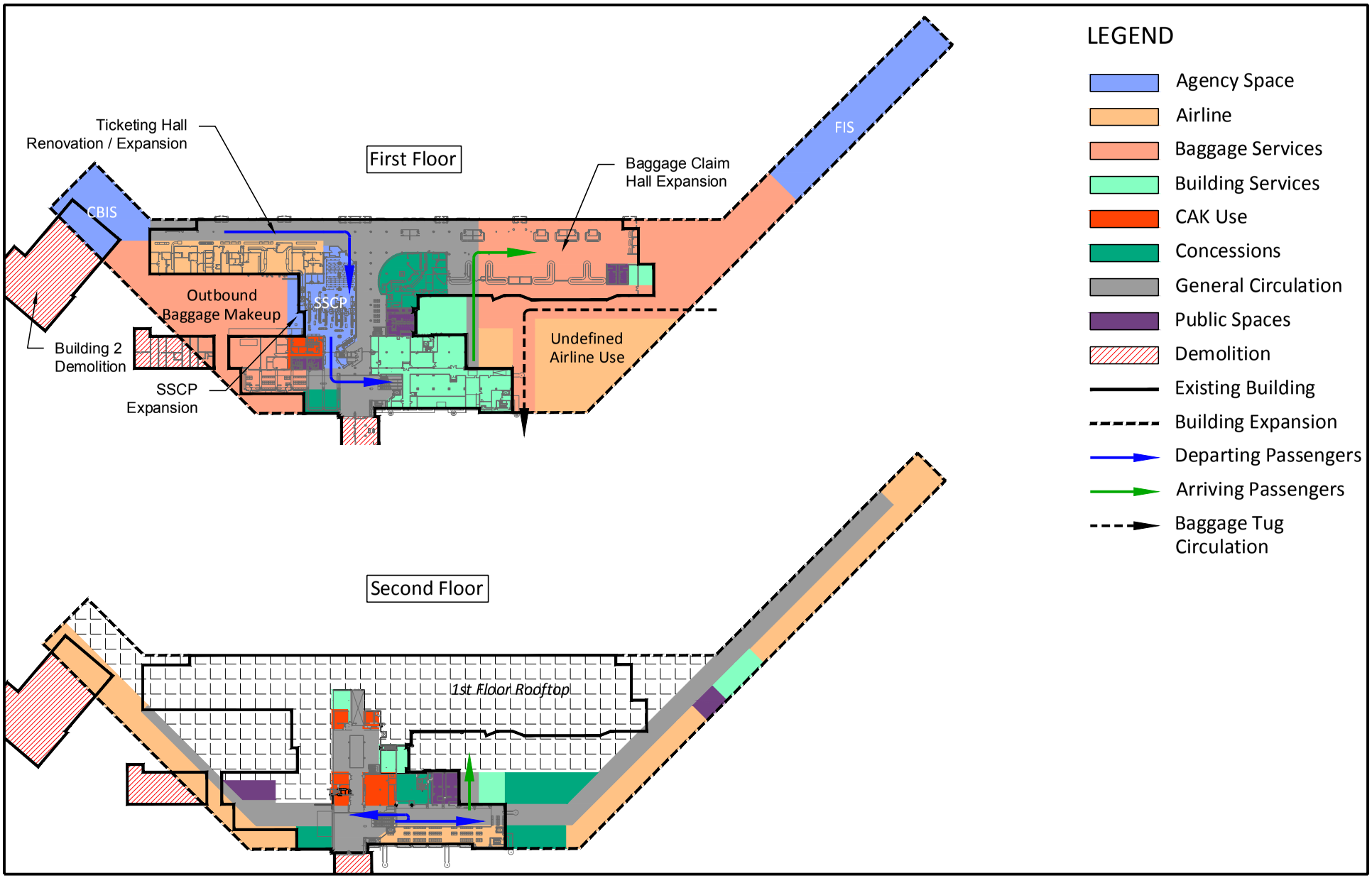
Sources: Gresham, Smith and Partners, CHA, 2013

AKRON-CANTON AIRPORT

MASTER PLAN UPDATE

GRAPHIC SCALE (FEET)
0 150 300

Figure 6-1
Terminal Concept 1:
Maximize Existing Building



Sources: Gresham, Smith and Partners, CHA, 2013

AKRON-CANTON AIRPORT

MASTER PLAN UPDATE

NOT TO SCALE

Figure 6-2
Terminal Concept 1: Interior

6.2.2 Concept 2: Replace Terminal Building

This concept involves completely replacing the existing terminal, with a new building specifically designed to optimize operational efficiency and passenger convenience. This strategy would allow the existing terminal to remain functional while the new terminal is constructed. Considering the existing landside and utility infrastructure, as well as access and terrain constraints with other sections of Airport property, the only reasonable location for development of a new terminal would be in approximately the same location. The area south of the exiting terminal provides the least airspace and airfield constraints. Under this concept, a new terminal could be oriented as depicted in **Figure 6-3**, or could be aligned parallel to Taxiway E, similar to the configuration depicted in Concept 3.

Providing curbside access to a new terminal would require extension of the ring road, providing opportunities for expansion of the surface parking lots. The new terminal building or extended roadway access would impact the southern hangar area, likely prompting the replacement of buildings 16, 17, 18, 19 and 39. Depending on the configuration, the new ARFF building (commissioned in 2013) and the southern de-icing pad would also need to be relocated. Once the new building is commissioned, the old terminal could be repurposed for a variety of uses, such as commercial office space, automobile parking, hangar space or an apron.

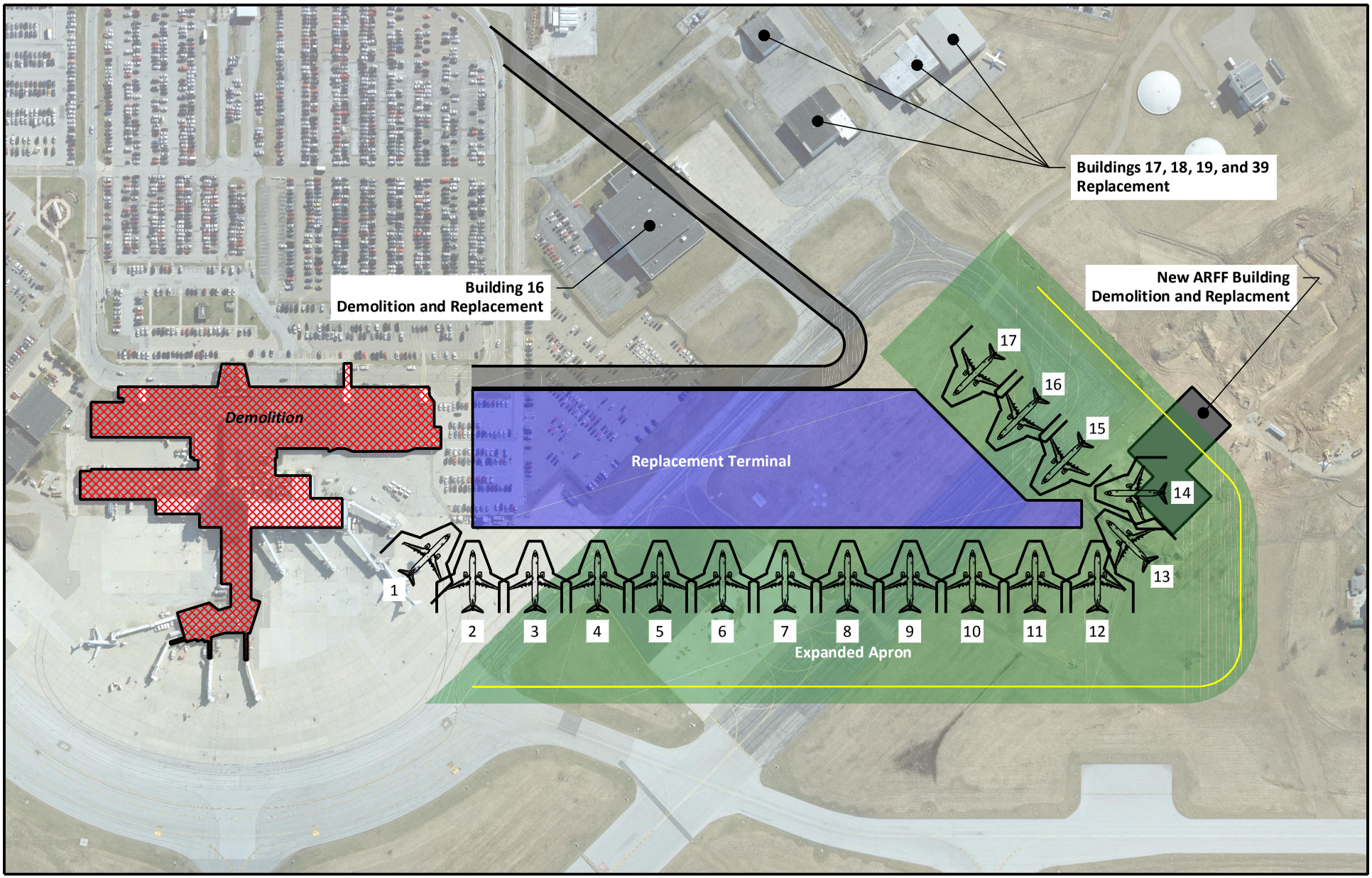
The estimated cost for Concept 2 is presented in **Table 6-4**. A graphical depiction of this concept is shown in **Figure 6-3. Figure 6-4** provides an efficient configuration of interior functional areas.

Table 6-4 – Terminal Concept 2 Cost Estimate

Primary Project Component		Units	Cost ($)
Terminal Building Demolition		167,000 SF @ $35/SF	5,845,000
Terminal Building New Construction		400,000 SF @ $504/SF	201,600,000
Passenger Boarding Bridges		13 units @ 793,728/each	10,318,464
Terminal Apron Expansion		99,900 SY @ $281/SY	28,071,900
Access Road Improvements		10,200 SY @ $232/SY	2,366,400
TOTAL PROJECT COSTS			**248,201,764**

Impact Costs		Units	Cost ($)
Building 47 (New ARFF)	*Demolition* *Building Replacement*	36,000 SF @ $20/SF 36,000 @ $360/SF	13,680,000
Building 16 (Goodyear)	*Demolition* *Building Replacement* *Apron Replacement*	33,700 SF @ $60/SF 33,700 @ $158/SF 4,600 SY @ $292/SY	8,689,800
De-icing Pad	*Replacement*	22,300 SY @ $295/SY	6,578,500
Building 17 (G-Force)	*Building Replacement* *Apron Replacement*	12,700 @ $240/SF 2,200 SY @ $260/SY	3,620,000
Building 18 (Northstar)	*Building Replacement* *Apron Replacement*	13,100 @ $240/SF 900 SY @ $260/SY	3,378,000
Building 19 (McKinley)	*Building Replacement* *Apron Replacement*	4,700 @ $240/SF 300 SY @ $260/SY	1,206,000
Building 39 (Castle)	*Building Replacement* *Apron Replacement*	12,000 @ $240/SF 800 SY @ $260/SY	3,088,000
TOTAL IMPACT COSTS			**40,240,300**

Source: CHA, McGuiness Unlimited, Gresham, Smith & Partners, 2013



Sources: Gresham, Smith and Partners, CHA, 2013

AKRON-CANTON AIRPORT

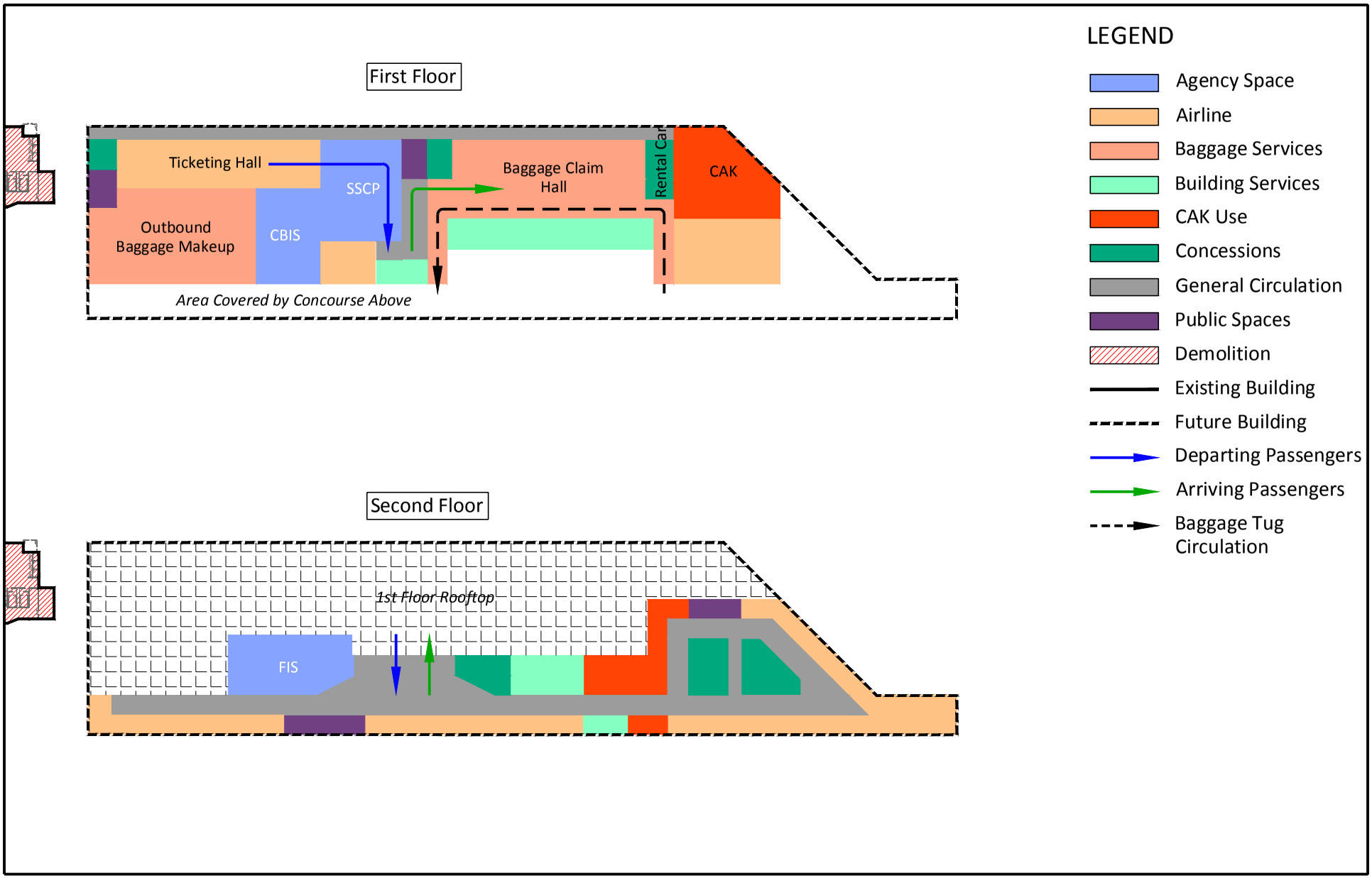
MASTER PLAN UPDATE

GRAPHIC SCALE (FEET)

0 150 300

Figure 6-3

Terminal Concept 2:
Replace Building



Sources: Gresham, Smith and Partners, CHA, 2013

AKRON-CANTON AIRPORT

MASTER PLAN UPDATE

NOT TO SCALE

Figure 6-4
Terminal Concept 2:
Interior

6.2.3 Concept 3: Expand into new Terminal Building

This concept reflects an incremental expansion into a new terminal building. The difference between this and the other two concepts is that, through a series of phased expansions, the various terminal functions are gradually shifted southward, resulting in a new facility. The likely progression would be:

1. The concourse is extended southward.
2. New ticketing, CBIS and passenger SSCP facilities are developed.
3. New baggage handling facilities would be constructed.
4. The international FIS and Airport administration facilities are developed.

The existing terminal would be used in the interim and renovation projects would be considered as they are needed.

As with the previous concepts, exiting automobile parking and south hangar facilities would be impacted. As depicted in **Figure 6-5**, aligning a new terminal in this orientation would require extension of the access road, which could impact operation of the existing fuel farm. As the new terminal building is developed, the old terminal could be repurposed or converted to other uses.

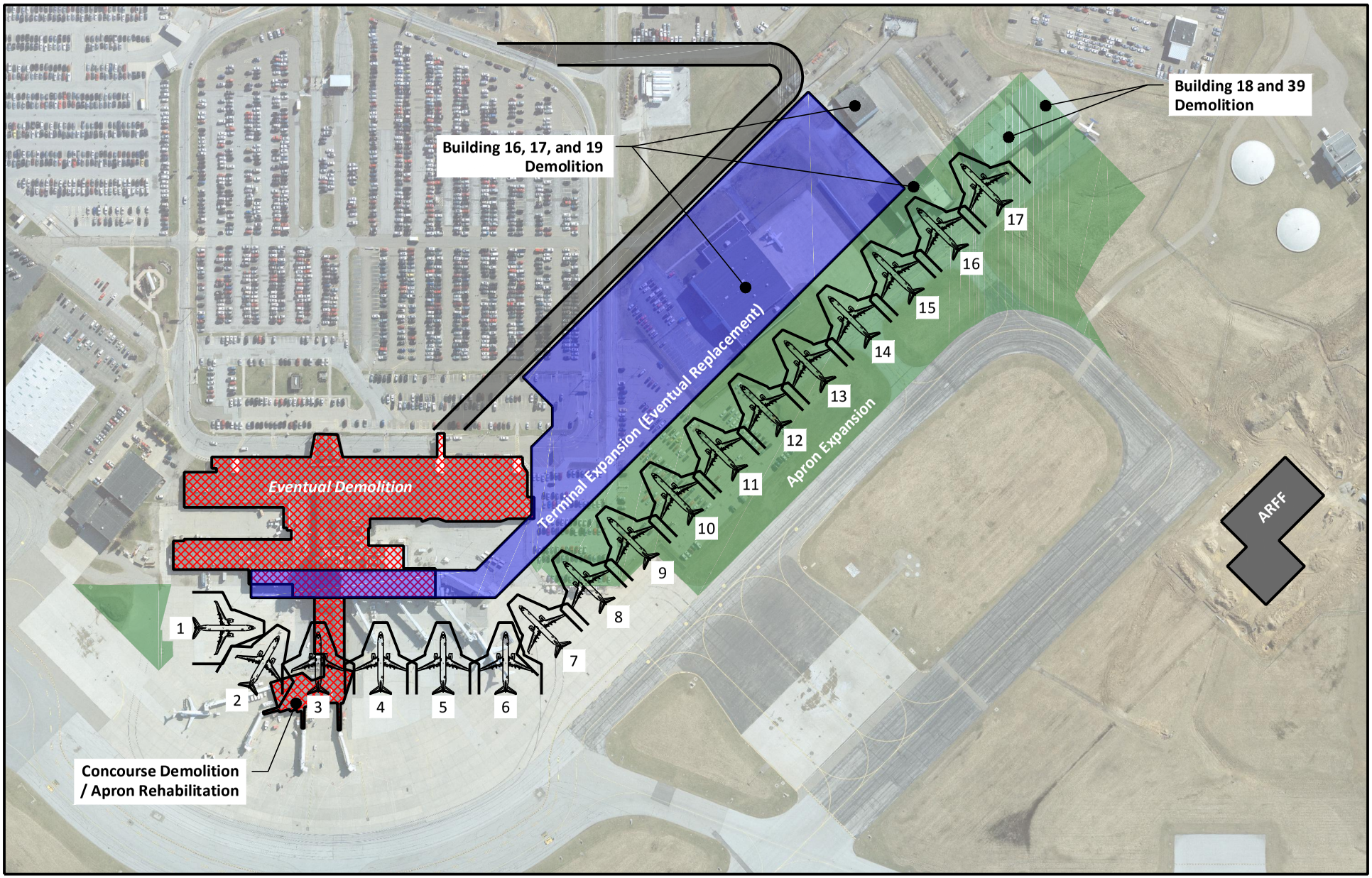
The estimated cost Concept 3 is presented in **Table 6-5**. A graphical depiction of this concept is shown in **Figure 6-5. Figure 6-6** provides an efficient configuration of interior functional areas.

Table 6-5 – Terminal Concept 3 Cost Estimate

Primary Project Component		Units	Cost ($)
Terminal Building Demolition		167,000 SF @ $35/SF	5,845,000
Terminal Building Rehabilitation/Reconfiguration		13,070 SF @ $173/SF	2,261,110
Terminal Building Expansion/New Construction		386,930 SF @ $504/SF	195,012,720
Passenger Boarding Bridges		13 units @ $793,728/each	10,318,464
Terminal Apron Expansion		54,000 SY @ $281/SY	15,174,000
Terminal Apron Rehabilitation		6,700 SY @ $62/SY	415,400
Access Road Improvements		9,000 LF @ $232/SY	2,088,000
TOTAL PROJECT COSTS			**231,114,694**

Impact Costs		Units	Cost ($)
Building 16 (Goodyear)	*Demolition* *Building Replacement* *Apron Replacement*	33,700 SF @ $60/SF 33,700 @ $158/SF 4,600 SY @ $292/SY	8,689,800
Building 17 (G-Force)	*Demolition* *Building Replacement* *Apron Replacement*	12,700 SF @ $20/SF 12,700 @ $240/SF 2,200 SY @ $260/SY	3,874,000
Building 18 (Northstar)	*Demolition* *Building Replacement* *Apron Replacement*	13,100 SF @ $20/SF 13,100 @ $240/SF 900 SY @ $260/SY	3,640,000
Building 19 (McKinley)	*Demolition* *Building Replacement* *Apron Replacement*	4,700 SF @ $20/SF 4,700 @ $240/SF 300 SY @ $260/SY	1,300,000
Building 39 (Castle)	*Demolition* *Building Replacement* *Apron Replacement*	12,000 SF @ $20/SF 12,000 @ $240/SF 800 SY @ $260/SY	3,328,000
TOTAL IMPACT COST			**20,831,800**

Source: CHA, McGuiness Unlimited, Gresham, Smith & Partners, 2013



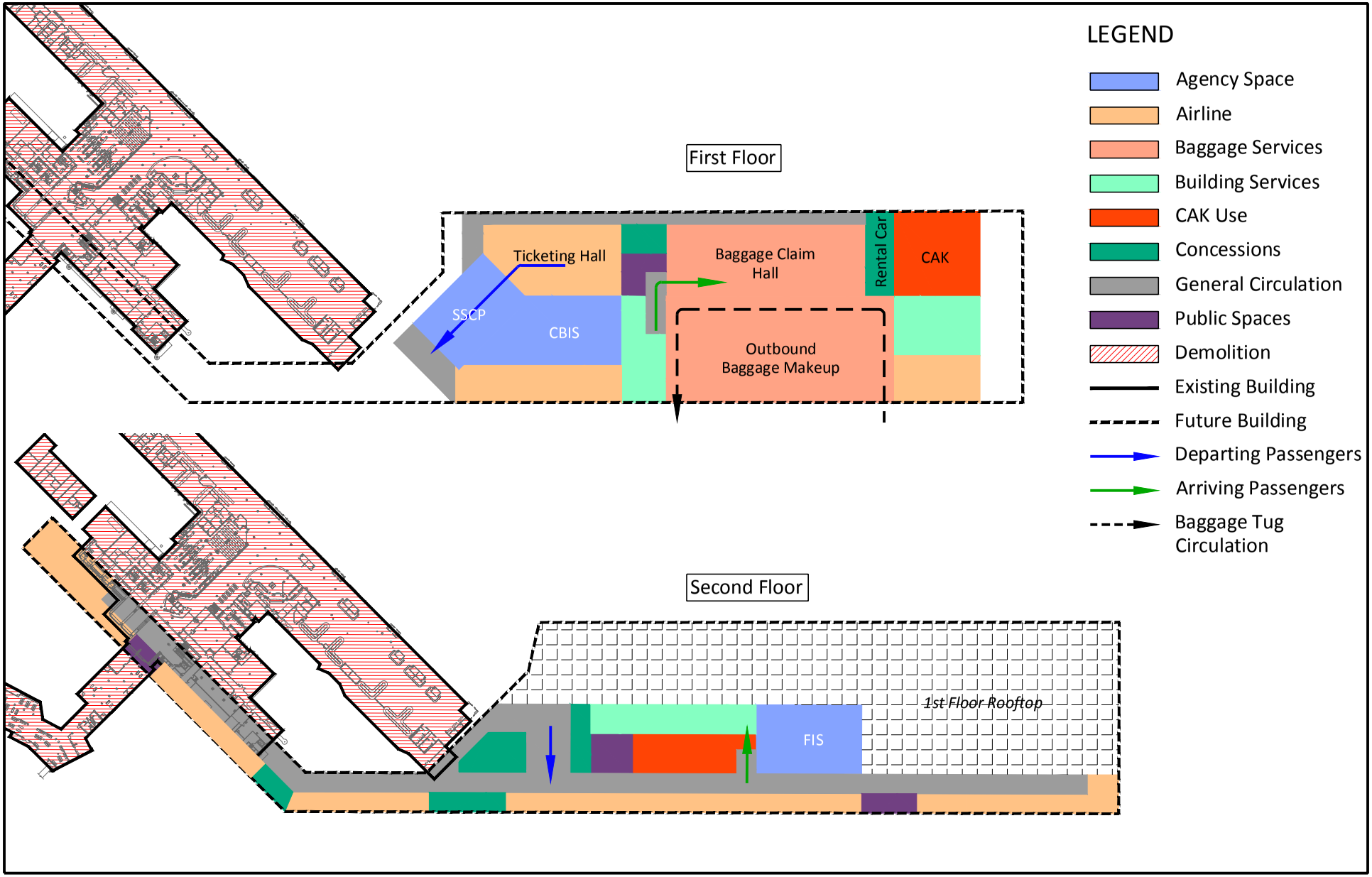
Sources: Gresham, Smith and Partners, CHA, 2013

AKRON-CANTON AIRPORT

MASTER PLAN UPDATE

GRAPHIC SCALE (FEET)
0 150 300

Figure 6-5
Terminal Concept 3:
Expand into New Building



Sources: Gresham, Smith and Partners, CHA, 2013

AKRON-CANTON AIRPORT

MASTER PLAN UPDATE

NOT TO SCALE

Figure 6-6
Terminal Concept 3: Interior

6.2.4 Comparison and Preferred Concept

In the side-by-side cost comparison provided in **Table 6-6**, Concept 1 (Maximize Existing Terminal) has the lowest relative implementation cost. It also has the lowest impact to surrounding facilities and requires the least amount of apron expansion. The incremental nature of this concept allows the improvements to be pursued as multiple smaller project elements are accelerated or slowed with demand. However, phasing as it relates to operational efficiency and customer convenience during construction is a concern. While the existing terminal is considered to be in good physical condition for the most part, aging infrastructure will continue to be a concern, where the other two concepts result in new and completely updated facilities.

