



Customs Facility Location Study

AECOM

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1. Overview and Project Objectives

The purpose of this study is to evaluate locations for replacing the existing temporary Customs Facility with a permanent facility capable of handling general aviation and commercial aircraft. Long Island MacArthur Airport (MacArthur Airport) is located in central Long Island, Suffolk County within Ronkonkoma, Town of Islip New York. The airport is owned and operated by the Town of Islip. Figure 1 provides an aerial view of the airport. The airport has a system of four runways; 6/24, 15R/33L, 10/28 and 15L/33R. A central terminal area with all related amenities is located along the airports southern border. Scheduled service is provided by Southwest Airlines, American Airlines, Frontier and Elite Airways. The western and southern portion of the airport houses general aviation (GA) support functions; Hawthorne Global Aviation Services, Sheltair Aviation and NY Jet Corporate Flight Center provide fixed based operator (FBO) services. The east side of the airport is largely underutilized with one aviation support function: aircraft hangars located east of the arrival end of Runway 33R. The northern portion of the airport is not utilized for aviation services. The only activity within this portion of the airport is a compost facility that is operated by the Town of Islip. Just past the airports northern boundary to the north of Railroad Avenue is the Long Island Rail Road's (LIRR) Ronkonkoma Station which is the third largest station and transportation hub along the Main Line of the LIRR. The station is the eastern terminus of the Ronkonkoma Branch, which provides service to Penn Station, NY, and the western terminus of the Greenport Branch, which provides service to Greenport, Long Island.

L.I. MacArthur Airport currently accommodates 200 international general aviation flights annually, and has initiated an air service development plan focused on increasing demand for domestic and international service. The existing customs facility at the Airport is a temporary facility (see Figure 2) and does not comply with Customs and Border Protection Standards. Customs and Border Protection (CBP) has not determined how long such temporary facilities will be allowed. Customs facility deficiencies include the following:

- No Hold Rooms or Search Rooms
- No Offices for CBP Staff
- Access Control System Does not Meet CBP Standards
- No Restrooms for Passengers or CBP Officers
- No Agricultural Area

- IT Capabilities are Deficient

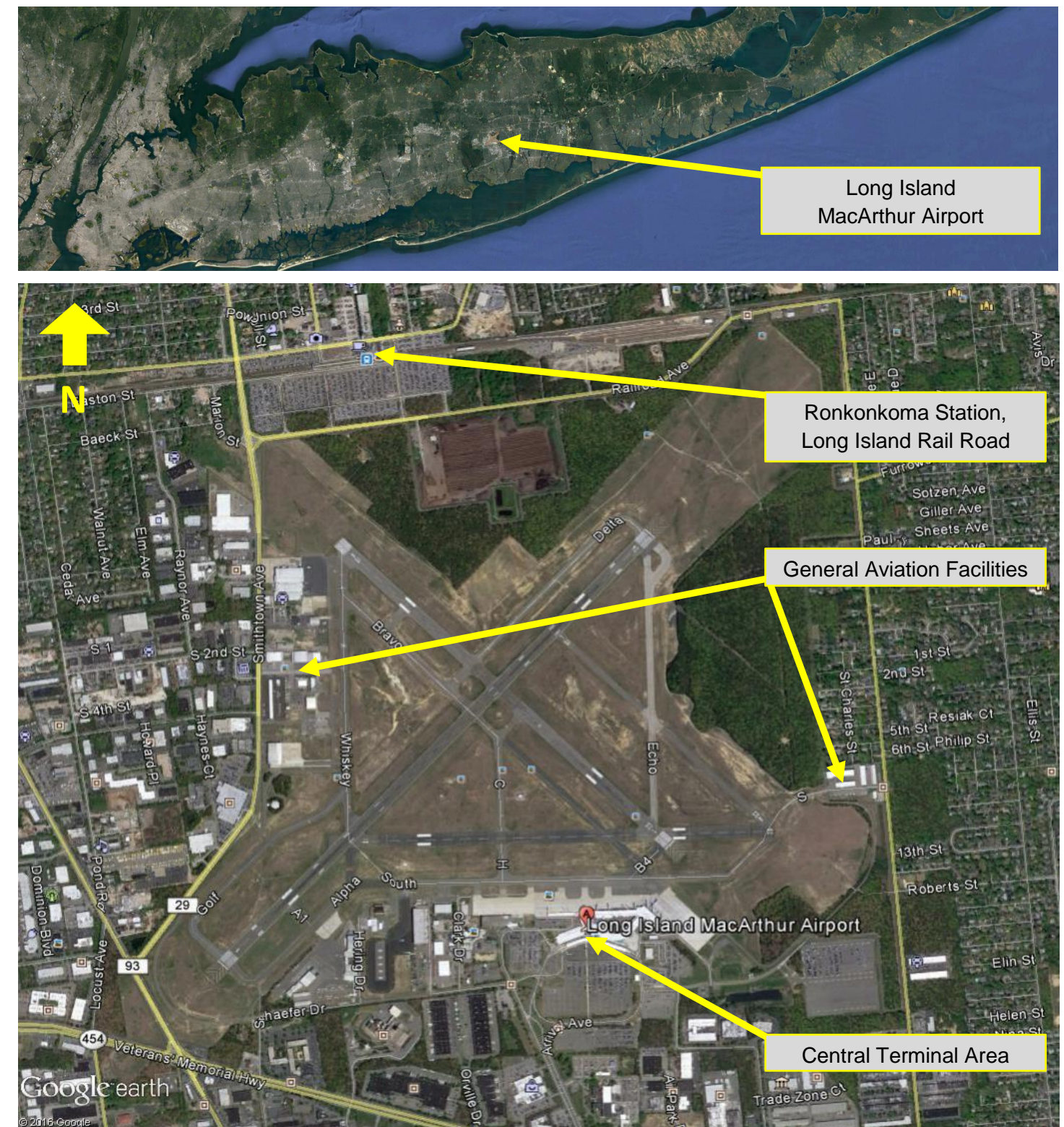


Figure 1 L.I. MacArthur Airport

L.I. MacArthur Airport's proximity to New York City and nearby access to a mass transit connection makes the airport a logical alternative as a reliever for domestic and international demand as John F. Kennedy International and LaGuardia Airport reach capacity. Preliminary plans for a permanent general aviation only customs facility were developed in 2015. However, this facility was not sized to accommodate commercial service. The Airport Administration requested AECOM to conduct a feasibility study for siting a permanent customs facility at the airport with the following objectives:

- Conduct an independent review of the options for siting a customs facility at L.I. MacArthur Airport that can accommodate general aviation and commercial service.
- Address L.I. MacArthur Airport customs facility development criteria.
- Develop scenarios for siting a customs facility that considers the northern portion of the airport.
- Consult with airport stakeholders regarding plans for the proposed customs facility.
- The project must be financially feasible and implemented within the near term (2019).

1.1 Project Development Criteria

Prior to proceeding with this analysis L.I. MacArthur Airport staff identified development criteria for the project. The development criteria for the proposed customs facility at L.I. MacArthur Airport include the following:

- Must be compliant with current CBP standards
- Must accommodate general aviation and commercial flights
- Must be capable of processing up to 200 passengers per hour
- Must be capable of accommodating two Gulfstream 650 corporate size aircraft and one Airport Design Group (ADG) IV simultaneously. Inclusion of a Passenger Boarding Bridge (PBB) for the ADG IV aircraft (e.g., 757-200) must be possible
- Must include expansion capability to accommodate an additional ADG IV aircraft with PBB- Two ADG IV aircraft total
- Construction completion 2019 timeframe
- Minimum square footage 14,000 – 18,000 sf
- Must include global entry and automated passport control kiosks, two of each

- Must include a business center
- Include plan for relocation of airport administrative offices and provide vertical circulation, if necessary
- Must include indoor service animal relief area (SARA) for Americans with Disability Act (ADA) compliance
- Provide connectivity to existing LIRR Ronkonkoma Station
- Include a plan for relocation of existing uses within the developable space.

This report is a feasibility study to identify the preferred location for siting a permanent customs facility at MacArthur Airport. Development of a final design will require close coordination with Customs and Border Protection, a more detailed analysis of existing utilities, code requirements, access/egress, security standards, structural design and environmental permitting requirements.



Figure 2 Temporary Customs Facility

2. Stakeholder Meetings

To identify concerns of key stakeholders an outreach program was conducted. Meetings were held with a variety of entities to gain their perspective on the customs facility development project. A summary of key issues raised by various stakeholder groups is outlined below. Meeting minutes for individual stakeholder meetings are included in Appendix A.

2.1 Long Island Rail Road

- LIRR is supportive of a connection from L.I. MacArthur Airport to Ronkonkoma Station
- Synergies exist with north side customs facility and LIRR
- LIRR Double Track Project- Will increase service from hourly to ½ hourly by 2018.
- The East Side Access Project is expected to provide greater nonstop access from the Ronkonkoma Station to Grand Central Station by 2022. The Mid-Suffolk Yard Project at Ronkonkoma Station is to be completed within the same timeframe as East Side Access and will provide capacity to support the expected increase in AM and PM peak ridership.
- Has worked closely with Tritech on the Ronkonkoma Hub Project

2.2 Tritech

- Developers of Ronkonkoma Hub Project
- 53 Acre Site just north of the Ronkonkoma Rail Station
 - Mixed Use Development Of High Density Residential, Commercial, Hospitality, Institutional, Office and Retail Uses Along With Conference, Entertainment, and Exhibition Venues and Outdoor Space.
 - LEED certified project
 - Creation of a walkable community
- Phase I of project expected to begin late 2016
- Suffolk County Bus Rapid Transit Station planned for redeveloped rail station

2.3 U.S. Customs and Border Protection (CBP)

Overall

- Easy movement of passengers and bags is key

North Side Location

- Satisfies CBP requirements
- Separation from terminal building will complicate operations
- Managing baggage will be a challenge
- Passengers still must depart from terminal building until TSA provides screening

Terminal Building Location

- Best terminal alternative- Vicinity of Central Terminal Area
- Movable wall component does not meet CBP standards
- A modified egress process might be possible
- General aviation passengers typically processed through crew booths
- Will work with design team once final location identified

2.4 U.S. DOT Transportation Security Administration

- North side facility will require aircraft repositioning for departing aircraft
- TSA not amenable to split operation
- Additional TSA resources can only be committed once enplanements are documented
- Utilization of the terminal building west concourse is a favorable option for phased development

2.5 Suffolk County

- Suffolk County very supportive of a Ronkonkoma-MacArthur Airport connection
- L.I. MacArthur Airport a major component of Innovation Zone Project (iZone)
- Funding available for studying Ronkonkoma-L.I. MacArthur Airport connection

- LIRR commuter parking lots south of Ronkonkoma Station owned by Suffolk County and should be considered in north side planning efforts

2.6 Federal Aviation Administration

- Must analyze the aeronautical impacts of siting the customs facility on the north side of the airport
- Decommissioning of Runway 33R may be possible

2.7 Elected Officials

- North side development- Future of the airport
- North side development- More difficult to accomplish quickly
- East side of airport- Abuts residential community
- Terminal development -Synergies with stakeholders/services
- Must be as cost effective as possible
- Efficiency and timing important

2.8 Civic Associations

- Draft Ronkonkoma vision plan discusses possible rail connection to airport
- North side development- Viewed favorably
- North side development- Concern expressed over financial and operational viability
- Early education of community regarding financial impact and security issues is important

2.9 L.I. MacArthur Airport Fixed Based Operators (FBO)

- North side development- Best for customs facility
- Standalone facility preferred
- General Aviation customers expect exclusive service
- Design for general aviation with commercial service expansion capability
- Concerned about prioritization of general aviation/commercial operations
- East side development- Possible community opposition was discussed

2.10 Southwest Airlines

- Location outside of existing terminal problematic
- Development south of the east concourse conflicts with operations
- Support further evaluation of the Central Terminal Area and west concourse
- Concerned about prioritization of general aviation/commercial operations
- East concourse adjacent to central terminal Area may be available for expansion

2.11 Key Stakeholder Takeaways

- Ronkonkoma-MacArthur Airport connection important for airport growth- **Supported by All**
- LIRR enhancing capacity at Ronkonkoma Station
- Southwest- Prefers modification of existing terminal building
- Fixed Based Operator's -Prefer north side of airport
- Civic Associations- CBP/TSA/FAA- No preference for location of customs facility
- Elected Officials/Suffolk County
 - Must be cost effective & timely
 - East side development- Community concerns

3. Opportunities and Constraints

Given the development criteria established by the Airport's administration for this project, AECOM evaluated the opportunities and constraints associated with siting a customs facility at various locations on airport. Key objectives of the project include financial feasibility and the ability to implement the project by 2019. As a result the review of various locations was considered with these objectives at the forefront. Input obtained from the Stakeholder meetings was also incorporated into this analysis.

The northern portion of the airport is essentially undeveloped, but is adjacent to the Long Island Rail Road's Ronkonkoma station which provides a convenient mass transit access point to the airport which is highly desired by travelers. Reconfiguring airport development to take advantage of this access has been considered since the 1980's, but for various reasons was not been pursued (See Figure 3). Because of the mass transit opportunity presented by any development of the northern portion of the airport this area was considered for a new customs facility, that could be expanded to offer full Terminal Building services in the future.

Co-locating the customs facility within or nearby the existing terminal building is a logical approach, given the numerous efficiency benefits of consolidating aviation services and amenities in the same location, but is potentially complicated by lease issues, the challenges of adapting spaces designed for other uses for customs processing and development criteria that specifies expansion capability.

Development along the east or west sides of the airport has all the inefficiencies of developing a custom facility away from the main terminal building with none of the mass transportation advantages presented by development within the northern portion of the airport. In addition, expansion capability along the west side of the airport is lacking as a result of existing FBO operations and the roadway network serving the east side of the airport is primarily designed for the adjacent residential community, not aviation services. For these reasons siting a customs facility on the east or west sides of the airport was not considered further.

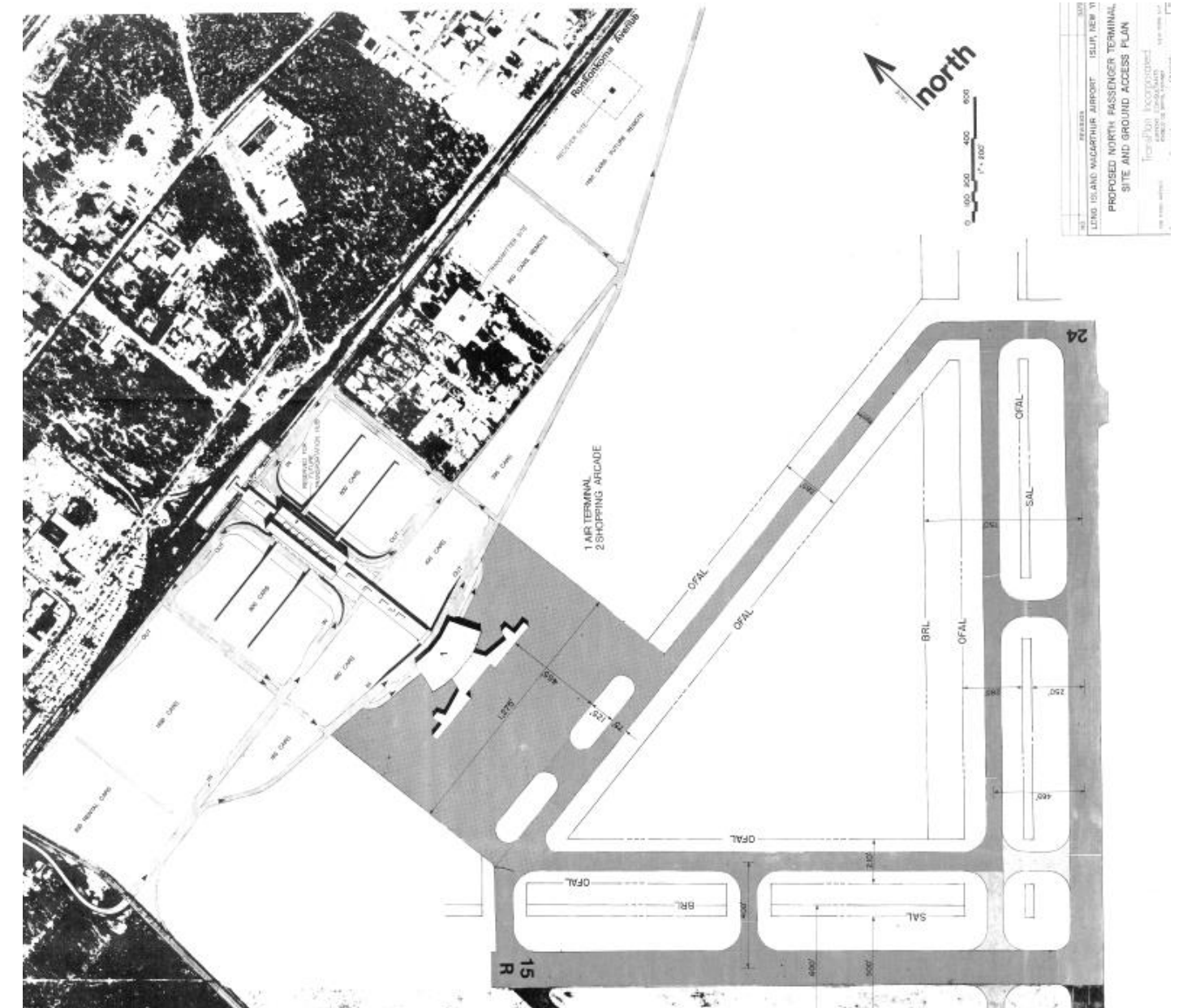


Figure 3 Proposed North Passenger Terminal & Shopping Arcade circa 1981

Opportunities and constraints were initially considered with respect to:

- 3.1 Development on the North Side of the Airport
- 3.2 Development Within Terminal Building Area
- 3.3 Infrastructure Considerations for Terminal Building Development
- 3.4 Environmental Considerations
- 3.5 Transportation Connections
- 3.6 Customs and Border Protection Coordination
- 3.7 Community Coordination

3.1 Development on the North Side of the Airport

Opportunities

1. As outlined in Figure 4 roughly 70 acres are available for development within the northern area of the airport. This is more than enough room for a customs facility with expansion capability. This area is not encumbered by any aeronautical or safety related aviation surfaces and provides room for a full terminal building with associated ramp space and taxiway system. If desired this is enough room to provide a 49 Gate Terminal Building that can accommodate 43 Aircraft Design Group III and six ADG IV aircraft.
2. This area is adjacent to the Ronkonkoma rail road station, which would provide a convenient mass transit access for airport passengers and employees.
3. Ronkonkoma Avenue is a major thoroughfare that connects directly to the Long Island Expressway and runs along the airports west side with direct access to the north side of the airport via Railroad Avenue.
4. The land area is largely undeveloped limiting the amount of site reconfiguration required.
5. Development of the north side within the area identified in Figure 4 will not impact Runway 15L/33R operations.

Constraints

1. There is no infrastructure in place on the north side of the airport to support a customs facility and the investment in new infrastructure would be significant. New taxiways, ramp areas, access roadways, parking lots, storm water drainage, water and electrical connections and waste water processing will all be required in addition to the investment in the facility itself. In

addition, the traffic capacity of Railroad Avenue would have to be assessed to determine if capacity exists to handle expected peak hour demand.

2. While a customs facility on the north side of the airport would be much closer to the Ronkonkoma Station, than the existing terminal building, the walking distance would be approximately a ½ mile, a considerable distance for a customer traveling with baggage.
3. A rough order of magnitude estimate for construction of a “no frills” elevated walkway from a customs facility on the north side of the airport to the Ronkonkoma station is \$10 to \$20M dollars, addition of moving walkway capability along with full climate control, etc. could raise the cost to as high as \$60M.
4. Airport services and amenities are lacking. Food service, parking lots, taxi stands, currency exchange, traveler’s aid, rental car access, etc. are all located within or adjacent to the existing terminal building. To the extent that arriving commercial passengers will be transferring to domestic departures, baggage handling will be more challenging from a location apart from the terminal building as will transporting those passengers to their domestic connecting flights.
5. Moving the existing compost facility would be required if a customs facility is sited on the north side of the airport. Moving this facility to another location may be problematic depending upon the ultimate location and proximity to local communities.

