VOLUME 2

Tampa International Airport®

# 2012 AIRPORT MASTER PLAN UPDATE

BOARD APPROVAL DATE: APRIL 4, 2013

VOLUME 2 CONTENTS

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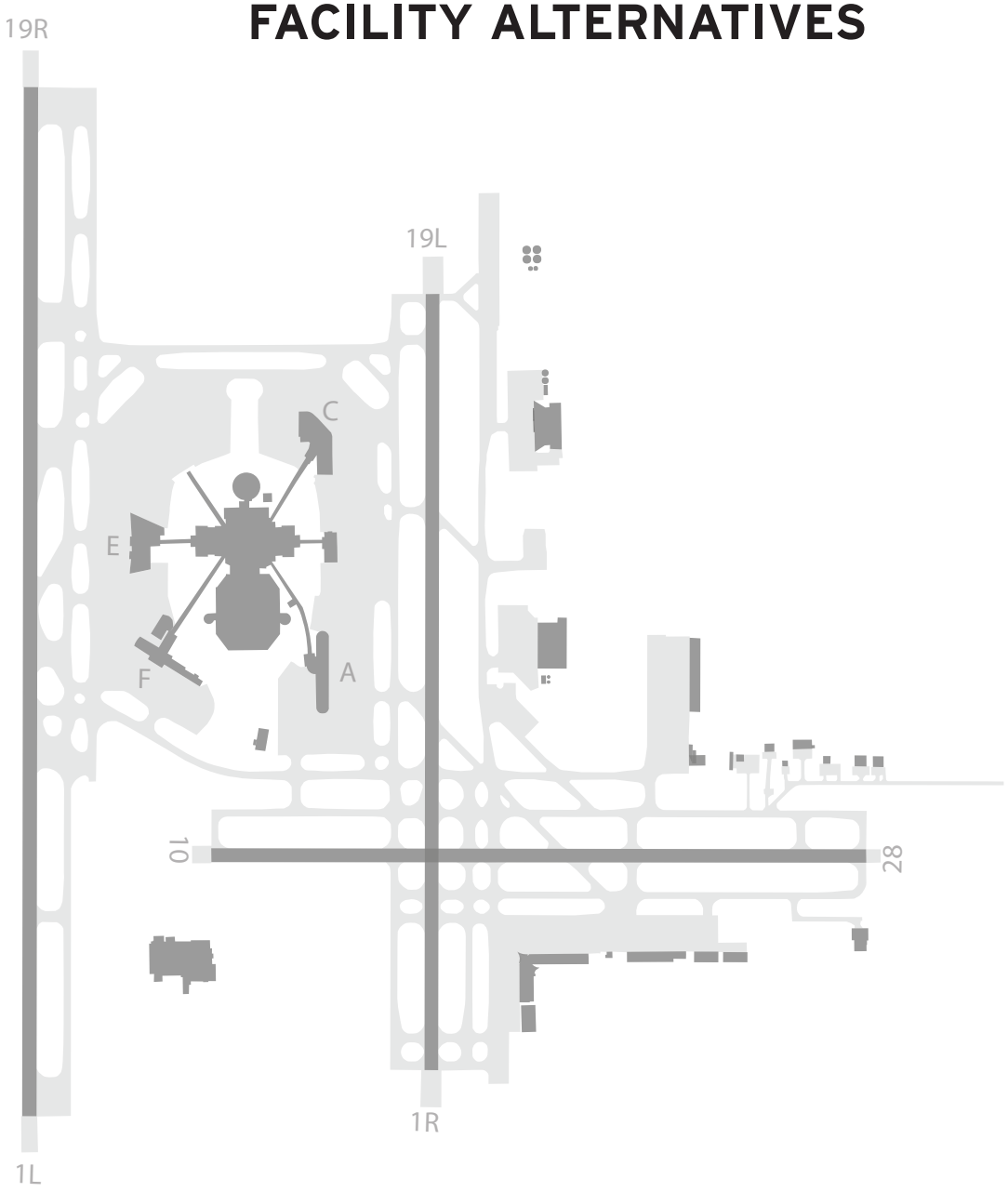
# SECTION 5 - AIRPORT FACILITY ALTERNATIVES



# 5 AIRPORT FACILITY ALTERNATIVES

The focus of this section is to provide an assessment of airport development alternatives at TPA. The assessment is organized based on sectors of development as opposed to the traditional approach which would typically assess single functional elements separately regardless of geographic location.

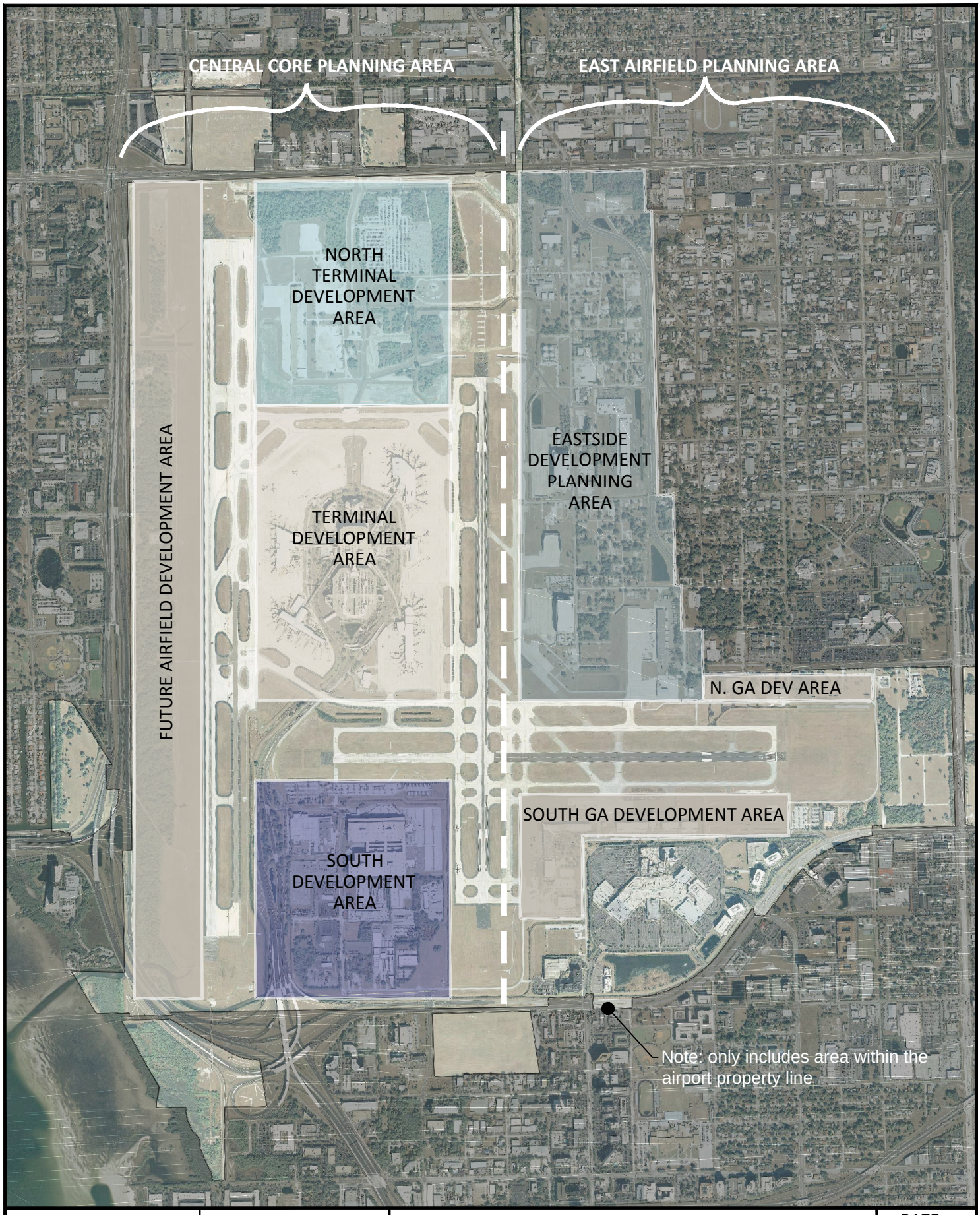
There are two "main sectors" at TPA; the, "East Airfield Planning Area" and the "Central Core Planning Area." The sectors and their subparts are defined as summarized in the bullets below. Additionally the organization of this chapter follows the same structure:

- East Airfield Planning Area
    - Eastside Development Planning Area
    - North GA Development Area
    - South GA Development Area
- Central Core Planning Area
    - North Terminal Development Area
    - Terminal Development Area
    - South Terminal Support Development Area
    - Future Airfield Development Area

For a graphical depiction of the main sectors covered in this analysis see **Figure 5.1**.