The two main benefits of Concept 2 (Replace Terminal Building) are that the various functional areas of the new building could be right-sized and located for optimum efficiency and passenger convenience, leaving minimal impact to passenger convenience during construction. The disadvantages of this concept include the high implementation cost, the large amount of land disturbance and the impacts to existing taxiways, hangars, de-icing pad, southern hangars and possibly the new ARFF building.

Concept 3 (Expand into a new Terminal Building) would ultimately result in new facilities and would provide some level of phasing flexibility. As with Concept 2, many of the facilities south of the existing terminal building would be impacted. The overall implementation cost would also be slightly less than Concept 2.

With these concerns in mind, the three overall terminal concepts were evaluated and compared using the criteria described in **Table 6-1**. For each criterion, the concepts were ranked, based on their ability to meet the parameters of that criterion. The ranking values range from 1 (least benefit/most impact or cost) to 3 (largest benefit/least impact or cost). The ranking value was then multiplied by the weighting factor to arrive at point value score. The concept with the highest cumulative score is the preferred development concept. The scoring matrix is presented in **Table 6-7.** Based on this evaluation, the preferred concept is Concept 1 (Maximize Existing Terminal).

Table 6-6 – Terminal Building Concept Cost Comparison

Project Component	1 Maximize Existing Building	2 Replace Building	3 Expand into New Building
Terminal Building Demolition	960,855	5,845,000	5,845,000
Terminal Building Rehabilitation/Reconfiguration	3,717,078	0	2,261,110
Terminal Building Expansion/New Construction	97,588,512	201,600,000	195,012,720
Passenger Boarding Bridges	10,318,464	10,318,464	10,318,464
Terminal Apron Expansion	14,190,500	28,071,900	15,174,000
Terminal Apron Rehabilitation	415,400	0	415,400
Access Road Improvements	0	2,366,400	2,088,000
TOTAL PROJECT COST ($)	**127,190,809**	**248,201,764**	**231,114,694**

Impact Costs	1	2	3
Building Demolition			
Building 2 (Old ARFF/Maintenance)	388,000		
Building 16 (Goodyear)	2,022,000	2,022,000	2,022,000
Building 17 (G-Force)			254,000
Building 18 (Northstar)			262,000
Building 19 (McKinley)			94,000
Building 39 (Castle)			240,000
Building 47 (New ARFF)		720,000	
Building Replacement			
Building 16 (Goodyear)	5,324,600	5,324,600	5,324,600
Building 17 (G-Force)		3,048,000	3,048,000
Building 18 (Northstar)		3,144,000	3,144,000
Building 19 (McKinley)		1,128,000	1,128,000
Building 39 (Castle)		2,880,000	2,880,000
Building 47 (New ARFF)		12,960,000	
Apron Replacement			
Building 16 (Goodyear)	1,343,200	1,343,200	1,343,200
Building 17 (G-Force)		572,000	572,000
Building 18 (Northstar)		234,000	234,000
Building 19 (McKinley)		78,000	78,000
Building 39 (Castle)		208,000	208,000
De-Icing Pad		6,578,500	
TOTAL IMPACT COST ($)	**9,077,800**	**40,240,300**	**20,831,800**
COMBINED COSTS ($)	**136,268,609**	**288,442,064**	**251,946,494**

Source: CHA, McGuiness Unlimited, Gresham, Smith & Partners, 2013

Table 6-7 – Terminal Building Concept Scoring Matrix

Criteria	Weight	1		2		3	
		Maximize Existing Building		Replace Building		Expand into New Building	
		Rank	Score	Rank	Score	Rank	Score
Implementation Cost	6	3	**18**	1	**6**	2	**6**
Potential for Maximized Revenue	4	1	**4**	3	**12**	2	**8**
Disruption to Surrounding Facilities	1	3	**3**	1	**1**	2	**2**
Passenger Convenience	8	2	**16**	3	**24**	1	**8**
Operational Convenience	3	3	**9**	1	**3**	2	**6**
Development Phasing	6	3	**18**	1	**6**	2	**12**
Flexibility	7	2	**14**	1	**7**	3	**21**
Environmental Considerations	2	1	**2**	3	**6**	2	**12**
TOTAL SCORE			**84**		**65**		**75**

Source: CHA, 2013

6.3 PRIORITY TERMINAL IMPROVEMENTS

With the long-term vision and development envelope for the passenger terminal defined by the preferred Concept 1, the second phase of the terminal planning effort focuses on the areas of deficiency found to have the greatest effect on efficient passenger travel, which should be addressed in the short-term planning horizon. The three priority development areas include: consolidated CBIS and improved outbound baggage processing; replacement of the Y concourse gates; and expanded baggage claim and inbound baggage processing. Multiple concepts for each of these areas have been developed and are evaluated in the following sub-sections.

6.3.1 CBIS/Outbound Baggage Makeup

The objectives in this priority development area are to install a single in-line baggage screening system to service all airlines, provide a covered or indoor baggage makeup area and expand circulation space in the ticketing lobby. In late 2013, the Authority has begun coordinating its Airport Capital Improvement Program (ACIP) to include these projects. To meet the needs described in Chapter 4, design would ideally occur in 2014 and 2015 and construction in 2015 and 2016. The Authority is also pursuing TSA funding for the CBIS.

While the details could vary, there are three concepts for providing these necessary facilities. The first concept would use the old ARFF building for these functions and expand the terminal to meet the remaining space requirements. The second concept would reconfigure and expand the north side of the terminal building, in accordance with the development envelope defined in **Section 6.2**. This concept would require the demolition of Building 2 (Old ARFF/Maintenance Building) and a portion of the terminal building. The third concept is similar to the first concept, but requires less upfront cost. It involves using the old ARFF building and providing a covered outdoor area.

Cost estimates were prepared for each of these concepts using the per-unit costs presented in **Table 6-2** and are presented at the end of this section. These preliminary estimations are generalized and should be used for concept comparison purposes only. Depending on the eventual final design and level of fit and finish, the actual costs could be higher or lower. Since the equipment for the CBIS and baggage sorting devices is expected to cost relatively the same across all three concepts, the cost of these devices was left out of the evaluation.

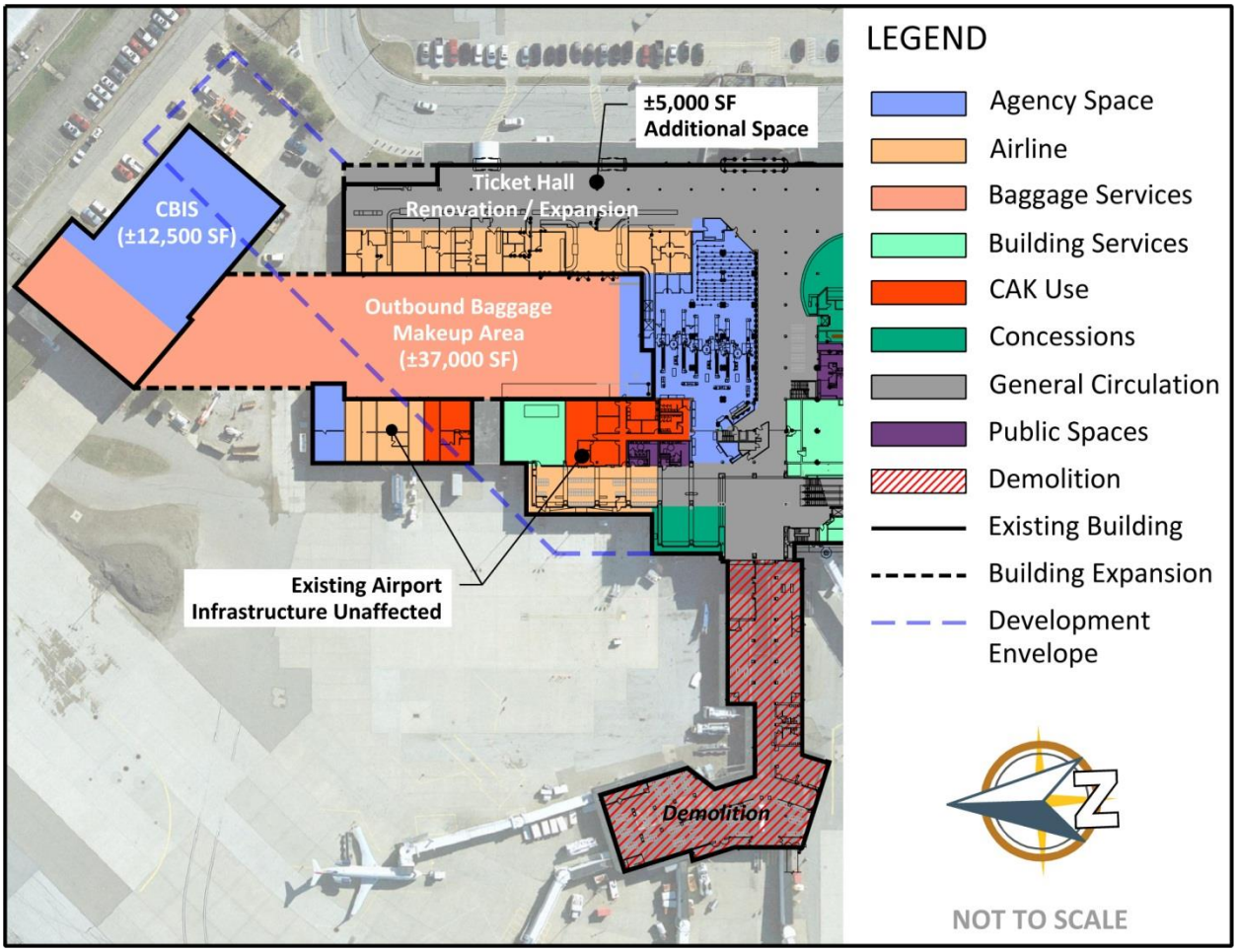
Concept 1: Use Old ARFF Building / Terminal Expansion

In this concept, the old ARFF building would be converted to provide adequate PAL 4 CBIS and baggage handling space. To account for additional deficiencies, the terminal building would be expanded, connecting to the old ARFF. Accommodation for the general aviation Customs and Border Protection facility – built out in 2013 – could be maintained. The old ARFF building is physically sound and, compared to constructing a new building, its reuse would support the tenets of sustainability – reduce, reuse, recycle. The use of tugs and carts or an enclosed conveyor system would be needed to transport baggage from the ticket lobby to the CBIS. Once the existing baggage screening facilities are relocated, the airline offices and ticket counters would be reconfigured and the lobby wall moved toward the airfield, providing

additional passenger circulation space in the lobby. Moving the landside wall near the northernmost ticket counters toward the parking lot could further expand the ticketing lobby. These projects combined would provide an additional 5,000 square feet of queuing and circulation space.

This concept would likely alter the overall terminal building footprint from the preferred terminal concept identified previously. Expansion and long-term use of the old ARFF building would preclude development of the northernmost gates, depicted in the preferred overall terminal Concept 1 (Maximize Existing Terminal). This is not a space issue in the short-term, but when warranted to expand gates into this area, the CBIS could be incorporated into the terminal construction and the old-ARFF building demolished. In the long-term, the two gates in question could be added to the southern concourse extension, which would impact buildings 16, 17, 18, 19 and 39.

Figure 6-7 – CBIS Concept 1

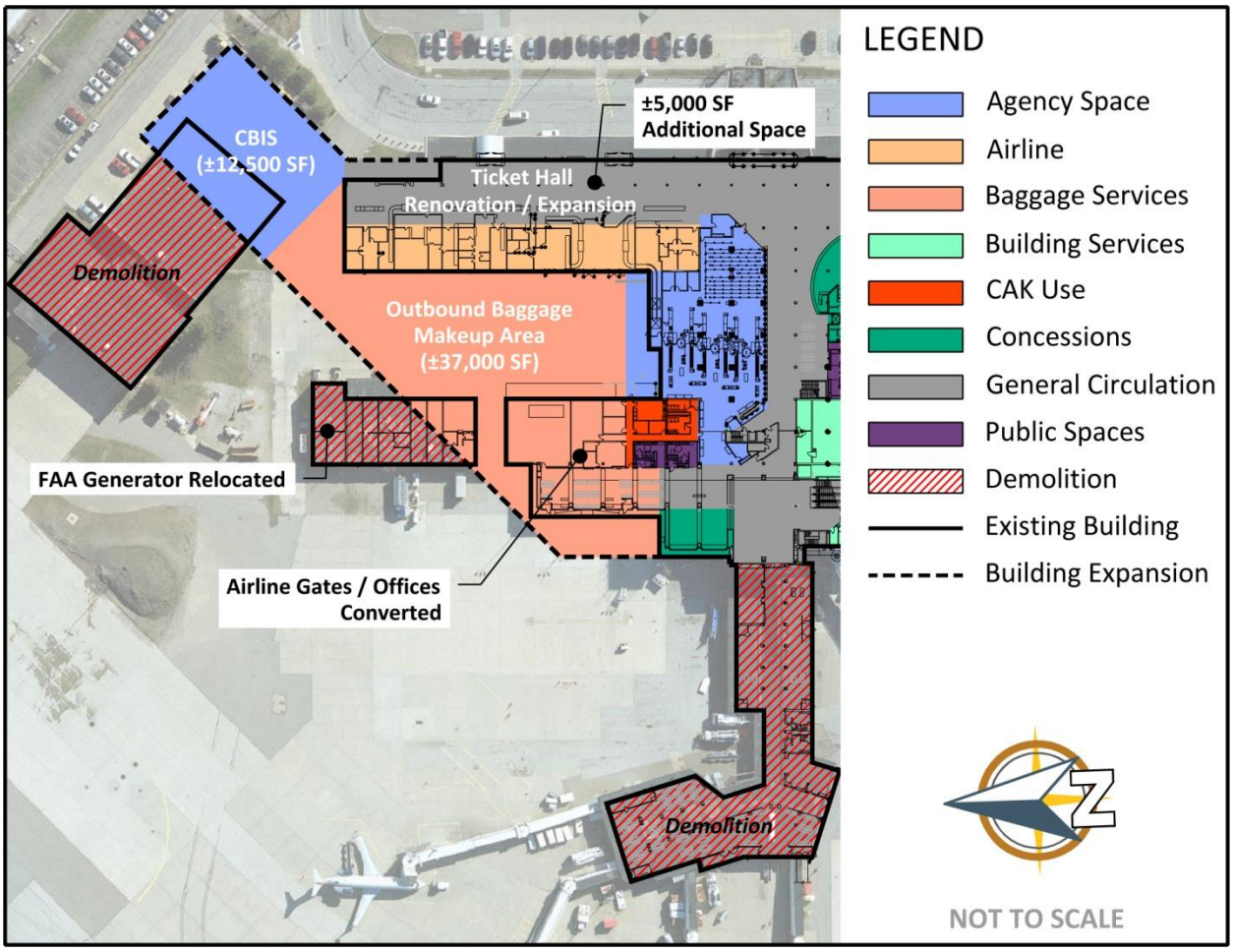


Sources: Gresham, Smith and Partners, CHA, 2013

Concept 2: Terminal Reconfiguration

This concept directly corresponds to the overall preferred terminal concept and does not use the old ARFF building. As depicted in **Figure 6-8**, portions of the loading dock would be impacted. In addition, the existing Gates 1 and 2 would be converted into outbound baggage handling space and the FAA Generator relocated. The ticketing lobby would be expanded similar to in Concept 1. Due to the amount of new building construction, this concept has a higher implementation cost than if the old ARFF building were used.

Figure 6-8 – CBIS Concept 2

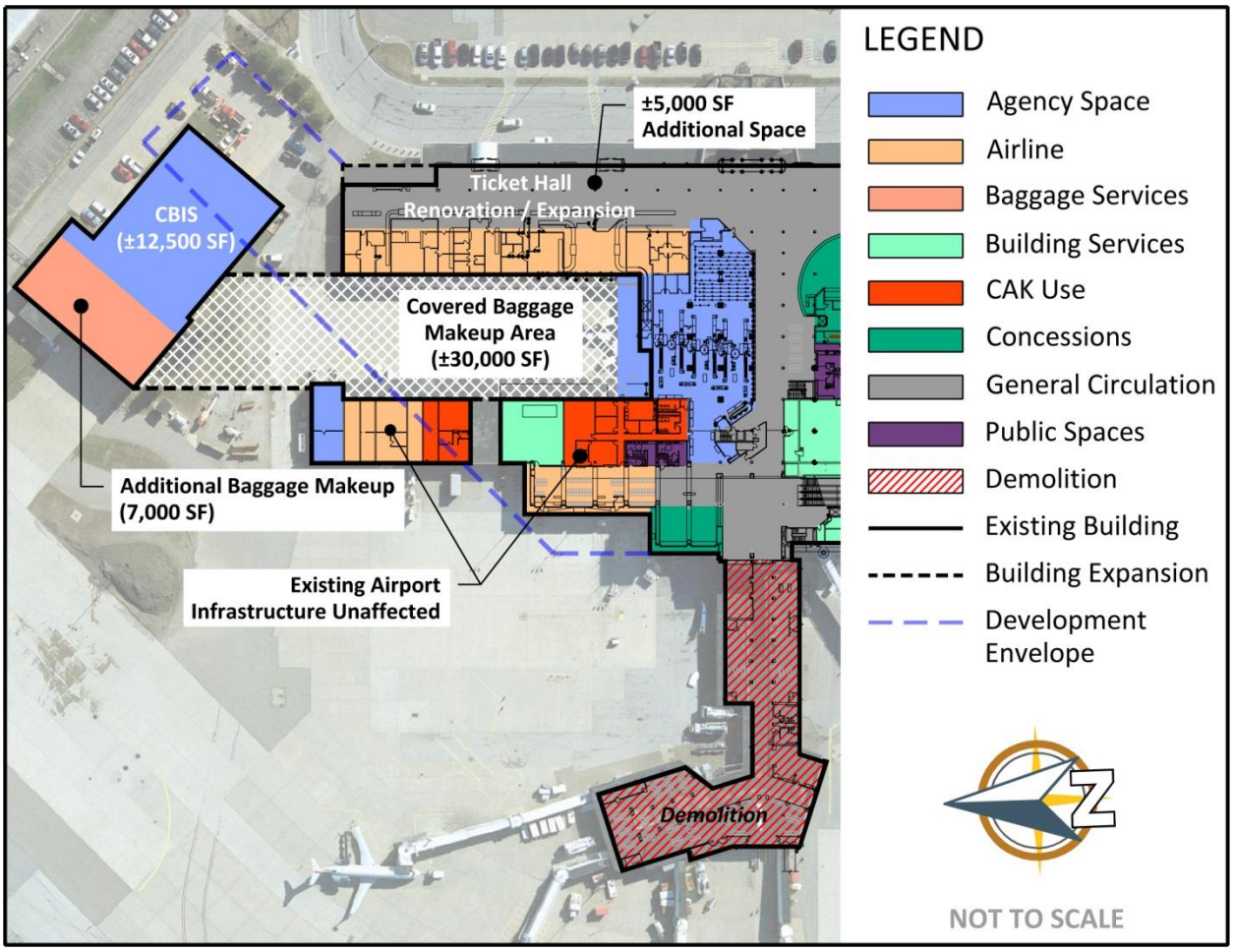


Sources: Gresham, Smith and Partners, CHA, 2013

Concept 3: Use Old ARFF Building / Outdoor Covered Area

This concept is mostly the same as Concept 1. However, instead of a fully finished terminal expansion, a covered outdoor area for outbound baggage makeup would be provided. This structure would likely be an open, non-insulated, steel-frame structure – similar to a big hangar or maintenance bay. While these facilities would ultimately be replaced if the preferred overall development concept is pursued, it requires less upfront investment. If warranted, the Airport would maintain the ability to change the preferred concept.

Figure 6-9 – CBIS Concept 3



Sources: Gresham, Smith and Partners, CHA, 2013

Comparison and Preferred Concept

The three CBIS/Outbound Baggage Makeup concepts were evaluated and compared, based on the criteria described in **Table 6-2**. For each criterion, the concepts were ranked on their ability to meet the parameters of that criterion. The ranking values range from 1 (least benefit/most impact or cost) to 3 (largest benefit/least impact or cost). The ranking value was then multiplied by the weighting factor to arrive at a point value score. The concept with the highest cumulative score was determined to be the preferred development concept. The scoring matrix is presented in **Table 6-9** and, based on this evaluation, the preferred concept is Concept 3 (Use Old ARFF Building/Outdoor Covered Area).