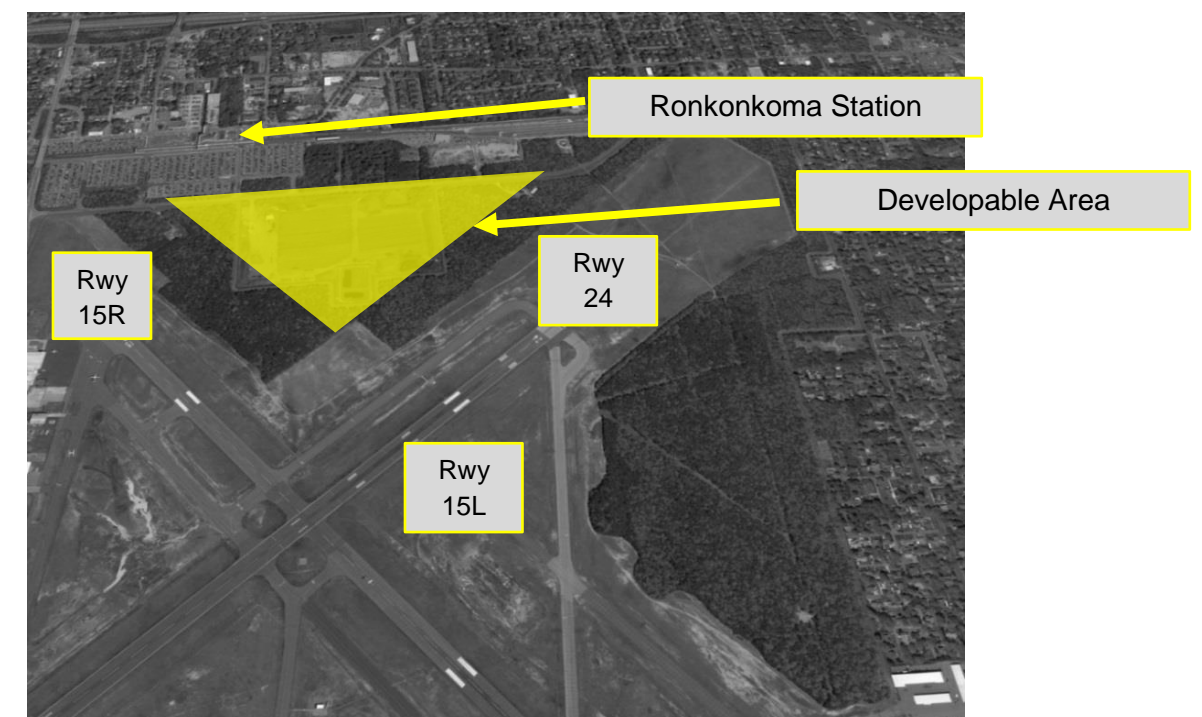


Figure 4 Developable Area North Side of L.I. MacArthur Airport

3.2 Development Within Terminal Building Area

The existing Terminal Building (see Figure 5) has been expanded incrementally over the years. The oldest portions of the building are the oval shaped center section commonly referred to as the “Central Terminal Area” which was constructed in 1966 and the west concourse which was constructed in 1989. The Central Terminal Area serves to connect the various portions of the terminal building and was designed as the prime meter/greeter space. Today it houses administrative offices on the second level, a Transportation Security Administration (TSA) offices and concessions. The West Concourse has two operational passenger loading bridge utilized by Elite Airways and a number of noncontact gates for loading of passengers via ramp access. To the south west is the baggage claim area which has four baggage claim units as well as rental car ticket counters, while directly to the south east is the main ticket hall. Connecting to the north east corner of the Central Terminal Area and directly east of the main ticket hall is the East Concourse which was constructed in 2006 and is now occupied by Southwest and American Airlines. This is a full service concourse with concessions, eight contact gates with dedicated hold room areas, and a TSA security checkpoint.

Opportunities

1. The existing Terminal Building has sufficient capacity to handle the demand forecast outlined in the most recent Master Plan (MacArthur airport Master Plan 2/17) which estimated future aviation activity to year 2037. Overall air carrier, air taxi and commuter operations in 2016 totaled 16,862 operations, significantly below the peak of 33,000 operations in 2007. Of all the terminal facilities assessed in the Master Plan only check-in kiosks and baggage screening devices were found to be deficient in future years.
2. Customer services & amenities are already in place at the Terminal Building and connectivity between a customs facility and domestic operations would be straight forward. Passengers arriving on international flights can use existing services to reach local destinations or transfer directly to domestic flights.
3. Infrastructure is already in place within the Terminal building area with an established roadway network, parking facilities, terminal frontage, ramp and taxiway system.

4. The West Concourse along with portions of the East Concourse are underutilized as is the Central Terminal Area of the Building, providing opportunity for reutilization for customs services.

Constraints

1. An existing lease with Southwest Airlines complicates any alternatives within the Terminal Building that involve portions of the Terminal under the Southwest leasehold.
2. The Central Terminal Area portion of the Building is relatively small in size, potentially impacting expansion capability.
3. The West Concourse was part of the original building constructed in 1966 and was originally designed as a temporary facility. Full utilization of this structure may require significant renovation.
4. Even with fully redeploying existing underutilized sections it may be difficult to incorporate a customs facility completely into the existing building envelope.
5. Mechanical, electrical and plumbing systems along with the roof need upgrade/replacement (see section 3.3 and Appendix D and E).

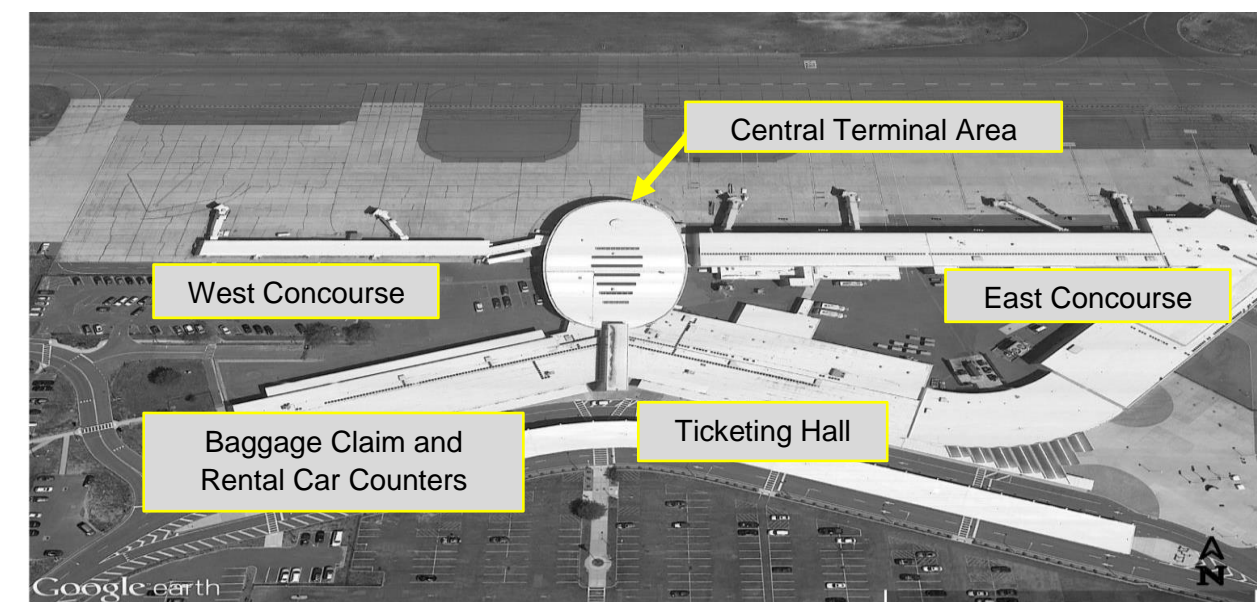


Figure 5 L.I. MacArthur Airport Terminal Building

3.3 Infrastructure Considerations for Terminal Building Development

Much of the Infrastructure supporting the existing terminal building is old and in need of replacement or upgrade. As the Central Terminal Area is under consideration for supporting the development of a permanent customs facility at the airport the condition of building infrastructure was assessed. The details of these assessments of electrical, mechanical and plumbing systems are outlined in Appendix D and Appendix E respectively.

The main air handling units in the basement are prone to failures and many system components have exceeded their median life expectancy. Air handling units fans, cooling coils, heating coils, ductwork, and insulation, serving the Central Terminal Building are all original (1965) and in poor condition. The ability to perform maintenance on the original air handling units is severely hindered due to space constraints and ductwork and piping obstructing access. There is limited zone temperature control, which causes cause temperature variation issues in the terminal.

The chiller plant is undersized and has trouble cooling the terminal building during peak summer temperatures. The type of refrigerant utilized by the existing chiller equipment is scheduled to be banned by 2020. Given that the existing Chiller is 20-21 years old with an expected lifespan of 23 years it is recommended that it be replaced before 2020. The piping and pump systems that distribute water for cooling and heating the building are old with some dating from the 1960's, while the majority of the existing pumps were installed in a Terminal Addition Project (1998). ASHRAE lists the median lifespan of a base-mounted pump at 20 years which means that even the newer pumps are nearing their median lifespan. The piping insulation is generally in poor condition and pipes are exposed in multiple places; causing them to rust significantly. See Appendix E for more detail on the system assessment, options for rehabilitation and ROM cost estimates.

The electrical system is old and upgrades are recommended for various system components. The Terminal Building also does not have an adequately sized emergency generator and replacement of the existing 80 kW system with an 800kW system is recommended. There are also a number of components of the electrical system that do not meet current code requirements. See Appendix D for more detail on the system assessment and ROM cost estimates.

In addition to the mechanical and electrical systems, the roof of the Central Terminal Area needs replacement. The Rough Order of Magnitude (ROM) cost for this work is \$500,000. The curtain wall is also older and not energy efficient and in need of rehabilitation.

Rehabilitation of these systems will be required soon regardless of whether a permanent customs facility is located within the Central Terminal Area or not. However if the Central Terminal Area is selected for installation of a permanent customs facility it is advisable that necessary infrastructure upgrades be conducted at the same time.

3.4 Environmental Considerations

L.I. MacArthur Airport is subject to environmental review regulations established by the Federal Aviation Administration and Customs and Border Protection under the National Environmental Policy Act and New York State through The New York State Environmental Quality Review Act. Both require a screening review to determine the environmental significance of an action. If an action is determined to cause a significant impact an Environmental Impact Statement (EIS) will be required which can often take many years to complete. However, most projects do not have significant environmental impacts and timeframes and cost are much less than that required for an EIS and largely dependent upon the level of environmental impact identified. To the extent a project can be implemented within an area already disturbed by development, with infrastructure available that can support capacity needs, the less time and cost associated with project approval.

Opportunities

1. Development within or adjacent to the existing terminal building that relies on existing airport infrastructure will help reduce environmental impacts and reduce the time required for the environmental approval process. Development confined largely to the existing buildings will have the least environmental impact while alternatives that utilize non-developed space adjacent to the Terminal Building will produce greater impacts.
2. A customs facility development project completely confined within the existing terminal building would have little environmental impact, and not result in a change to the Airport Layout Plan, which is a trigger for Federal Aviation Administration environmental review under the National Environmental Policy Act. The environmental review timeline associated with such an action will most likely be 6 months or less. The environmental review process for a customs facility constructed within the environs of the Terminal Building so that use of existing infrastructure is maximized is expected to range from approximately 6 months to a year.

Constraints

1. Development of a customs facility on the north side of the airport which has expansion capability and is part of a long term plan to relocate terminal operations in closer proximity to the Ronkonkoma rail station would face a number of environmental issues.
 - a. Freshwater ponds are located just south of the compost facility, are man-made and are not listed as wetlands by NYS Department of Environmental Conservation (see figure 6).



Figure 6 Location of Freshwater Ponds (circled)

- b. Review of the NYS DEC Environmental Resource Mapper for L.I. MacArthur Airport indicates the possible presence of Rare Plants/Animals. Assessment of this resource will be required as part of any environmental review for siting a customs facility at this location (see Figure 7).
- c. Any proposed development of the north side of the airport will need to assess the capacity of Railroad Avenue to handle the expected demand. Areas of concern include the intersection of the existing compost facility access roadway and Railroad Avenue and Ronkonkoma/Railroad Avenue intersection (see Figure 8 and Figure 9).
Development proposed as part of the Ronkonkoma Hub project and its impact on traffic within the project area would also need to be taken into consideration.
- d. Perhaps the most significant environmental issue related to development of the north side of the airport is definition of the “action” that would require analysis. If a customs facility is one component of a larger overall plan to move services to the north side of the airport the New York State Environmental Quality Review Act and National Environmental Policy Act require that the whole action be evaluated. Such an analysis would assess the environmental impacts of additional phases of project development. In addition, cumulative impact analyses, where an action is likely to be undertaken as a result of the proposed action, must be evaluated. For north side redevelopment this would include any impacts associated with compost facility relocation. A programmatic environmental analysis might be appropriate given uncertainty regarding development levels, though it is not expected that such an analysis would reduce review timeframes.
- e. It is estimated that the environmental approval process for development of a customs facility on the north side of the airport could take from 1 to 3+ years depending upon the project size and level of environmental analysis required.

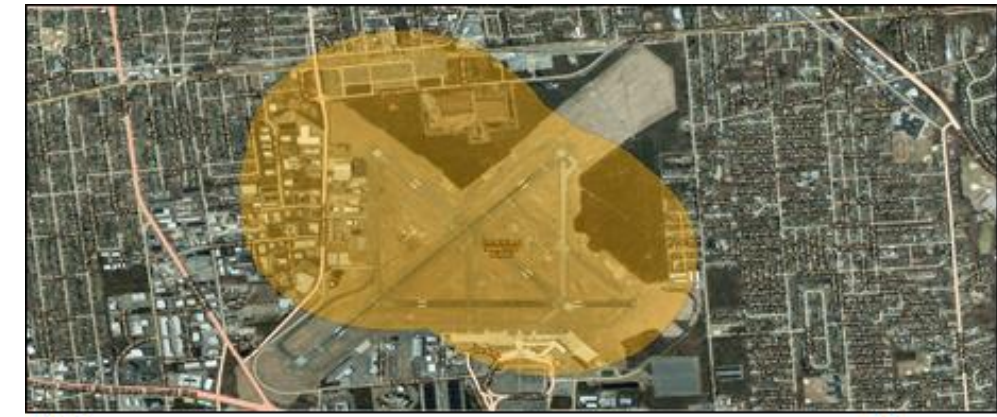


Figure 7 NYS DEC Rare Plants/Animals

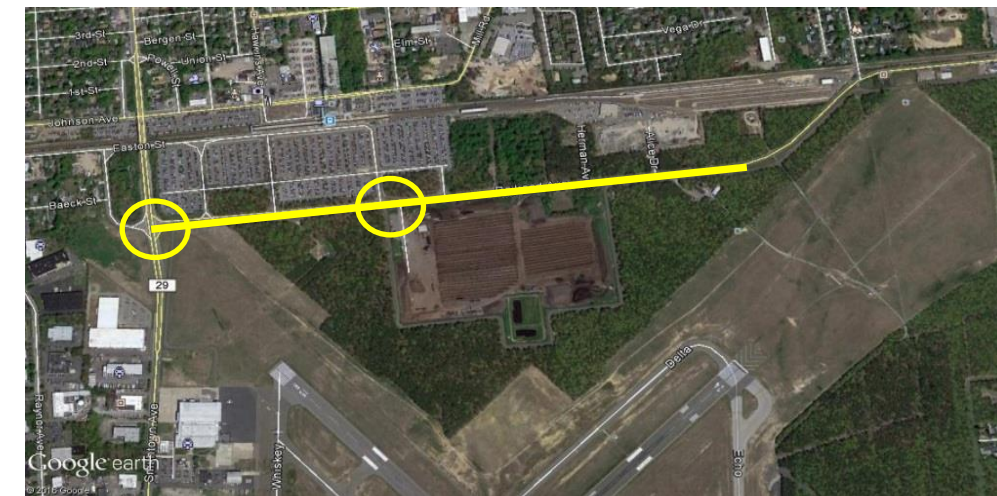


Figure 8 Railroad Avenue & Key Intersections



Figure 9 Looking East Along Railroad Avenue

3.4 Transportation Connections

Opportunities and Constraints

An improved connection from L.I. MacArthur Airport to the Ronkonkoma Station has been a highly desirable planning goal for a long time. A concept level assessment was completed identifying options and ROM cost estimates for improved intermodal access between the Airport and the Ronkonkoma Station (See Appendix B for the technical memorandum).

Airport Terminal Connection

- Bus Rapid Transit (BRT) - An improved at grade bus operation that emulates a fixed rail transit system. This is the most cost feasible option for a connection to the existing Airport Terminal.
- Figure 10 outlines a conceptual alignment for a BRT connection to the existing Terminal Building.
- Rough order of magnitude cost for a five (5) vehicle system is \$43M
- Order of magnitude estimated capital costs for an elevated automated guideway transit (AGT) system from the Ronkonkoma Station to the existing Terminal Building are \$642M.

Connection to a North Side Facility

- The distance from a north side facility to the Ronkonkoma Station would be approximately 2,600 feet or about ½ mile. Given the closer proximity, ROM capital cost estimates for a bus shuttle, AGT and moving walkway system concept were estimated.
- Bus Shuttle- Ten minute headways in each direction based on three (3) vehicles. \$1.2M
- Elevated AGT System- Assume a single two car train with one spare vehicle. \$135M
- Elevated Moving Sidewalk- Assume total length of approximately 1,800 feet, estimated travel time – 6 minutes. \$60M



Figure 10 BRT Concept Alignment

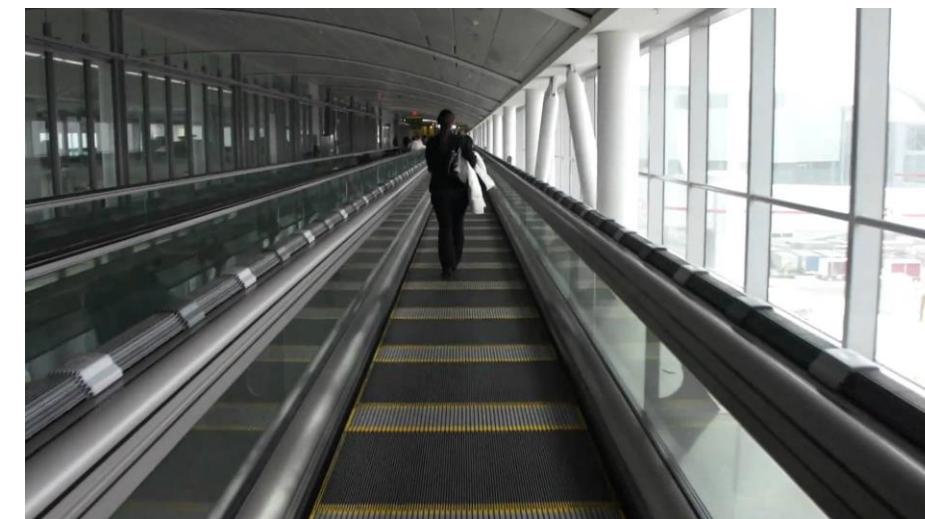


Figure 11 Toronto Airport Moving Walkway

3.5 Customs and Border Protection (CBP) Coordination

Opportunities and Constraints

Clearance through CBP at L.I. MacArthur Airport is currently managed under a “Landing Rights” Airport designation. This designation has been provided by CBP under 19 CFR 122.14 and allows customs agents to travel to L.I. MacArthur Airport to conduct customs clearance activities on flights that have provided adequate notice of arrival. Private aircraft must secure permission to land from CBP via an electronic data interchange system prior to departure from a foreign port. At a Landing Rights airport fees for customs service are paid to CBP on a per plane basis. However, denial of Landing Rights can occur if sufficient federal government personnel or proper inspection facilities or equipment are not available.