The reasoning for this approach is based on the fact that several major areas on the Airport have been the subject of specific sector development planning as a part of the Master Plan Update. These areas include the Eastside Development Planning effort done for a large area east of Runway 1R/19L and north of Runway 10/28 as well as the South Development area located south of Runway 10/28 between the parallel runways. At the same time a considerable planning focus has been aimed specifically at addressing the future improvements to be undertaken in the Main Terminal Area, generally defined as the area south of Taxiway B, North of Taxiway J and between the parallel runways.

For this reason, the presentation of the airport alternatives analysis will be undertaken along a geographic location basis tied to the integrated development plans prepared for each location. Facility requirements and recommended improvements for airfield facilities were previously identified and addressed in Section 3, Airfield Facilities & Demand Capacity Analysis. All remaining components of the Airport will be addressed by whether they lie to the east of Runway 1R/19L (EAST AIRFIELD PLANNING AREA ALTERNATIVES) or west of Runway 1R/19L (CENTRAL CORE PLANNING AREA ALTERNATIVES). The East Airfield Planning Alternatives will be further divided into the Eastside Development Area and remaining development while the Central Core will be divided into discussion of the North Terminal Area, Main Terminal Complex and the South Development Area. Finally, the alternatives evaluation includes a section to address the overall airport Land Use designations for both developed and undeveloped areas of the Airport.

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# AIRPORT SECTORS

TAMPA INTERNATIONAL AIRPORT
TAMPA, FLORIDA

DATE: Jul 03, 2013

Figure: 5.1

C:\Temp\AcPublish_956\TPA_Airport Sectors Figure.dwg Airport Sectors Jul 03, 2013 - 9:47am

## 5.1 East Airfield Planning Area Alternatives

The East Airfield Planning Area describes the portion of the Airport that lies to the east of the alignment of Runway 1R/19L between Spruce Street on the south and Hillsborough Avenue to the north. Within this portion of the Airport is a wide mix of key airport facilities and support uses along with a significant portion of the under-developed or undeveloped acreage available for future expansion of aviation related uses and other activities.

As shown in **Figure 5.1**, the area contained within the limits of the East Airfield Planning Area is a large area, historically referred to as the Eastside Development Area. The area is comprised of property that was acquired as a part of the Drew Park acquisition program. The Eastside Development Area is generally bordered by Hillsborough Avenue on the north, Runway 1R/19L on the west, N. Hesperides Street and N. Lauber Way on the east and Runway 10-28 on the south.

Inside of these general boundaries the Airport has developed major airport and airline support facilities. Significant among these are the two large aircraft Maintenance Repair and Overhaul (MRO) hangars and support areas that serve as the headquarters of PEMCO World Air Services, all of the Airport's facilities serving the air cargo industry, and the majority of the HCAA airport support facilities including the airport fuel farm, airport maintenance area, airport police training areas, airport warehouse along with the airport surveillance radar, ground service equipment maintenance facility and a compressed natural gas fueling station.

Despite the extent of development of airport facilities that has already taken place in the Eastside Development Area, there remains approximately 145 acres of land that is currently undeveloped. The HCAA identified the need to develop a specific sector plan for the Eastside Development Area to address the future allocation of property in this area to meet forecast facility demand and to provide benefits back to both the Airport and the community as whole. That planning effort is incorporated as a distinct section in the East Airfield Planning Area effort.

The remaining area within the East Airfield Planning Area is comprised of property located along the north side of Runway 10/28 east of N. Lauber Way and south of West Tampa Boulevard, property along between the east end of Runway 10-28 and N. Dale Mabry Highway, land along the north side of West Boy Scout Boulevard and Jim Walter Boulevard south of Runway 10-28 and land located west of North Westshore Boulevard and the southern portion of Runway 1R/19L north of Spruce Street. Similar to the Eastside Development Area, the remaining portions of the East Airfield Planning Area consists of a mix of aviation related activities, some limited airport support activities and areas of presently undeveloped property. Key among the aviation related activities and uses in the remaining area are individual aircraft hangars located along the north side of Runway 10/28 in a non-commercial general aviation area and the extensive Fixed Base Operator (FBO) and general aviation aircraft MRO activities located to the southeast of the intersection of Runway 1R/19L and Runway 10/28. The first section of the alternatives analysis for the East Airfield Planning Area will focus on the conceptual realigned rail transit alignment which spans the whole Eastside Development Area, followed by the development plan for the Eastside Development Area.

## 5.1.1 Conceptual Realigned Rail Transit Alignment

The focus of this section is to discuss the potential alignment of the rail transit concept that has been considered in the Master Plan. Additionally, this section discusses the proposed corridor and the myriad of challenges and considerations that need to be made.

### 5.1.1.1 Background

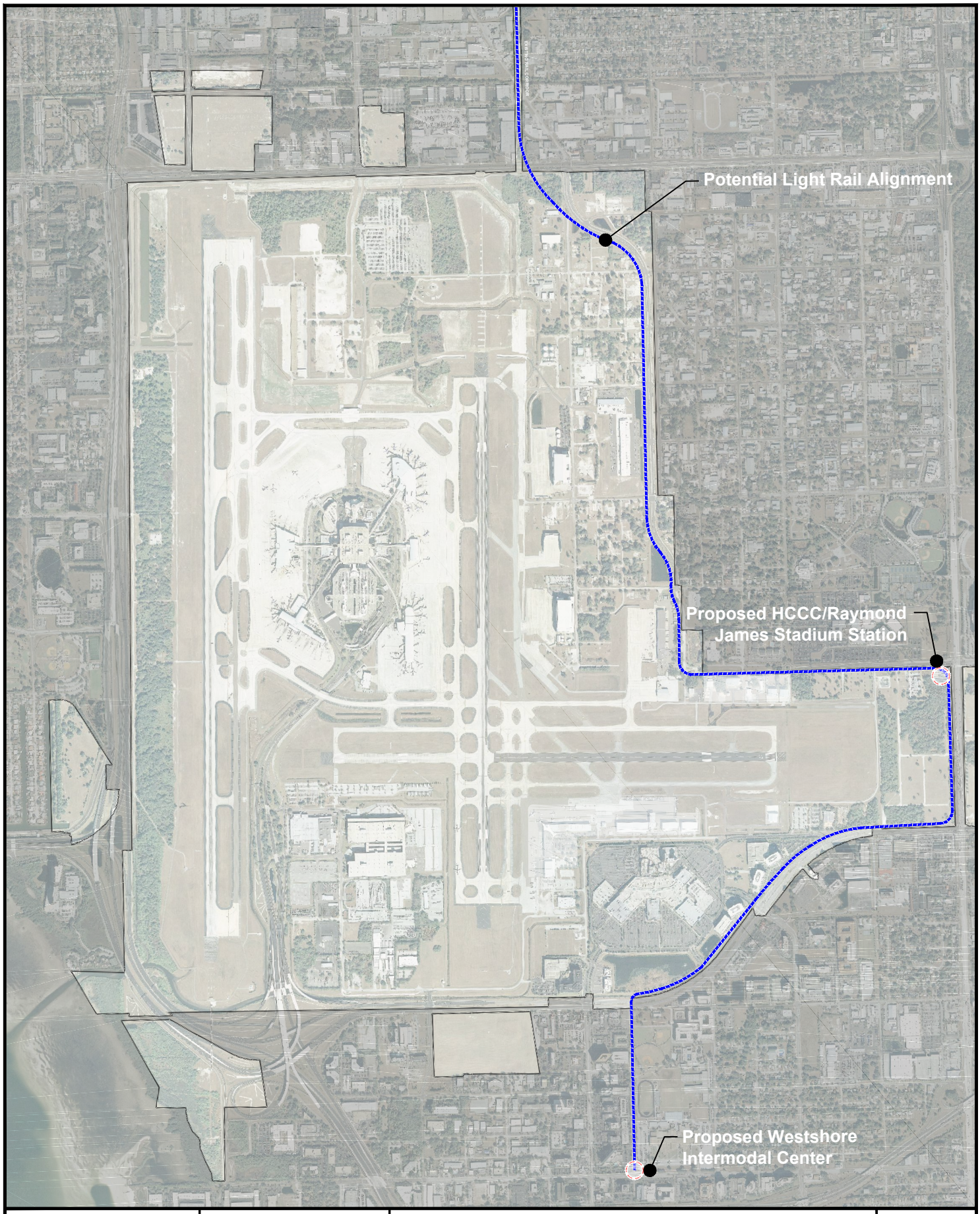
The concept of interfacing with other future modes of transportation, notably commuter or light rail, has been an element of planning at TPA for a number of years. The 2005 Master Plan depicted a light rail alignment that extended through the center of the proposed North Terminal and Main Terminal complexes connecting communities north and northwest of the Airport with the Westshore area and ultimately with Downtown Tampa. This alignment would entail a two track system along its entire length. with a right of way that would potentially vary from approximately 40 feet to as much as 75 or more feet. Whether the system would involve overhead catenary lines or not would depend upon the technology ultimately implemented. At the time of the 2005 Master Plan, the concept consisted of a light rail system with overhead catenary lines.