Concept 2 best aligns with the overall preferred terminal concept, but it is the most costly (as shown in **Table 6-8**) and must be completed after – or concurrently with – a gate replacement project, due to the displacement of Gates 1 and 2. Concepts 1 and 3 require less upfront investment and would be less disruptive to terminal operation during construction. Gates 1 and 2, the loading dock and the FAA generator could remain in place until a gate replacement project is pursued. In addition, these two concepts also use a structurally sound building (old ARFF), and support the Airport's goals of sustainability and low costs for their tenants and passengers. Concept 3 provides the best balance of low initial investment and long-term flexibility.

Table 6-8 – CBIS / Outbound Baggage Concept Cost Comparison

	1	2	3
Project Component	**Use Old ARFF**	**Terminal Reconfiguration**	**Outdoor Covered Area**
Terminal Building Demolition	0	166,600	0
Terminal Building Rehabilitation/Reconfiguration	3,373,500	3,842,330	3,373,500
Terminal Building Expansion/New Construction	15,120,000	21,784,896	7,200,000
Baggage Handling Equipment	9,900,000	6,100,000	9,900,000
TOTAL PROJECT COST ($)	**28,393,500**	**31,893,826**	**20,473,500**
Impact Costs	**1**	**2**	**3**
Building 2 (Old ARFF/Maintenance) Demolition	0	388,000	0
FAA Generator Relocation	0	400,000	0
TOTAL IMPACT COST ($)	**0**	**788,000**	**0**
COMBINED COSTS ($)	**28,393,500**	**32,681,826**	**20,473,500**

Source: CHA, McGuiness Unlimited, Gresham, Smith & Partners, 2013

Note: Cost of CBIS devices not included as it is assumed to be relatively the same cost in all concepts.

Table 6-9 – CBIS/Outbound Baggage Concept Scoring Matrix

Criteria	Weight	1		2		3	
		Use Old ARFF		Terminal Reconfiguration		Outdoor Covered Area	
		Rank	Score	Rank	Score	Rank	Score
Implementation Cost	6	2	**12**	1	**6**	3	**18**
Potential for Maximized Revenue	4	0	**0**	0	**0**	0	**0**
Disruption to Surrounding Facilities	1	2	**2**	1	**1**	3	**3**
Passenger Convenience	8	0	**0**	0	**0**	0	**0**
Operational Convenience	3	2	**6**	3	**9**	1	**3**
Development Phasing	6	2	**12**	1	**6**	3	**18**
Flexibility	7	2	**14**	1	**7**	3	**21**
Environmental Considerations	2	2	**4**	1	**2**	3	**6**
TOTAL SCORE			**50**		**31**		**69**

Source: CHA, 2013

6.3.2 Replacement of the Y Concourse Gates

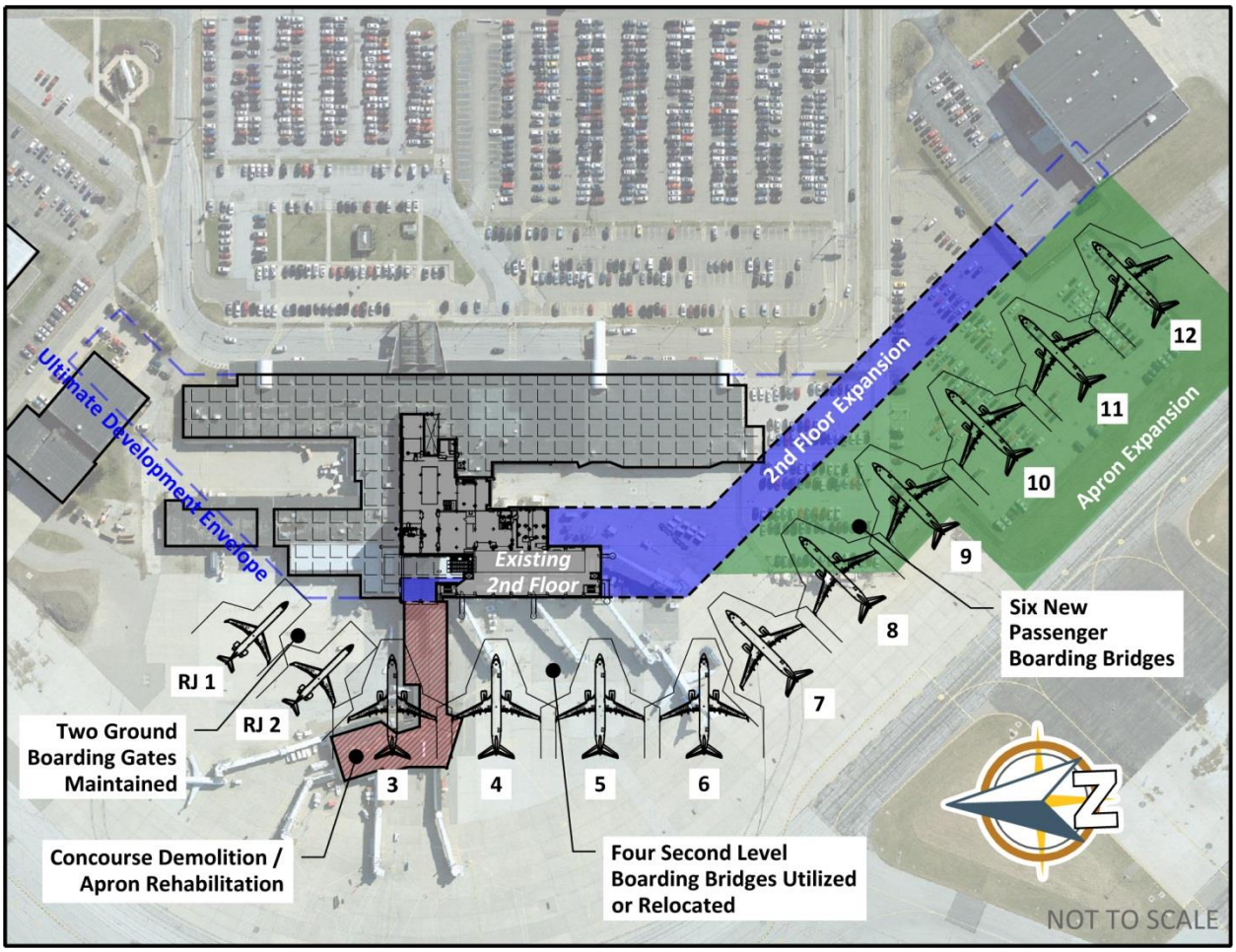
Within this priority development area, the objective is to demolish the aging and undersized Y concourse and replace those five gates with adequately sized, second level concourse gates. These concepts address a PAL 1 programmatic goal of up to 12 total gates, including a surge factor and contingency gate to accommodate peak and unanticipated activity levels. While the specific building details would need to be addressed during future design efforts, the following concepts essentially define how far north and/or south and in what general order, the gate development should occur in the short-term planning horizon.

Concept 1: South Expansion

For this concept, all new and replacement gate development would occur south of the demolished Y concourse (refer to **Figure 6-10**). The existing ground level, regional aircraft boarding Gates 1 and 2 would remain. If feasible, two of the ground boarding bridges from the Y concourse could be relocated to Gates 1 and 2. To accommodate 12 total gates, the upper level concourse would be extended south through the rental and employee car parking lots, but would not necessarily impact Building 16 (Goodyear). With the scope of this concept focused on the southern portion of the existing terminal, necessary improvements to the baggage claim

area could be pursued concurrently. Configuration options for inbound baggage processing will be discussed in **Section 6.3.3**. The cost for this concept, including six new passenger boarding bridges and approximately 20,000 square yards of new apron pavement, is presented in **Table 6-10**. The existing rental car and employee parking lots would need to be relocated in this concept. However, these costs are not accounted for in this cost comparison, as relocating these lots is a recommendation of the parking concepts discussed in **Section 6.4**. Minor revisions during design could minimize impacts to public parking, automobile access roads and Building 16 (Goodyear).

Figure 6-10 – Gate Replacement Concept 1

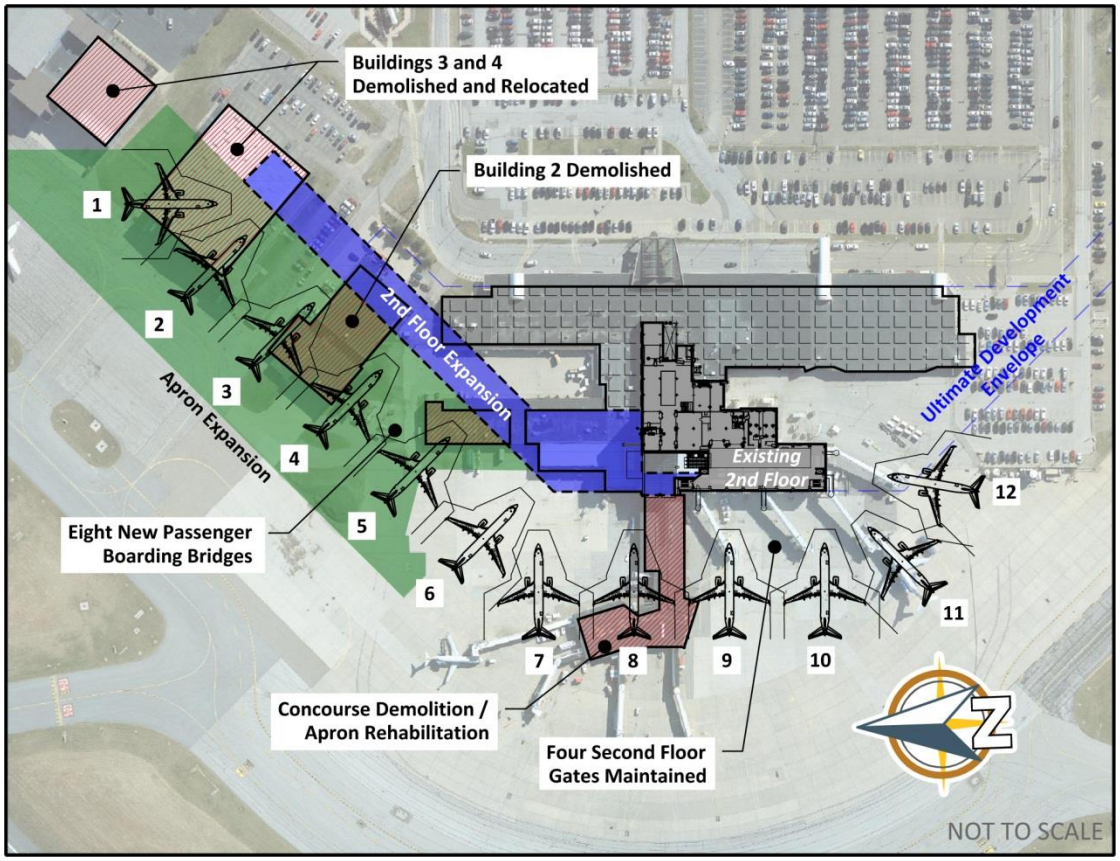


Sources: Gresham, Smith and Partners, CHA, 2013

Concept 2: North Expansion

The overall preferred terminal concept (Maximize Existing Terminal), depicted a concourse expansion to the north, extending through the old ARFF building. However, the North Expansion gate replacement concept evaluates a larger northward building expansion, extending through Building 3 (PSA). Due to the required apron expansion and aircraft maneuvering space, Building 4 (McKinley Main Hangar) would be impacted as well. The ideal location for the McKinley facilities would be on the west side of the airfield with the other GA facilities. The PSA hangar would be best located on the east side, near the terminal building. This concept would defer impacting the parking lots and hangars to the south. Focusing development in this area would also provide opportunities for the previously described CBIS and inbound baggage project to be pursued concurrently. And gate expansion to the north would impact the operation of the north de-icing pad. As depicted in **Figure 6-11**, a second level concourse would serve all gates. The cost for this concept, including up to eight new boarding bridges, approximately 21,000 square yards of new apron pavement and replacement of the PSA and McKinley hangars is presented in **Table 6-10**.

Figure 6-11 – Gate Replacement Concept 2

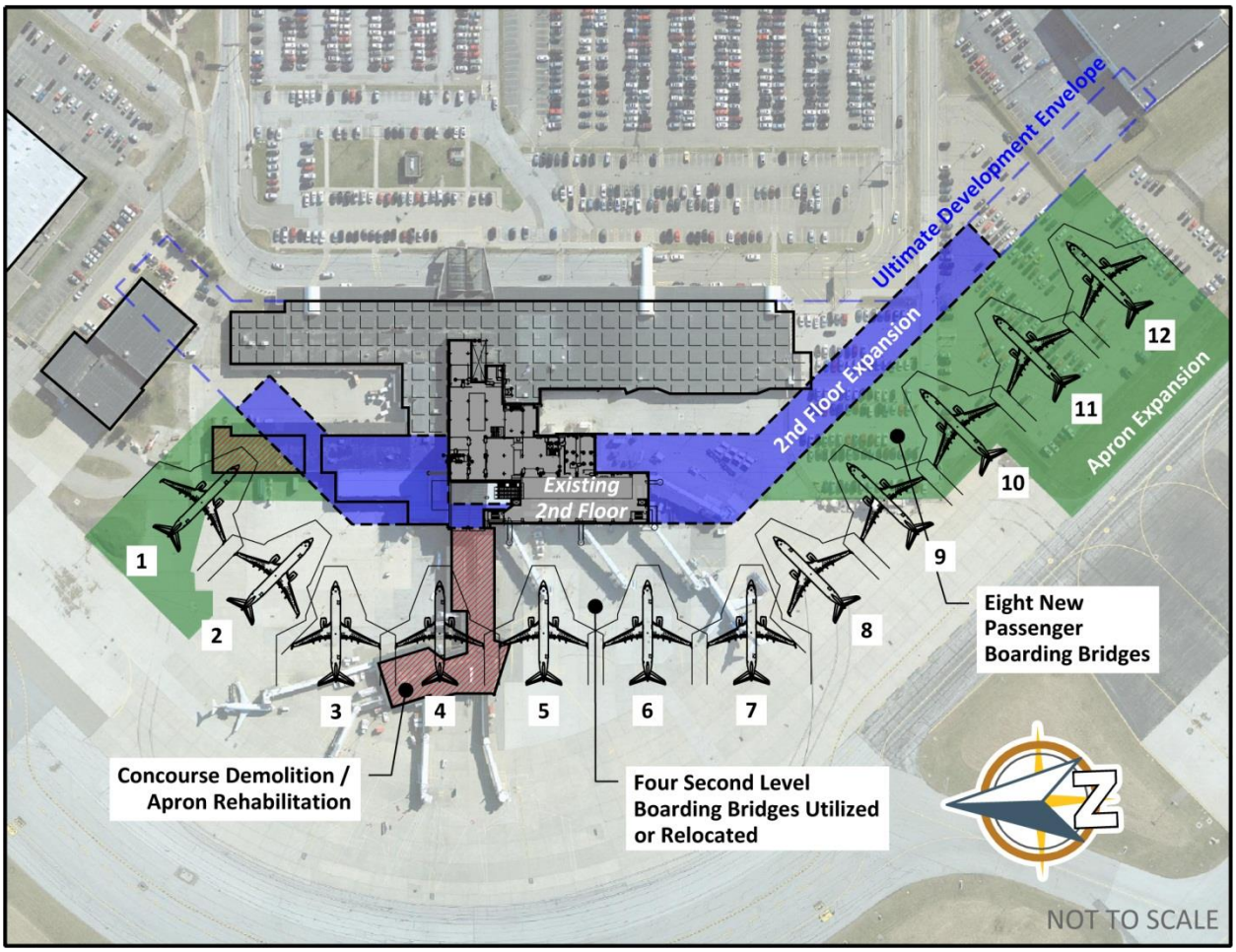


Sources: Gresham, Smith and Partners, CHA, 2013

Concept 3: North and South Expansion

The previous two concepts involve relatively large-scale development projects focused on either end of the terminal building. In an effort to reduce the level of impact to surrounding facilities and provide opportunities to phase the gate replacement into multiple smaller projects, this concept provides concourse expansion on the north and south sides of the terminal. As depicted in **Figure 6-12**, up to 12 gates could be provided and Building 2 (Old ARFF/ Maintenance) and Building 16 (Goodyear) could remain. The rental car and employee parking lots would have to be relocated and the loading dock/FAA generator building would have to be removed. The cost for this concept, including up to eight new boarding bridges and approximately 20,000 square yards of new apron pavement, is presented in **Table 6-10**.

Figure 6-12 – Gate Replacement Concept 3



Sources: Gresham, Smith and Partners, CHA, 2013

Comparison and Preferred Concept

As presented in **Table 6-10**, the north expansion concept would be the most costly, due to impacts on surrounding facilities. Distributing the concourse expansion to the north and south sides of the terminal building provides more opportunities for project phasing and cost dispersion. The south expansion concept provides the best balance of maximizing benefits, while minimizing costs and impacts. Using the previously established evaluation criteria and weighting factors, the three concepts were ranked on their ability to meet the parameters of each criterion. The ranking values range from 1 (least benefit/most impact or cost) to 3 (largest benefit/least impact or cost). The ranking value was then multiplied by the weighting factor to arrive at a point value score. Based on this evaluation, the concept with the highest overall score and therefore the preferred concept, is Concept 1 – South Expansion.

While these concepts included a PAL 1 programmatic goal of 12 gates, all capable of accommodating narrow body aircraft, that level of development will likely occur over multiple construction phases. This is due mostly to the less-than-anticipated passenger growth and changing airline route structures that occurred in 2013. It's also partially in an effort to maintain a conservative funding program that accommodates traveler demands, without significantly increasing the airport's cost per enplaned passenger. Based on anticipated airline flight schedules over the short-term planning horizon and the fact that two of the existing 11 gates are not frequently used, Authority personnel believe that efficient operations can be managed over the short-term planning horizon with a minimum of eight narrow body gates and two regional jet gates. With this in mind, pursuing a first phase gate replacement project would be similar to Concept 1, by keeping the existing Gates 1 and 2 and then extending the south concourse as far needed to accommodate the eight narrow body positions. When warranted, the remaining gates needed to satisfy PAL 2 demands could be developed in a second and/or third phase, consistent with the overall preferred terminal concept.

Table 6-10 – Gate Replacement Concept Cost Comparison

Project Component	1 South Expansion	2 North Expansion	3 North and South Expansion
Terminal Building Demolition	735,000	773,500	773,500
Terminal Building Rehabilitation/Reconfiguration	0	3,010,200	3,010,200
Terminal Building Expansion/New Construction	27,619,200	27,468,000	37,850,400
Passenger Boarding Bridges	4,762,368	6,349,824	6,349,824
Apron Expansion	5,648,100	5,901,000	5,535,700
Apron Rehabilitation	415,400	415,400	415,400
TOTAL PROJECT COST ($)	**39,180,068**	**43,917,924**	**53,935,024**

Impact Costs	1	2	3
Building 2 (Old ARFF/Maintenance) Demolition	0	388,000	0
Building 3 (PSA) Demolition	0	600,000	0
Building 3 (PSA) Replacement	0	7,200,000	0
Building 4 (McKinley) Demolition	0	200,000	0
Building 4 (McKinley) Replacement	0	2,400,000	0
FAA Generator Relocation	0	400,000	400,000
TOTAL IMPACT COST ($)	**0**	**11,188,000**	**400,000**
COMBINED COSTS ($)	**39,180,068**	**55,105,924**	**54,335,024**

Source: CHA, McGuiness Unlimited, Gresham, Smith & Partners, 2013

Table 6-11 – Gate Replacement Concept Scoring Matrix

		1		2		3	
		South Expansion		North Expansion		North and South Expansion	
	Weight	Rank	Score	Rank	Score	Rank	Score
Implementation Cost	6	3	**18**	1	**6**	2	**12**
Potential for Maximized Revenue	4	0	**0**	0	**0**	0	**0**
Disruption to Surrounding Facilities	1	3	**3**	1	**1**	2	**2**
Passenger Convenience	8	2	**16**	1	**8**	3	**24**
Operational Convenience	3	1	**3**	1	**3**	2	**6**
Development Phasing	6	3	**18**	1	**6**	2	**12**
Flexibility	7	3	**21**	1	**7**	2	**14**
Environmental Considerations	2	2	**4**	1	**2**	3	**6**
TOTAL SCORE			**83**		**33**		**76**

Source: CHA, 2013

6.3.3 Baggage Claim/Inbound Baggage Makeup

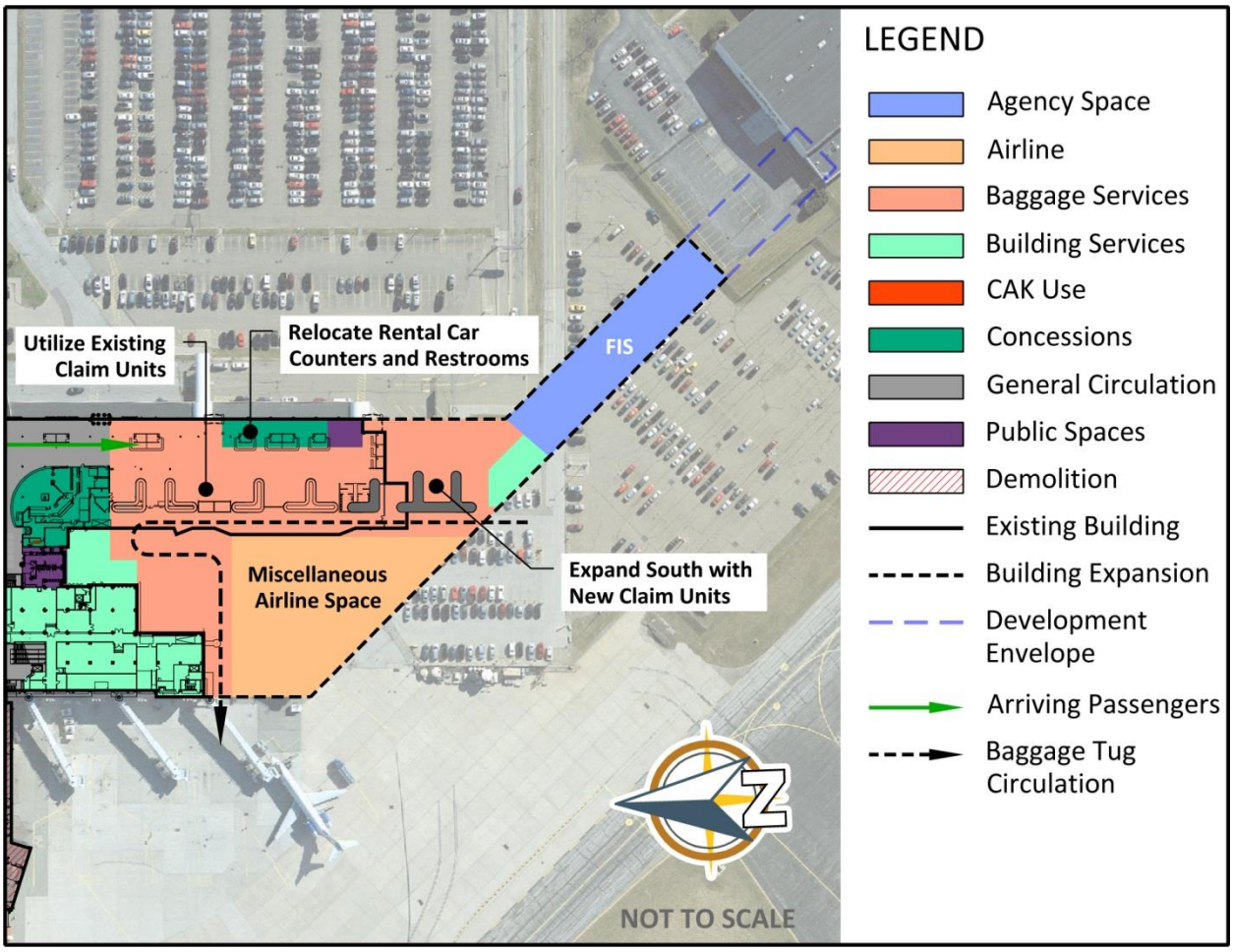
The objective for this priority development area is to provide adequate space for processing inbound baggage. This includes expansion of the passenger baggage claim and airline baggage handling areas. In the context of the preferred terminal and preferred gate replacement concepts, expansion of these facilities can be accommodated within the lower level of the terminal development envelope, beneath the expanded upper level concourse. While this project is a priority for the Airport, other projects (such as the CBIS/Outbound Baggage Makeup or Gate Replacement projects) would likely take precedence. A baggage claim project is not anticipated to occur in the near future. With that in mind, the following four concepts are presented as configuration options. A preferred concept has not been identified at this time. These concepts, or portions of them, could be pursued in conjunction with a southern gate expansion project or reevaluated and refined during future design efforts.