Permanent support by CBP requires reimbursement of the cost of a Customs Officer on an annual basis. Given the level of international flights at L.I. MacArthur Airport today the cost for permanent CBP support is not justified.

An alternative to the Landing Rights designation that should be explored is the CBP’s Reimbursable Services Program which provides for payment to CBP for activities associated with the construction, alteration, operation or maintenance of new or existing Federal Inspection Stations. The Landing Rights designation is intended to support intermittent activity by small aircraft, while the Reimbursable Services Program activity may provide greater flexibility for managing commercial aircraft service.

3.6 Community Coordination

Opportunities and Constraints

Interviews were conducted with the Ronkonkoma Chamber of Commerce, the Bohemia Civic Association and the Ronkonkoma Civic Association, along with State and local elected officials to get a sense of community concerns and opinions regarding the project to site a permanent Customs Facility at L.I. MacArthur Airport. Issues raised include the following:

- Development along the East Side of the airport was viewed as potentially having significant impacts to the adjacent community. Roadways within this area are sized for residential activity, not to support airport operations (see Figure 12). There was concern regarding the impact to this neighborhood of increased vehicle activity.
- Early education of community groups regarding any airport redevelopment proposals was identified as an important component for garnering community support.
- The following were highlighted as examples of community concerns that could be addressed through early communication of project specifics:
 - Are my taxes used to fund airport development projects? – L.I. MacArthur Airport is self-sufficient funded through user fees, Passenger Facility Charges and state and federal grants designated for support of transportation projects.
 - Will airport development increase aircraft operations above historical benchmarks? - Aircraft operations are currently below historical levels for the airport



Figure 12 Residential Street East of Airport

4.0 Customs Facility Alternatives

Multiple locations were investigated throughout the feasibility study. During the procurement process AECOM proposed several concepts for a design approach for the customs facility. The designs were based upon the site suggested by the RFQ, and three (3) alternatives that AECOM developed without stakeholder input.

Design Approach 1

This approach was the Basis of Design included within the RFQ. It connects to the last Southwest Airlines gate through a fixed section of a passenger boarding bridge to a Flight Service (FS) building on the landside of the airport (see Figure 13). The FS building requires renovation and expansion in order to fit a customs facility separate from the rest of the terminal. This design was a baggage first facility and would have utilized Southwest gate A8 as a domestic / international swing gate. Utilizing this gate has leasing implications with Southwest Airlines, and has issues with tying the secure airside delivery of baggage to the international claim area. The FS building is in need of renovation and the passenger boarding bridge limits access to the south side of the east concourse.

Design Approach 2

This approach was an addition to the southern portion of the Southwest Terminal. It required a sterile corridor from gate A8 leading to an upper level primary processing facility spanning the access tunnel to the Concourse interior courtyard (see Figure 14). Passengers proceed down vertical circulation to baggage claim and secondary processing and exit to the non-secure portion of the lobby. This option also created leasing issues with Southwest Airlines, limited access to the courtyard and required more new construction than the Basis of Design.

Design Approach 3

This approach redeveloped under-utilized existing infrastructure in the Central Terminal Area portion of the building into a customs facility (see Figure 15). It adds a passenger boarding bridge and holdroom which is connected to the Concourse; the gate can be used as a domestic/international swing gate. It proposes to demolish offices on the second floor for primary processing functions, adding a circulation core between the Central Terminal Area and the existing baggage claim hall, and adapting Baggage Claim 1 as a swing claim unit for international and domestic use. This option is explored in greater depth in this document as Central Terminal Area Options A and B.

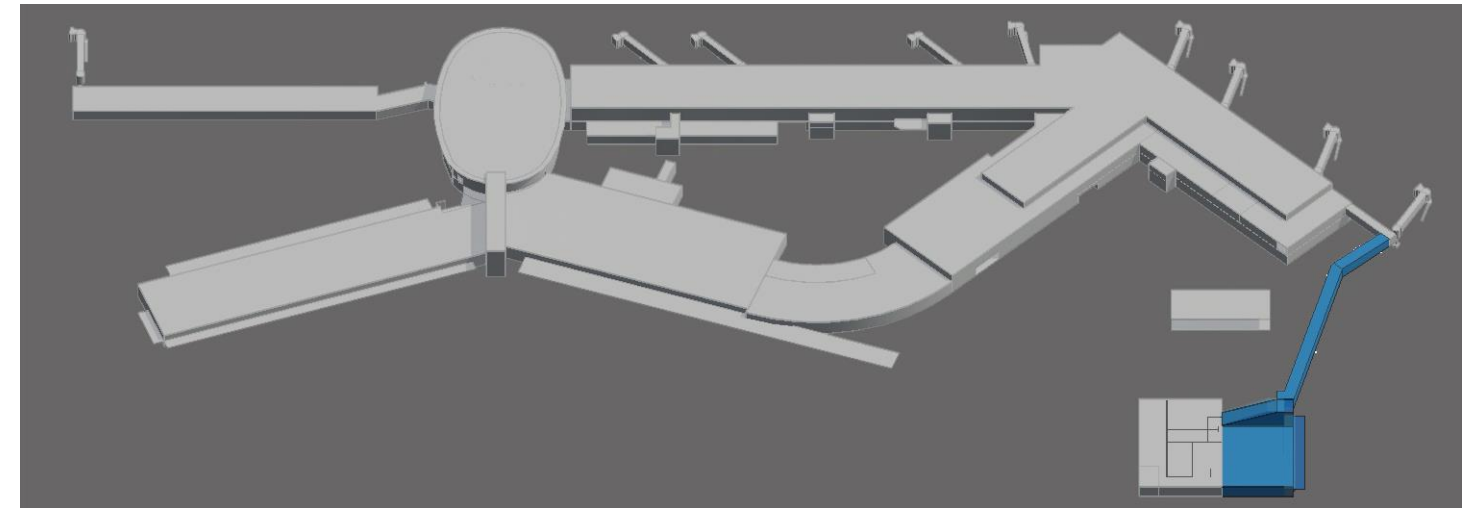


Figure 13 Design Approach 1

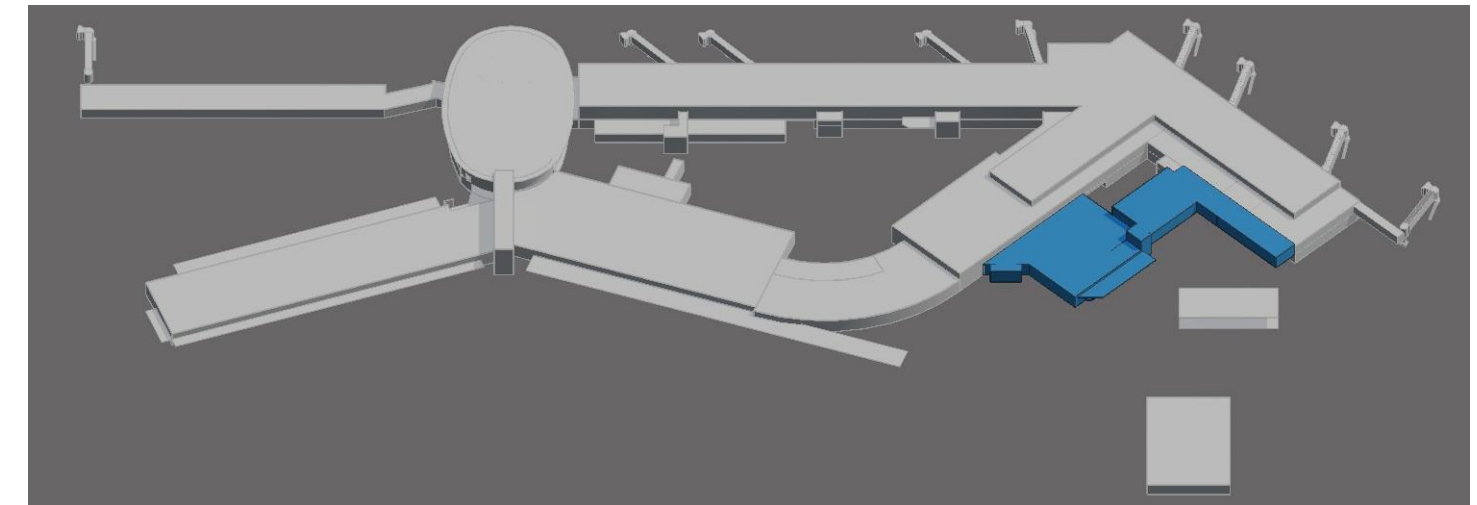


Figure 14 Design Approach 2

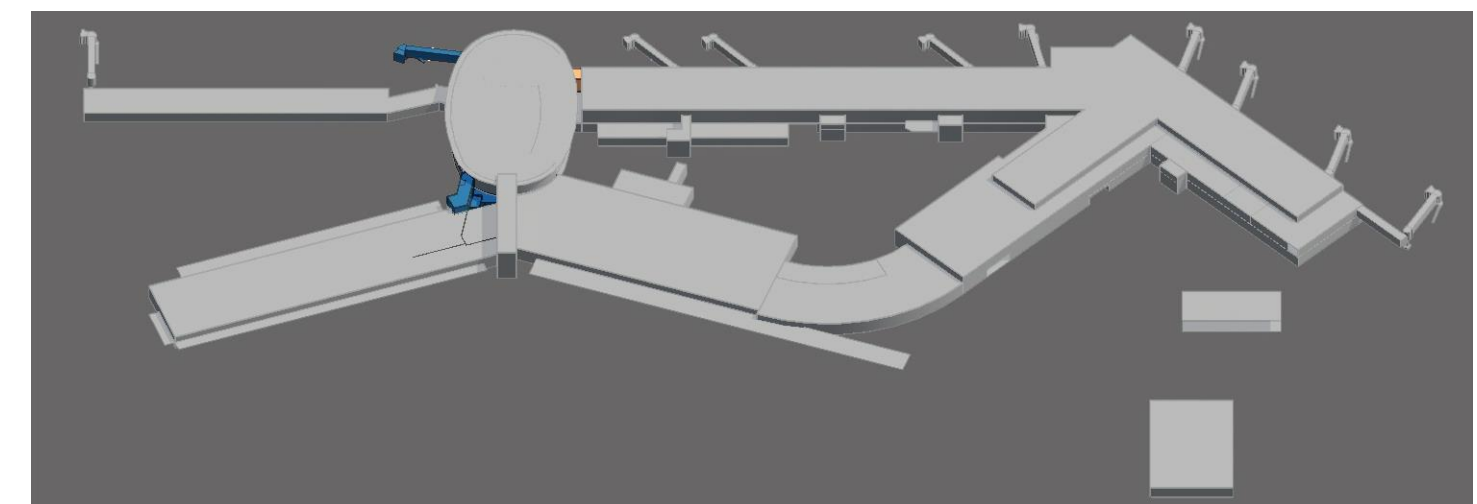


Figure 15 Design Approach 3

4.1 Alternatives Assessment

Proposed Locations:

After award of the contract and further discussion, design approaches 1 and 2 which used gate A8 (currently leased by Southwest Airlines) were dropped from further consideration based on the issues identified. Other alternative locations were then explored. The alternatives assessment conducted herein provides a level of detail necessary to identify the most promising location for a customs Facility. The alternatives presented do not directly address code compliance, egress analysis, and other related final design issues.

The north side of the airport was considered a prime location for consideration given the proximity of the Ronkonkoma Rail Road Station and the connection provided to Manhattan. This area is currently occupied by a compost facility. While this location does not have the advantage of being directly adjacent to existing airport services, the nearness of to mass transit argued for inclusion in this analysis. Locations along the east or west sides of the airport do not have this mass transit advantage. In addition, expansion capability along the west side of the airport is lacking as a result of existing FBO operations and the roadway network serving the east side of the airport is primarily designed for the adjacent residential community, not aviation services. For these reasons siting a customs facility on the east or west sides of the airport was not pursued.

Two locations along the side south of the airport were evaluated; the Terminal Building and the developable area just to the west of the Terminal Building. The Central Terminal Area is the hub for connection of the east and west sides of the Terminal Building and because of this was selected for more detailed analysis. The area adjacent to the Terminal Building west concourse was also selected for analysis because of the relative availability of the west concourse for expansion, and the lack of conflicting airport operations in this area.

Alternatives for siting a Customs Facility at L.I. MacArthur Airport were developed in consultation with all Stakeholders and Airport Staff. A design charrette was held at the airport on March 8th, 2017 to confirm development criteria, review opportunities and constraints, confirm facility requirements and identify up to two feasible development alternatives for review and assessment. The following summarizes the alternatives discussed and developed at the design charrette.

TABLE 1: SUMMARY OF ALTERNATIVES CONSIDERED

LOCATION	DESCRIPTION	OPTIONS
1. Central	Central Terminal Area Renovation	4.2.1 Central Terminal Area: Option A
		4.2.2 Central Terminal Area: Option B
		4.2.3 Central Terminal Area: Option C
2. West	West Concourse Addition/New Construction	4.3.1 West Terminal Addition: Option A
		4.3.2 West Terminal New Construction: Option B
		4.3.3 West Terminal New Construction: Option C
3. North	North Terminal New Construction	4.4.1 North Terminal New Construction: Phase 1
		4.4.2 North Terminal New Construction: Phase 2
		4.4.3 North Terminal New Construction: Phase 3
		4.4.4 North Terminal New Construction: Phase 4



Location 1: Central Terminal Area Renovation

As noted earlier in this report the Central Terminal Area is the original airport terminal. As a result, this original portion of the airport facility continues to contain many key functions and services, including a primary passenger exit from the secure side of east and west concourses, passenger circulation across the east –west axis of the airport on the secure and non-secure side, interior access to the mechanical room for maintenance personnel, airport and TSA offices, restrooms, and limited concessions.

Given the generous assortment of functions either located in or accessed through the Central Terminal Area, and the age of the facility, there was a cautious optimism for inserting a technically demanding program, such as a new customs facility, within this area. Much of the Central Terminal Area is underutilized with vacant floor area in the center and north end, which affords an opportunity to accommodate major portions of a new customs facility. The north end of the Central Terminal Area originally served as a two level restaurant, but has been vacant for many years. The east and west sides of the Central Terminal Area include mezzanines accommodating much of the airport administrative offices, and the areas below at ground level predominately consist of public restrooms, concessions and additional airport operations and support functions. Three options have been identified that renovate and utilize the Central Terminal Area for a new customs facility. All of these options will include relocation of existing uses to another location.

Location 2: West Concourse Addition/New Construction

Using the available site on the west side of the terminal requires minimal impact to the existing terminal buildings. Options for this area can integrate the existing west concourse, avoid it, or work under the presumption that the inexpensive and low-quality building would be torn down in the near future. There is an existing ready lot for the rental car agencies that would also need to be relocated. In addition, adding a building to the west of the terminal can potentially encroach on the adjacent FBO facility lease line. Alternatively, there is potential to create a general aviation curbside, while still being able to connect the customs facility building to the bag claim hall for commercial passengers. The cost of all new building and related utility connections along with additional grading is costly, but it provides a more efficient lay-out and flexibility for general aviation and commercial passengers, and future expansion. Three options have been identified on the west area of the terminal for potential additions or new construction with connections back to the existing terminal.

Location 3: North End New Construction

The North End development is a prime location to develop a new terminal that meets all of the latest FAA, TSA, and CBP design criteria with room for future expansion as passenger demand increases. There is currently a compost facility leasing these grounds from the airport which would have to be relocated.

This option also provides access to the Ronkonkoma Station of the Long Island Railroad (LIRR) just off the airport property. The station is located just north of Railroad Avenue and the North End development site and provides mass transit access to JFK International Airport, Manhattan and other Long Island Destinations.

For the North End development, all associated pavement and infrastructure for both landside and airside will need to be provided as this is a completely undeveloped site. A comprehensive plan for both the airports landside and airside components, as well coordination of off-airport transportation modes in relation to planned future residential and commercial areas should be coordinated. This plan should also address utility corridors for future expansion of the terminal.

A potential layout has been determined and broken down into four phases, starting with a small customs facility and ending with a fully-functioning large international airport terminal.

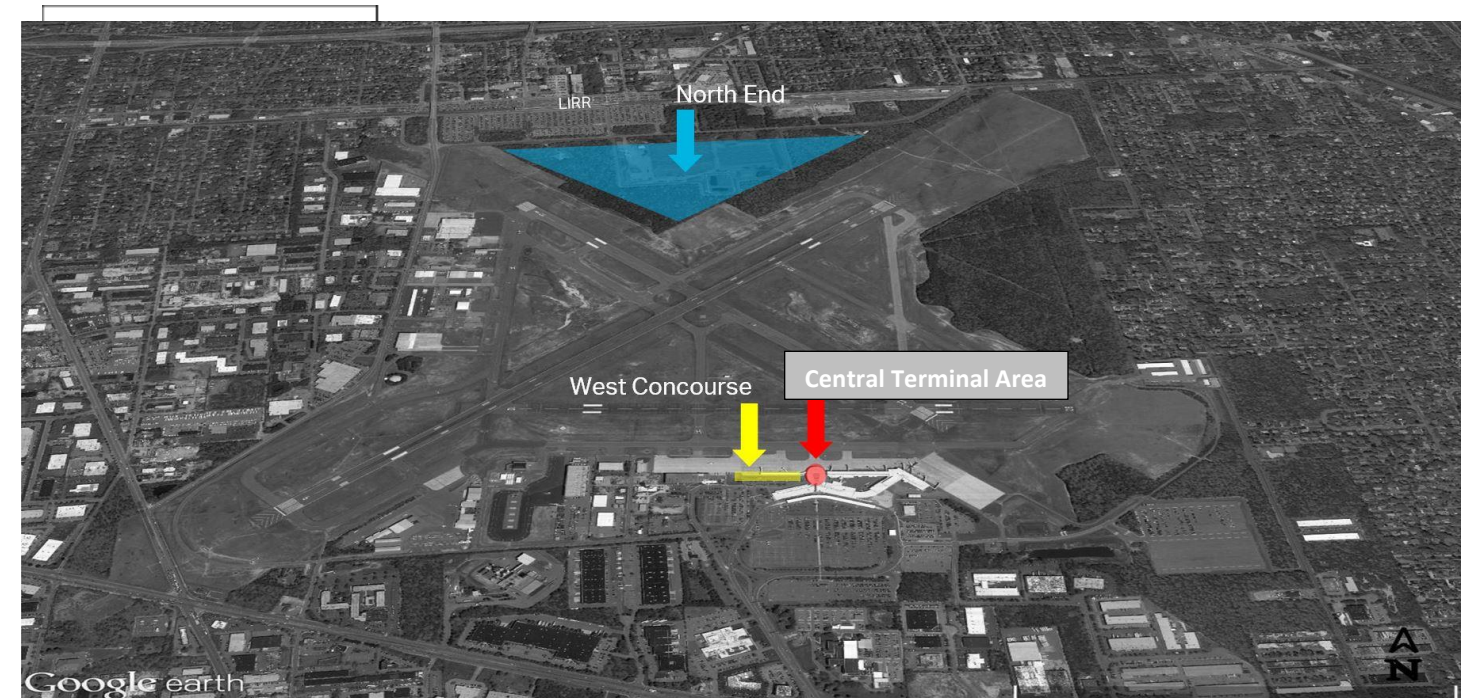


Figure 17 Location Map

4.2.1 Location 1: Central Terminal Area – Option A

- Option A – \$21M - 16 months construction

Option A takes full advantage of floor area already available in the Central Terminal Area and reuses the existing underutilized bag claim carousel (see Figure 18). This option demolishes all of the offices on the second level on the west side of the Central Terminal Area and requires that these offices be relocated. Primary processing for the customs facility would be located on the second floor on the west side of the Central Terminal Area (see Figure 20). A new Passenger Boarding Bridge (PBB) would be installed on the northwest side of the Central Terminal Area capable of handling a 757-200 and a G650 (via fixed gate adaption ramps). Restrooms would be located immediately after disembarking from the airplane before entering primary processing. Associated CBP functions (required for a 2 level facility) would be located just after the primary processing booths before passengers make their way downstairs via an escalator to the baggage claim area and secondary processing as required. From the baggage claim area passengers who do not require secondary screening will empty into the lobby area between the ticketing hall and the baggage claim hall. Passengers that require secondary screening will be sent to the passenger waiting room and then called for documentation review or baggage screening. Other CBP functions would be located on the first floor under the primary processing area and accessed by a CBP-only corridor from the bag screening area (see Figure 19). This displaces existing landside restrooms that may need to be relocated. Passengers would only access this corridor if escorted by CBP personnel into the holding areas. Adding an additional PBB to the northwest side of the Central Terminal Area to enhance capacity may require remarking for PBB along the west concourse. The existing baggage carousel is reaching the end of its useful service life and may need to be replaced in the near future.