Early in the 2012 master planning update process, the HCAA made an independent decision that the proposed regional rail alignment from the 2005 Master Plan, running through the center of the Main Terminal Complex, generated significant challenges to accommodating other essential terminal area improvements. Because of these challenges, the HCAA determined that the alignment could not be accommodated through the terminal complex and an alternative alignment would need to be considered.

### 5.1.1.2 Revised Alignment

In response to the HCAA decision, the Hillsborough County Metropolitan Planning Organization (MPO) developed an alternative conceptual corridor for future regional commuter rail that consisted of a dual track at-grade alignment around the east side of the Airport. Decisions were still pending at the time of this Master Plan Update relative to the rail technology that might be involved. The range of potential technologies include traditional light rail, diesel light rail or even heavier commuter rail similar to Miami's Metro-Rail or Orlando's proposed SunRail system.

See **Figure 5.2** for a schematic depiction of the proposed alignment in the context of the entire airport. It should be noted that the alignment shown is preliminary in nature and is at a level of detail commensurate with the high-level planning conducted in a master plan.

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Potential Light Rail Alignment

TAMPA INTERNATIONAL AIRPORT
TAMPA, FLORIDA

DATE: Jun 10, 2013

Figure: 5.2

C:\Temp\AcPublish_7576\TPA_Proposed APM and Light Rail.dwg APM and Light Rail Alignments Jun 10, 2013 - 10:21am

#### 5.1.1.3 Alignment Overview

The proposed alignment both within and beyond the Eastside Aviation Development Area has been incorporated into the planning for the east side of the Airport and more specifically into the planning of the Eastside Aviation Development Area. Under the preliminary MPO concept, the future rail alignment north of the Airport would extend south via the current active alignment of the CSX rail and the inactive former CSX alignment that is presently owned by the HCAA. The corridor crosses Hillsborough Avenue approximately 675 feet west of the Hillsborough Ave/ Cargo Road intersection, entering the Eastside Aviation Development area at this point.

On the south side of Hillsborough Avenue the alignment is shown as angling to the southeast across the north side of the airport police facilities. The alignment is then shown to intersect the west side of Cargo Road at the north end of the retention pond, which is located at the northernmost end of N. Westshore Blvd. From this point the conceptual alignment continues at grade and is parallel to the west side of Cargo Road, crossing each of the east/west street alignments anticipated to remain. These east/west alignments include West Crest Ave., West South Ave., West Cayuga St., West Dr. Martin Luther King, Jr. Blvd, and West Ohio Ave., along with several drive access points to Cargo Road that could exist in the future

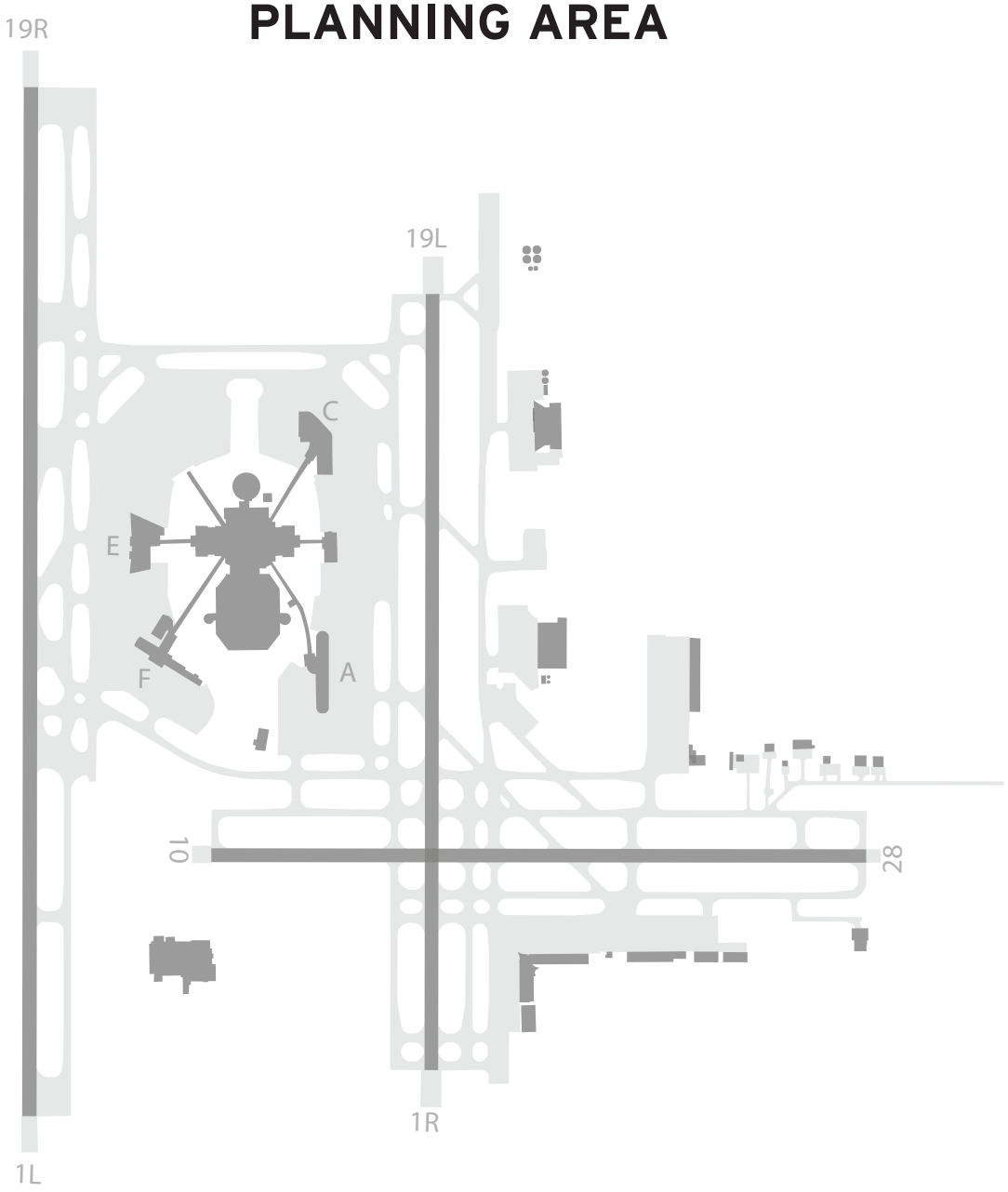
Given the anticipated frequency of train movements along the north and south-bound tracks, there will be some interaction between traffic generated from the development within the Eastside Aviation Development Area and rail movements. Although, given the length of trains and frequency, the impact of the rail system should be minimal. The interaction that does occur would likely be of most concern for the all-cargo operators at the southern end of the development area and for the fulfillment/distribution center development at the northern end of the site.