All four concepts accommodate PAL 4 space requirements for inbound baggage processing and include expanded space for baggage cart circulation. Because these improvements are not anticipated to occur until after later phases of the Preferred Development Strategy are completed (presented at the end of this chapter), these concepts depict potential long-term improvements that include a lower-level FIS facility for processing international passengers and baggage, as well as additional airline space used for storing ground support equipment. If these areas were constructed in conjunction with the inbound baggage project – but aren't warranted at that time – they could be left as an unused shell space or an open unfinished area, which would later be converted into physical building space.

Concept 1: Use Existing Space / Claim Devices

This concept uses the exiting baggage claim devices in their existing location and relocates the rental car counters to the terminal's curbside wall to provide additional passenger and meeter and greeter circulation space. Space would be provided to accommodate the addition of larger carousels in the future. This concept is depicted in **Figure 6-13**.

Figure 6-13 – Inbound Baggage Concept 1

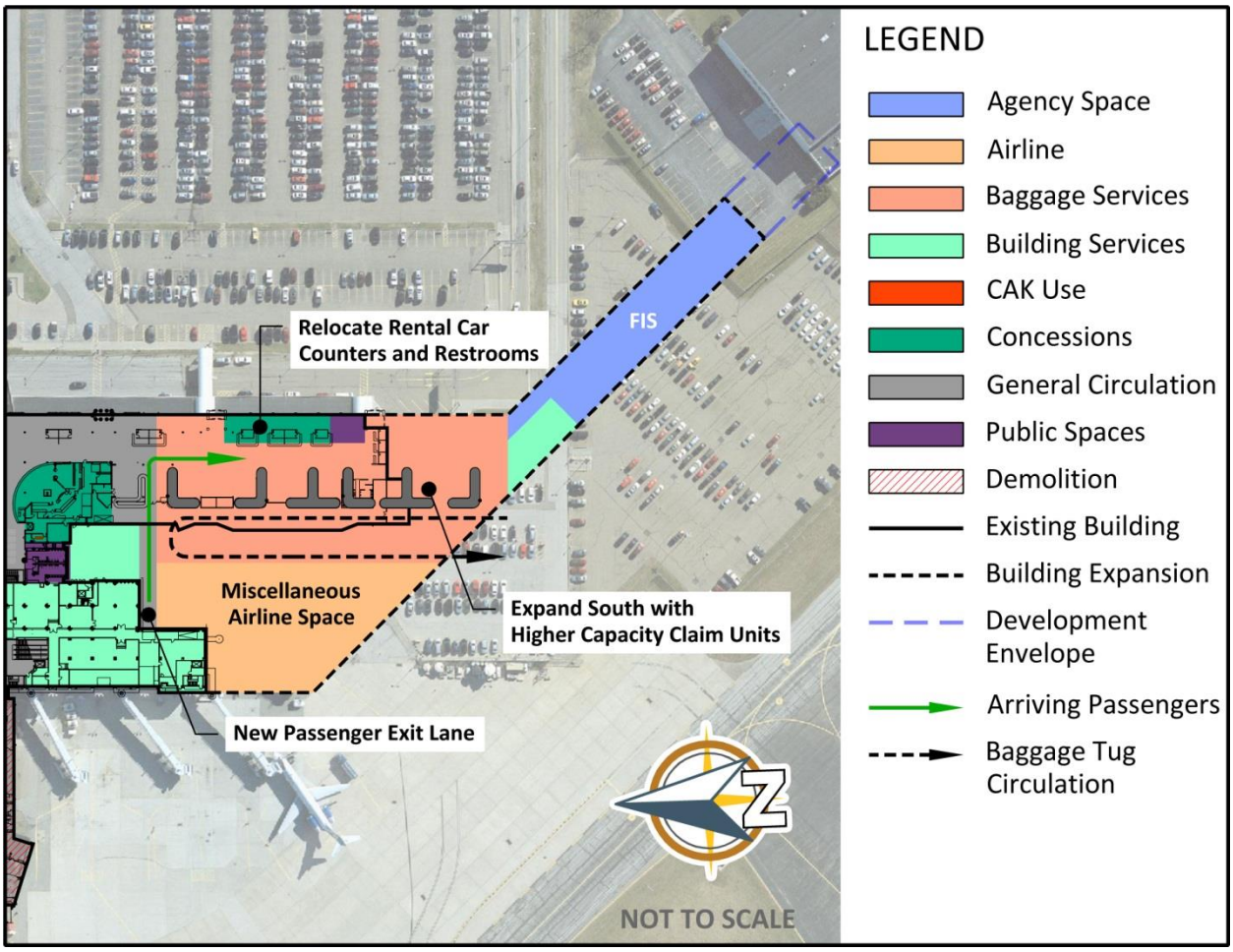


Sources: Gresham, Smith and Partners, CHA, 2013

Concept 2: Replace Claim Devices/West Expansion

By relocating the back wall and claim units toward the airfield, additional space is provided in the lobby for passenger circulation and larger carousels with more belt frontage. Though not depicted in **Figure 6-14**, the rental car counters could also be relocated to the curbside wall, as in Concept 1, to provide additional lobby space.

Figure 6-14 – Inbound Baggage Concept 2

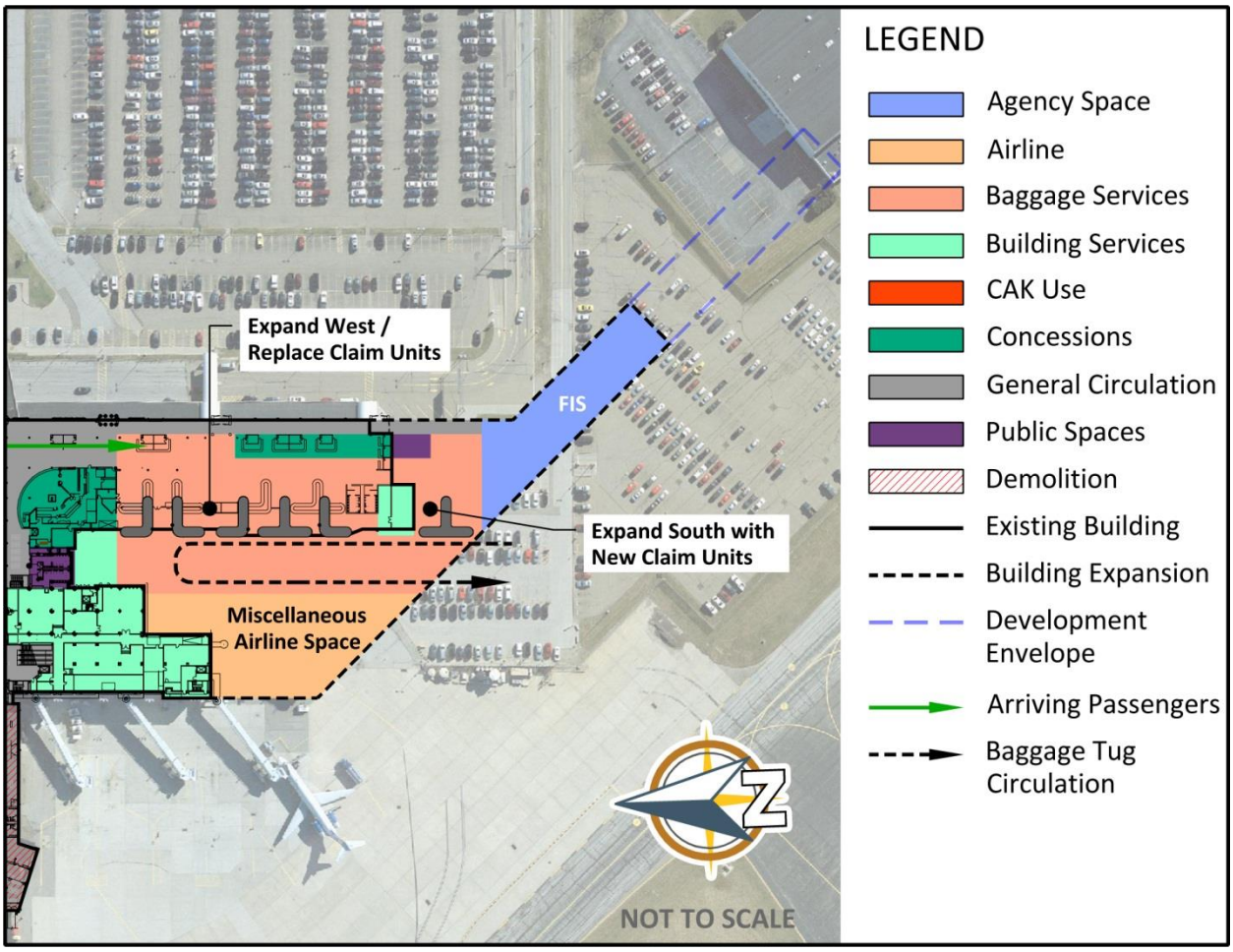


Sources: Gresham, Smith and Partners, CHA, 2013

Concept 3: Replace Claim Devices/New Exit Lane

As depicted in **Figure 6-15**, the key component of this concept is a new passenger exit lane leading from the second-level concourse to the baggage claim lobby. This would provide a second, closer egress point for passengers arriving at the southernmost gates. Similar to Concept 2, the baggage claim devices would be replaced with larger carousels.

Figure 6-15 – Inbound Baggage Concept 3

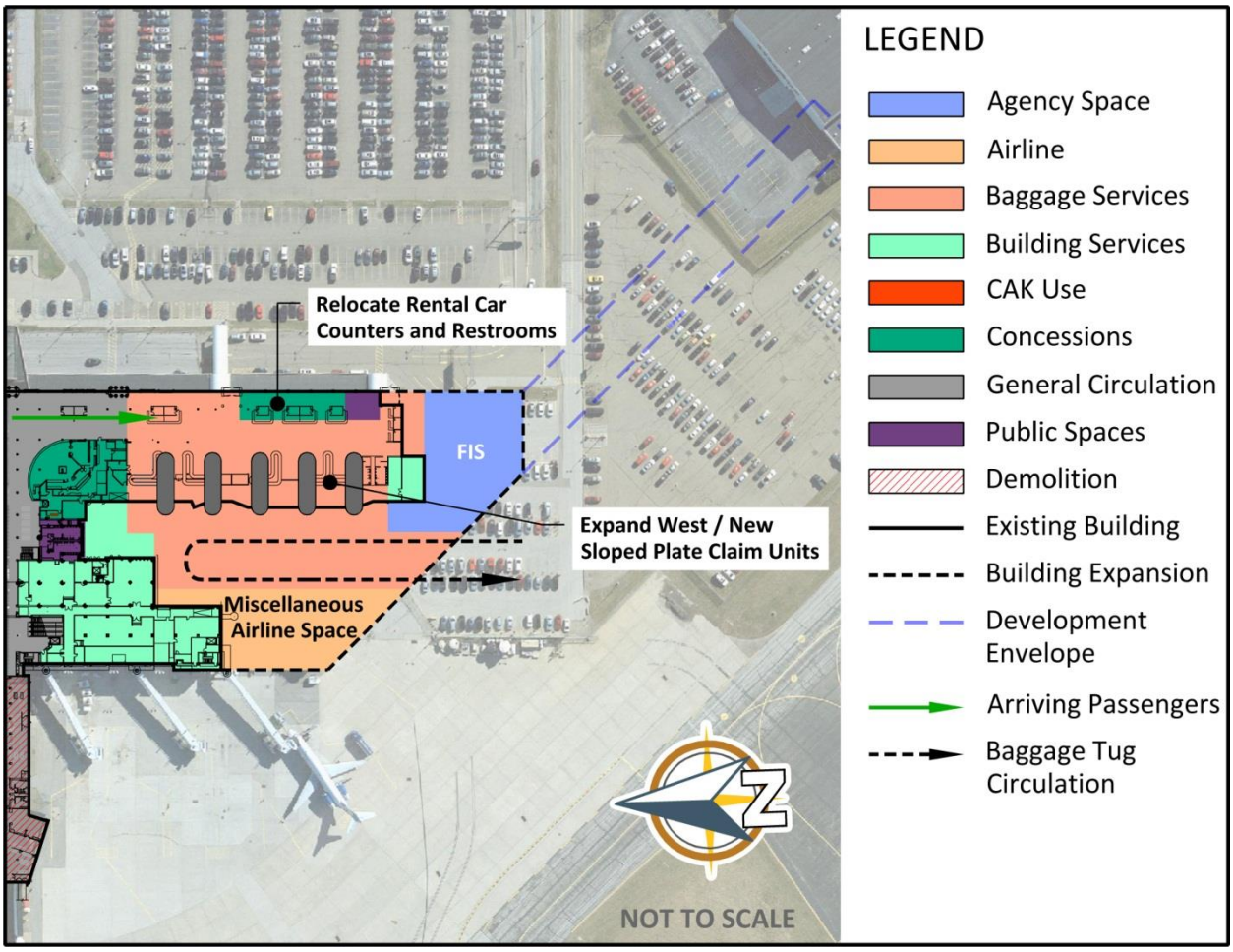


Sources: Gresham, Smith and Partners, CHA, 2013

Concept 4: Install Sloped Plate Claim Devices

This concept would replace the existing belt type claim devices with sloping plate devices. The footprint of these devices requires less floor space, which reduces the southern extent of lower level build out required. Relocating the back wall and rental car counters would provide additional passenger circulation space. This concept is depicted in **Figure 6-16**.

Figure 6-16 – Inbound Baggage Concept 4



Sources: Gresham, Smith and Partners, CHA, 2013

6.4 AUTOMOBILE PARKING

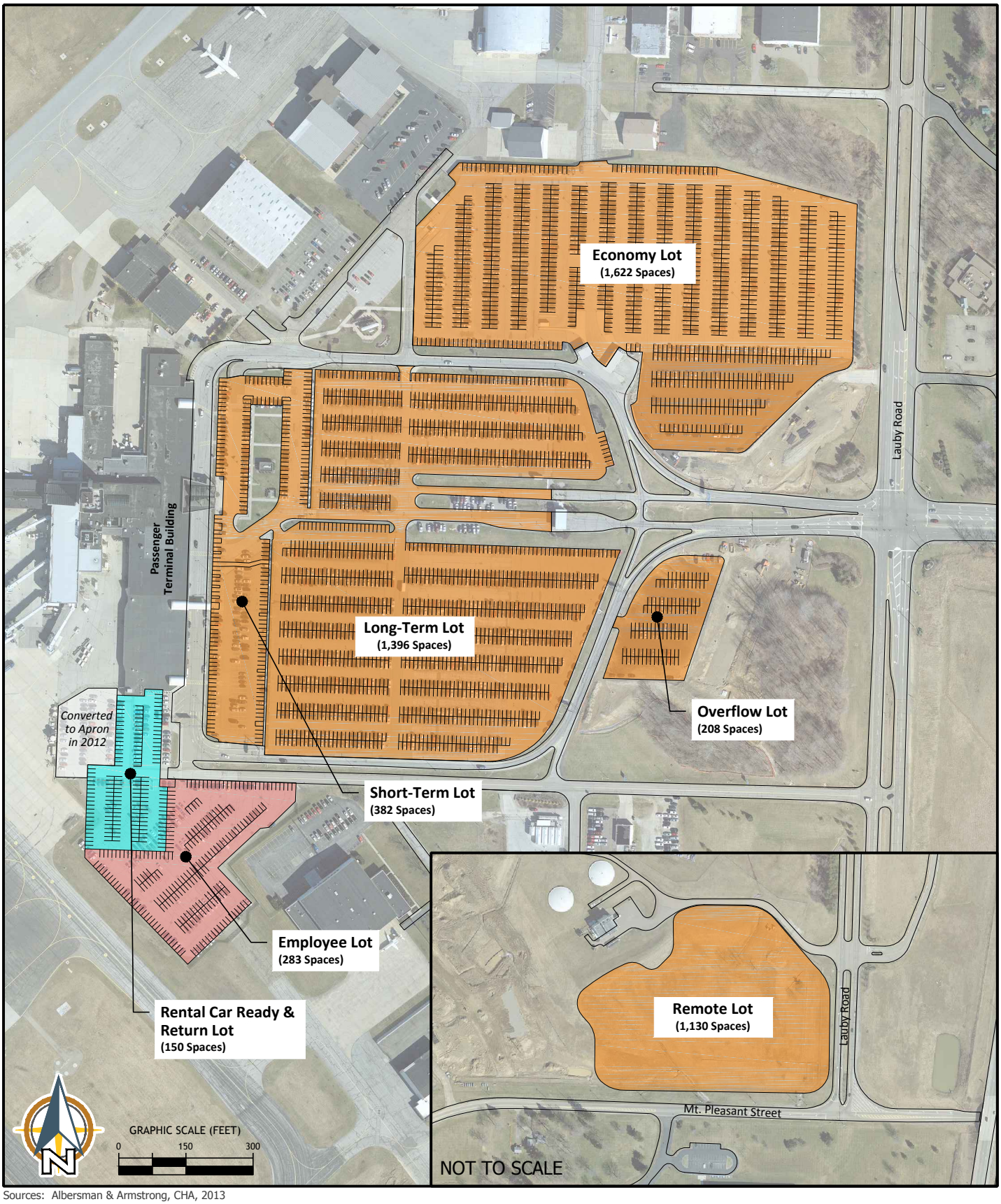
As of early 2013, the parking facilities at CAK included approximately 4,738 public spaces, 283 employee spaces and 150 rental car parking spaces, for a total of 5,171 parking spaces. Assuming a 90 percent effective availability rate for the public spaces to account for parking contingencies including vacancies – resulting from improperly parked vehicles, maintenance work and enough open space for circulating parkers to find an open stall, the total effective public parking supply is 4,264 spaces. Adding this to the physical supply of rental car and employee spaces results in an overall total of 4,697 available parking spaces. The existing parking facilities are depicted in **Figure 6-17**.

As described in **Section 4.11** and summarized in **Table 6-12**, an approximate 330 space deficit in parking capacity is anticipated by PAL 1. PAL 4 forecasts this deficit to increase to more than 2,600 spaces. Although the parking facilities at CAK have been able to accommodate existing traffic to date, the Authority has been making interim improvements to keep up with demand. This includes expanding and remarking the economy lots and development of a remote lot at the intersection of Lauby Road and Mt. Pleasant Street. As demand continues to rise, parking constraints will become more pronounced over the planning horizon, emphasizing the need for a long-term solution.

Table 6-12 – Airport Parking Supply

		Demand					
Type	**Supply**	**2012**	**PAL 1**	**PAL 2**	**PAL 3**	**PAL 4**	**PAL 4 Surplus/ Deficit**
Effective Public Parking	4,264	3,953	4,446	5,100	5,730	6,453	-2,189
Employee Lot	283	238	289	332	373	420	-137
Car Rental Lot	150	251	293	336	377	425	-275
TOTAL	**4,697**	**4,442**	**5,028**	**5,768**	**6,480**	**7,298**	-2,601
Surplus/Deficit	n/a	255	-331	-1,071	-1,783	-2,601	

Source: Albersman & Armstrong, 2013



Sources: Albersman & Armstrong, CHA, 2013

AKRON-CANTON AIRPORT

MASTER PLAN UPDATE

Figure 6-17
On-Airport Public Parking

There are two general parking expansion strategies to satisfy future parking demand – expanding surface parking or constructing a parking garage. As described in the following sections, a concept for each of these strategies was developed with emphasis on the following goals:

- Increasing Airport revenues
- Improving customer service
- Simplifying parking operations and way finding
- Minimizing vehicle and pedestrian conflicts
- Expanding the curbside road

Both concepts include a new commercial road east of the existing curbside road to segregate traffic types, provide additional passenger curbside and relieve peak period congestion. Additionally, the entry/exit and toll plaza circulation would be reconfigured to improve customer convenience, improve way finding and maximize available spaces within the loop road.

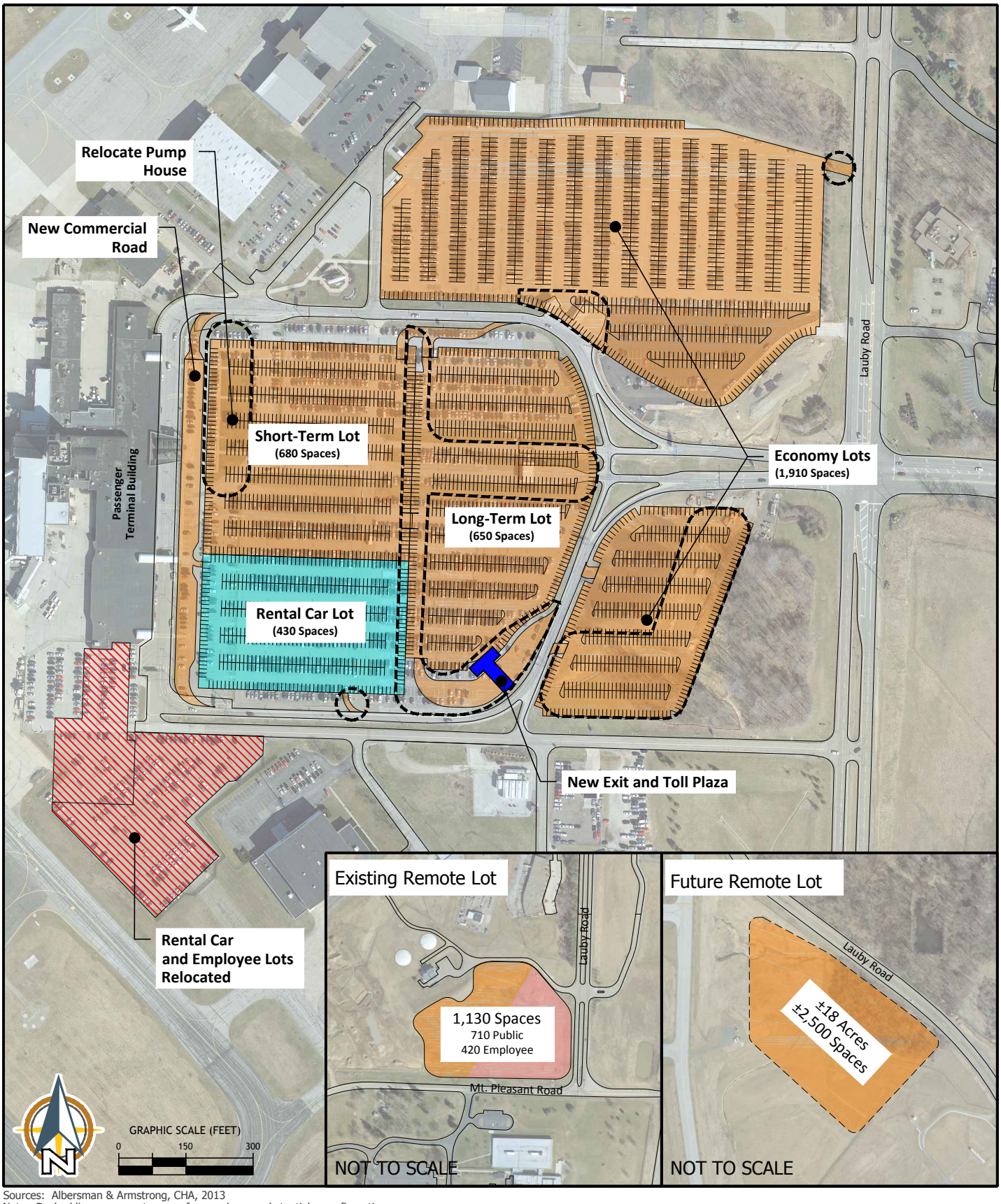
6.4.1 Concept 1: Expand Surface Parking

This concept would accommodate PAL 4 demands by reconfiguring and expanding the surface parking. Due to surrounding infrastructure and terrain, there is little, readily-available space in the terminal area for expansion of the surface lots. However, by reconfiguring the central entry/exit location, filling in open spaces and relocating the pump house, a maximum number of parking spaces could be attained within the loop road. The economy and overflow parking lots would also be expanded. Due to the anticipated terminal expansion, the existing rental car and employee lots would be relocated (rental car parking to the front of the terminal; employee parking to the existing remote lot). To accommodate forecasted public parking demands, particularly for PALs 3 and 4, the existing remote lot would need to be maintained and an additional remote lot would need to be developed. The most viable location for a new remote lot is directly adjacent to Lauby Road, northeast of the airfield (east of the Runway 19 end). An 18-acre site is required to meet PAL 4 parking demands and provide approximately 2,500 spaces. Should this site prove to be insufficient for an 18-acre parking lot (due to terrain concerns), the new remote lot could be located on Airport-owned property on Greensburg Road (or split between the two locations). Concept 1 is depicted in **Figure 6-18**.