- | | |
|--|---|
| <ul style="list-style-type: none"> • Pros <ul style="list-style-type: none"> • Utilizing existing building infrastructure and envelope • Level 1 baggage claim repurpose • Space for airside business center and Service Animal Relief Area (SARA) • Reduced cost • Allows processing of inbound and outbound international flights | <ul style="list-style-type: none"> • Cons <ul style="list-style-type: none"> • Two level customs facility • All levels interior renovation • New PBB • Level 1 restrooms relocate • Level 2 offices relocated • Level 1 existing functions displaced (I.e. retail, radio station, electrical and mechanical rooms, etc.) • Level 2 small floor area infill • No gate expansion capability |
|--|---|

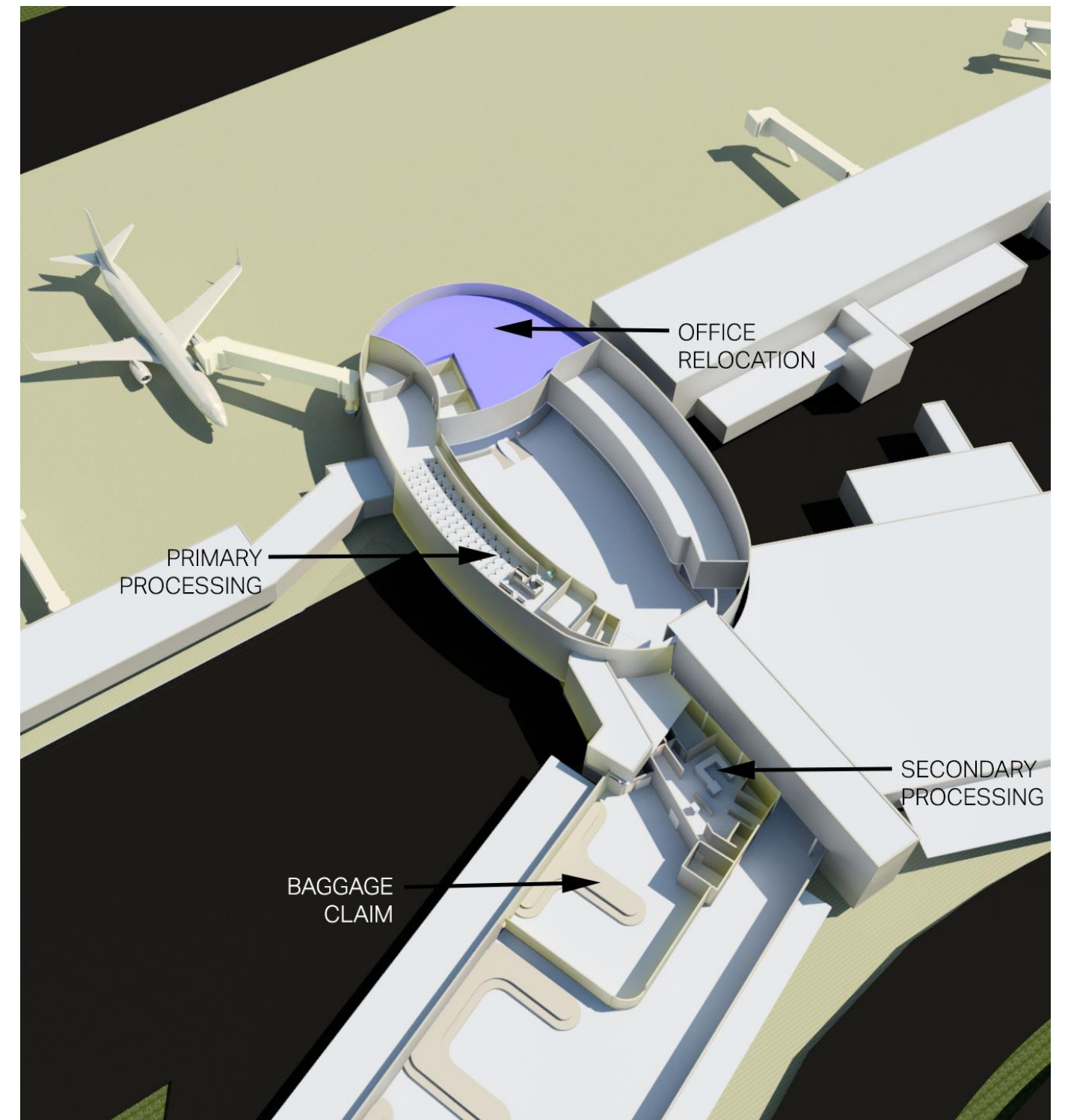


Figure 18 Central Terminal Area Option A Rendering

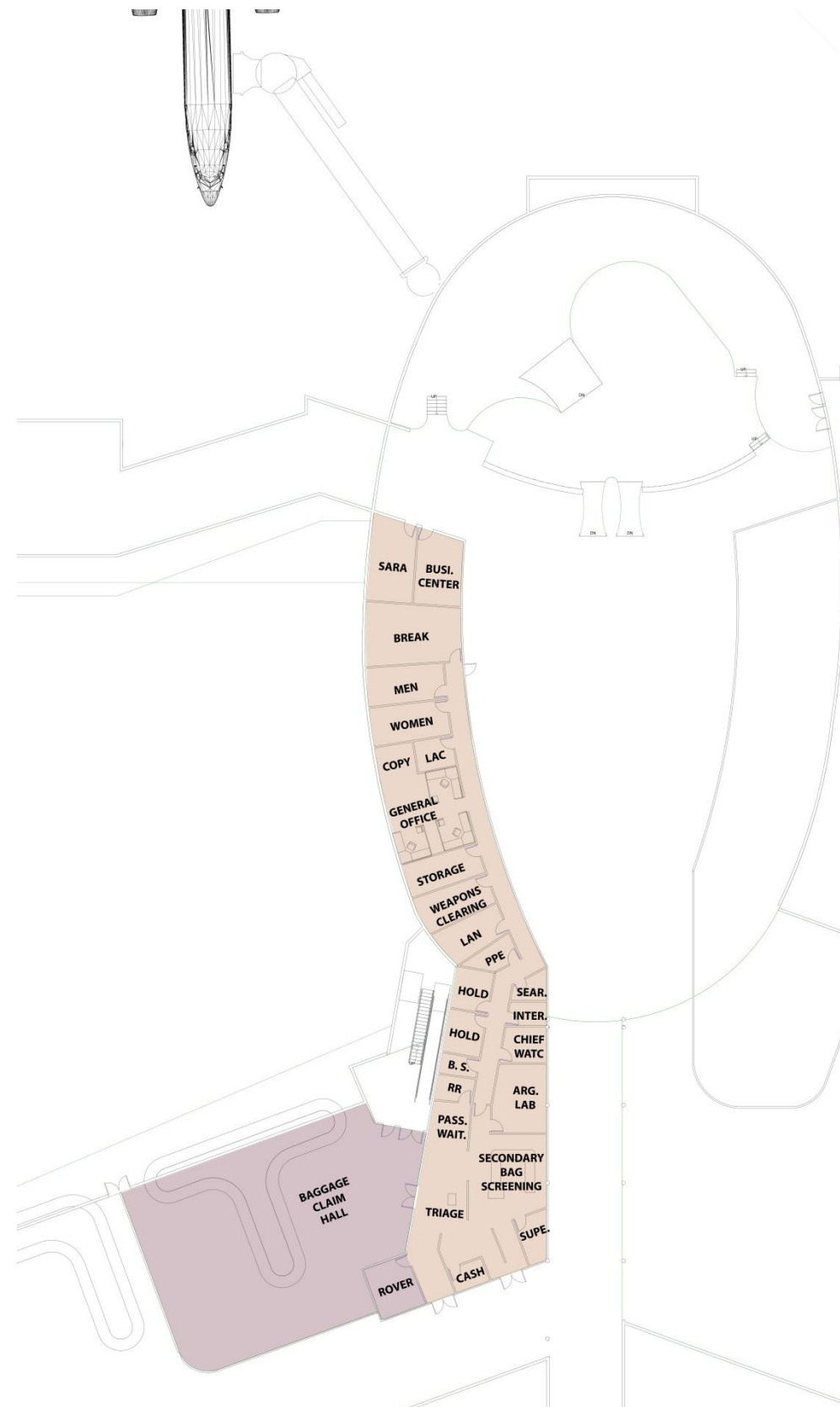


Figure 19 Central Terminal Area Option A: First Floor Plan

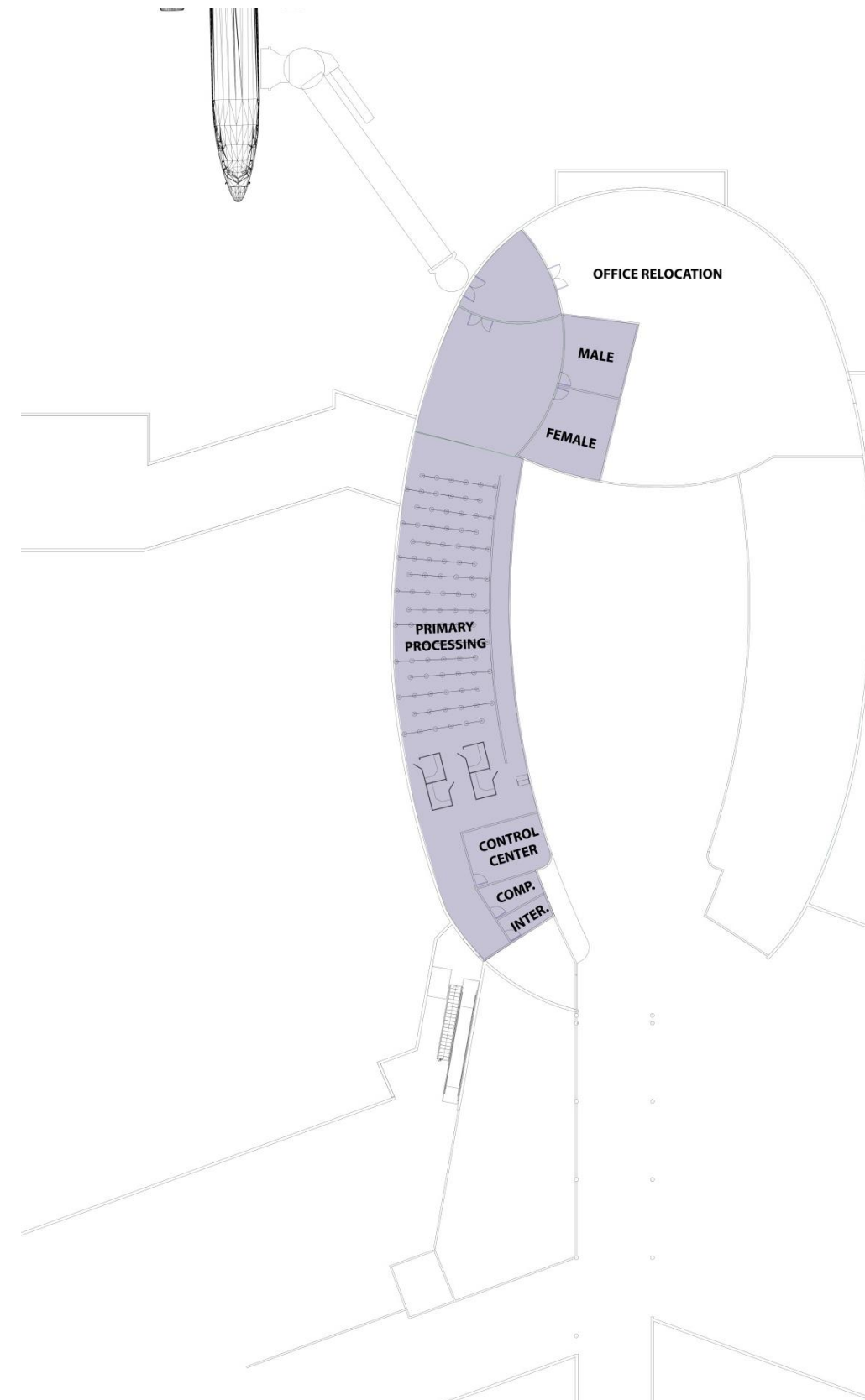


Figure 20 Central Terminal Central Terminal Area Option A: Second Floor Plan

4.2.2 Location 1: Central Terminal Area - Option B

- Option B – \$22M – at 18 months construction

Option B is similar to option A, but instead of adding a PBB, it connects to an existing PBB in the east Concourse (see Figure 21). This creates a unique opportunity because this gate can now be used as a swing gate for domestic and international passengers. It requires a few more floor area fill-ins and proposes that the offices be relocated by creating a second floor that fills in the center section of the Central Terminal Area. Primary processing for the customs facility would be located on the second floor previously occupied by administrative offices (see Figure 23). Restrooms would be located immediately after disembarking from the airplane and before entering primary processing. Associated CBP functions (required for a 2 level facility) would be located just after the primary processing booths before passengers make their way downstairs via an escalator to the baggage claim area and secondary processing as required. From the baggage claim area passengers who do not require secondary screening will empty into the lobby area between the ticketing hall and the baggage claim hall. Passengers that require secondary screening will be sent to the passenger waiting room and then called for documentation review or baggage screening (see Figure 22). Other CBP functions would be located on the first floor under the primary processing area and accessed by a CBP-only corridor from the bag screening area. This displaces existing landside restrooms that will need to be relocated. The existing baggage carousel included in this alternative is reaching the end of its useful service life and may need to be replaced in the near future.

- | | |
|---|---|
| <ul style="list-style-type: none"> • Pros <ul style="list-style-type: none"> • Utilizing existing building infrastructure • Level 1 baggage claim repurpose • Space for airside business center and Service Animal Relief Area (SARA) • Uses existing PBB/swing gate • Reduced cost • Allows processing of inbound and outbound international flights • Can add an additional gate | <ul style="list-style-type: none"> • Cons <ul style="list-style-type: none"> • Two level customs facility • All levels interior renovation • Level 1 restrooms relocate • Level 2 offices relocate (Cost of in-fill) • Level 1 existing functions displaced (i.e. retail, radio station, etc.) • Level 2 large floor area infill • No kiosks/global • Lease agreement with SWA • Passengers access both concourses |
|---|---|