As the rail alignment proceeds south along Cargo Road it transitions from Cargo Road onto N. Lauber Way in the vicinity of the existing FedEx cargo facility. It then continues south to the intersection of N. Lauber Way with W. Tampa Bay Blvd where the corridor turns to the east. The corridor then crosses N. Lauber Way and continues to run parallel to the south side of W. Tampa Bay Blvd.

The section of dual track alignment along the south side of W. Tampa Bay Boulevard would cross the entrances to the existing general aviation hangars situated south of W. Tampa Bay Boulevard. The alignment would potentially impact the current parking areas of two of the existing facilities. The alignment would continue east crossing the access to the City of Tampa police substation and turn south along the east side of North Dale Mabry Highway. Based on a highly conceptual alignment provided by the MPO, the concept includes a potential transit station that was preliminarily placed on airport property in the southwest quadrant of N Dale Mabry Highway and W. Tampa Bay Boulevard. This proposed station was identified as the Hillsborough County Community College/Raymond James Stadium station. The location of this proposed station is in an area that is further discussed for a change in land use designation in a subsequent section of the report. However, the placement of a potential transit station on or adjacent to the site would still be consistent with the proposed new designation of the property. At present, the concepts and alignment planning are highly conceptual. The HCAA will need to stay involved in corridor planning efforts and in the placement of other transit facilities on or adjacent to its property.

From the proposed station site the rail alignment is depicted to extend south along the west side of N. Dale Mabry to the intersection of Boy Scout Road. At the intersection of these two major streets the rail alignment turns to the west along the north side of Boy Scout Road and continues to parallel Boy Scout Road for a distance of approximately 6,200 feet to the vicinity of the intersection of Boy Scout Road and N. Trask Street At this intersection the rail alignment is shown turning to the south along N. Trask Street for a distance of approximately 2,800 feet to the vicinity of N. Trask Street and W. Cypress Street, which is the site of the proposed Westshore Intermodal Center. **Figure 5.2** displays the alignment from a point approximately one-half mile north of the Airport to the conceptual location for the Westshore Intermodal Station.

# EASTSIDE DEVELOPMENT PLANNING AREA



## 5.2 Eastside Development Planning Area

Associated with the planning of future facilities in the areas east of the alignment of Runway 1R/19L is the preparation of a coordinated and unified development plan for the former Drew Park acquisition area which for reference purposes will be referred to as the East Airfield Planning Area. This key element of the master planning process for Tampa International Airport (TPA) was intended to determine the highest and best aviation related development for remaining undeveloped or under-developed lands that have been acquired by the HCAA. The largest single tract of developable property outside of the proposed North Terminal development area is located on the northeast side of the Airport within the area referred to as the Eastside Development Area. This area was evaluated during the previous Master Plan and the analyses conducted during that plan have served as a point of beginning for the current master plan update process.

### 5.2.1 Introduction

#### 5.2.1.1 Definition of the Eastside Development Area

The geographic area that is being reviewed under this analysis, the Eastside Development Area, consists of airport owned property situated to the north of the alignment of Runway 10/28, south of Hillsborough Avenue, to the east of Runway 1R/19L, and primarily to the west of Cargo Road/North Lauber Way with the exception of a tract of airport owned property immediately south of Hillsborough Ave. The total site size equates to approximately 415 acres of which approximately 145 are presently un-developed or under-developed. The area commonly referred to as the Eastside Development Area is depicted in **Figure 5.3.**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SCALE: 1" = 1,100'

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# Eastside Development Planning Area

TAMPA INTERNATIONAL AIRPORT
TAMPA, FLORIDA

DATE:
Jul 03, 2013

Figure:
5.3

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#### 5.2.1.2 Previous Planning Concepts

The 2005 Airport Master Plan identified two conceptual development plans (3B and 3C) for the eastside area that focused future aviation development on accommodating expanded dedicated air freight belly haul cargo facilities while maintaining aircraft maintenance facilities within their current land envelope. Fundamentally the two concepts were very similar, with the primary differences being whether large scale aircraft ramp area would be provided to the rear of the east-west oriented belly cargo building, and how the existing cargo apron is connected to Taxiway E.

Both plans showed expanded cargo facilities being developed north of the existing FEDEX facility between West Ohio Avenue on the south and West Cayuga Street on the north and oriented perpendicularly to the alignment of Runway 1R/19L. Under Concept 3C, aircraft access to three new air cargo buildings would be accommodated by way of a new taxiway that would extend to the east from Taxiway E north of the northernmost PEMCO MRO hangar and then turn to the south paralleling the east side of North Westshore Boulevard. Under Concept 3B, access would be provided to new cargo ramps and buildings with a new taxiway extending past the Run-up enclosure across North Westshore Blvd and then turning to the north. Both concepts included additional development north of West Cayuga Street consisting of a large Airport Rescue and Fire Fighting (ARFF) training facility having two burn pits and the reservation of approximately 30 acres north of the ARFF training facility for the relocation of the regional United States Postal Service (USPS) processing center from the south side of the airport to the Eastside Development Area. The 2005 Master Plan maintained the placement of a number of airport support facilities including the airport fuel farm, airport maintenance area and airport police training facilities in their existing locations and provided space for the future expansion of each. Provisions were also incorporated to accommodate a potential relocation of an existing TECO electrical substation, and relocation of the airport surveillance radar (ASR) into the area.

While the area immediately west of the existing FEDEX cargo facility was identified for cargo development, new facilities were focused to the north of the existing FEDEX facility rather than directly west of the existing cargo building. The area across the current cargo ramp from the FEDEX facility was designated for cargo facility development beyond the 20-year planning horizon, and in Concept 3B this ramp was bisected by a proposed taxiway extending from the cargo ramp past the southern PEMCO hangar to directly intersect Taxiway E.

Also delineated in the earlier development concepts was the construction of a four-lane, north-south aligned boulevard extending from Hillsborough Avenue on the north to the vicinity of Tampa Bay Boulevard to the south. This roadway was designed to support the movements of trucks and other vehicles anticipated to be generated by the proposed development plan in the Eastside Development Area. **Figures 5.4** and **5.5** display the two preferred development concepts for the eastside property from the 2005 Master Plan.

Several of the Plan's recommendations have been implemented in the period since the completion of the 2005 Master Plan and the start of the 2012 Update. Notable among these is the completion of the proposed North/South roadway to serve development in the Eastside Development Area. The roadway depicted in the plan was constructed and is now referred to as Air Cargo Road. This alignment provides excellent accessibility to the site and has a signalized intersection with Hillsborough Avenue along with a connection to Dale Mabry Boulevard by way of Tampa Bay Boulevard. The road is sized to meet all possible traffic that would be generated

from development on the eastside and is also designed to accommodate the requirements of tractor trailers.

Other facility improvements were also completed including the development of a new belly haul cargo building, although the building was oriented in the north/south alignment rather than the east/west orientation as depicted on the preferred concept plans. Additionally a second building for ground service equipment maintenance was constructed very close to the footprint of the original placement of the belly cargo building in the 2005 concept plans. Finally, the ASR was relocated to the Eastside Development Area at the northwest corner of Air Cargo Road and West Cayuga Street, rather than further to the north as depicted on the concept plans.