6.4.2 Concept 2: Parking Garage

The parking garage concept involves constructing a parking structure in the main lot, maximizing the amount of convenient parking closest to the terminal building. A four-story parking garage would provide approximately 4,400 spaces and fulfill PAL 4 public and rental car demands. Rental car parking would be accommodated on the first level of the parking garage. Employee parking would be relocated to the existing remote lot. If pursued, this concept would preclude the need for a new remote surface parking lot. However, a temporary remote lot would need to be constructed to accommodate parking spaces displaced during construction of the garage. That lot could then be repurposed for other uses, such as rental car storage, employee parking and overflow parking for peak periods or special events, or other non-aeronautical facility expansion needs.

Depending on when the parking garage is constructed, the size of the temporary remote lot could vary. To satisfy PAL 4 demands, construction of a parking garage would likely begin at or before PAL 2 enplanement levels. After that time, it would be difficult for the Airport to provide enough public parking during construction to meet anticipated user demand, plus the displaced parking spaces during construction. A 12-15 acre remote lot would provide approximately 1,600-2,100 parking spaces and offer enough spaces to accommodate PAL 2 and construction demands. Concept 2 is depicted in **Figure 6-19**.

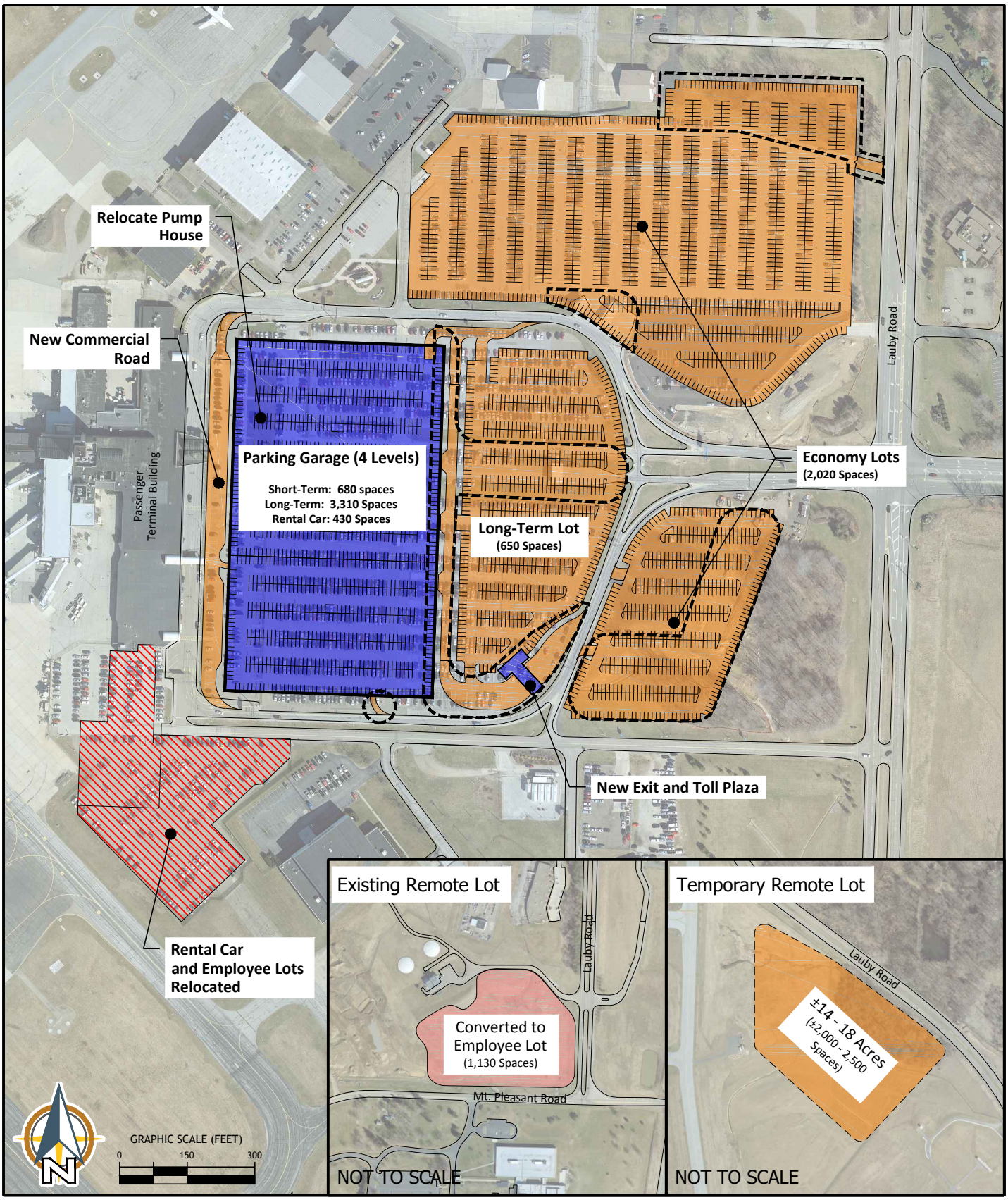


Sources: Albersman & Armstrong, CHA, 2013
Note: Dashed lines represent areas of expansion or substantial reconfiguration.

AKRON-CANTON AIRPORT

MASTER PLAN UPDATE

Figure 6-18
Parking Concept 1:
Expand Surface Parking



Sources: Albersman & Armstrong, CHA, 2013
Notes: Dashed lines represent areas of expansion or substantial reconfiguration.

AKRON-CANTON AIRPORT

MASTER PLAN UPDATE

Figure 6-19
Parking Concept 2:
Parking Garage

6.4.3 Comparison and Preferred Concept

The construction costs of the two concepts are presented in **Table 6-13**. The costs include the rehabilitation or expansion of new surface parking, the construction of a remote parking lot or parking garage, and associated improvements – roadway improvements, toll plazas.

Table 6-13 – Parking Concept Cost Estimate

Project Component	1 Expand Surface Parking	2 Parking Garage
Surface Parking Rehabilitation/New Pavement	3,130,000	3,470,000
Remote Parking Lot [1]	8,712,000	5,808,000
Parking Garage	0	70,720,000
Toll Plazas	950,000	950,000
Roadway Improvements	1,084,800	1,417,600
TOTAL PROJECT COST ($)	**13,876,800**	**82,365,600**

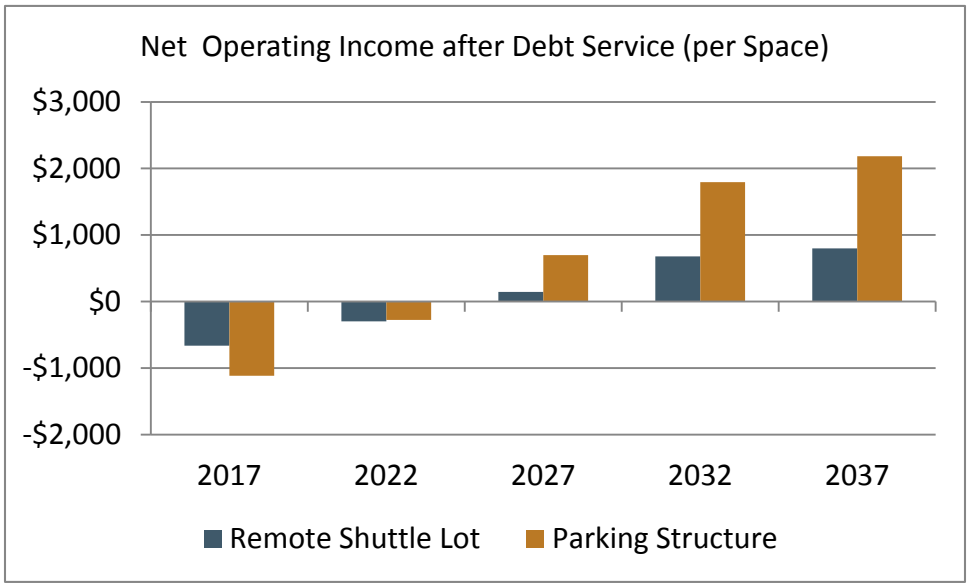
Source: Albersman & Armstrong, McGuiness Unlimited, CHA, 2013

[1]Based on 18 acres for surface parking concept, 12 acres for parking garage concept

Expanding the surface parking carries a lower implementation cost than constructing a garage, but does not improve passenger convenience (long walking distances, no covered parking) and would be inconvenient operationally (requires use of shuttle buses). Alternatively, the parking garage would improve passenger convenience and improve overall parking efficiency, but requires heavy investment.

A preliminary economic analysis was conducted to compare the two concepts, in terms of an initial construction cost and a long-term economic benefit. The analysis considered four variables: cost of parking, cost of construction, cost of operating a shuttle service and the differences in revenue opportunities. Shuttling costs were estimated to be approximately $5 to $10 per parker. It is important to consider that maintaining a high level of customer service requires that shuttles arrive within five minutes of the passenger parking. That means that the number of shuttles does not necessarily decline when demand is reduced. It is also assumed that a good portion of parking patrons are willing to pay more to park in a garage than in a remote parking lot. **Figure 6-20** illustrates the net operating income per space with the debt service factored. As shown, it is anticipated that a parking garage would produce more revenue over the long term than if the surface parking was expanded.

Figure 6-20 – Parking Concept Economic Analysis



Source: Albersman & Armstrong, 2013

The parking concepts were also evaluated and compared based on the criteria described in **Table 6-1**. For each criterion, the concepts were ranked on their ability to meet the parameters of that criterion. The ranking values range from 1 (least benefit/most impact or cost) to 2 (largest benefit/least impact or cost). The ranking value was then multiplied by the weighting factor to arrive at point value score. The highest cumulative score was used to determine the preferred development concept. The parking concept scoring matrix is presented in **Table 6-14**. According to this analysis, Concept 2 (Parking Garage) is the best long-term option.

Table 6-14 – Parking Concept Scoring Matrix

		1		2	
		Expand Surface Parking		Parking Garage	
	Weight	Rank	Score	Rank	Score
Implementation Cost	6	2	12	1	6
Potential for Maximized Revenue	4	1	4	2	8
Disruption to Surrounding Facilities	1	2	2	1	1
Passenger Convenience	8	1	8	2	16
Operational Convenience	3	1	3	2	6
Development Phasing	6	2	12	1	6
Flexibility	7	1	7	2	14
Environmental Considerations	2	2	4	1	2
TOTAL SCORE			**52**		**59**

Source: CHA, 2013

6.5 AUTOMOBILE ACCESS ROAD CONFIGURATION

Improvements to the automobile access road could improve customer service by simplifying parking operations, improving efficiency and way finding, and minimizing vehicle/pedestrian conflicts. Three concepts were developed and are described in the subsequent sections. Each of these concepts could be incorporated into either the surface parking or garage concepts and provide approximately the same number of spaces.

Concept 1: Maintain Existing Road

This concept entails minimum improvement to the access road (similar to the configuration shown in the parking concepts). The main features of this concept include an expanded curbside area and the replacement of the current entry/exit plaza with separate, more efficient plazas for entry and exit functions. A central travel corridor through the main lots would also be developed. Concept 1 is depicted in **Figure 6-21**.

Concept 2: Modified Ring Road

The access road configuration in this concept is similar to Concept 1, but the alignment of the entry and exit roads is shifted north toward the economy lot. By realigning the road, additional space is gained to the south for the exit plaza queue. As with Concept 1, an expanded curbside area would double the available space, and the parking entry/exit plazas would be separated to increase efficiency. Concept 2 is depicted in **Figure 6-22**.

Concept 3: New Ring Road

This layout provides all expanded parking within a new terminal ring road. Airport Drive would continue to be used as the main entry/exit point for passenger automobile traffic. The access road would be directed north and would circumscribe a reconfigured parking lot that combines the long-term, economy and overflow lots. Concept 3 is depicted in **Figure 6-23**.

Sources: Albersman & Armstrong, CHA, 2013

AKRON-CANTON AIRPORT

MASTER PLAN UPDATE

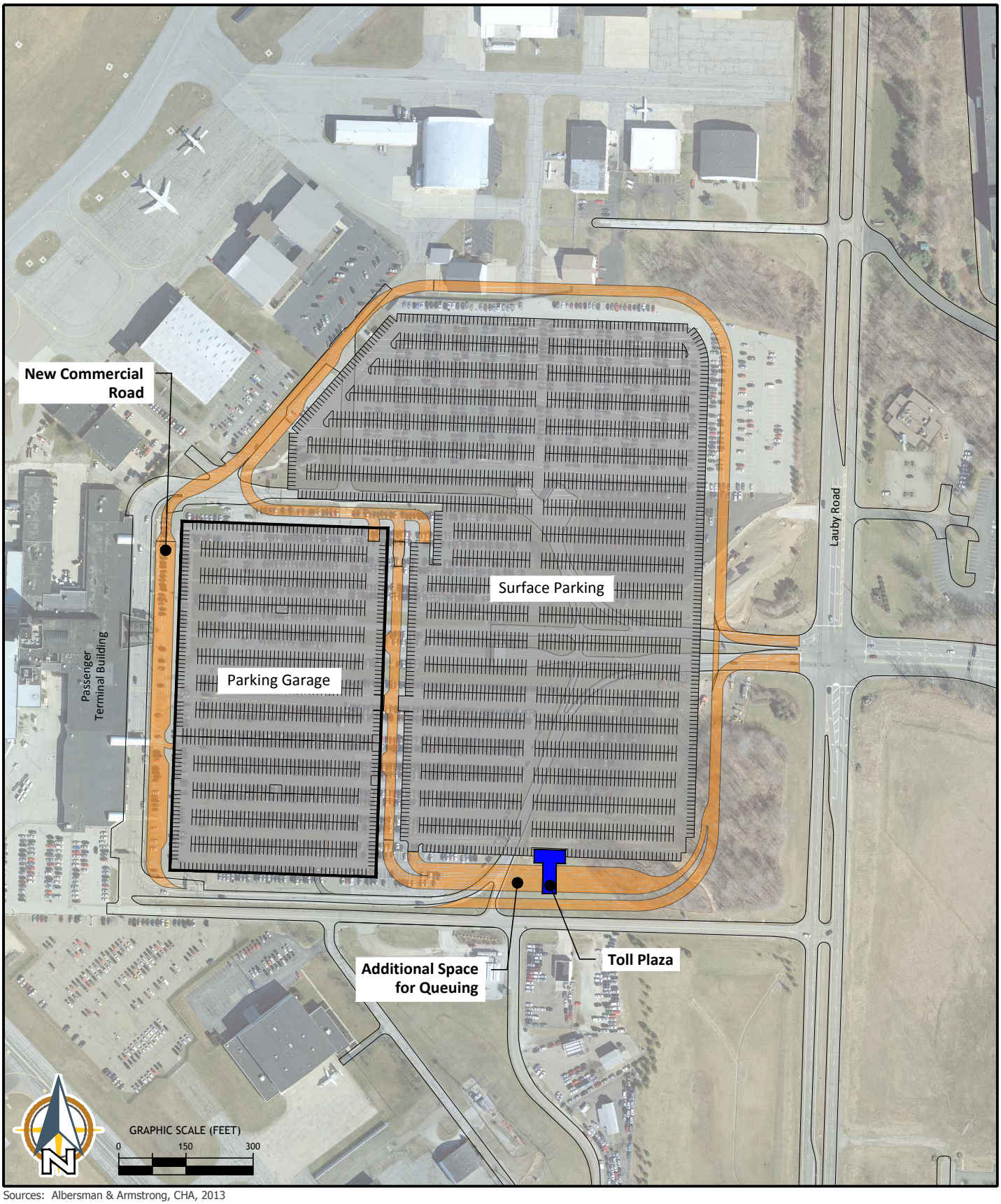
Figure 6-21
Access Concept 1:
Maintain Existing Road

Sources: Albersman & Armstrong, CHA, 2013

AKRON-CANTON AIRPORT

MASTER PLAN UPDATE

Figure 6-22
Access Concept 2:
Modified Ring Road



Sources: Albersman & Armstrong, CHA, 2013

AKRON-CANTON AIRPORT

MASTER PLAN UPDATE

Figure 6-23
Access Concept 3:
New Ring Road

Comparison and Preferred Concept

Concept 1 has the lowest construction cost, but requires multiple entry/exit locations. The tight weaving around the exit plazas could potentially result in congestion. Concept 2 addresses the queuing distance, but could still result in congestion, due to the multiple entry/exit locations and the risk of driver confusion. Concept 3 is operationally the best concept. It improves efficiency by locating all parking within the ring road and provides for simple and intuitive way finding. This concept also improves the efficiency of shuttling by reducing the need to cross active roadways. Drawbacks include the high cost of construction and the difficulty in maintaining high levels of customer service and operational efficiency during construction.

Table 6-15 – Access Road Concept Cost Estimate

	1	2	3
Project Component	**Existing Road**	**Modified Road**	**New Road**
Toll Plazas	950,000	950,000	950,000
Roadway Improvements	1,417,600	2,342,400	3,499,200
TOTAL PROJECT COST ($)	**2,367,600**	**3,292,400**	**4,449,200**

Source: Albersman & Armstrong, McGuiness Unlimited, CHA, 2013

The access road concepts were evaluated and compared based on the criteria described in **Table 6-1**. For each criterion, the concepts were ranked on their ability to meet the parameters of that criterion. The ranking values range from 1 (least benefit/most impact or cost) to 3 (largest benefit/least impact or cost). The ranking value was then multiplied by the weighting factor to arrive at point value score. The highest cumulative score was used to determine the preferred development concept. The scoring matrix is presented in **Table 6-16**. According to this analysis, Concept 1 (Maintain Existing Road) is the most feasible option and best aligns with the Airport's goal of providing low costs to their passengers. However, it is recommended that the Airport maintain the capability to construct the ring road in the future, if warranted.

Table 6-16 – Access Road Concept Scoring Matrix

		1		2		3	
		Existing Road		Modified Road		New Road	
	Weight	Rank	Score	Rank	Score	Rank	Score
Implementation Cost	6	3	18	2	12	1	6
Potential for Maximized Revenue	4	0	0	0	0	0	0
Disruption to Surrounding Facilities	1	3	3	2	2	1	1
Passenger Convenience	8	1	8	2	16	3	24
Operational Convenience	3	1	3	2	6	3	9
Development Phasing	6	3	18	2	12	1	6
Flexibility	7	3	21	2	14	1	7
Environmental Considerations	2	3	6	2	4	1	2
TOTAL SCORE			**77**		**66**		**55**

Source: CHA, 2013

6.6 TAXIWAY SYSTEM

As described in **Chapter 4**, the existing taxiway system meets or exceeds the ADG-III and TDG-5 standards for the commercial design aircraft family anticipated over the planning horizon. The existing 75-foot wide taxiways are also capable of accommodating aircraft in the ADG-IV and V categories on an occasional basis and with special attention from air traffic control. Typical aircraft in these categories that have occasionally operated at CAK include the Boeing 747SP (ADG-V, TDG-5), the Boeing 757-300 (ADG-IV, TDG-6), the Airbus A300-600 (ADG-IV, TDG-5) and the Boeing C-17 Globemaster III (ADG-IV, TDG-5).

While the taxiway system at CAK is considered adequate in that sense, there are areas where additional access is needed to support the ongoing development of aviation facilities. There are also areas where configuration improvements would enhance the Airport's overall operational efficiency and safety. The study team, in coordination with Airport and air traffic control tower staff, has developed the overall taxiway configuration strategy depicted in **Figure 6-24**. This was developed through application of the latest FAA airfield design standards and guidance, with consideration for potential future developments, future land uses and terrain elevations. The objectives addressed in this strategy include:

- Provide access to the west side of the airfield and reduce active runway crossings.
- Remove or mitigate taxiway hot spots and high-energy intersections.
- Separate GA traffic from the commercial apron.
- Reduce potential for pilot confusion and runway incursions.
- Provide full-length parallel taxiways where feasible.
- Realign Taxiway E to a 400-foot runway to taxiway separation east of Taxiway B.
- Provide additional exit taxiway for aircraft landing on Runway 23 between Taxiways K and F2, if feasible.
- Develop bypass capability at the Runway 23 end.

6.6.1 West Side Access

Although the existing taxiway system does provide access from the northwest GA area to each runway end, depending on the direction of travel, there could be multiple runway crossings involved. Developing full-length, west side parallel taxiways to either runway could reduce the overall need to the cross the runways. However this is not ideal, due to the fact that the taxiways would cross the middle-third of the intersecting runway, creating a new high-energy and angled intersection. In an effort to provide improved west side access for current and future facilities and reduce the number of potential runway crossings, the recommended configuration includes a partial parallel taxiway to both runways. This would tie the northwest GA area to Taxiway F2.

Steep terrain limits the ability to extend a west side parallel taxiway to the Runway 5 threshold. Considering Runway 5 is used the least (approximately 8 percent) and the distance from exit F2 to the Runway 23 threshold (approximately 4,800 feet) would accommodate the majority of GA aircraft operating to the west side, there appears to be little demand warranting the investment of extending the parallel taxiway further than F2.

Extending the proposed parallel taxiway to the threshold or end of Runway 19 isn't feasible, due to the location of an existing glideslope. Also, the required taxiway obstacle-free areas, particularly for larger aircraft, would essentially neutralize the exiting GA apron. Therefore, an ADG-II taxilane is proposed along the edge of the existing GA apron, extending to the end of Runway 19. This would provide the majority of GA aircraft access to the full length of Runway 19 without having to cross the runway. Large aircraft wanting to access Runway 19 from the Northwest GA area would have to cross Runway 1-19 at what would be a relocated and widened Taxiway H.

To further reduce crossings of Runway 1-19 at Taxiway F, a west side connection to the Runway 1 threshold is also recommended. This would allow aircraft access to Runway 1 from the northwest GA area, having to cross one runway instead of two. This segment of new taxiway would need to be located outside of the Runway 1 glideslope critical area and appropriately marked.