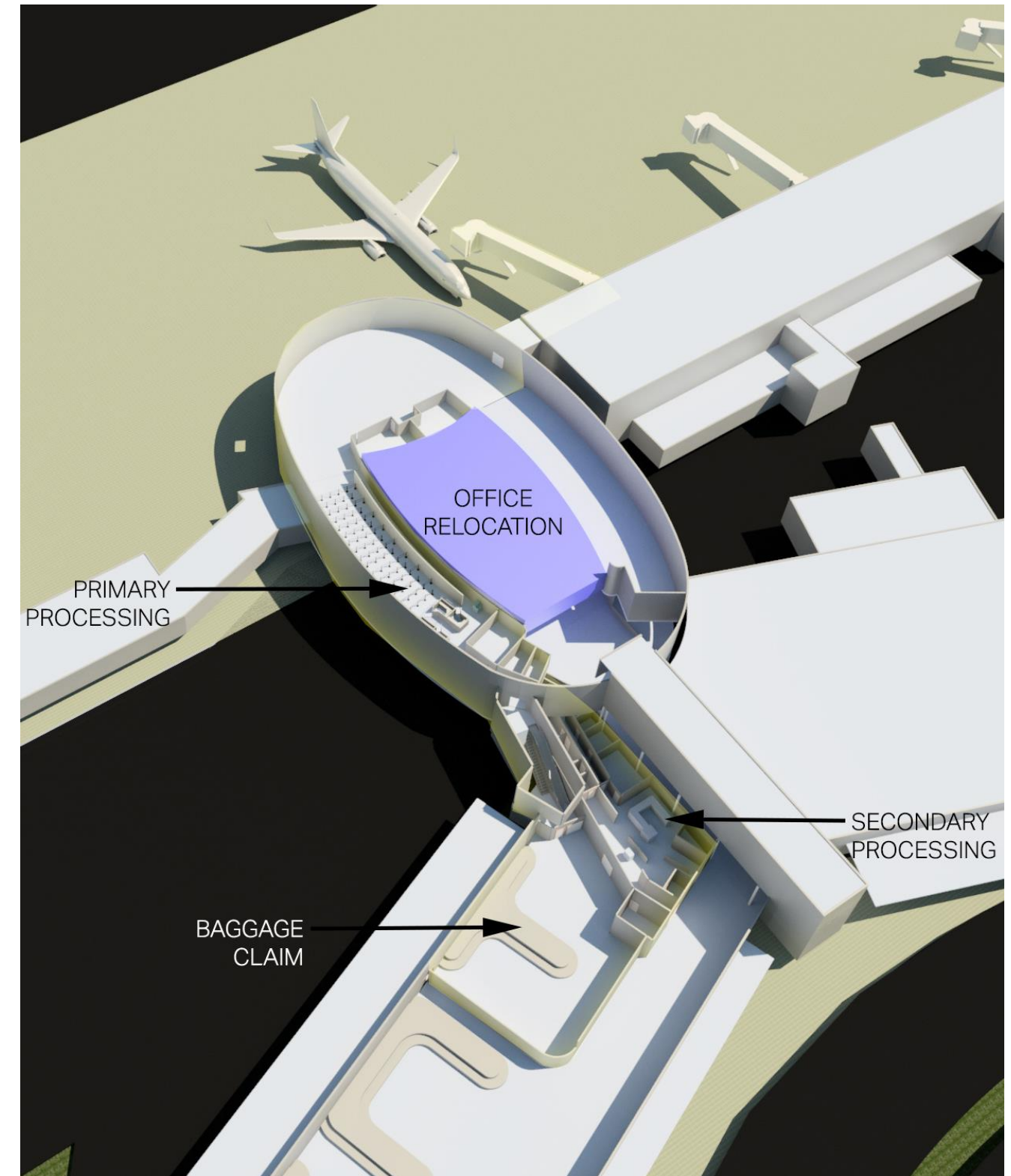


Figure 21 Central Terminal Area Option B Rendering

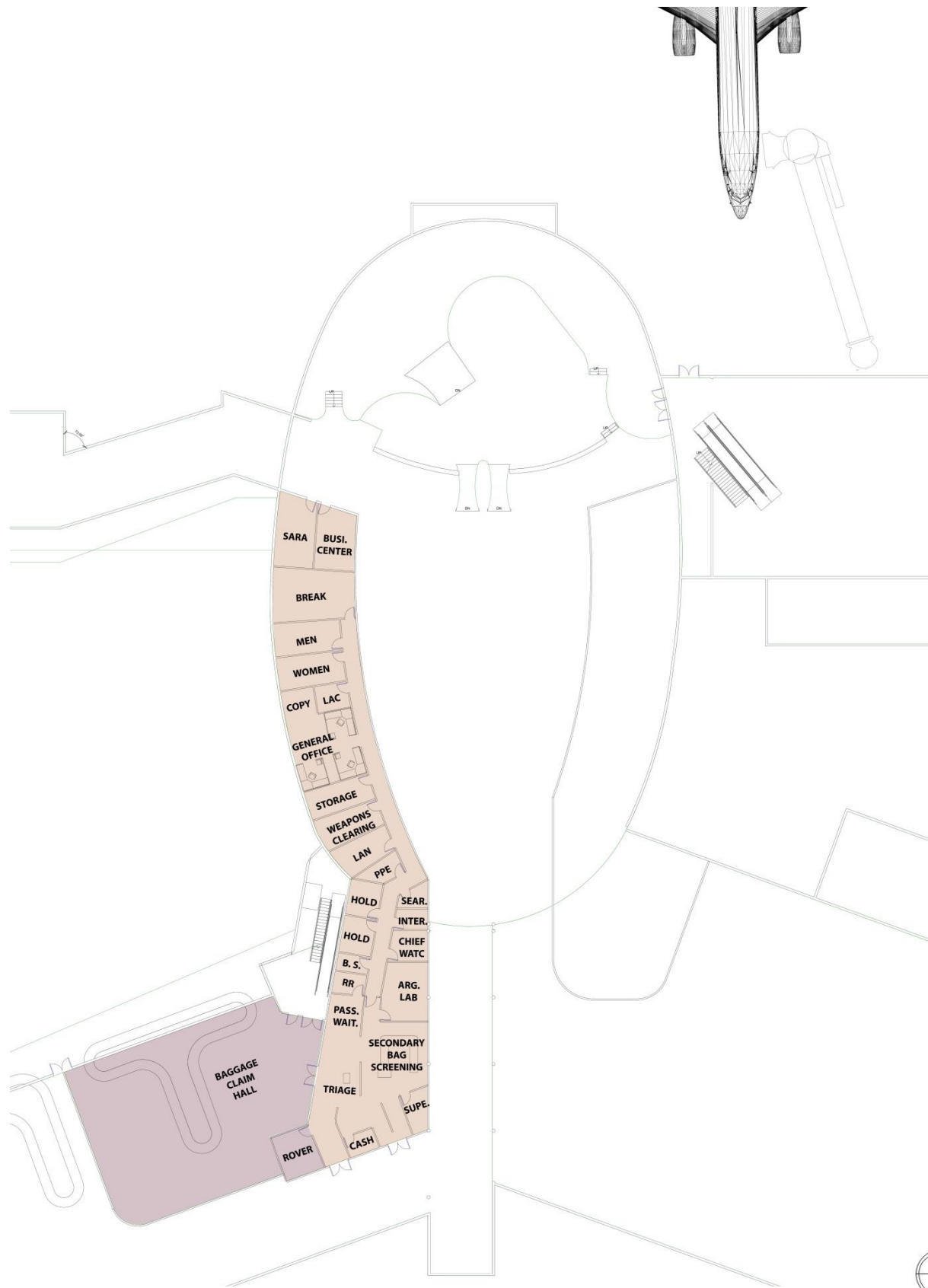


Figure 22 Central Terminal Area Option B: First Floor Plan

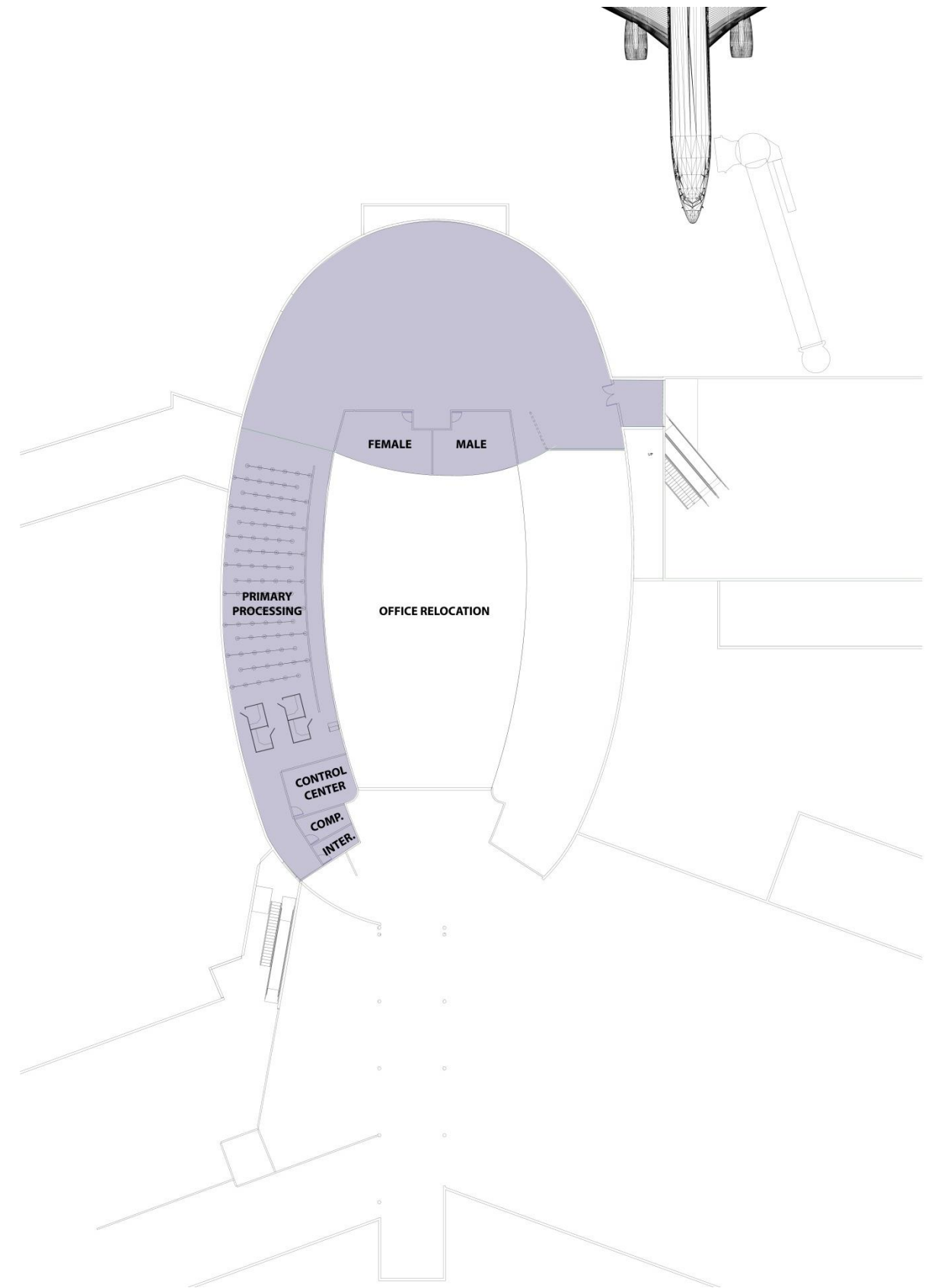


Figure 23 Central Terminal Area Option B: Second Floor Plan

4.2.3 Location 1: Central Terminal Area - Option C

- Option C - \$18M – at 16 months construction

Option C takes the gate options from A and B and combines them into one two-gate option. This gives the airport the choice to put a fixed bridge section over to SWA gate A1 or put in a new PBB immediately, while allowing for the alternative to be added later as demand increases (see Figure 24). It also uses the first floor of the Central Terminal Area rather than displacing administrative offices, and finds a way to allow for ground deplaning while still allowing cross-traffic to the west concourse. The existing offices would benefit from a bridge to connect the two sides, and an egress stair added at the end of the west corridor leading outdoors. Passengers deplaning by PBB would arrive on the existing mezzanine level and then head down the stairs or elevator to the baggage claim hall on the first floor (see Figure 26). Passengers ground deplaning would go through the general aviation (GA) entrance on the apron level and go up a short ramp to the first floor level. Restrooms would also be located on this lower level. Adding a flat plate baggage carousel for customs takes advantage of a relatively new concept that is just starting to be implemented by CBP, called a “baggage first” facility (see Figure 25). Passengers collect their bags from the carousel before they enter the primary processing lanes. This helps meter passenger flow and allows for shorter queueing lines and shorter processing times. Here they have the option to proceed through primary processing as usual, or through Automated Passport Control Kiosks. There would also be a lane for Global Entry processing that can also be used by General Aviation passengers. Once through primary processing, a passenger can be referred into secondary and passenger waiting or can exit the CBP facility. The secondary processing area becomes a suite added onto the west side of the Central Terminal Area.

- Pros

- Baggage Claim First Facility
- Utilizing existing infrastructure
- Reduced Interior modifications
- Level 2 future access SWA Gate A1
- Level 2 admin office bridge connecting both office blocks
- Serves both ground and PBB deplaning
- includes the underutilized north side of the Central Terminal Area
- Passport Control/Global Entry Kiosk

- Cons

- Arrivals on two separate levels
- Level 1 Crossover circulation
- Level 1 New building addition
- Level 1 Baggage claim addition
- Level 1 Restrooms displaced
- Level 1 Retail displaced
- Level 1 Exterior utilities impacted
- Level 2 New PBB (Cost)
- Level 1 radio station displaced
- SARA/Bus Center is Landside

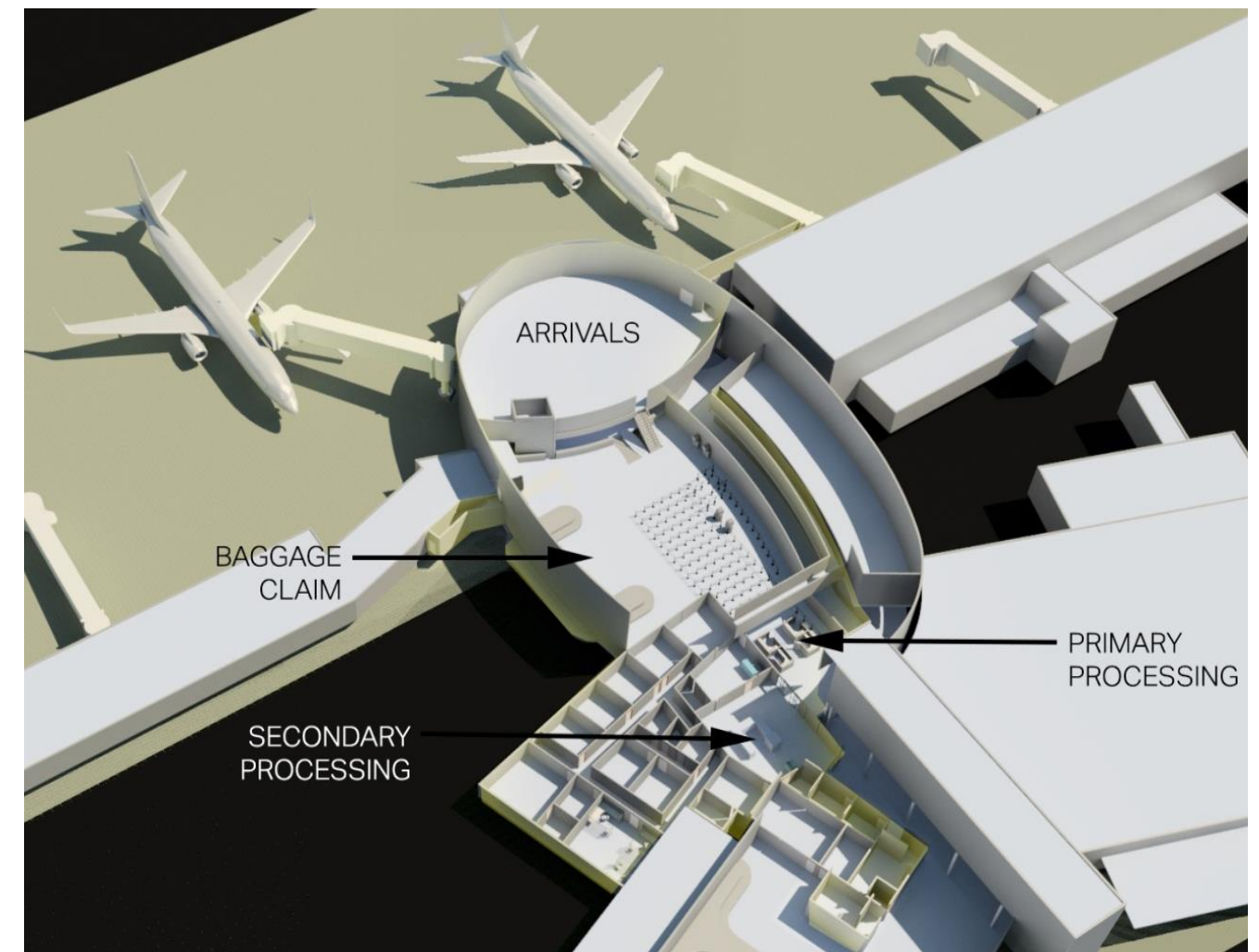


Figure 24 Central Terminal Area Option C Rendering

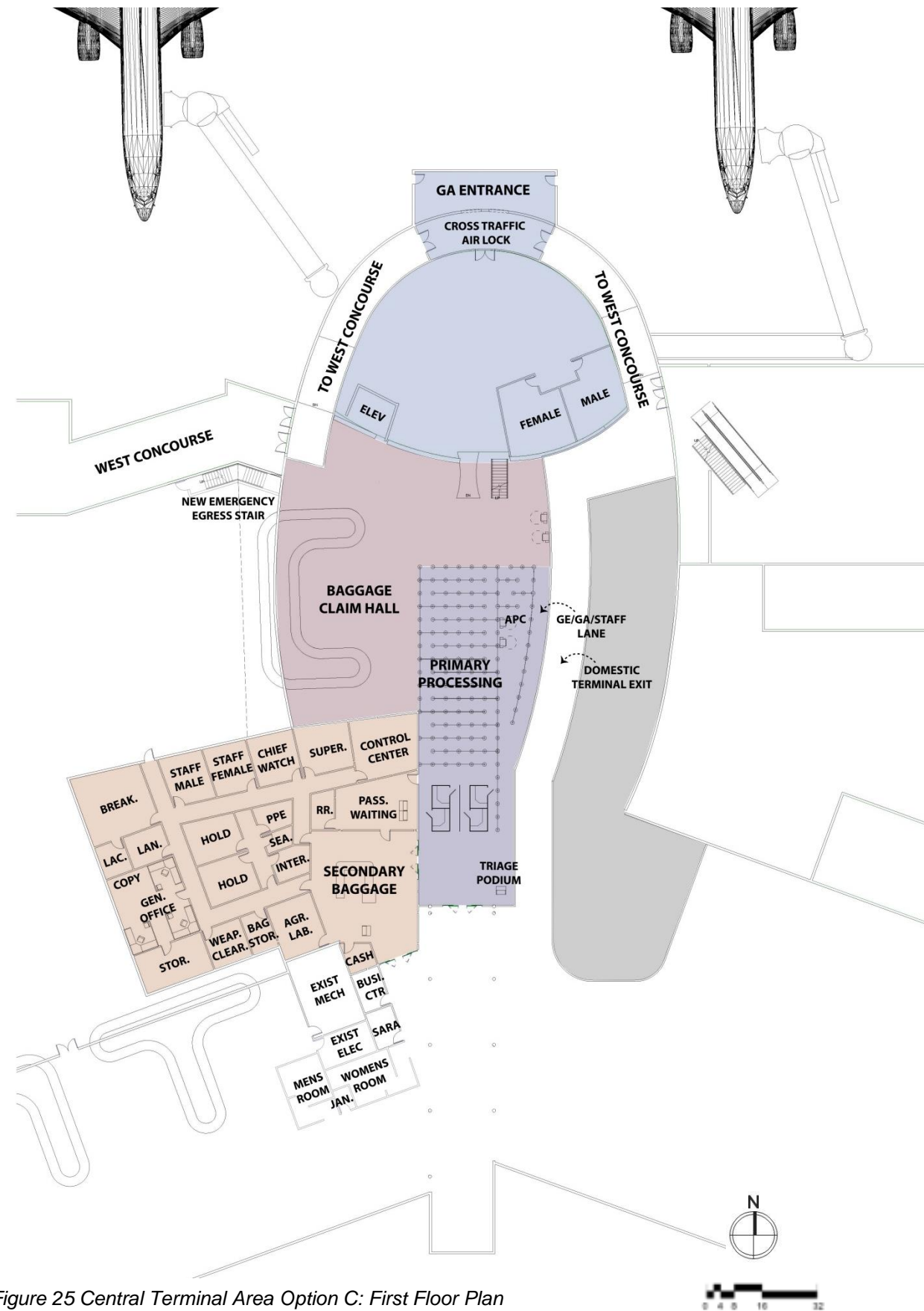


Figure 25 Central Terminal Area Option C: First Floor Plan

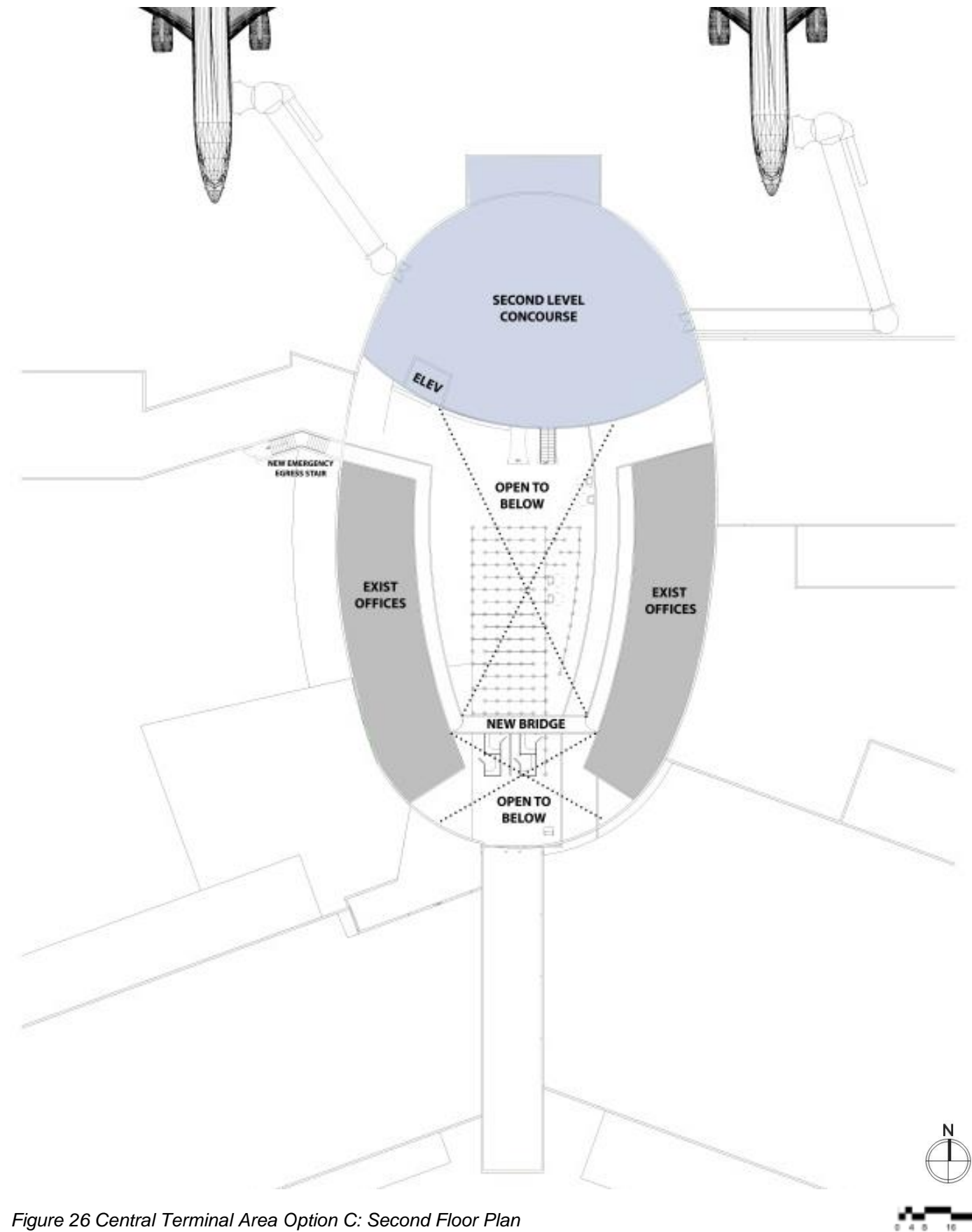


Figure 26 Central Terminal Area Option C: Second Floor Plan

4.2.4 Location 1: Central Terminal Area - Option C Derivatives

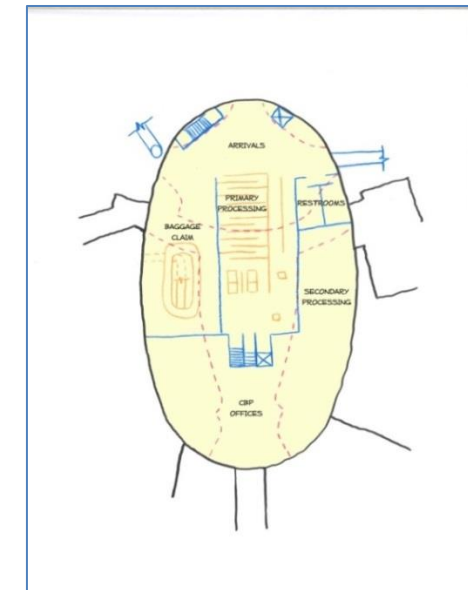
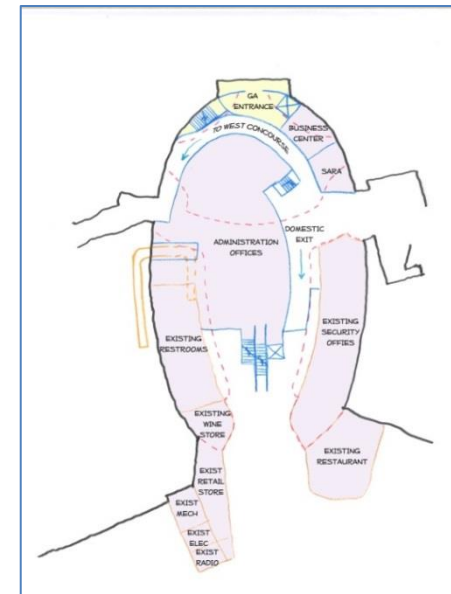
- Option C Derivatives- To Be Determined-> \$18M – \$25M, approximately 18 months construction