As noted, the concept planning done in 2005 provided a very valuable foundation for the planning effort that was conducted in 2012. A number of events have occurred in the since the completion of the previous study both on the Airport, such as the commencement of major MRO activity by PEMCO, and in the local, state and regional economies that triggered the desire to review and update the planned development within the Eastside Development Area. The subsequent sections provide background and the results of the re-evaluation.

## Figure 5.4

## Eastside Development Plan Alternative 3B

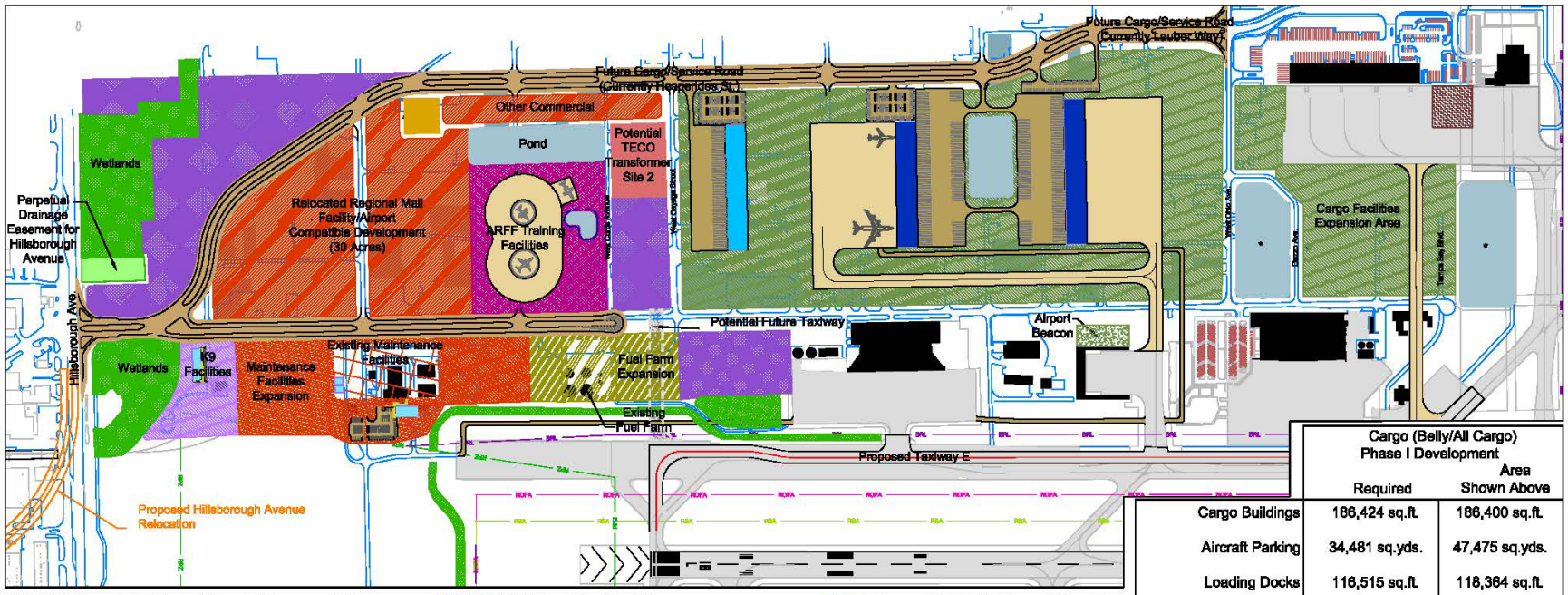
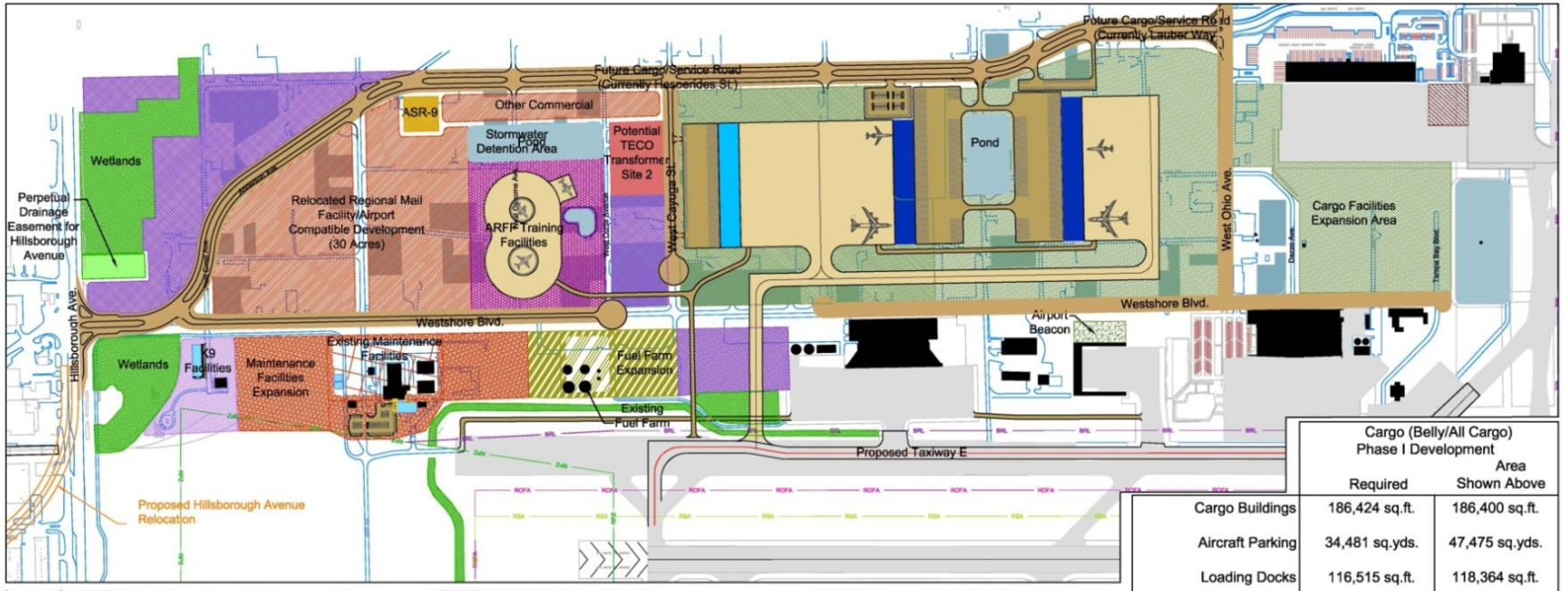


**Figure 5.5**

**Eastside Development Plan Alternative 3C**



#### 5.2.1.3 General Parameters Guiding the Planning Analysis

The analysis of potential development options in the Eastside Development Study Area was guided by several key parameters articulated by representatives of the HCAA. Primary among these parameters was the focus on identifying potential aviation related development that could be considered for location and/or expansion in the area consistent with a realistic appraisal of the likely demand for such uses and the ability to accommodate the activity. The Airport has a limited inventory of available development land on the east side of TPA and the HCAA deemed it essential to preserve and maximize the use of that property specifically for development of aviation uses that would either support the Airport or its current tenants or derive specific benefit from being located on the Airport.

Secondly, the HCAA noted that the Eastside Development Area had historically been the location for a number of key airport support facilities operated by the Aviation Authority. Those include the new facilities housing airline belly haul cargo operators and another new facility used for Ground Service Equipment (GSE) maintenance and storage. It was noted that unless there was a compelling operational or capacity reason to relocate existing support uses to a site elsewhere on the Airport the Eastside Development Area should remain as the primary location for key airport support uses

Third, the HCAA indicated that the planning analysis should assume that any parcels inside the boundary of the Eastside Development Area and in particular to the west of Air Cargo Road not presently owned by the HCAA would be acquired, when needed, to allow for development action. This was particularly the case for property located between Air Cargo Road, the alignment of parallel Taxiway E and the northerly extension of the Taxiway E centerline to its intersection with Hillsborough, Ave. There are approximately eight parcels within the boundary of the Eastside Development Area that have not been acquired by the HCAA.