6.6.2 Runway 1-19 East Side Parallel Taxiway

For Runway 1-19, parallel taxiway capability is fulfilled by a series of generally parallel taxiway segments (Taxiways B, E and A span the length of the runway). Due to the configuration of the intersecting runways, developing a full-length, parallel taxiway on the east side of Runway 1-19 would be extremely difficult, if not infeasible, based on current FAA design standards and guidance. Developing such a parallel would still result in angled runway intersections and require relocation of the Runway 23 glideslope. This glideslope was previously relocated in 2011 when the end of Runway 23 was shifted south and Taxiway D was extended to the new threshold.

Taxiway A could be extended, in parallel fashion, from Taxiway F to the commercial apron where it would intersect Taxiway E. This could reduce the potential for pilot confusion at the intersection of Taxiways K and A. It would also provide additional space for a new bypass taxilane to be developed along the commercial apron, which is contingent upon the removal of the Y concourse. This could improve circulation to the south de-icing pad and the southern concourse expansion. While this is possible, it is not deemed a high-priority project at this time.

6.6.3 Hot Spot Removal

Hot spot 1 is related to the Runway 19 glideslope critical area and the circulation on Taxiways H and J from the existing northwest GA apron. To eliminate this hot spot, the west side segments of Taxiways H and J would be removed or relocated. Circulation and access for small and large aircraft would be maintained with the addition of a taxiway connector to the end of Runway 19 and a relocated and widened Taxiway H.

To eliminate the potential for pilot confusion associated with hot spot 2, it is recommended that Taxiway C be removed.

To eliminate hot spot 3, it is recommended that the portion of Taxiway K between the two runways be removed, reducing the risk of pilot confusion and runway incursion.

The outer portions of Taxiway K could still be used as exit taxiways. Given the angle of Taxiway K off of Runway 1-19, it could even serve as an acute angled exit taxiway for aircraft landing on Runway 19. According to the preliminary analysis, this angled exit could capture approximately 76 percent[3] of the large aircraft traffic landing on Runway 19.[4]

Runway 23 is the most used runway at CAK and there are a number of concerns regarding the taxiway configuration and circulation around its threshold.

- The turn onto Runway 23 from the commercial apron and Taxiway E is limited to Group-III aircraft or smaller.
- There is limited bypass capability and no holding pads, which causes congestion.
- The angled intersection of Taxiway B with Runway 5-23 could lead to pilot confusion. The FAA encourages right angle intersections.

While air traffic control personnel are effectively managing ground traffic in this area, additional bypass taxiways and a reconfiguration of Taxiways B and E would improve efficiency by providing circulation options.

The existing Taxiway D pavement east of Runway 1-19 would be removed, eliminating a high-energy intersection with Runway 1-19. A new partial parallel taxiway would be constructed outside the Runway 23 glideslope critical area, which would also serve as an angled exit taxiway, capable of capturing approximately 27 percent of large aircraft landing on Runway 1. A new bypass taxiway would simplify circulation for departing aircraft and reduce the potential for congestion along Taxiway E. The northern most portion of Taxiway E would be relocated to the standard 400-foot runway-to-taxiway separation distance capable of accommodating up to ADG-V aircraft. In conjunction with the new bypass taxiway, this would increase space available on the adjacent apron and reduce the amount of taxiway limited to ADG-III or smaller aircraft. The existing blast-fence would still limit access to the Runway 23 threshold to aircraft with wingspans less than 118 feet (i.e., ADG-III). A new blast fence would be installed to prevent damage to buildings or aircraft from aircraft turning onto the new bypass capability. The proposed location of this blast fence is shown in **Figure 6-24**.

6.6.4 Additional Runway 23 Exit Taxiway

As described in **Chapter 4**, FAA air traffic control personnel have indicated that an additional exit taxiway for aircraft landing on Runway 23 – between Taxiways K and F2 – would help reduce runway occupancy times and allow them to better manage the mix of GA and commercial aircraft. While a high-speed exit might be preferred, the existing airfield configuration limits the ability to develop an efficient commercial aircraft high-speed exit, as prescribed by FAA design standards. Typically, a high-speed exit would be located approximately 6,000 feet from the landing threshold and exit directly onto a parallel taxiway.

[3] AC 150/5300-13A Airport Design; Exit Taxiway Cumulative Utilization Percentages

[4] AC 150/5300-13A *Airport Design*; Large aircraft defined as aircraft between 12,500 lbs. and 300,000 lbs.

The right-angled exit at Taxiway F2 is 4,863 feet from the threshold and calculated to capture approximately 42 percent of the large aircraft traffic. While a true high-speed exit may not be developed, an acute-angled exit 3,500 and 3,900 feet from the threshold could be developed to provide calculated large aircraft capture rates between 9 and 26 percent. As depicted in **Figure 6-25**, the closer the exit is to the threshold – the longer the decelerating turn onto Taxiway F. The closer the exit is to the intersection of Taxiways F and F2 – the more complicated the intersection could become. This could in turn increase the potential for pilot confusion and runway incursions from aircraft taxiing north on Taxiway F from the Runway 5 end. Because an exit in this area would have operational benefit – particularly for the corporate jet and smaller commercial aircraft – it is recommended that a 3,500-foot exit distance be preserved and documented on the Airport Layout Plan (ALP) drawing set. Should the Authority and FAA elect to pursue this improvement, additional evaluation of operational benefit and engineering feasibility would be needed.

AKRON-CANTON AIRPORT

MASTER PLAN UPDATE

GRAPHIC SCALE (FEET)

0 400 800

Realign Taxiway E

New Exit Taxiway to Runway 5

Provide Bypass Capability

Eliminate Hot Spot 1

Acute Angled Exit Taxiway

Realign Taxiway A

Eliminate Hot Spots 2 and 3

West Side Parallel Taxiway

Relocated and Widened Taxiway H

Runway 19 Entrance Taxiway (Limited to ADG-II)

Runway 1 Entrance Taxiway

Angled Exit Taxiway

Taxiway B

Taxiway A

Taxiway E

Taxiway E

Taxiway K

Runway 1-19

Runway 5-23

Taxiway J

Taxiway H

Group-II Taxilane OFA

Taxiway D

Taxiway K

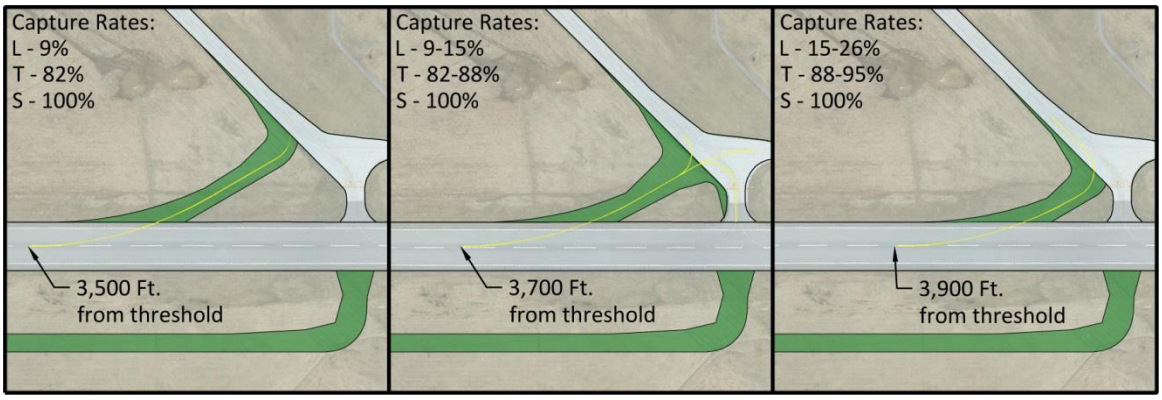
Taxiway F2

Taxiway F

Taxiway F1

Figure 6-24
Taxiway Configuration Strategy

Figure 6-25 – Runway 5-23 Potential Acute-Angled Exit Taxiway Configurations



Sources: CHA, 2013
FAA AC 150/5300-13A *Airport Design* – Exit Taxiway Cumulative Utilization Percentages
Notes: L – Large Aircraft (12,500 lbs. to 300,000 lbs.)
T – Small, Twin Engine (12,500 lbs. or less)
S – Small, Single Engine (12,500 lbs. or less)

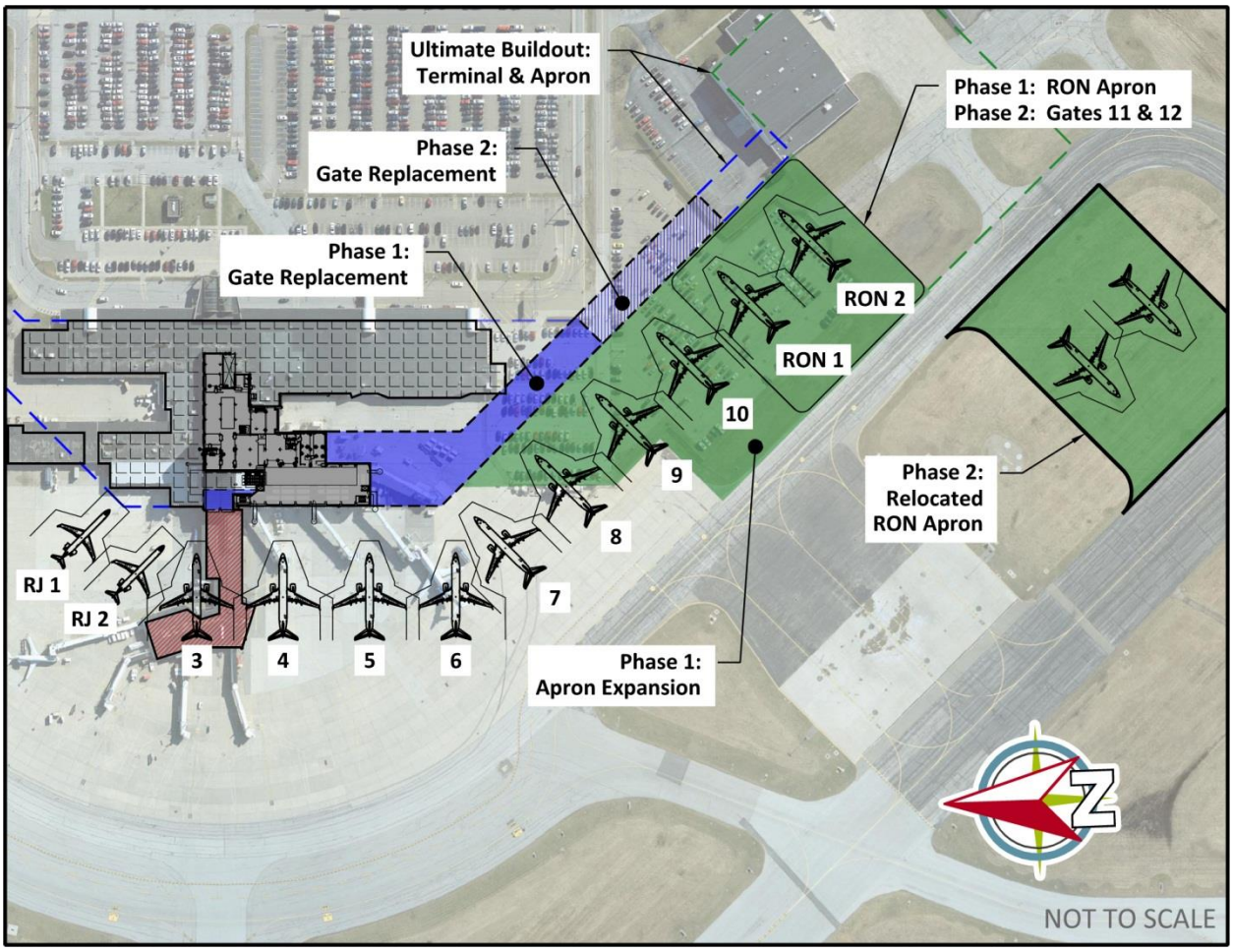
6.7 COMMERCIAL REMAIN OVERNIGHT (RON) APRON

Currently, airline demands and flight schedules at CAK allow overnighting aircraft to remain at their gate positions until next morning departures. There is no dedicated remain overnight (RON) apron, in the Security Identification Display Area (SIDA), available for commercial use. If needed, commercial aircraft have been overnighted on the southern end of Taxiway K. When this occasionally occurs, circulation along Taxiways K and E is impacted. As the terminal building expands south with the replacement of the Y concourse gates, maintaining free circulation along these taxiways is essential to accommodate future gate demands.

For these reasons, the development of a dedicated RON apron, capable of accommodating at least two narrow body aircraft – such as the Boeing 737-800 – is recommended. Considering the priority gate replacement and long-term terminal development concepts described previously, providing this needed apron space can be achieved in phases corresponding with the near-term gate replacement phasing, described in **Section 6.3.2**. As the concourse and apron expand south to provide the recommended eight narrow body and two regional gates in the near future, the apron could be extended further to provide two additional RON positions, as depicted in **Figure 6-26**. As activity levels rise and additional southern gates are constructed, using the previously developed apron, the RON positions would have to be relocated. At this point – or sooner, if possible – a new RON apron could most readily be developed as infill between Taxiways K and E, adjacent to the south de-icing pad.

Alternatively, depending on the status of tenants in the southeast GA area (i.e., Buildings 16-19 and 39), a RON apron could be developed on the extended south end of the commercial apron. To provide flexibility in accommodating future operational demands, this phased approach – with a future RON apron located adjacent to the deicing pad – will be depicted on the ALP and accounted for in the overall Master Plan Update development program.

Figure 6-26 – Phased RON Apron Development

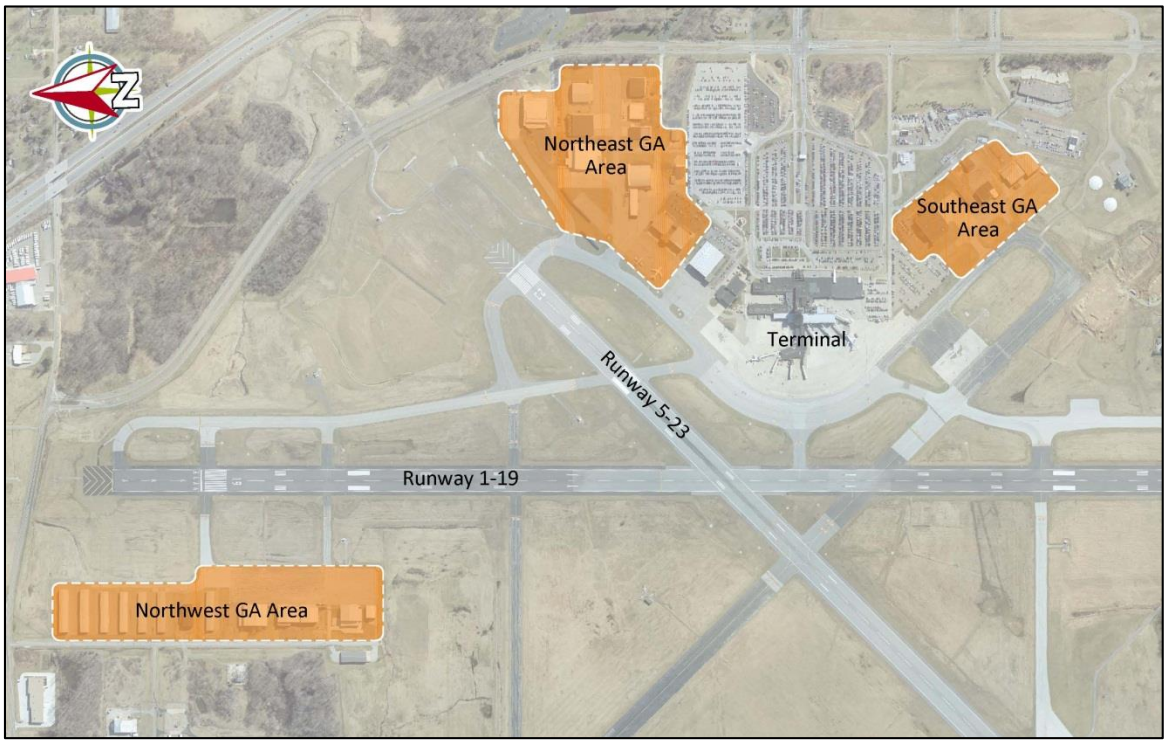


Source: Gresham, Smith and Partners, CHA, 2013

6.8 GENERAL AVIATION AREAS

As described in previous chapters, there are numerous general aviation (GA) tenants and service providers located at CAK. This includes two full-service Fixed Base Operators (FBOs), corporate flight departments for multiple Fortune 500 companies and approximately 140 based aircraft. As depicted in **Figure 6-27**, GA facilities are located in three distinct areas of the Airport and include 33 hangar/office/maintenance buildings and associated apron space. The facilities in each area are summarized in **Table 6-17**.

Figure 6-27 – Existing GA Areas



Source: CHA, 2013

Table 6-17 – GA Area Facility Summary

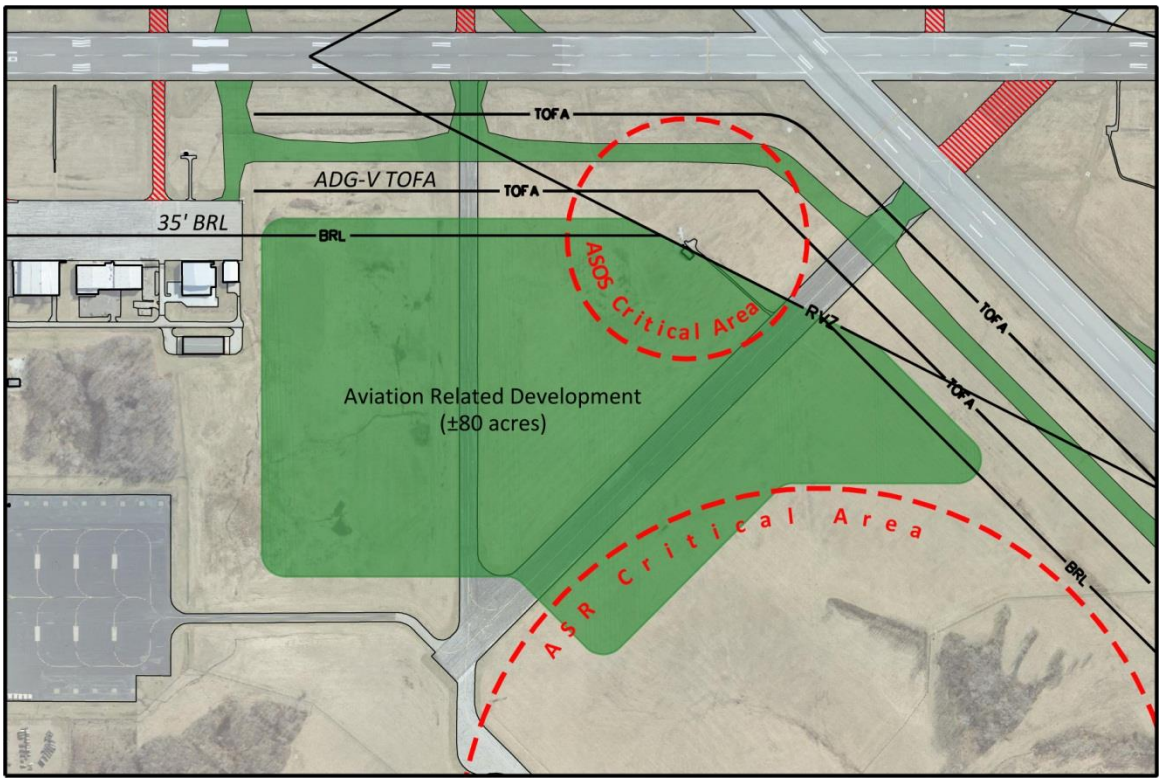
GA Area	Acreage	Buildings (#)	Buildings (SF)	Apron (SY)	Types of Tenant/Facility
Southeast	±13	6	±101,079	±11,944	Aircraft storage, corporate, charter, maintenance
Northeast	±31	13	±185,982	±38,500	FBO, aircraft storage, corporate, charter, maintenance, private, flight instruction
Northwest	±24	14	±200,301	±84,700	FBO, aircraft storage, corporate, private
Total	**±68**	**33**	**±487,362**	**±135,144**	

Source: CHA, 2013

With growth in based aircraft and demand for leasable hangar space highly dependent on national and local economic trends, new GA facilities will be developed on an as-needed basis, with evidence of viable tenants and financial feasibility. Consistent with the Long-term Land Use Plan described in **Chapter 5**, development of new GA facilities should be accommodated by expanding the northwest GA Area. As terminal area demands increase for passenger and commercial airline facilities on the east side of Runways 1-19, existing GA facilities in the northeast and southeast GA areas could also be relocated to the expanded northwest GA Area.

As depicted in **Figure 6-28**, there is approximately 80 acres of space readily available for expansion of the northwest GA area. The expansion area is effectively bounded by the proposed western parallel taxiways, the airfield's Runway Visibility Zone, ASR-11 Radar Critical Area and Object Free Area for the taxiway to the National Guard facilities. It is possible that an approximate 40 acres of additional space could be developed within the ASR-11 Critical Area. However, additional FAA coordination and significant facility design considerations would be required to mitigate any potential adverse effects to the radar signal. There is also an area of approximately six acres, just off the end of Taxiway K, which could potentially accommodate a standalone hangar facility. Landside access to that site would be developed from the new road developed through the Port Green Industrial Park site.

Figure 6-28 – Northwest GA Area Expansion Envelope

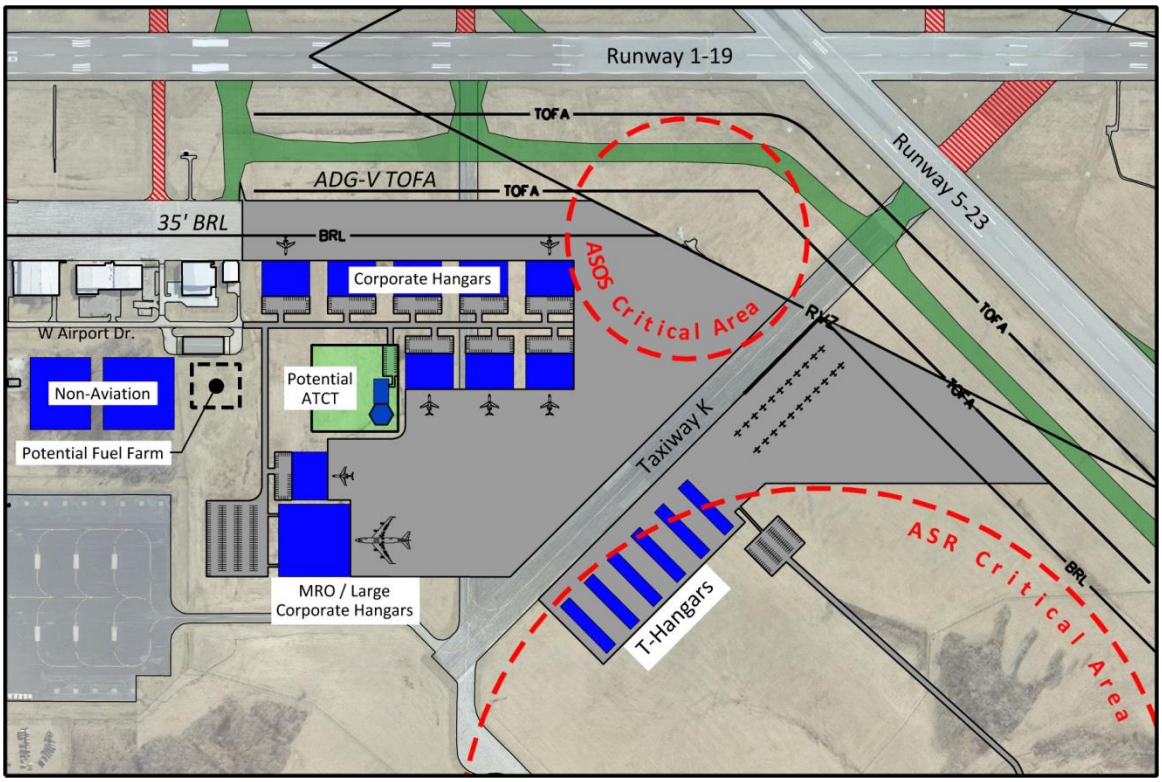


Source: CHA, 2013

New facilities in the northwest GA area could be developed in a multitude of configurations, ultimately depending on tenants' operational needs. Based on the mix of GA aircraft operating at CAK, this area will likely need to accommodate small personal aircraft and larger corporate and charter aircraft. The proposed parallel taxiway system would provide airside access to the northwest GA area up to ADG-V aircraft, which also provides the ability for Maintenance, Repair and Overhaul (MRO) or dedicated air-cargo facilities to be developed in this area. The general premise for this area should be to develop facilities for larger aircraft further to the east to mitigate any potential airspace protection (i.e., Part 77) or ATC Tower line-of-site concerns.