Various derivatives of Option C were developed as this concept most fully utilizes the available space within the Central Terminal Area to meet CBP design requirements, provide an adequate level of customer service, include expansion capability and incorporate airside amenities such as a business center and a SARA.

Derivative #1, outlined in Figure 27, envisions CBP and baggage claim services located on a fully filled in second floor with new administrative offices constructed on the first floor. In this This derivative maintains many of the existing first floor functions, includes a SRA and business center for customers and maintains the connection between the east and west concourses. General aviation passengers will have an elevator to transport them to the second floor for processing and passengers will utilize a stairway to take them down to the first floor to exit the Customs Facility.

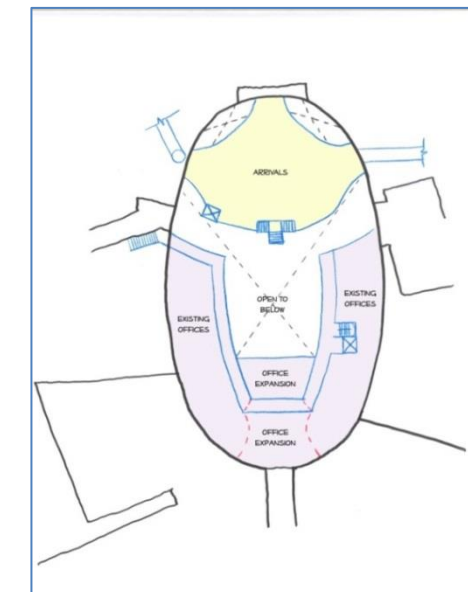
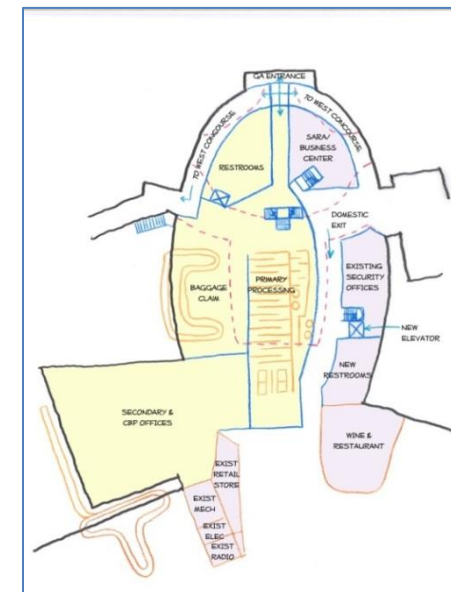
Derivative #2, outlined in figure 28, envisions CBP services and baggage claim services on the first floor with existing administrative offices maintained on the second floor via a connecting bridge and office expansion. Portions of the second floor will remain open. Passengers will arrive on the second floor within the northern portion of the Central Terminal Area and access the Customs processing area via a central stairway. Under this derivative CBP offices and secondary processing will need to be accommodated in a western addition to the Central Terminal Area similar to Option C.

These derivatives of Option C show methods of balancing the need for a permanent customs facility while maintaining operations and administrative functions within the Central Terminal Area. A final design concept will need to be established before entering the design phase for this project.



Floor 1, Floor 2


Figure 27 Central Terminal Area Option C: Derivative 1



Floor 1, Floor 2

Figure 28 Central Terminal Area Option C: Derivative 2

 Customs Facility

 Airport Functions

4.3.1 Location 2: West Terminal Addition - Option A

- Option A – \$36M – at 18 months Construction

Option A on the west is an addition to the back side of the west concourse as a baggage first facility (see Figure 27). It will use the west concourse gates as flex gates by cordoning them off during an international arrivals flight. It also gives the option to use one or both gates for international arrivals. Passengers will enter a sterile corridor on the back side that drops them into the bag claim area of the customs facility. Passengers will then claim their bags and move towards primary processing (see Figure 30). Here, they have the option to proceed through primary processing as usual, or through the Automated Passport Control Kiosks. There would also be a lane for Global Entry (GE) for accelerated processing. The GE lane will also be available for use by GA passengers. Once their documents are processed passengers would exit back into the Main Terminal at the western side of the Central Terminal Area. Passengers that require additional processing would proceed to the waiting area for secondary screening. This new building will also house a SARA and business center on the airside of the west concourse that will be accessible to all departing or domestic arriving passengers. This option utilizes the existing apron and repurposes the existing passenger boarding bridge locations; however the bridges will need to be replaced to accommodate ADG IV aircraft. As the gates are at the west end of the terminal there is excess pavement available and adjustments to adjacent gates will not be a significant issue. However, this option is in a location that is expected to significantly impact existing utilities.

- Pros

- New Construction (Updated)
- One Level
- Baggage Claim First Facility
- Directly connected to rest of terminal
- Airside SARA/Business Center
- Dedicated International Concourse
- Kiosks and Global Entry Provided

- Cons

- New Construction (Cost)
- Displaced 'Ready' Parking
- Modular Office Trailer displaced
- Infrastructure Impacts
- Fire protection service impacts
- Service Vehicle Access rework
- No curbside for GA
- Attached to old unimproved West Concourse
- No room for simultaneously domestic/international flights

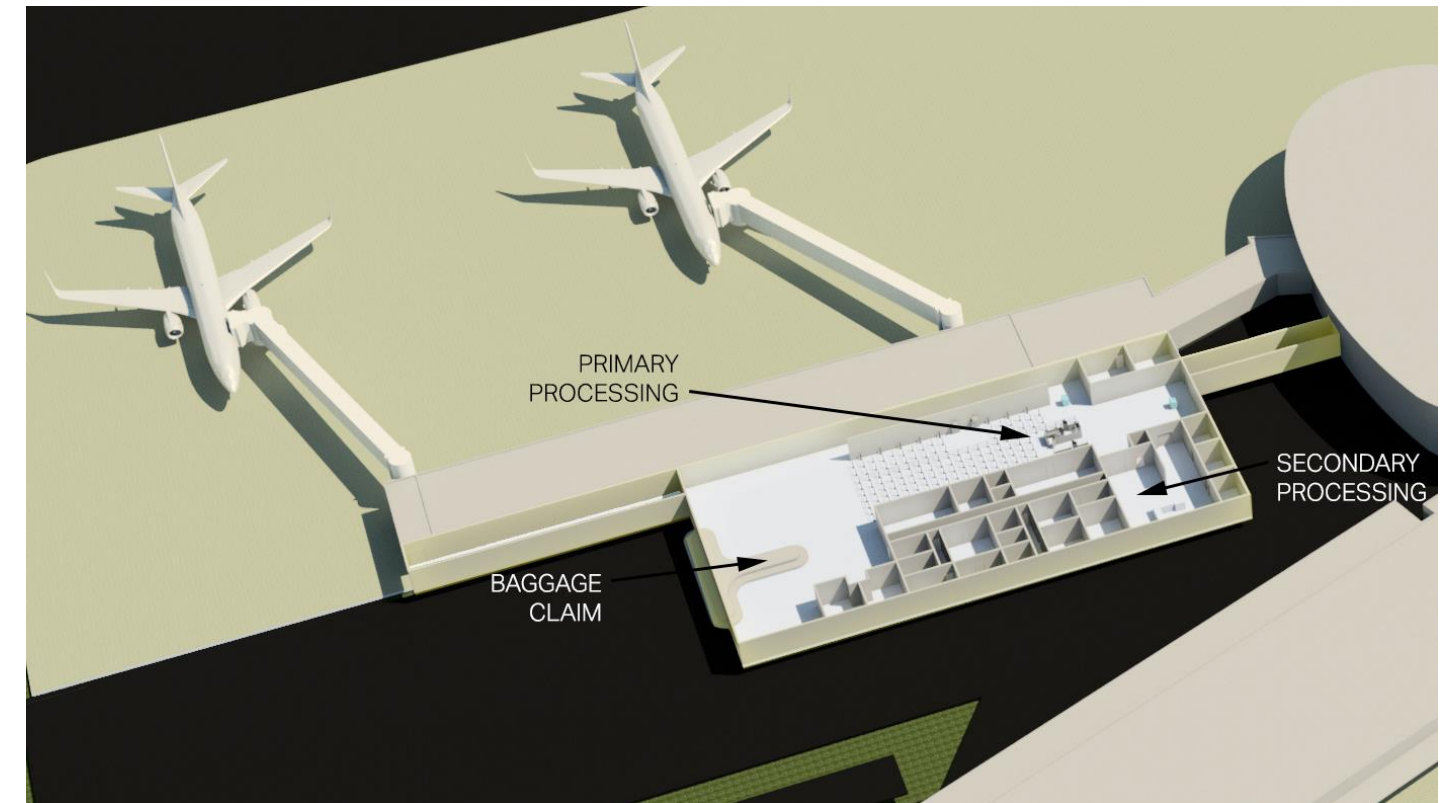


Figure 29 West Terminal Addition Option A Rendering

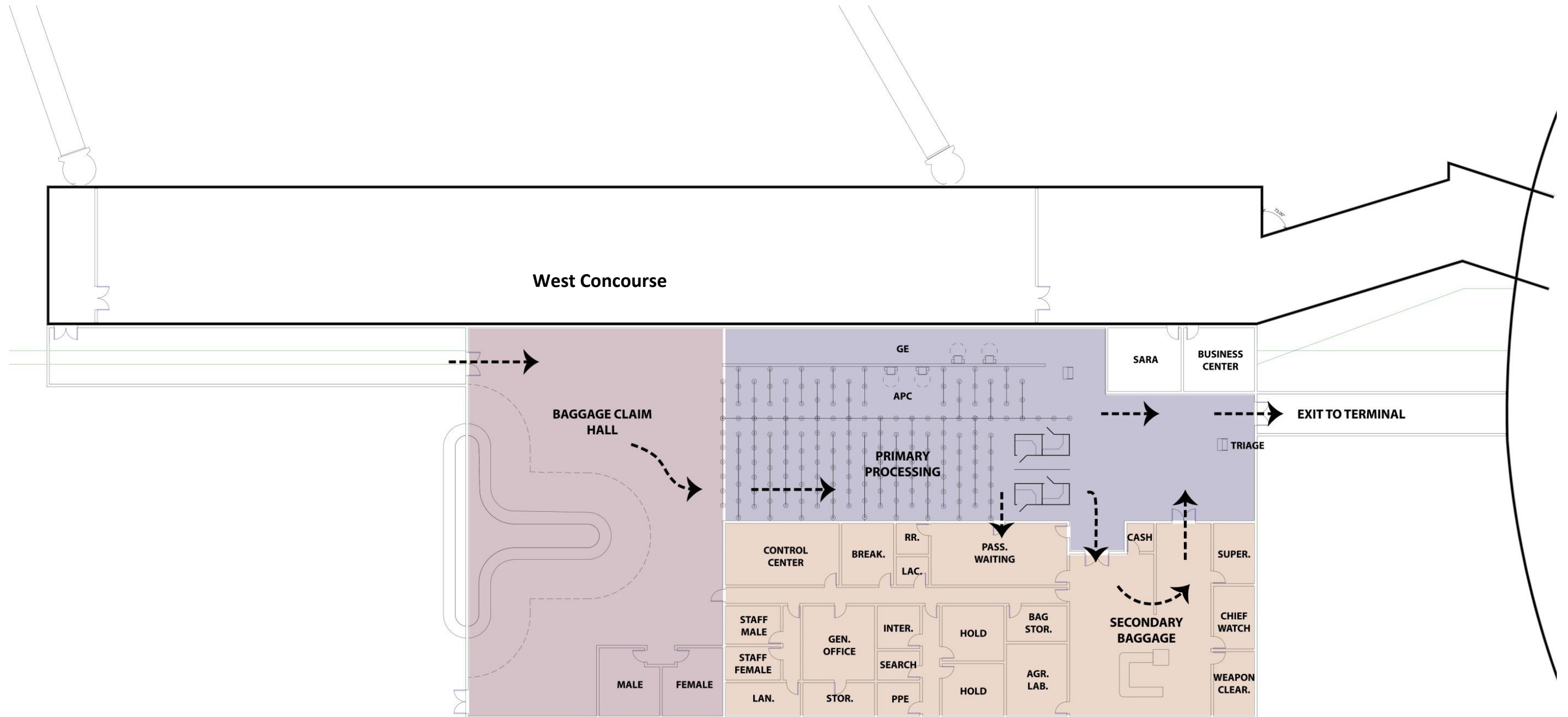


Figure 30 West Terminal Addition Option A: Floor Plan



4.3.2 Location 2: West Terminal New Construction - Option B

- Option B – \$40M – at 12 months Construction

Option B on the west side is a stand-alone baggage first facility in a separate building from the rest of the terminal (see Figure 31). This option will have two gates with Passenger Boarding Bridges or possibly ground loading that feed into a sterile corridor which empties into the bag claim area. Passengers then claim their bags and move towards primary processing. Here, they have the option to proceed through manned primary processing, or through the Automated Passport Control Kiosks (see Figure 32). There will also be a lane for Global Entry accelerated processing. The GE lane will also be available for use by GA passengers. Passengers exit through the curbside waiting area for pick up, or have the option of walking back into the Main Terminal for car rental or a connecting flight. This option adds two new gates in a stand-alone facility extending due west of the existing terminal. Due to the proximity to the west concourse existing aircraft gate locations will need to be adjusted to accommodate the new gate positions associated with the new facility, including potentially new passenger boarding bridges depending upon the layout. New pavement will also need to be added to remove the turf islands that provide separation between the existing apron and Taxiway S, extending the apron between the existing terminal to the west will also be required. Reconfiguring the landside pavement for vehicular circulation for passenger arrival and departures is also necessary.

- | | |
|--|---|
| <ul style="list-style-type: none"> • Pros <ul style="list-style-type: none"> • New Construction (Updated) • One Level • Baggage Claim First Facility • Directly connected to rest of terminal • Dedicated International Concourse • Kiosks and Global Entry Provided | <ul style="list-style-type: none"> • Cons <ul style="list-style-type: none"> • New Construction (Cost) • Sterile Corridor SF • Displaced 'Ready' Parking • Would Displace Sheltair • Attached to old unimproved West Concourse • No room for simultaneously domestic/international flights • Main Electrical Service Impacts • Possible Septic System Impacts • Main Gas Service impacts • Fire protection service impacts • Service Vehicle Access rework • No curbside for GA • No SARA or Business Center • No room for domestic flights simultaneously with international in West Concourse |
|--|---|