#### 5.2.1.4 Current Eastside Aviation Related Development

The Eastside Development Area currently accommodates a number of airport related activity areas and uses. On the southern end of the Eastside Development Area are existing facilities serving dedicated air cargo activity at TPA. These include the operations of FedExand the more limited activity of Flight Express who are presently the two dedicated cargo operators at TPA. Global Aviation, a company that wet leases a mix of aircraft through their holdings of World Airways and North American Airlines, also occupies a stand-alone facility to the immediate south of the FedEx Cargo building and due west of Flight Express. Also located near the southern end of the Eastside Development Area is the southernmost of two large Maintenance Repair and Overhaul (MRO) hangars currently leased to PEMCO, which is an airport based provider of MRO services to the airline industry. The configuration of existing uses in the Eastside Development area was previously displayed in **Figure 5.3**.

Between the two PEMCO hangars is the Airport owned Ground Run-up Enclosure (GRE) that was constructed to reduce the impact of engine run-up noise on surrounding areas. This facility is utilized by PEMCO, the airport FBOs, and Hawker Beechcraft as part of their aircraft maintenance activities. To the north of the run-up enclosure is an open tract of ground that separates the run-up facility from the second large MRO hangar that is also leased by PEMCO and used as a part of their operations. Both PEMCO hangars and the GRE facility front onto Taxiway E, the parallel taxiway along the east side of Runway 1R/19L. East of the northern

PEMCO hangar is the belly cargo building, while to the northeast of the PEMCO hangar is a new ground service equipment maintenance building constructed in 2010. These facilities are separated from the PEMCO hangar by the partial alignment of North Westshore Boulevard and an undeveloped 15-acre tract of land.

Passenger airline belly cargo is handled through the relatively new multi-tenant facility fronting on Air Cargo Road and located south of West Cayuga Street and north of West Ohio Street. The belly cargo facility is connected to the secure portion of the airfield and terminal area by way of a dedicated tug road that extends through a tunnel beneath the runway safety area on the north end of Runway 1R/19L. Both the belly cargo and GSE facilities were constructed after the completion of the 2005 Master Plan Update and opened for operation in 2010. Existing airport owned property is located between the south end of the current belly cargo building and West Ohio Street and provides additional space for a southerly expansion of the belly cargo building.

North and west of the belly cargo building is the Airport's Ground Service Equipment (GSE) building. The facility is used for servicing and storage of GSE equipment by both airlines and third party aircraft servicing providers. The GSE building was built by the HCAA and opened in the spring of 2010. Airside access to the GSE facility is provided by the secure roadway that was noted in the preceding paragraph. Space for a future expansion of the GSE facility is located to the immediate west of the GSE building. This property is in the process of being acquired. East and North of the GSE facility at the northwest corner of the intersection of West Cayuga Street and Air Cargo Road is the Airport Surveillance Radar (ASR-9) facility (tower and rotating feed horn).

Several significant airport support facilities are situated along the west side of North Westshore Blvd. and north of the secure road that accesses the GSE and Belly Cargo buildings. From south to north these support uses consist of the Airport Fuel Farm, Airport Maintenance Facilities, Central Receiving Warehouse and finally, Airport Police K9 training facilities and affiliated uses. In the Spring of 2012 the HCAA constructed a Compressed Natural Gas fueling station on a site at the northeast corner of West South Ave and North Westshore Blvd. This facility is intended to serve both airport owned and tenant owned vehicles, public vehicles from other City/County departments, transit vehicles that operate using CNG, and other general public users.

Despite this concentration of airport/airline support uses and activities in the Eastside Development area, there remain a number of parcels that are either undeveloped or underdeveloped, that should be brought into a higher and more productive aviation related use. These parcels are, with one exception, all situated to the west of the alignment of Air Cargo Road and provide a total area of approximately 145 acres of developable area. Much of this available acreage is contained in four large tracts west of Air Cargo Road. These are briefly described in the following discussion.

The first tract is located between the southern PEMCO Hangar and the FEDEX facility, south of West Ohio Avenue and is comprised of approximately 11.2 acres. The second tract is generally bordered by West Martin Luther King Boulevard on the north, Air Cargo Road to the east, Westshore Boulevard on the west and West Ohio Avenue to the south. This area equates to approximately 33.1 acres subtracting out an existing detention basin. The third tract is located west of the Belly Cargo Building, north of West Martin Luther King Boulevard, east of Westshore Boulevard and south of the secure service road access to the belly cargo and GSE buildings. This parcel equates to approximately 15.7 acres. The final tract comprises approximately 56 acres

and is bordered by West Cayuga Street on the south, Air Cargo Road on the east and north and Westshore Boulevard on the west.

In addition to these large tracts there are other tracts that could also be developed such as the open ground between the existing GRE and the northern PEMCO hangar, a parcel to the immediate west of the GSE building or a tract to the immediate south of the belly cargo building. As previously indicated combined there are approximately 145 acres of land that are available for some form of development in the Eastside Development Area.

*Existing Eastside Development Area Zoning*

The vast majority of the East Airfield Development Area is zoned within the City of Tampa IG Industrial-General zoning district. The City of Tampa Zoning Ordinance states the purpose of the district as follows: *"This district provides primarily for areas of light manufacturing, wholesaling, warehousing, assembly or product processing, heavy equipment and vehicular repairs and other light industrial uses."* The district allows for a wide range of permitted and special uses[1]. The basic area provisions for the district establish a minimum lot area of 5,000 SF, a maximum building height of 60 feet, and a maximum floor area ratio of 0.75. A small portion of the far southern part of the East Development Area is zoned PD Planned Development generally encompassing the area where FedEx distribution facility is located.

*Existing Major Utility Infrastructure*

It should be noted that the Eastside Development Area was formerly a mix of residential and interspersed commercial uses with infrastructure originally designed to support a much lighter mix of land uses that those that have emerged on the property acquired by the HCAA. The sections below provide an overview of major infrastructure components in the Eastside Development Area

*Street and Roadway Infrastructure*

Roadway infrastructure, except for Air Cargo Boulevard, is becoming obsolete. The roadway system was designed primarily to low density residential standards, typically with insufficient pavement width or vehicle turning radii to accommodate larger vehicles. The current block and street pattern is not conducive to the large format building program anticipated for the area. There is likely more street right of way and affiliated street pavement in place than required to serve future land uses and as a result right of way vacation and pavement removal along with the reconfiguration of the former pattern of streets is anticipated.

Further, the roadways that remain will need to be upgraded to meet the requirements associated with heavier truck movements and the affiliated turning radii requirements of trucks up to and including semi-tractor trailers. It is also anticipated that some roadways will be truncated and cul-de-sac turnarounds capable of accommodating tractor trailer movements will

[1] Chapter 27, Municipal Code - http://library.municode.com/index.aspx?clientId=10132

be required. The land use concepts in subsequent steps of the planning process will provide a strategy for a more efficient street and access configuration in the future.

*Utilities*

See **Figure 5.6** for a general depiction of existing Eastside Development Area utilities, which include the following:

- *Water* - The major water mains that serve this area include a 12-inch water main located on West Hillsborough Avenue, a 16-inch water main located on Air Cargo Road, and a 12-inch water main located on North West Shore Boulevard. The 16-inch water main on Air Cargo Road was constructed with a series of 12-inch stubs that extend into the development area and can be extended as needed to serve the new development. A 24-inch water transmission main is also located in W Hillsborough Avenue; however this is not for local water service and no connection to the 24-inch main is anticipated as part of this Master Plan Update.

The City of Tampa water atlas maps indicate that water mains were installed as part of the original development of this area. Cast iron water mains, identified as C.I. or ENAM. C.J. and cement asbestos water mains are likely older water mains, and for planning purposes, will be considered for abandonment/removal. Water mains identified as D.I.P. are likely the newer water mains and will be retained.