One possible configuration for the expanded northwest GA area is depicted in **Figure 6-29**. Extending West Airport Drive would provide automobile access. To maximize accessibility and use available space, Taxiway D would eventually be abandoned and circulation would be incorporated into the new apron. In this concept, Taxiway K would provide large aircraft circulation to the westernmost portion of the GA area. An independent T-hangar and tie-down apron could be developed south of Taxiway K, with landside access provided from Massillon Road through the Foreign Trade Zone. Non-aeronautical facilities, such as office space or industrial buildings, could be developed in the area between West Airport Drive and the National Guard apron. Developing that specific site with airside access could prove more challenging and restrict automobile access to the other hangar areas, as depicted.

Figure 6-29 – Northwest GA Area Development Concept

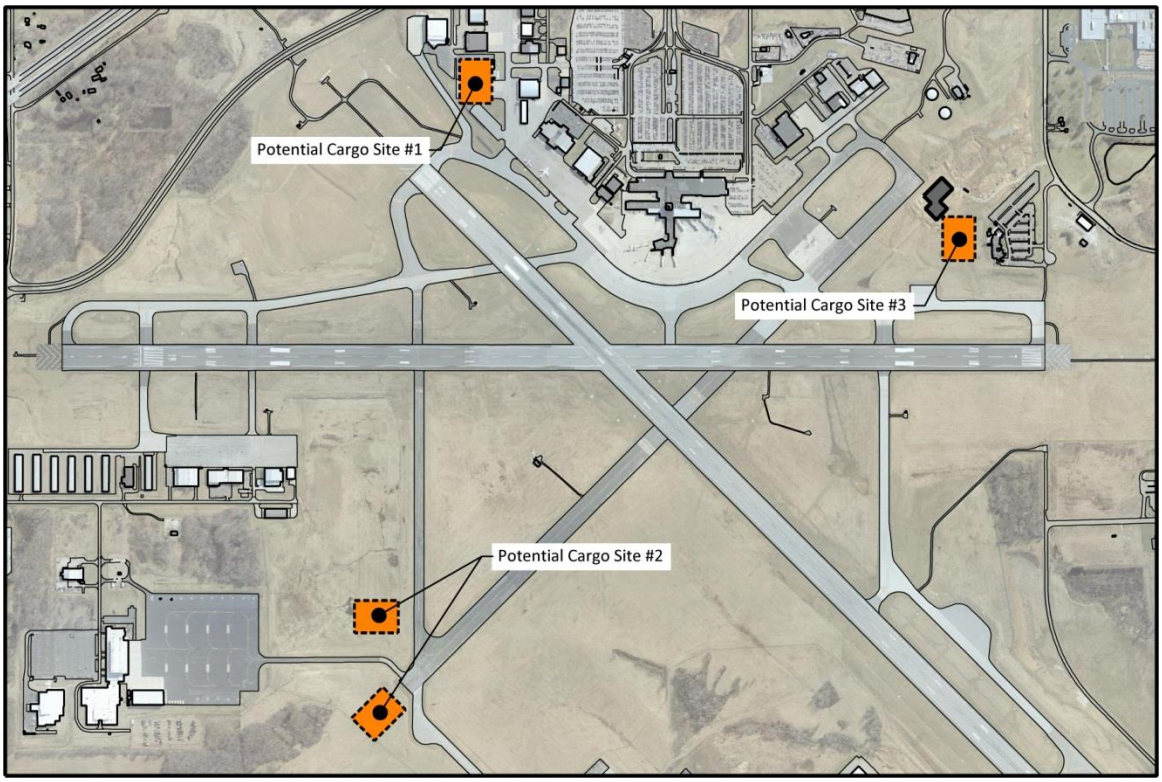


Source: CHA, 2013

6.9 CARGO AREA

As described in **Section 4.12**, current air cargo activity at CAK is adequately accommodated in the existing facilities. However, there is potential in the future that a consolidated cargo handling facility will be needed to support airline belly cargo and dedicated-cargo operations. A conceptual facility capable of accommodating a mix of propeller and jet aircraft up to a Boeing 737-800, with storage and cross docking to tractor/trailers would require an approximate two acre site. To maintain convenient access to the airfield and roadway networks, there are only a few sites that appear readily capable of accommodating a future air cargo facility, considering the terrain constraints within Airport property. As depicted in **Figure 6-30**, these include the northwest GA area, northeast GA area and the area adjacent to the south end of Taxiway A. Consistent with the recommended on-Airport land use plan described in **Section 5.4**, developing a cargo facility in the southeast GA area is not recommended, as this area should be reserved for future terminal area development.

Figure 6-30 – Possible Consolidated Air Cargo Facility Locations

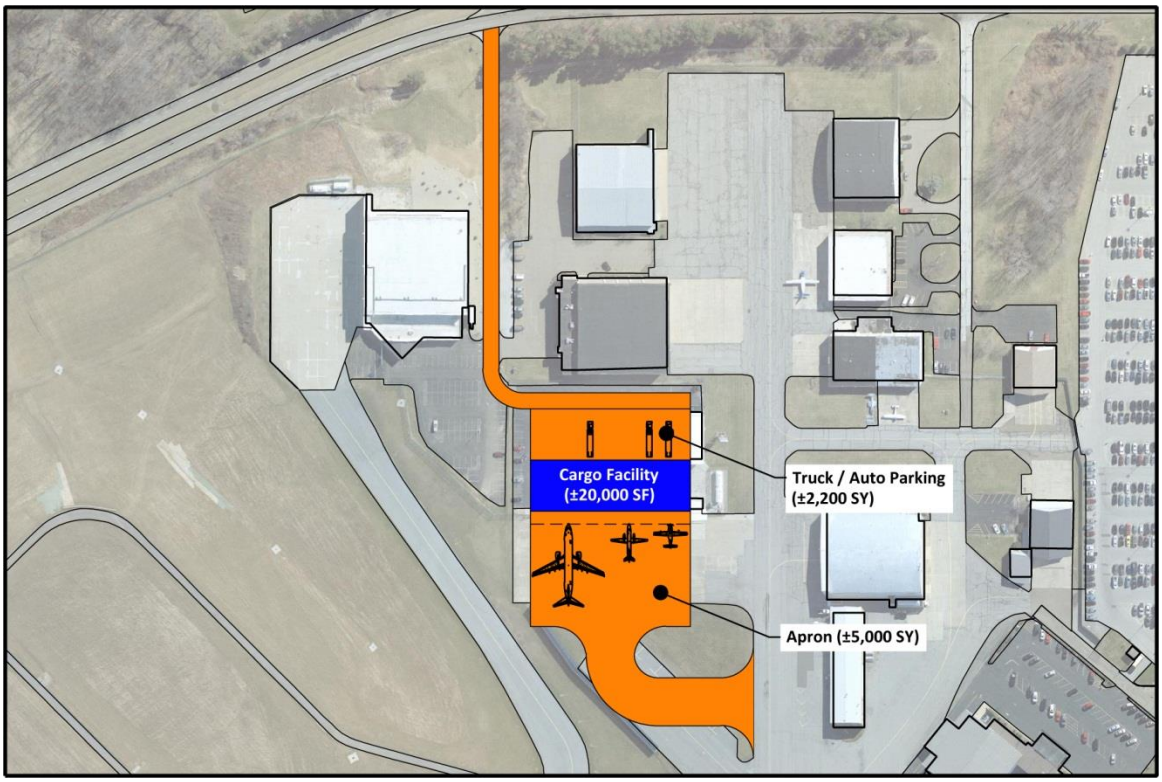


Source: CHA, 2013

Conceptual cargo configurations within these three areas are presented in **Figure 6-31** - **Figure 6-33**. These are offered as proof-of-concept exhibits. When development of a consolidated air cargo facility becomes warranted, a preferred location and site configuration will need to be further evaluated, with consideration of the specific operator needs. The status of the existing tenant facilities at that time may also influence which site is considered more readily developable (i.e., hangar availability or tenant relocation from the northeast GA area).

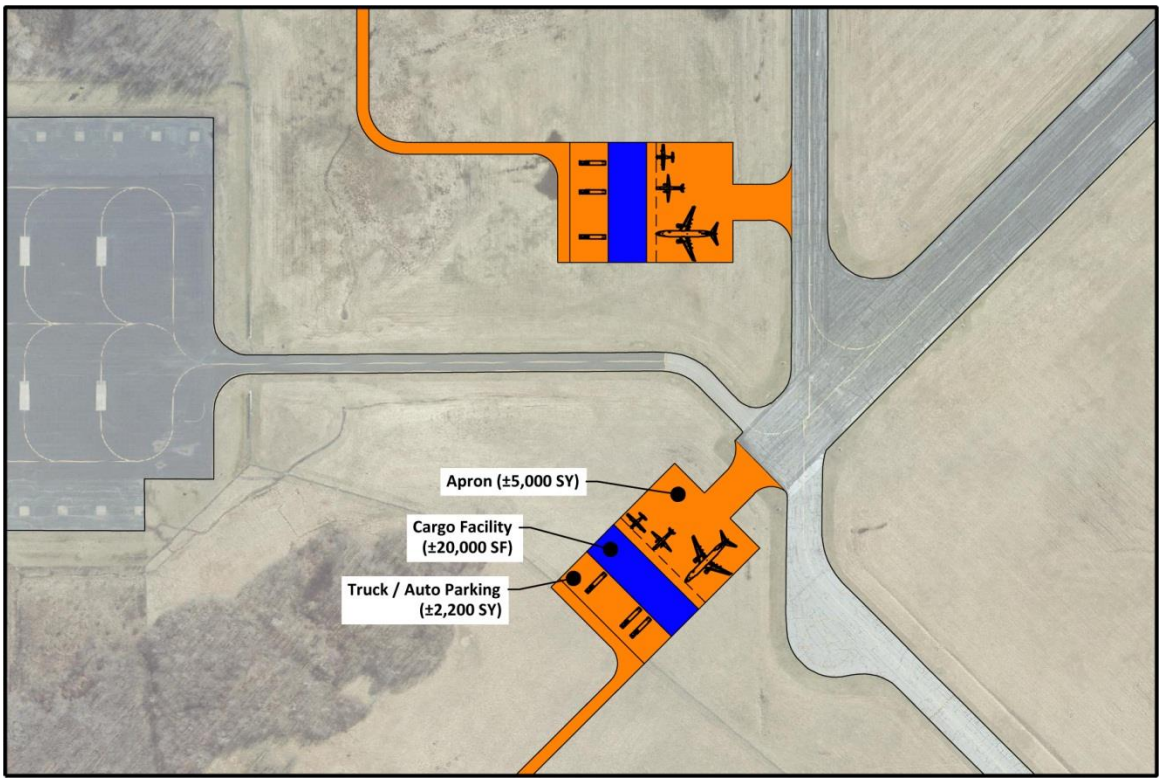
A cargo facility in the northwest area would have convenient roadway access to Greensburg Road but would be somewhat distant from the terminal apron and airline belly cargo. Developing a cargo facility in the northeast area would be consistent with the land use plan, but would require relocating existing tenants (which could be accommodated in the Northwest GA area). This location is close to the commercial airline activity and there are multiple roadside access points directly to Lauby Road. The terrain gradient from Lauby Road to the northeast site is rather steep and may not be operationally viable for the larger cargo box-vans or tractor-trailer access. There are two possible sites in the southeast quadrant of the Airport that could accommodate an air cargo facility, however access and terrain conditions present challenges.

Figure 6-31 – Potential Air Cargo Configuration – Site 1



Source: CHA, 2013

Figure 6-32 – Potential Air Cargo Configuration – Site 2



Source: CHA, 2013

Figure 6-33 – Potential Air Cargo Configuration – Site 3

Source: CHA, 2013

6.10 INSTRUMENT LANDING SYSTEM (ILS) UPGRADE

As described in **Section 4.5**, all four of CAK's runways provide Category I (CAT-I) precision approach capability, with a 200-foot ceiling and half a statute mile visibility minimum – the best possible for CAT-I approaches. Upgrading to a CAT-II system could support aircraft approaches, with a decision height as low as 100 feet and a visibility minima as low as a quarter mile for properly equipped aircraft and properly trained aircrews. A detailed evaluation of the feasibility of upgrading the ILS systems at CAK to CAT-II capability is provided in **Appendix B**.

Based on that evaluation, CAT-II ILS capability would benefit many of the Airport's users and stakeholders. Historic weather data indicates that providing CAT-II minimums could keep the Airport open for landing an additional 0.7 percent of the year (approximately 61 hours). CAT-II meteorological conditions occur most often in February, March, November and December – likely due to snow and early spring fog.

While both runways at CAK could be developed to support CAT-II operations, Runway 5/23 has the longer landing length and newest ILS equipment. Therefore, it is most suitable for an upgrade. Due to predominate use of approaches by all turbine aircraft, Runway 23 would be the priority runway end to upgrade.

CAT-II approach minimums could be achieved through one of two system variants: the Standard CAT-II ILS or the Special Authorization (SA) CAT-II ILS. A SA CAT-II approach procedure, developed and approved by the FAA, would allow the same low minimums as a Standard CAT-II ILS, but would only be available to aircraft equipped with advanced on-board navigation control systems, such as autoland or Heads-Up Display (HUD). The advanced navigation equipment reduces some of the ground-based equipment requirements of the Standard CAT-II system, such as airfield lighting configuration, minimum visual range sensors and equipment monitoring systems.

It appears that the existing facilities and ILS equipment associated with Runway 23 could support SA CAT-II approach procedures with modest NAVAID equipment upgrades to the runway lighting backup generator and power source feeds, and minor airfield marking improvements. The estimated cost for such improvements is $300,000-$400,000. Development of a Standard CAT-II ILS system at CAK would also require a new approach lighting system (ALSF-2), installation of runway centerline and touchdown zone lighting and installation of a Far Field Monitor and midpoint Runway Visual Range (RVR) sensor. A standard system is estimated to cost between $7-$8 million. Either scenario would also require changes to the system monitoring procedures, performed by maintenance and air traffic control personnel. Air traffic control staff would also require additional training to manage the new approach procedures.

With an approximate $8 million cost, providing Standard Cat-II approach capability would be a substantial investment. The Authority and FAA would have to be confident that the benefits to the traveling public, aircraft operators, air traffic control and regional communities justify such an investment. Developing Special Authorization CAT-II approach capability would require a significantly less financial investment, but the operational benefits would only be available to those operators with advanced airborne navigation systems and training (i.e., autoland or HUD

to touchdown). Based on these factors, it is recommended that the Authority initially pursue the development of a Special Authorization CAT-II approach procedure for Runway 23, while preserving the potential for developing a Standard CAT-II ILS system in the future. This includes providing sufficient separation distances from airfield facilities and NAVAID critical areas per FAA design standards and considering applicable lighting and electrical system upgrades during future construction or pavement rehabilitation projects. Then developing a Standard CAT-II ILS could be pursued in the future or technology could advance to the point that such ground-based systems become obsolete.

6.11 AIR TRAFFIC CONTROL TOWER (ATCT)

The existing air traffic control (ATC) tower is an integral component of the passenger terminal building. It was commissioned in 1961 and is owned by the Authority. The FAA and Authority maintain office space on the various floors of the tower. As described in **Chapter 4**, the FAA prefers to maintain stand-alone tower facilities instead of having them incorporated into public facilities or passenger terminals, like at CAK. Stand-alone facilities allow FAA ATC personnel to more efficiently manage security access and system integrity.

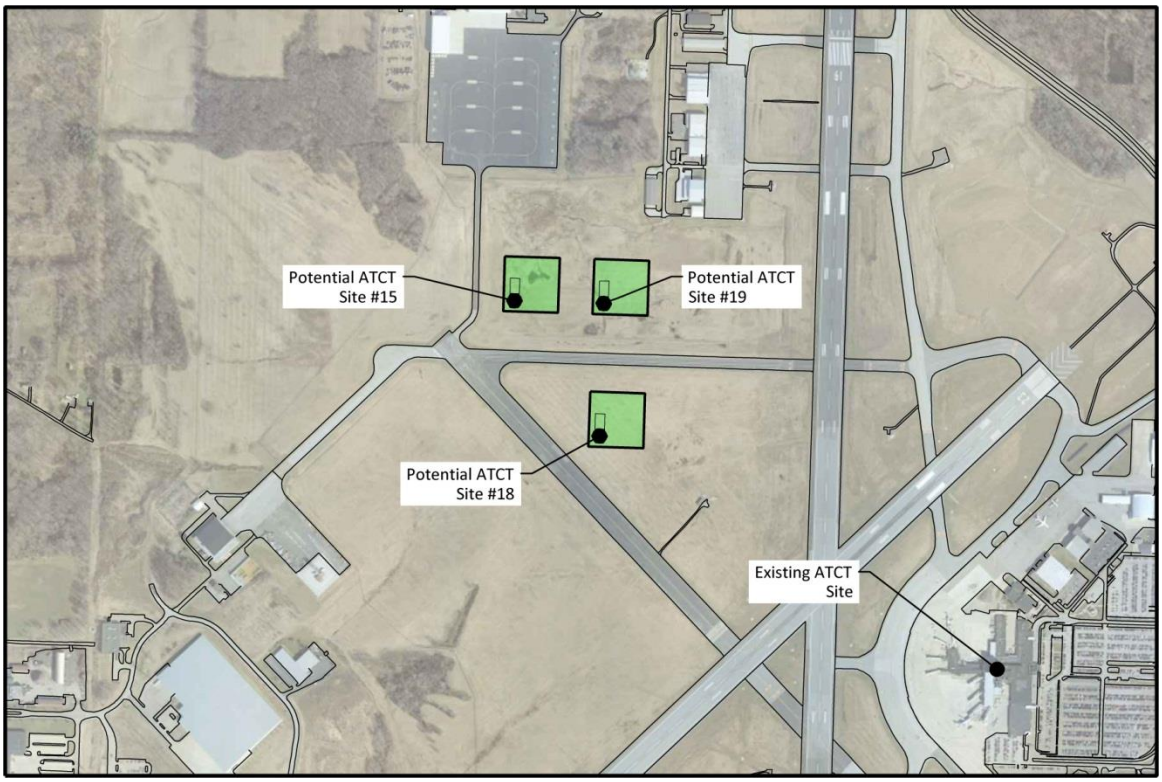
Between 2010-2012, the FAA performed a tower siting study, which identified and evaluated numerous potential locations for a relocated ATC facility. The study was performed in accordance with FAA Order 6480.4A *Airport Traffic Control Tower Siting Criteria* and included a baseline comparison of the existing tower location. The FAA determined that the existing tower was in a superior location and would meet the TERPS criteria, even if it were up to 40 feet taller.[5]

Through the technical screening process, three feasible locations (sites 15, 18 and 19) for a relocated tower were identified (refer to **Figure 6-34**). Of these, Sites 15 and 19 were deemed the most viable, due to ease of access. Because of differing opinions by FAA study team members on which of these two sites would be preferred, the site selection study has not progressed since May 2012. Combined with federal program funding concerns, this has delayed the FAA's decision of whether or not to relocate the facility.

Both of the viable candidate sites are in the northwest GA expansion area described previously. Due to the FAA's programmatic desire to eventually develop a stand-alone tower facility, it is recommended that ongoing planning and construction activities for the northwest GA area give consideration for a potential relocated tower, should it become warranted in the future. Typical FAA tower facilities, including support building, employee parking and desired security buffer can be developed on approximately a three-acre site. A logical configuration of the GA area with an ATC tower is depicted in **Figure 6-29** (refer back to **Section 6.8**).

[5] Airport Traffic Control Tower Site Survey, FAA Great Lakes Terminal Engineering Center, May 22, 2012

Figure 6-34 – Potential ATC Tower Sites



Source: "Airport Traffic Control Tower Site Survey, FAA Great Lakes Terminal Engineering Center, May 22, 2012

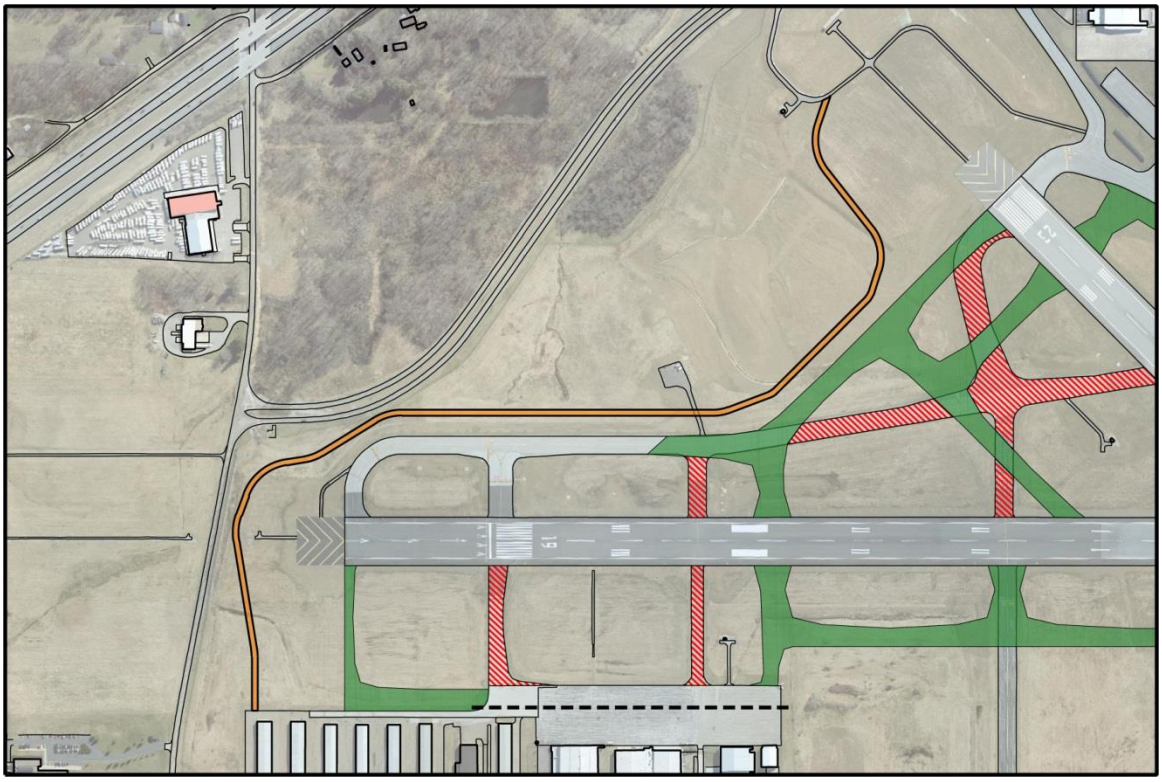
6.12 INTERNAL ACCESS ROAD

An internal road system providing access to all areas of the airfield – without the need to use taxiways or nearby public roads, or cross active runways – would benefit Airport operations and maintenance personnel. Due to terrain challenges, existing infrastructure, property limits and airfield safety areas, development of a comprehensive or full loop roadway is severely hindered. Overcoming the terrain challenges would require extensive use of fill and retaining walls, which would become a substantial financial investment. Currently, Airport staff and ATC personnel effectively manage automobile traffic about the airfield.