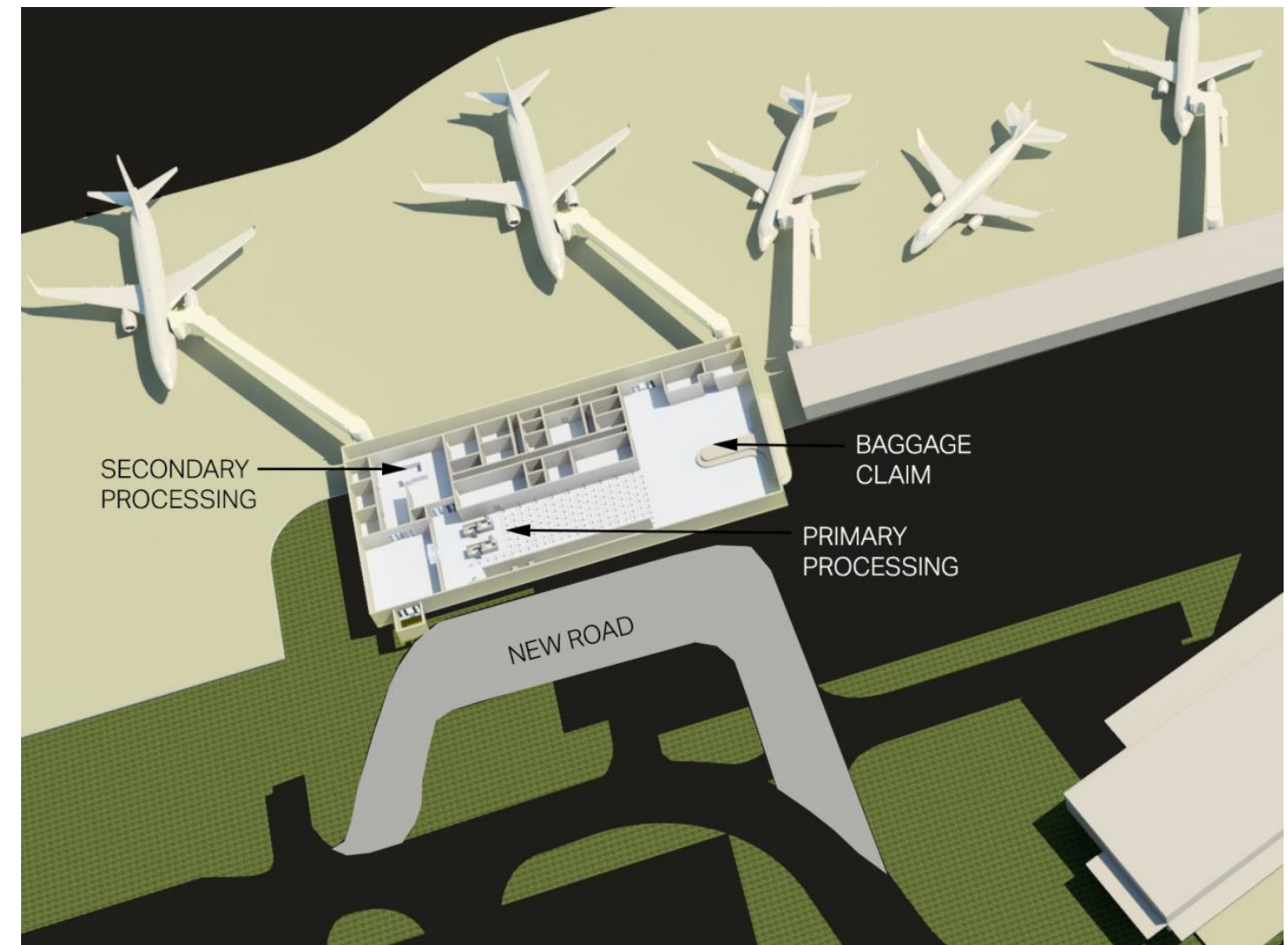


Figure 31 West Terminal New Construction Option B Rendering

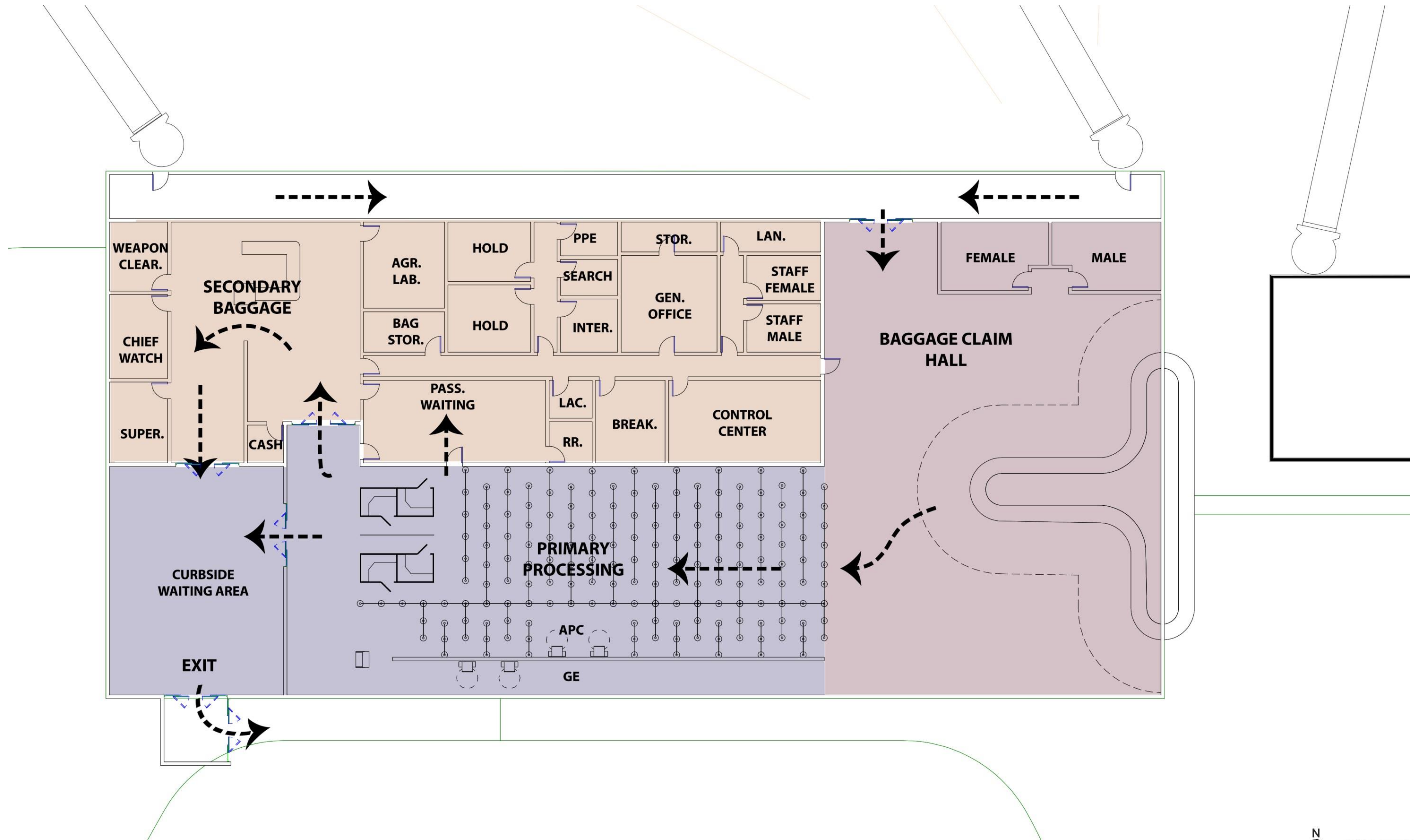
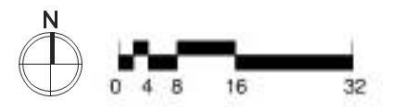


Figure 32 West Terminal New Construction Option B: Floor Plan



4.3.3 Location 2: West Terminal New Construction - Option C

- Option C - \$37M – at 12 months Construction

Option C takes advantage of adding additional gates and a curbside comparable to Option B and still being connected to the old terminal similar to Option A (see Figure 33). This option has two gates with PBBs connected via a fixed section into a sterile ramped corridor that empties into the bag claim area. Passengers claim their bags and move towards primary processing. Here passengers have the option to proceed through staffed primary processing, or through the Automated Passport Control Kiosks (see Figure 34). There is also a lane for Global Entry which can also be used for GA passengers. Passengers then either exit or are directed to Passenger Waiting or Secondary Baggage for more screening. They then proceed into the Curbside Waiting Area for pick-up, or walk through a corridor connected back to the original terminal for car rental or connecting flights.

- Pros

- New Construction
- New Curbside
- One Level
- Baggage Claim First
- Site grading minimal
- Connection back to terminal
- Can accommodate inbound and outbound international
- Kiosks and Global Entry Provided

- Cons

- New Construction (Cost)
- Displaced 'Ready' Parking
- Service Vehicle Access is limited
- Length and cost of SCS
- No SARA or Business Center
- Attached to old west concourse
- Would Displace Sheltair
- Encroaching on Leased Spaces
- Current vehicle exit eliminated

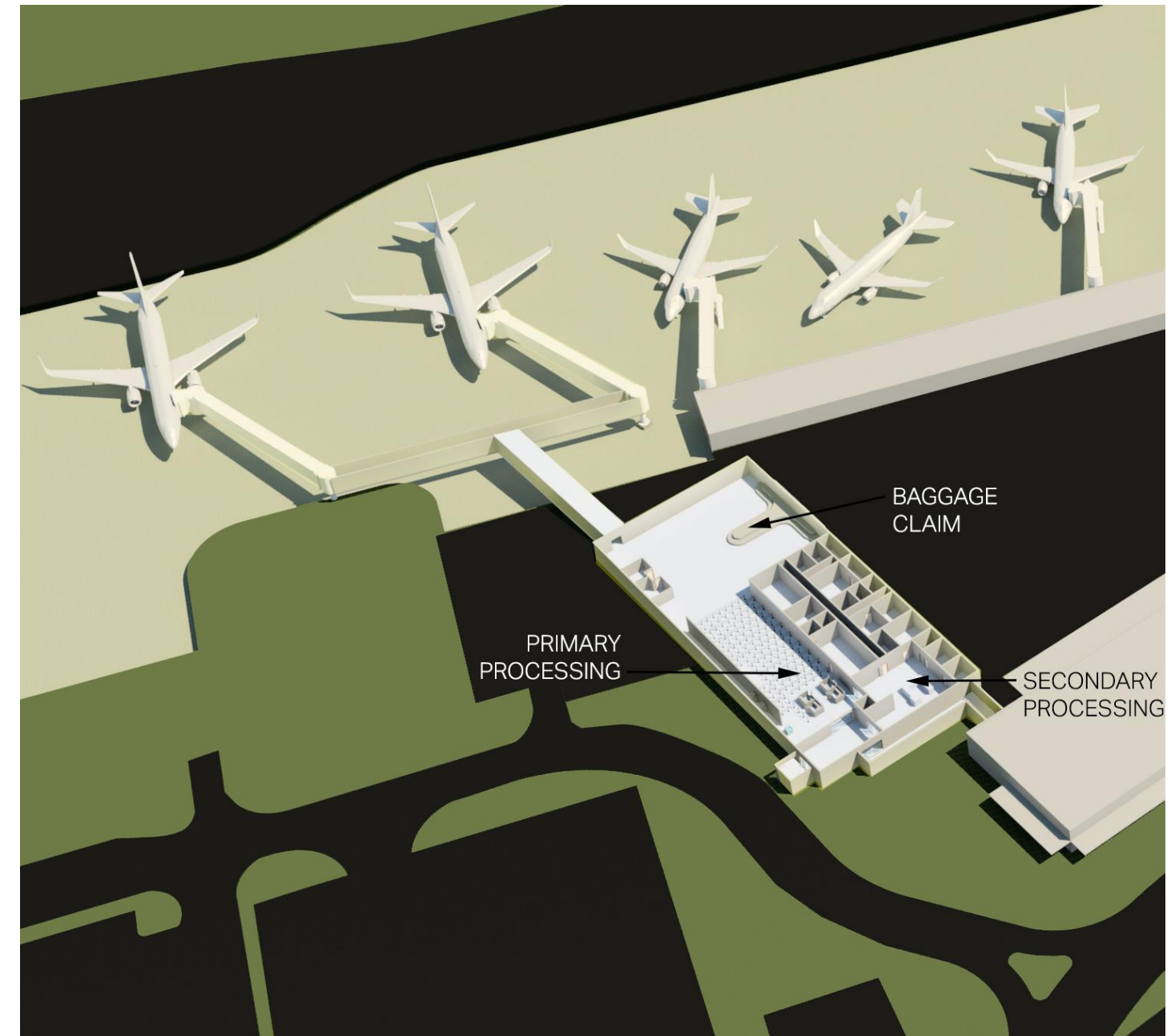


Figure 33 West Terminal New Construction Option C Rendering

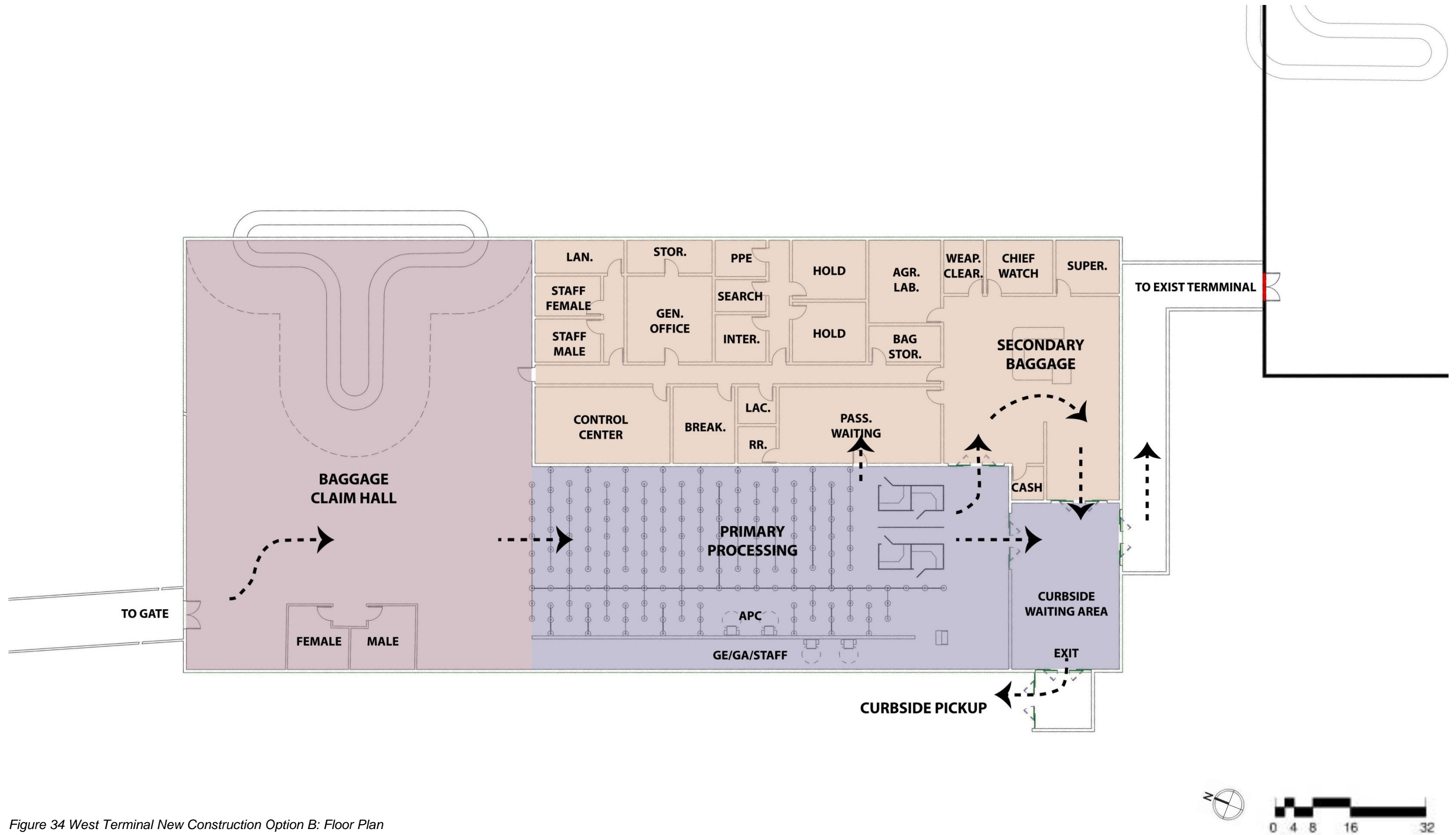


Figure 34 West Terminal New Construction Option B: Floor Plan

4.4.0 Location 3: North Terminal New Construction Option

Summary

Our assessment for development of the north side of the airport includes an initial phase for a customs facility that meets airport development criteria. Additional phases are also included that present a concept plan for full build out of the north side. Four phases of development are considered which increase the size of the terminal from 2 gates to 14 gates, then to 26 gates, and the ultimate buildout of 49 gates. Each of the phases of development expands on the previous phase to minimize disruption to existing operations. The North End development provides room for the airport to systematically grow for the future, while minimizing or reducing impacts to the existing community. The first phase relocates the compost facility and gets utilities to the site and provides infrastructure for storm water management, septic and roadway improvements as necessary. It places a minimally-sized customs facility in the most ideal location for expansion and connection to the LIRR. The project is phased to allow a logical progression to expand the terminal, maximizing the capacity of the North end.



Figure 35 North Site Location and Potential Site for Relocation of Compost Facility

4.4.1 Location 3: North Site New Construction - Phase 1

- Phase I – \$ 72M – at 18 months Construction

Phase 1 is a maximum development two-gate customs facility that is separate from the main terminal on the south end of the property and is capable of handling two ADG IV aircraft for arrivals only (see Figure 36). This phase will require significant initial investment in utility and infrastructure. Its two gates will be accessed by PBBs ideally placed as to maximize the plane frontage on a building designed to expand. There would be surface parking available for patrons of the facility.

The facility provides limited aircraft rated pavement and circulation capability, as well as limited access through a single taxiway available for accessing Runway 15R or crossing to Taxiway B. The facility is positioned to allow for future expansion and preserves the space to install a parallel taxiway to the east of Runway 15R. This includes the addition of a taxiway pavement to service ADG IV aircraft west of Taxiway B to Taxiway W, transitioning into Taxiway G. Due to planned future traffic, Taxiway B may also require pavement overlays or pavement reconstruction to support the heavier aircraft and avoid circulating aircraft traffic that may not meet clearance requirements on Taxiway W.

- | | |
|--|--|
| <ul style="list-style-type: none"> • Pros <ul style="list-style-type: none"> • Proximity to LIRR and HUB • New Construction (2 gates) • Customs Facility GA and Commercial • Provides 'stake' at North End • Provides room for future expansion | <ul style="list-style-type: none"> • Cons <ul style="list-style-type: none"> • Customs Facility Only (Arrivals only) • New Construction (Cost) • Infrastructure Cost • Detached from Main Terminal Amenities • Timeline (not by 2019) • Requires new airfield pavement • Environmental review process |
|--|--|

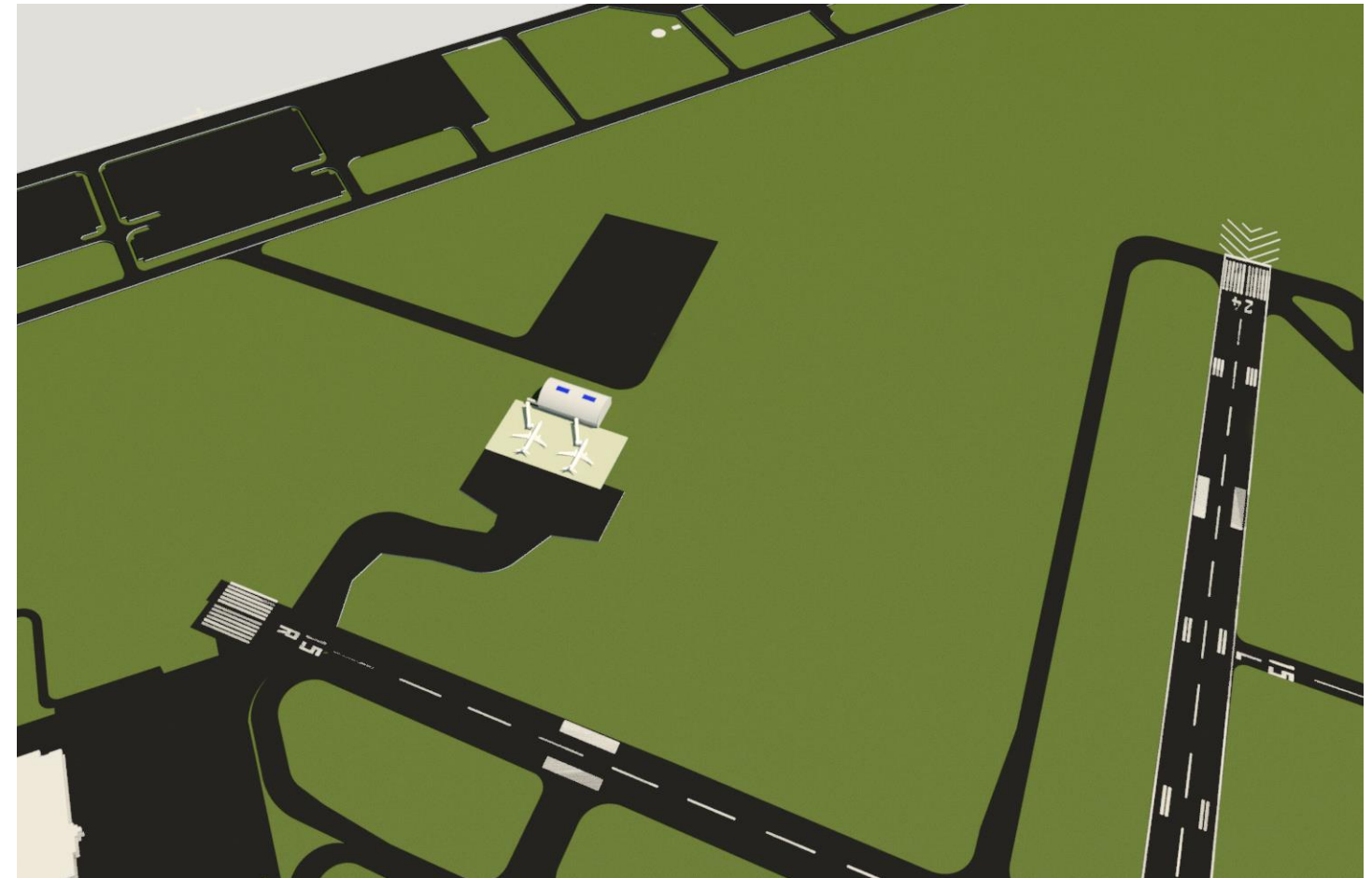


Figure 36 North Terminal New Construction Phase 1 Rendering

4.4.2 Location 3: North Site New Construction - Phase 2

Phase 2 expands the facility from the two-gate customs facility to a fully-functioning airport terminal with the addition of 12 terminal gates, creating 14 gates total (see Figure 37). The widest part of the terminal, or headhouse, would house a ticketing lobby, baggage claim, offices, a TSA checkpoint, and the customs facility. It would then branch out to the concourse with restrooms, retail space, and holdrooms for the gates. At this point, the terminal is large enough that it may require a parking garage in order to minimize a parking footprint.