- *Wastewate*r - The northern portion of this area is served by gravity sanitary sewers that are tributary to the Osborne Wastewater Pump Station, which is located near the southwest corner of West Osborne Avenue and North Lois Avenue. The tributary gravity sewers range in size from 8-inch to 24-inch diameter. The pump station discharges into two forced mains, a 12-inch and a 14-inch diameter, which flow in an easterly direction from the pump station.

The southern portion of the Eastside Development Area is served by gravity sanitary sewers that are tributary to the Dazzo Wastewater Pump Station, which is located just south of West Dazzo Avenue, approximately one block east of North West Shore Boulevard. The tributary gravity sewers range in size from 8-inch to 15-inch diameter and the pump station discharges into a 14-inch force main, which flows in an easterly direction.

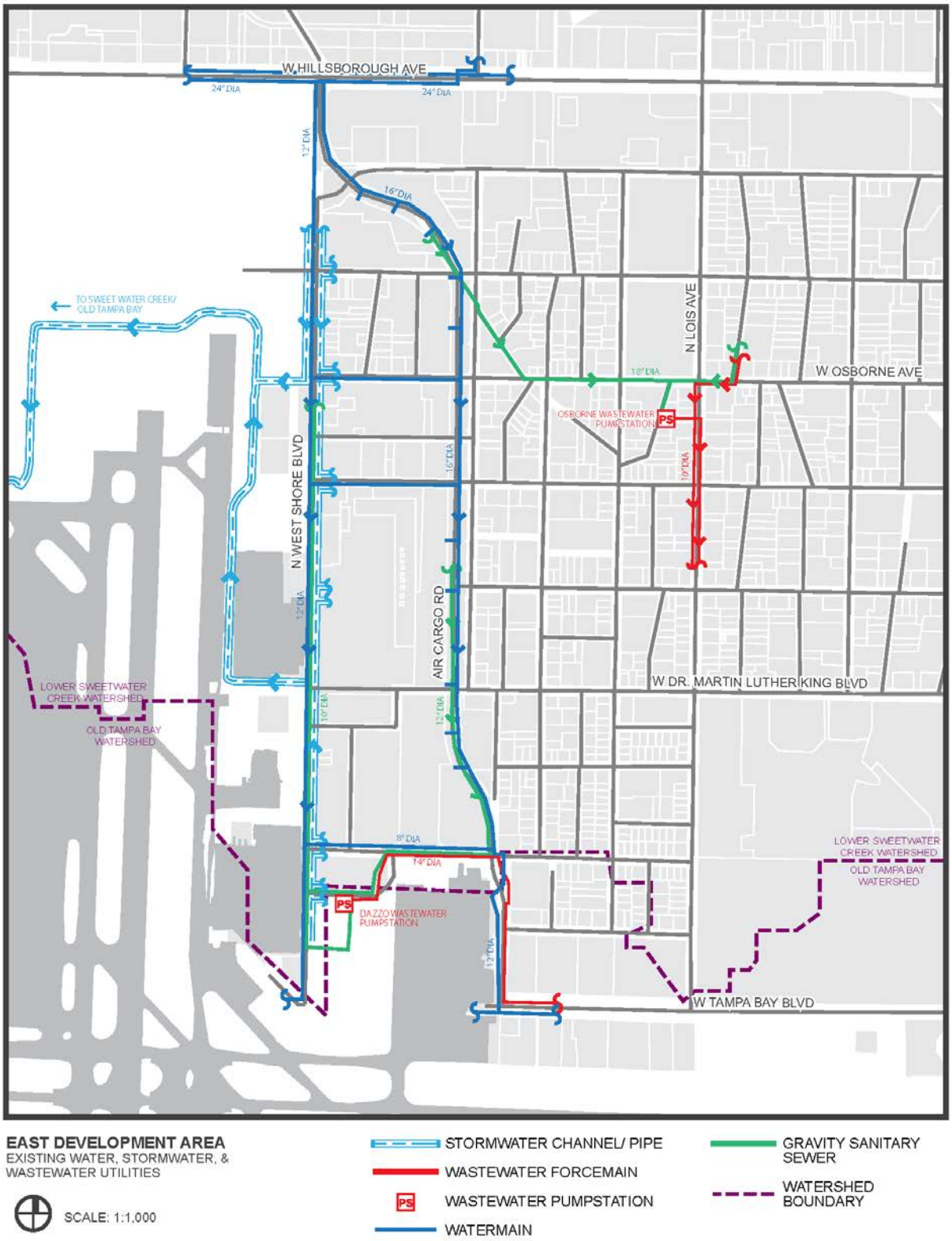
Review of the Sanitary Sewer Plan Sheets for the Air Cargo Road Extension project indicates that a new 12-inch sanitary sewer was constructed as part of the road construction. The sewer starts at the intersection of Air Cargo Road and West Alva Street and extends south to an existing 16 inch sanitary sewer at W Ohio Ave. This new 12 inch sewer intercepts various sanitary sewers that flow from east to west. The drawings do not show any new sanitary sewer stubs to the west, which is an indication that it was not intended to accept flow from the areas being redeveloped on the west side of Air Cargo Road.

- *Stormwater* -A drainage boundary divides the Tampa International Airport. The northern portion of the Airport, which includes the Eastside Development Area, is located in the Lower Sweetwater Creek Watershed and the southern portion of the Airport, which includes the South Development Area, is located in the Fish Creek Watershed. Sweetwater Creek and Fish Creek discharge into Old Tampa Bay.

Drainage facilities within the Eastside Development Area consist of a series of detention basins, open channels, culverts and storm sewers. Stormwater flows to the north and west across airport property and into the neighborhood to the west of the Airport. The Eastside Development area contains several stormwater basins that were constructed along with Air Cargo Road and the air cargo handling facility. It is our understanding that these basins were designed based on the needs for the new road and the cargo handling facility and do not include capacity for any additional redevelopment being considered in this study. New development will need to provide for stormwater management, and best management practices to minimize stormwater impacts (such as pervious pavement and green roofs) should be considered.

**Figure 5.6**

**Eastside Development Area Utilities**




Source: Ricondo & Associates, Inc; 2005
Prepared by: Ricondo & Associates, Inc.; 2005

The following sections summarize the analyses conducted as a part of the land use evaluation for the Eastside Development Area and the basis for the development recommendations that have been derived from the updated planning effort.

## 5.2.2 Market Factors Analysis

To provide a basis for the identification of potential aviation development needs beyond the airport support facilities (fuel farm, airport maintenance, etc.) located in the Eastside Development Area, the HCAA requested that an analysis of potential aviation businesses and activities be conducted to determine the range and intensity of potential uses that could be viable for development in the area. This analysis reviewed existing activities including MRO and air cargo activities and also investigated other potential uses not currently located at TPA, but in evidence at other airports in the U.S. The process employed and uses identified are discussed in the following sections.

### 5.2.2.1 Air Cargo Benchmarking

The previous Eastside Development Area planning effort identified a concept that depicted the development of extensive air cargo facilities, far beyond the facilities that existed at the time of the 2011 Master Plan Update. The 186,000 SF of proposed new cargo facilities over and above the existing cargo area that was recommended in the 2005 concept plan and depicted on the Airport Layout Plan exceeded the facility size needed to accommodate the 20-year level of demand that was forecast in the 2005 planning effort. Based on those forecasts, it was estimated that TPA would experience an enplaned cargo volume of 146,683,328 pounds by the 2025 end of the planning horizon and would add 186,400 SF of new cargo building in addition to the existing 108,000 SF of air cargo building operated by FEDEX. In 2011 approximately 85 million pounds were enplaned at TPA and this activity was being fully accommodated in the existing air cargo facilities at the Airport.