By following a consistent terrain profile and remaining on the outermost edges of the airfield pavement safety areas, **Figure 6-35** depicts what could be considered a "best fit" access road configuration. Vehicles would still have to use a combination of existing NAVAID service roads, apron areas and taxiways.

As the northwest GA facilities expand, there will be additional demands for Airport vehicles, including aircraft fuel trucks, to transition between the east and west sides of the Airport.

Figure 6-35 – Conceptual Internal Access Road



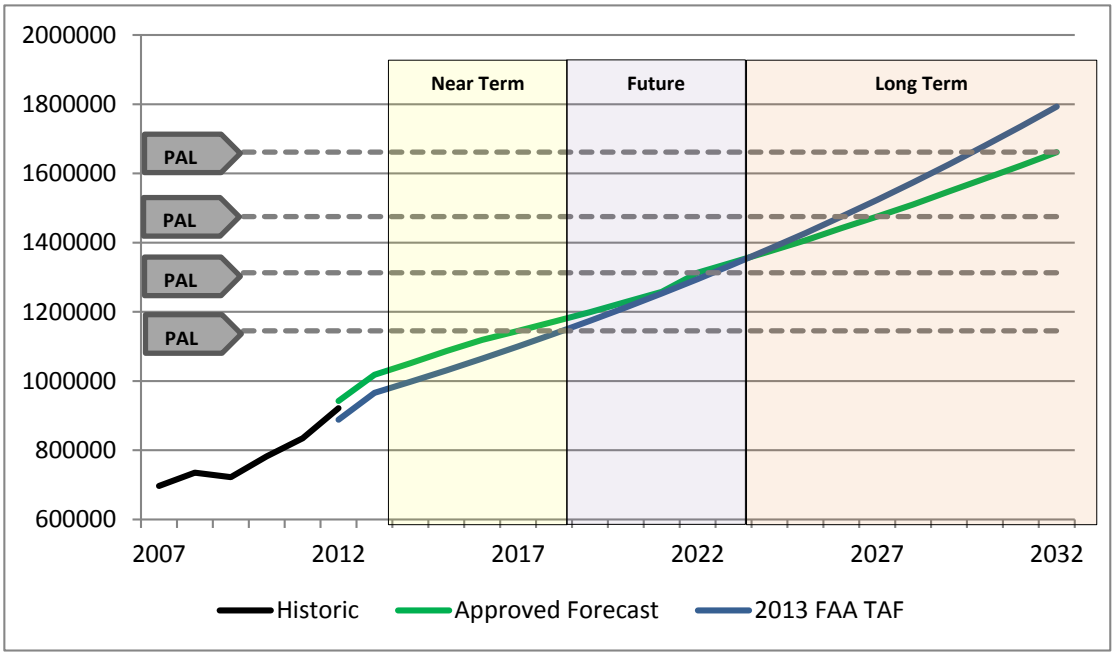
Source: CHA, 2013

6.13 PREFERRED DEVELOPMENT STRATEGY

This chapter evaluated various development concepts for the key functional areas of the Airport and recommended facility configurations were identified. As noted previously, changes in air service related to Frontier Airlines leaving the CAK market and the Southwest-Air Tran merger resulted in an overall decrease in passenger activity in 2013. Relative to the approved passenger forecasts presented in **Chapter 3**, this is considered to be a temporary fluctuation in year-to-year activity. As the route structures stabilize and the travelers become accustomed to the newly merged airlines, Airport staff anticipates that seat capacity and enplanements will continue to decline through 2014 and return to positive growth in 2015. Factors contributing to the anticipated growth include additional service provided by Southwest and the merging of American Airlines and US Airways. This merger, approved by the U.S. Department of Justice in 2013, is anticipated to bring new direct-travel destinations to CAK, such as American's hub markets at Chicago O'Hare and Dallas-Fort Worth.

With consideration of a 20-year planning horizon, the approved activity forecasts, the Planning Activity Levels (PALs) and the temporary trend in passenger traffic as of early 2014, the recommended facility improvements would likely be pursued as short-term (±5 years), foreseeable future (±10 years), long-term (±20 years) and ultimate (20+ years) improvement projects. The correlation between activity levels and anticipated project phasing is depicted in **Figure 6-36**. At this projection, PAL 1 would occur at approximately the five-year mark and PAL 2 would occur around the 10-year mark.

Figure 6-36 – Development Strategy Timeline



Source: Federal Aviation Administration Terminal Area Forecast; CHA forecasts; 2013

Cumulatively, the phased recommendations make up the Preferred Development Strategy for the Airport. Even with the recent passenger trends, there is still existing demand driving several recommended facility improvements – particularly the priority terminal improvements. As activity returns to the 2012 level, this development strategy will focus on the short-term and foreseeable future phases of the planning horizon to satisfy those needs. This approximately 10-year horizon is the basis of the conceptual Airport Capital Improvement Program (ACIP) described in **Chapter 8**.

Generally speaking, the strategy for the terminal in the near term would be to pursue development of a CBIS in the old ARFF building, reconfigure and expand the ticketing lobby, provide a covered outbound baggage handling area, and to remove the Y concourse and replace those gates in Phase 1 of a southern concourse expansion. The gate expansion project would be aimed at providing 10 gates that would accommodate baseline/2012 peak hour departures, plus one contingency gate and include eight narrow body gates on a second-level concourse and providing passenger boarding bridges to two of the existing regional jet gates. This project would provide passenger amenities in the terminal, such as expanded concession space. The lower level space below the expanded concourse would remain relatively unfinished and could be used for miscellaneous airline and GSE storage.

During the future timeframe, baggage claim and inbound baggage handling space could be renovated and expanded, including new or replacement claim devices. Expansion would be achieved by finishing out a portion of the area beneath the previously expanded concourse above. As activity levels increase into the future and long-term planning horizons, Phase 2 of the southern concourse expansion could be pursued, including development of an FIS facility and development of a swing gate for international traffic, if demand warrants. Preliminary site planning indicates that up to 12 gates in the southern expansion concept can be developed without major impact to Building 16 (Goodyear Hangar). Potential ultimate terminal development would be pursued with evidence of demand and could include northern and/or southern terminal expansions.

Concurrent with the terminal improvements, the public parking facilities would also be expanded. Short-term reconfiguration of the surface parking lots is already underway as of early 2014. This project will improve traffic flow, relocate and expand the rental car ready/return lot and prepare the site in front of the terminal for the recommended parking garage. This also includes additional curbside lanes and replacement/relocation of utility lines in front of the terminal. With the southern gate replacement project extending over the existing employee lot, employee parking would most readily be relocated to the existing remote lot, which would require additional shuttle bus use. At this point, the amount of remaining parking spaces available for public use should satisfy demand to approximately the PAL 1 activity levels. To accommodate PAL 2 activity levels, a new remote lot of approximately 7.5 acres, or 1,000 spaces, would be needed. Construction of the recommended parking garage would displace approximately 1,000 of the existing public spaces during construction, requiring an additional 7.5 acres of remote surface parking. With the goal of having a parking garage available for use in the 10-year timeframe, development of a new remote surface lot, approximately 12-15 acres

in size (1,600-with 2,100 spaces[6]), would need to be pursued in the latter part of the near-term planning horizon.

Phased improvements to the airfield include instrument approach improvements and taxiway rehabilitation in the near-term. This would be followed by providing bypass capability to Runway 23, removing hot spots at Taxiways C and K and providing a new exit taxiway for aircraft landing on Runway 5 in the future planning horizon. During this time period, the first phase of a west side parallel taxiway and relocation of Taxiway H would be pursued. Long-term improvements would include the reconfiguration of the northeast segments of Taxiways B and D. Pavement maintenance and rehabilitation would be pursued as needed throughout the phases. The remaining recommended improvements would be pursued, and are considered part of the potential ultimate taxiway configuration.

Should the activity levels increase faster than indicated by recent trends, projects should be advanced accordingly. The phased development strategy, including all recommended improvements, is presented in **Table 6-18** and **Figure 6-37-Figure 6-40**.

[6] 15 acres/2,100 spaces would accommodate PAL 2 demand with consideration of 90% effective availability rate

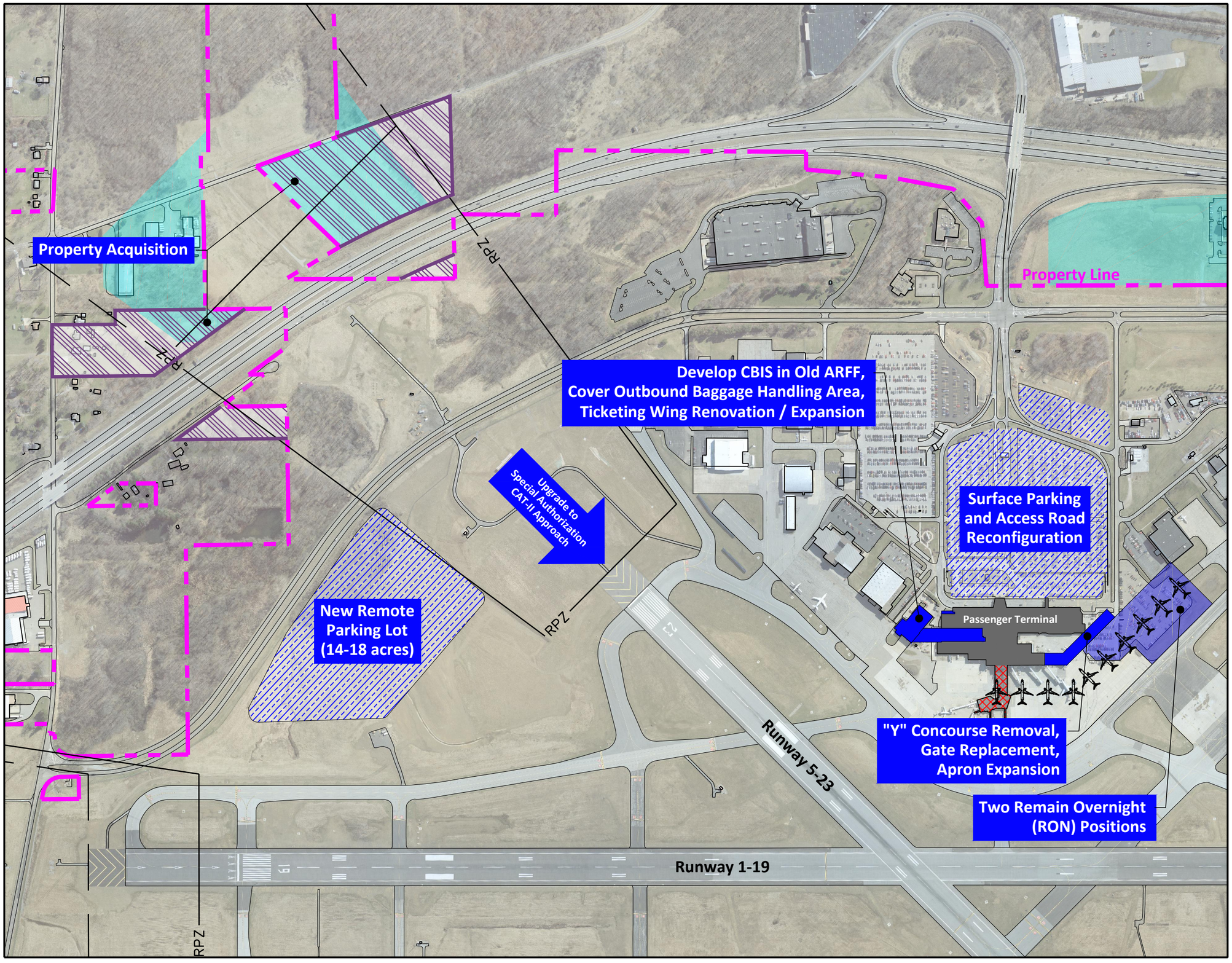
Table 6-18 - Preferred Development Strategy by Phase

	Near-Term (0-5 Years)		Intermediate (6-10 Years)		Long-Term (11-20 Years)		Ultimate (20+ Years)	
Airfield	Environmental Assessment for 5 Year Development Program	$400,000	Environmental Assessment for 5 Year Development Program	$600,000	RON Apron Relocation (2 spaces)	$2,363,399	New Runway 1 Entrance Taxiway	$3,783,000
	Acquire Property within the Runway 23 RPZ (4 parcels, 19 acres)	$705,000	Signage and Marking Improvements (Upgrade to ARC D-III Requirements)	$200,000			New Runway 23 Angled Exit Taxiway	$1,825,000
	Obstruction Removal Phase 1	$75,000	Westside Parallel Taxiway (Phase 1)	$3,635,600			Taxiway J Reconfiguration	$1,901,600
	Upgrade Runway 23 to Special Authorization CAT-II ILS	$350,000	Taxiway E Relocation / Taxiway C and K Removal	$2,189,000			Westside Parallel Taxiway Extension to K and F2	$6,335,500
	Remain Overnight (RON) Parking (2 spaces)(construction)	$2,055,130					Taxiway A Realignment	$1,312,800
							Taxiways B and D Reconfiguration and and New Runway 5 Exit	$5,855,500
	SUBTOTAL	**$3,585,130**		**$6,624,600**		**$2,363,399**		**$21,013,400**
Terminal	Ticket Wing Renovation	$2,500,000	Baggage claim renovation, expansion	$9,358,560	Gate Expansion / Replacement (Phase 2)	$8,475,456	Gate Expansion (up to 17 gates)	$52,707,296
	Gate Expansion / Replacement (Phase 1) (includes apron expansion/rehabilitation, "Y" concourse demolition, utility improvements)	$25,287,874			Customs and Border Protection FIS development (lower level)	$6,888,000		
	Cover Outdoor Baggage Area	$3,140,000						
	CBIS / CBP Facility (in old ARFF)	$12,708,000						
		$43,635,874		**$9,358,560**		**$15,363,456**		**$52,707,296**
Parking and Access	New Remote Parking Lot (12 ac, ±1,600 spaces)	$4,820,640	Parking Garage (Phase 1)	$37,860,000	Parking Garage (Phase 2)	$32,860,000	Access/ring-road reconfiguration	$3,699,110
	Entrance and Access Road Reconfiguration (Construction Phase 2)	$649,480						
	SUBTOTAL	**$5,470,120**		**$37,860,000**		**$32,860,000**		**$3,699,110**
Support Facilities			Sanitary Sewer and Pump Stations in Terminal Area	$622,767				
			General Aviation Utilities and Roadway Improvements	$1,479,417				
	SUBTOTAL			**$2,102,184**				
	PHASE TOTAL	**$52,691,124**	**PHASE TOTAL**	**$55,945,344**	**PHASE TOTAL**	**$50,586,855**	**PHASE TOTAL**	**$77,419,806**

Estimated 10-Year Program Total $108,636,468

AKRON-CANTON AIRPORT

MASTER PLAN UPDATE



GRAPHIC SCALE (FEET)

0 250 500

Figure 6-37

Preferred Development Strategy
Near-Term (0-5 Years)

AKRON-CANTON AIRPORT

MASTER PLAN UPDATE

Taxiway E Relocation / Bypass to RW 23

Parking Garage (Phase 1)

Baggage Claim Renovation / Expansion

Passenger Terminal

Taxiway C and K Removal

Westside Parallel Phase 1, Taxiway H Relocation

RPZ

RPZ

Runway 5-23

Runway 1-19

GRAPHIC SCALE (FEET)

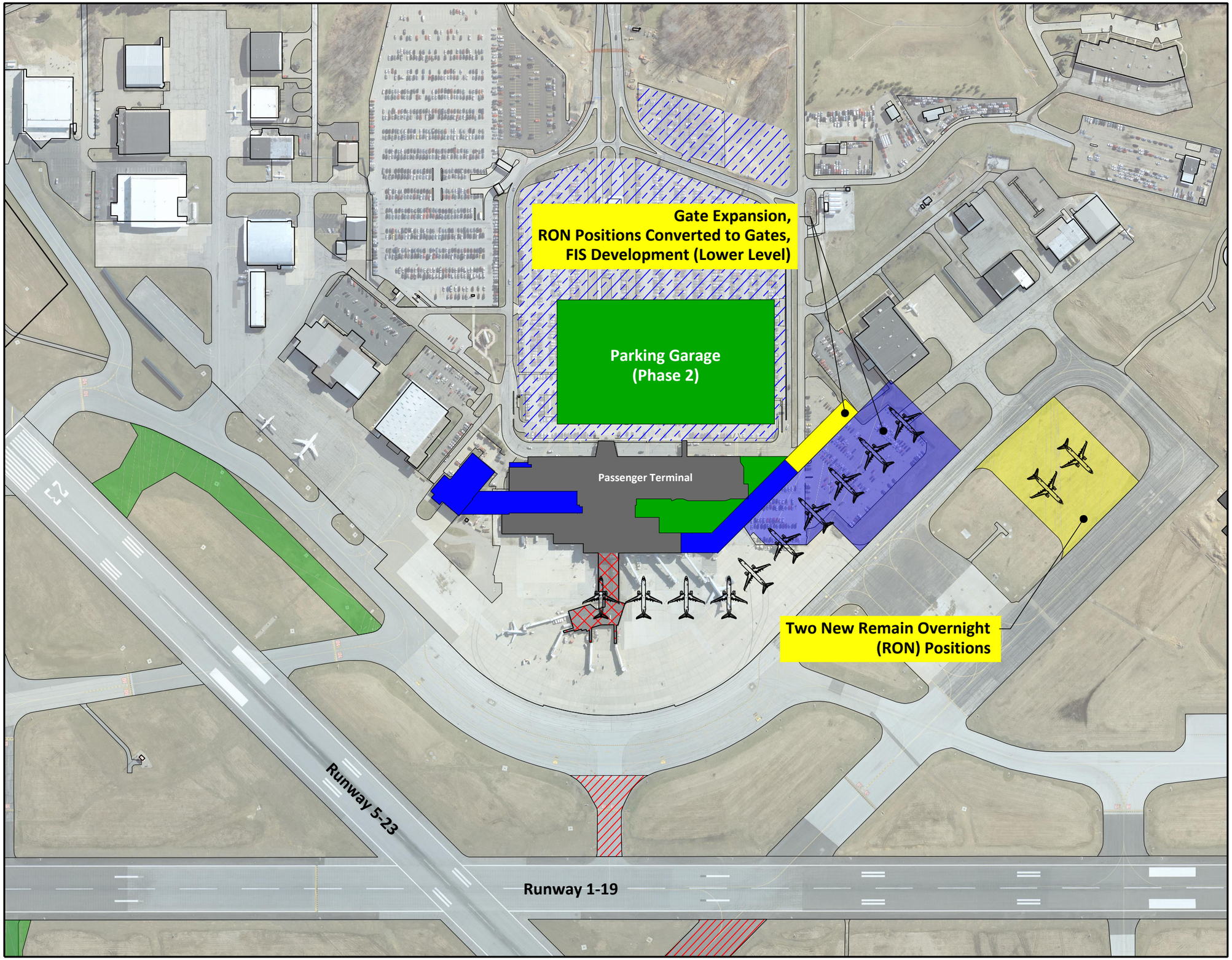
0 200 400

Figure 6-38

Preferred Development Strategy
Future (6-10 Years)

AKRON-CANTON AIRPORT

MASTER PLAN UPDATE

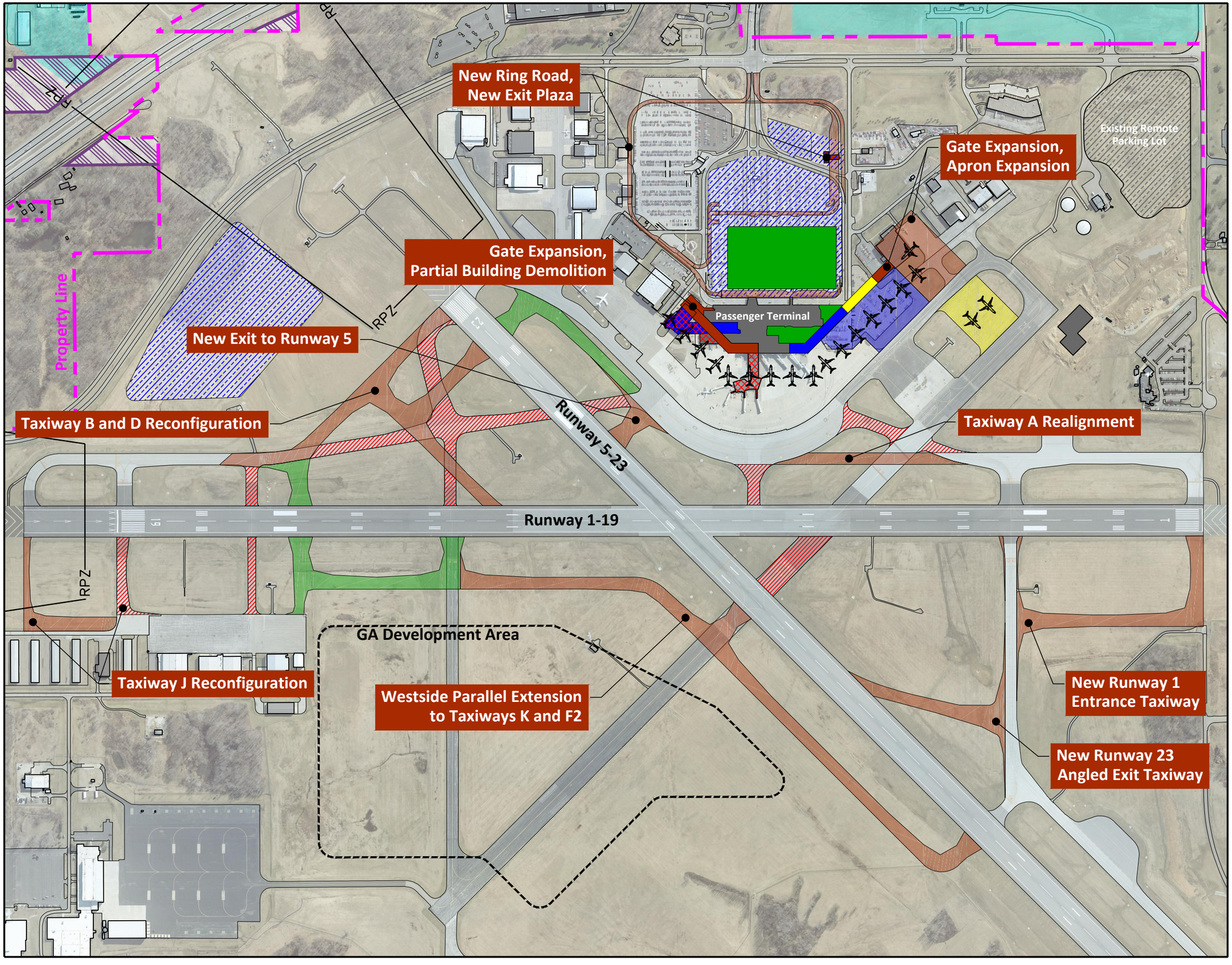


GRAPHIC SCALE (FEET)
0 150 300

Figure 6-39
Preferred Development Strategy
Long-Term (11-20 Years)

AKRON-CANTON AIRPORT

MASTER PLAN UPDATE



GRAPHIC SCALE (FEET)

0 300 600

Figure 6-40

Preferred Development Strategy
Ultimate (20+ Years)