The airfield pavement for the terminal is dramatically expanded to provide support operations at the new terminal facilities including expanded concrete hardstands and a taxiway for circulation around the terminal.

Airport airside facilities are also improved with the construction of the bypass taxiway into the runway 15R end, the construction of a parallel taxiway between the Runway 15R end and Taxiway D, and connection of apron pavement and taxiways into Taxiway D.

- Pros
 - Proximity to LIRR and HUB
 - New Construction (14 gates)
 - Customs Facility w/ major airport terminal allows for arrivals and departures
 - Fully independent facility
 - Provides room for future expansion
 - Additional airside pavement for improved traffic flow
- Cons
 - New Construction (Cost)
 - Infrastructure Cost
 - Timeline (Not by 2019)
 - Environmental Approval Process
 - Traffic limited to crossing Runway 15R

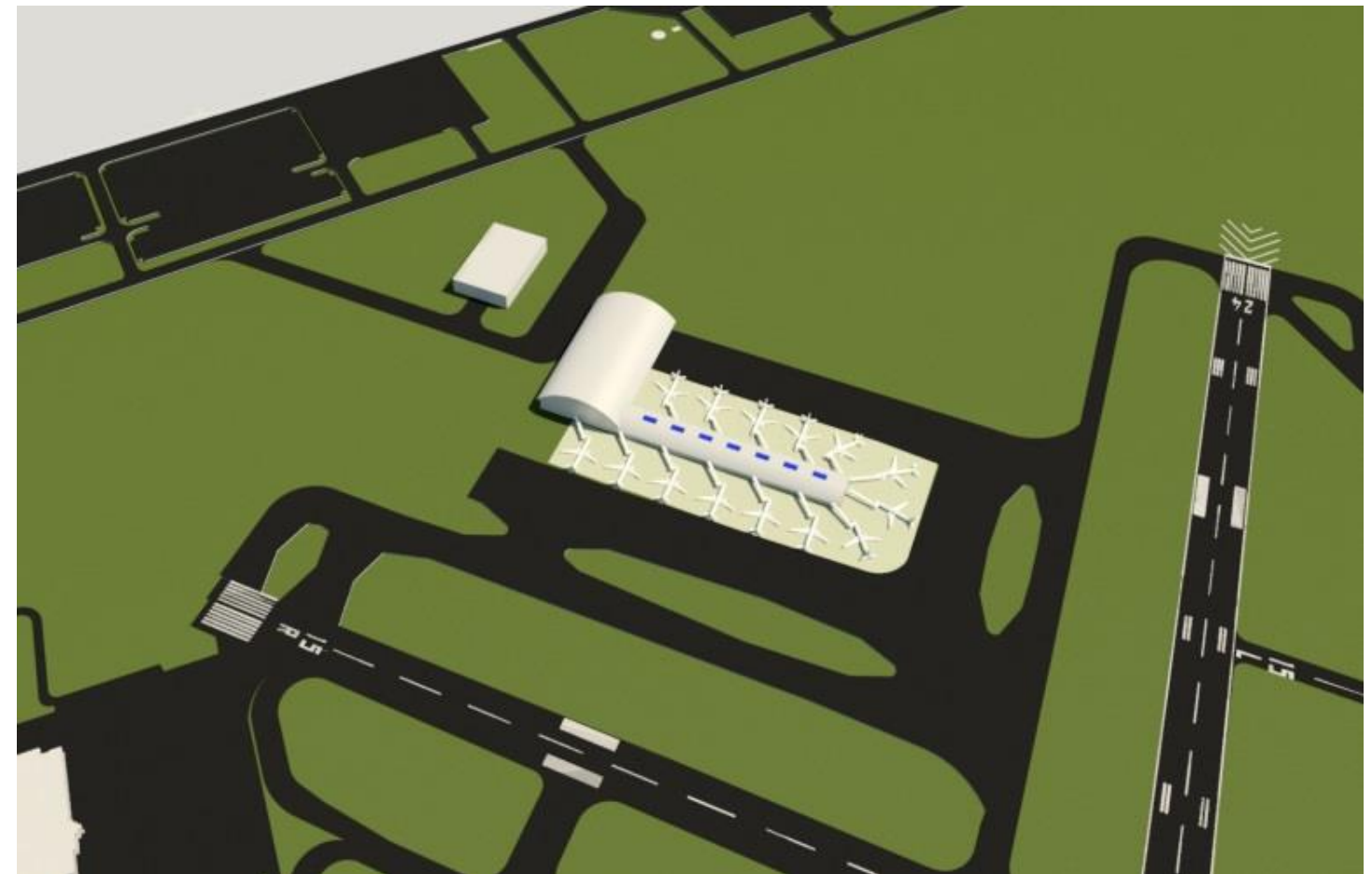


Figure 37 North Terminal New Construction Phase 2 Rendering

4.4.3 Location 3: North Site New Construction - Phase 3

The facility expands from 14 gates to 26 gates with the addition of a second concourse, nearly doubling in size (see Figure 38). The headhouse doubles in size as well adding more ticket counters, baggage claim carousals, offices, and TSA checkpoints as necessary. The parking garage would now double in size to accommodate the increase in passengers. A full length curb front is now established with multiple parking and driving lanes.

Taxilanes around the terminal are increased parallel to Taxiway D and the second concourse, with expanded and additional pavement tie-ins to provide aircraft circulation.

- Pros
 - Proximity to LIRR and HUB
 - New Construction (26 gates)
 - Customs Facility w/ major airport terminal allows for arrivals and departures
 - Fully independent facility
 - Provides room for future expansion
- Cons
 - New Construction (Cost)
 - Infrastructure Cost
 - Environmental Approval Process
 - Timeline (Not by 2019)

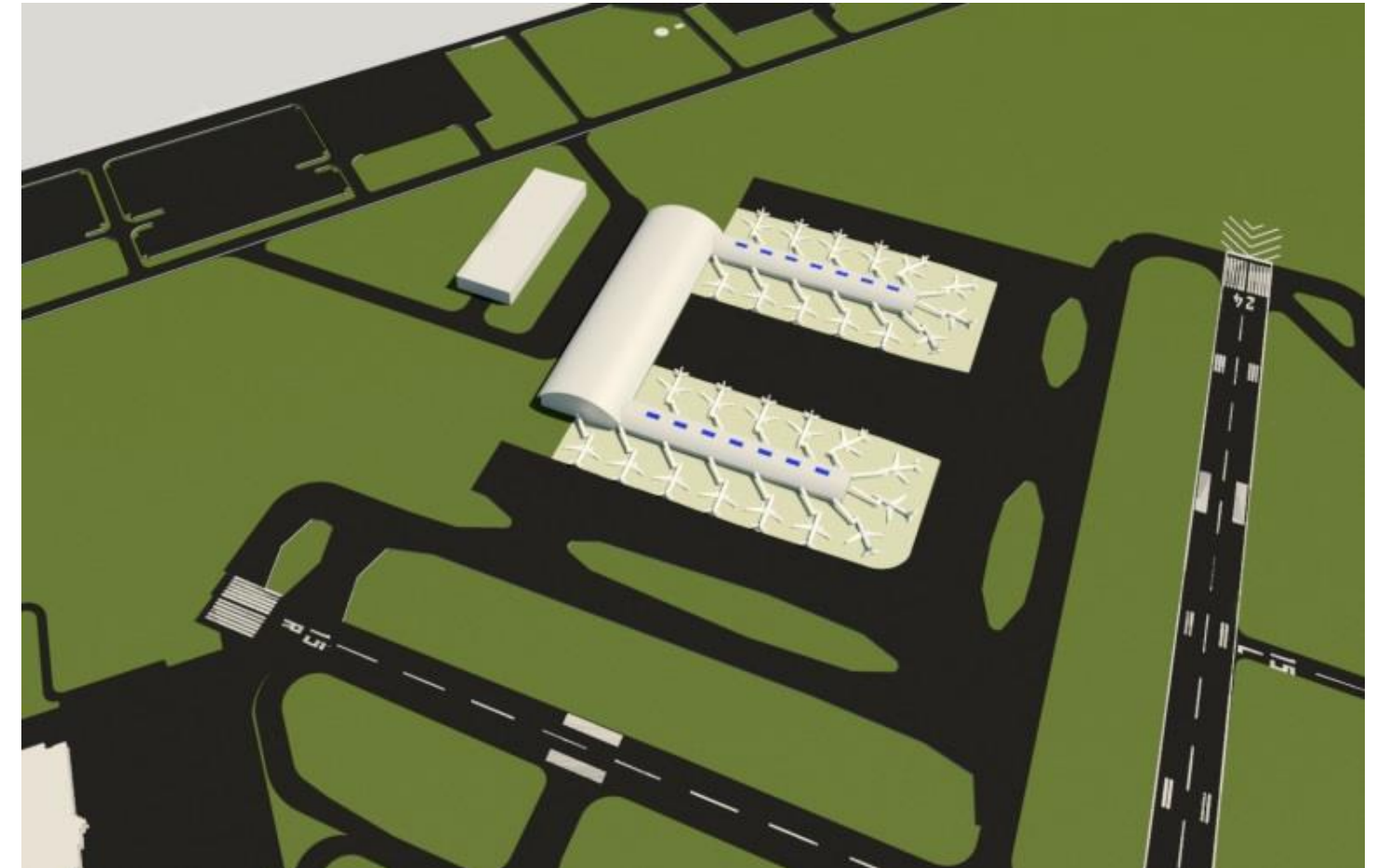


Figure 38 North Terminal New Construction Phase 3 Rendering

Location 3: North Site New Construction - Phase 4 (Ultimate)

The facility expands from 26 gates to 49 gates with the addition of third and fourth concourses (see Figure 39). The headhouse remains the same size, as it would have been constructed in a previous phase to be able to handle the final expansion. The fingers would expand to the Northeast and Northwest and may require additional TSA checkpoints. The curbside is at maximum capacity and may need to expand to a two-level operation.

Concrete hardstand pavement is provided between all concourses, with only a bituminous taxiway provided around the perimeter of the terminal. For airside airport improvements, the taxiway parallel to Runway 15R is lengthened to provide access to the full length of the new fourth terminal to minimize circulation conflicts. With the third concourse expansion along Taxiway D, there is the potential for a circulation conflict between inbound and outbound traffic on the east side of the concourse. An additional connection with the lengthening of Taxiway D is an option.

- Pros
 - Proximity to LIRR and HUB
 - New Construction (49 Gates)
 - Incremental Development as passenger demand increase
- Cons
 - Cost over \$1B
 - Infrastructure Cost
 - Timeline (Not by 2019)
 - Potential aircraft circulation issues

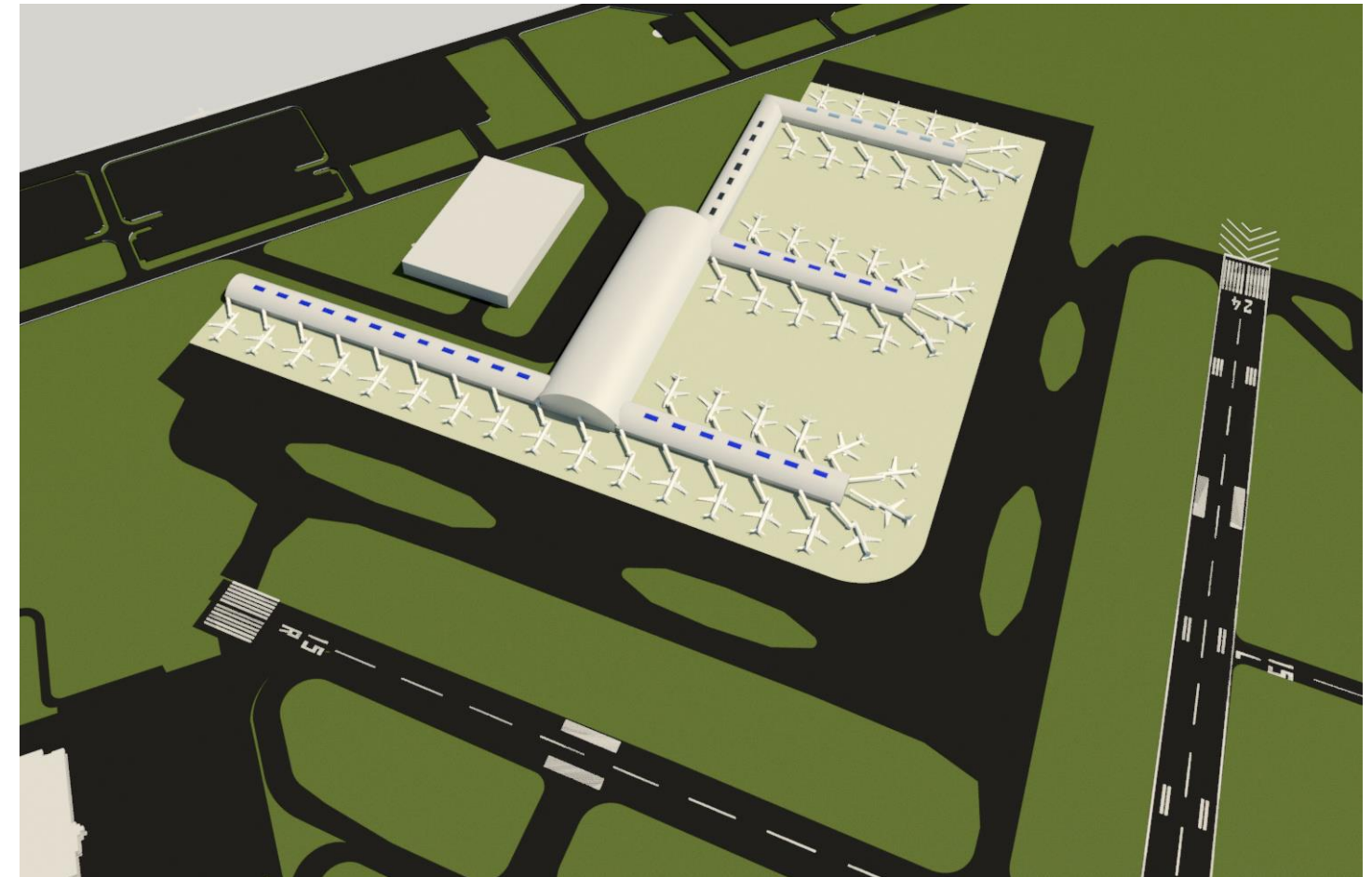


Figure 39 North Terminal New Construction Phase 4 Rendering

5. Evaluation Matrix

Alternative Evaluation Matrix									
Evaluation Criteria	Design Approach 1	Design Approach 2	CTA Option A	CTA Option B	CTA Option C	West Terminal A	West Terminal B	West Terminal C	North Site New Construction
Cost	●	●	●	●	●	●	●	●	●
Schedule	●	●	●	●	●	●	●	●	●
Meets Airport Development Criteria	●	●	●	●	●	●	●	●	●
Environmental Impact	●	●	●	●	●	●	●	●	●
Community Support	●	●	●	●	●	●	●	●	●
Alignment with Regional Planning Efforts	●	●	●	●	●	●	●	●	●
Passenger Convenience	●	●	●	●	●	●	●	●	●
● Good	1	1	5	6	6	2	3	3	1
● Fair	3	3	2	1	1	4	3	3	1
● Poor	3	3	0	0	0	1	1	1	5

6. Summary

Development of a customs facility on the north side of the airport would provide an anchor for further development in this area which would be advantageous given the proximity of the rail station. However, the cost of developing a customs facility in this portion of the airport is high because of the lack of existing landside and airside infrastructure. In addition, a key development criterion is construction of the facility beginning in 2019. It is estimated that the regulatory approval process for construction on the north side of the airport will exceed this date. Lastly, operating an arrivals only customs facility apart from the main terminal building will introduce a number of complications for commercial operations related to coordination of connecting passengers and baggage and not provide a high level of customer service to arriving international passengers. As a result of these issues the north side alternative was considered less favorable in a number of different rating criteria than the alternatives associated with the existing Terminal Building.

Alternatives considered along the southern portion of the East Concourse and associated with the existing Flight Service Station building were reviewed but considered non-viable because of cost, lack of expansion capability and interference with Southwest Airline operations.

A series of alternatives were considered to the west of the Central Terminal Area adjacent to and integrated into the West Concourse. A major drawback of all of these alternatives is a Rough Order of Magnitude (ROM) cost on the order of \$30M. West Concourse Option A would also have a significant impact on utilities that could make this option not feasible. West Concourse Option B is a separate structure to the west of the existing West Concourse with separate curbside access. Connecting international passengers would have to utilize an external walkway to access the Terminal Building. Existing passenger boarding bridges at the West Concourse may need to be adjusted to accommodate the new passenger boarding bridges installed as part of Option B. Option C is a hybrid of Options A and B providing both a new curbside and a connection to the existing Terminal Building through the baggage hall. Environmental approval of West Concourse options will most likely be longer than that for options considered for the Central Terminal Area, as the West Concourse options all create large external structures to the existing Terminal Building, two of which require development of new curbside access.

Three alternatives were considered for the Central Terminal Area portion of the Main Terminal Building. Option A takes advantage of the underutilized portions of the Central Terminal Area to create a two level customs facility totally enclosed within the existing Terminal Building. This alternative provides access for one passenger boarding bridge but expansion capability is limited. In addition, a two level facility is not as efficient as having all customs operations on one level. This alternative also utilizes the existing baggage carousel which is reaching the end of its useful service life. Option B is very similar to Option A, but relies upon the East Concourse for passenger boarding bridge access. This change necessitates filling in the central portion of the Central Terminal Area to accommodate the relocation of administrative offices, which is a relatively expensive modification. Option C and its derivatives combine the best elements of Options A and B by providing true expansion capability via access to two passenger boarding bridges. It also provides a more efficient design using the baggage first concept, one floor for all CBP activities and includes the installation of a new baggage carousel. While the environmental review requirements will be a bit more extensive than what might be required of Options A and B, the time frame for approval should not be materially different. ROM breakdowns of the costs for each option assessed are outlined in Appendix C.

Development of a customs facility on the north side of the airport has significant cost, schedule and customer service drawbacks. Options considered for the area west of the Terminal Building are also costly and include complications presented by utility infrastructure, gate adjacency issues and the complications associated with adding a second airport arrival curb frontage. The best options from a comparative cost, schedule and customer service perspective were alterations considered to the Central Terminal Area. Of the three options considered Option C, or a derivative thereof, provides the most efficient design and capability for future expansion, while providing equivalent cost and schedule to the other Central Terminal Area options considered.

The Central Passenger Terminal areas encompassed by the west concourse, Central Terminal Area and baggage claim and ticketing wings have deficient or obsolete mechanical, electrical and plumbing infrastructure, along with certain areas with failing roofs and an inefficient curtain wall structure. Upgrades/repairs to these systems are necessary whether a customs facility is developed within the Central Terminal Area or not, but timing these improvements as part of any upgrade of customs capability for the Central Terminal Area is advisable.