Before deciding to consider other forms of land use on the east side of the Airport, the HCAA wanted to review the previously recommended development to be certain that any change would not undermine their ability to be responsive and flexible in the event that expanded growth in air cargo occurred. Three approaches were employed to review the previous development concept and its viability given market factors. The first process involved the development of new bottom-up forecasts of future air cargo volumes. The second step was to conduct a benchmarking analysis, comparing the Tampa market historic air cargo capture against that of other major competing airports and airports with significant cargo activity. Finally, as a third step, meetings were conducted with air cargo operators to gain their perspective on potential events that might occur or would need to occur to significantly change the pattern of cargo activity at TPA.

HCAA monthly traffic reports record air cargo in terms of freight and mail. Air cargo is carried in cargo compartments under the main deck of a passenger aircraft (belly cargo) or a dedicated cargo aircraft (all-cargo). Various passenger airlines carried belly cargo in 2011 with British Airways as the leading belly cargo carrier, followed by Southwest Airlines and United Airlines. Belly cargo accounts for approximately 15% of air freight and all the reported air mail tonnage in 2011.

Interviews were conducted with representatives of FedEx, who is the dominant carrier at TPA, concerning their market area, adequacy of their facility and potential changes that might significant impact cargo volumes at TPA. Further, historic cargo tonnages handled at surrounding airports were collected to identify what the impact might be if one or more of these markets were to be consolidated at TPA. The surrounding airports reviewed included Miami International, Fort Lauderdale-Hollywood International, Palm Beach International, Southwest Florida International, Orlando International and St. Petersburg-Clearwater International. It was determined that the two markets that might most viably be consolidated at TPA would be Southwest Florida and St. Petersburg, however even if this were to occur the overall impact to the volume of air cargo would not generate a level of demand necessary to require the extent of cargo development depicted on the 2005 concept plans.

The ability to lure cargo volume out of Miami International has been a goal of a number of Florida and out–of–state airports for years and a plethora of studies abound. Unfortunately, the ability to shift of the array of market factors that make Miami the fourth largest cargo airport in North America is not solely based on having an uncongested ramp, or a large available building. Rather it is tied to the freight forwarders, international and domestic flight schedules, cultural and banking relationships and the ability to consolidate loads and reduce cost on cargo flown. The lack of these intangible assets in markets and airports including Orlando, Southwest Florida and the northern gulf coast despite their long runways and available development space has negated their ability to lure cargo tonnage from the Miami market. This point was confirmed in discussions with cargo operators and airport marketing personnel.

FedEx dominates the TPA all-cargo market, in terms of total tonnage, transporting more than 75% of the total tonnage in 2011 and is the only all-cargo carrier routinely operating at TPA. There are occasional operations by independent cargo operators but these have declined significantly over the past several years. The other primary cargo carrier in the Tampa Bay area (United Parcel Service) currently operates from St. Petersburg-Clearwater International Airport (PIE). While a number of passenger airlines currently carry U.S. mail, FedEx holds the primary contract with the USPS to carry mail and is the primary carrier of mail by air in the U.S. HCAA data does not identify the specific breakdown between air cargo and mail carried by FedEx. From interviews conducted as a part of the master planning inventory process, it was found that typical FedEx flight activity at TPA consists of three daily wide body aircraft operations generally consisting MD-11F, DC-10/30 and A300-600F aircraft. On a typical day two of the three FedEx aircraft are over 95% loaded with mail.

The other all-cargo carrier, Flight Express, utilizes smaller single and twin-engine piston aircraft such as the Cessna C210 and the Beech Baron and as a result carries a far smaller percentage of total air cargo at TPA. All-cargo carriers accounted for approximately 80% of all air cargo transported at the Airport in 2011.

A key element of the overall Master Plan was the updating of the aviation activity forecasts to address changes in passenger, operations, air cargo and general aviation activity at TPA. Key to the projections was the evaluation and forecast of future air cargo tonnage levels at the Airport. **Table 5.1** displays the projected level of future air cargo tonnage out to 2031 for both belly haul cargo and dedicated air cargo operators

**Table 5.1**
**Tampa International Airport Air Cargo Forecast**

| Year | All Cargo | | Belly Cargo | | Total Cargo | | |
|---|---|---|---|---|---|---|---|
| | Enplaned | Deplaned | Enplaned | Deplaned | Enplaned | Deplaned | Grand Total |
| 2011 | 33,651 | 42,870 | 8,928 | 10,443 | 42,579 | 53,313 | 95,892 |
| 2016 | 37,932 | 48,173 | 10,288 | 13,066 | 48,220 | 61,239 | 109,459 |
| 2021 | 41,324 | 52,482 | 11,285 | 14,332 | 52,609 | 66,814 | 119,423 |
| 2031 | 49,358 | 62,684 | 13,480 | 17,120 | 62,838 | 79,804 | 142,642 |

Source: HCAA Monthly Records and HNTB Analysis

Based on the benchmarking process and the cargo volume and activity forecasts developed and subsequently approved by the Federal Aviation Administration, it was determined that planning for future TPA cargo demand should be based on the forecast level of demand as delineated above. Using this demand level and reasonable cargo processing criteria the need for the extent of facilities depicted in the 2005 concept plans was not confirmed and revisions to the cargo facility concepts were undertaken and are discussed later in this analysis.

#### 5.2.2.2 Analysis of Other Potential Aviation-related Uses

In addition to evaluating the Eastide Development Area's air cargo potential, other aviation-related uses were identified and assessed for their relevance as potential uses in the area. These uses generally fall within the categories of: catalytic aviation-related uses; maintenance, repair and overhaul (MRO) facilities; MRO suppliers and components; and fulfillment centers. The planning team completed the following activities in support of the analysis:

- Industry benchmarking of aviation-related uses
- Analysis of labor employment statistics and demand for aircraft mechanics and service technicians
- Research of MRO industry trends and drivers
- Identification of major North American MRO organizations and corresponding operations
- Evaluation of E-commerce business models and applicability and impact on real estate demands
- Research regarding prevailing national, state and local economic incentive programs

The categories of aviation-related uses include a range of facilities and respective tenants:

- Aircraft Manufacturing and Assembly
- Aircraft Parts and Components Manufacturing
- Aircraft and Components Testing, Research & Development Facilities
- Aircraft Maintenance, Repair and Overhaul (MRO) Facilities
- Logistics Processing Centers

- Corporate Headquarters
- Product Assembly, Distribution and Fulfillment Centers
- Aviation-related Education Centers
- Customer Service, Sales and Support Centers

To assess the market potential for these aviation-related uses at TPA, numerous examples were benchmarked nationally, identifying and analyzing key attributes and physical requirements for the successful implementation of these uses. Specific attributes researched included land use, tenant name, airport location, estimated land size (in acres), estimated building size (in SF), estimated Floor-to-Area ratio (FAR), number of stories, and whether airside/ramp access was needed. Additionally, the number of employees, site information and surrounding development for each of these uses were noted where available. Also noted were any economic development incentives that had been leveraged to attract and promote the success of these aviation-related uses in order to determine if the economic infrastructure in the Tampa MSA is sufficient to support similar development.

**Table 5.2**, the Airport Adjacent-Aviation Development Summary, presents the comprehensive benchmarking research conducted for aviation-related uses and their corresponding development requirements.

## Table 5.2

## Airport Adjacent-Aviation Development Summary

| TPA EASTSIDE DEVELOPMENT AREA: INDUSTRY BENCHMARKING FOR SELECT CATALYTIC AVIATION-RELATED USES | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Land Use** | **Tenant** | **Airport Location** | **Estimated Land Size (acres)** | **Estimated Building Size (SF)** | **Estimated FAR[1]** | **# Stories** | **Airside/ Ramp Access** | **On-site Employment** | **Site Information / Surrounding Related Development** | **Special Economic Incentives Leveraged** |
| **Office/Industrial** | | | | | | | | | | |
| Office | NetJets Aviation: Headquarters & Flight Center | Port Columbus International Airport (CMH) | 17 | 148,500 | .21 | 1 - 2 | yes | 1,300 | offers fractional ownership of aircraft; NetJets site located entirely on airport-owned property; Flight Center includes owner services, logistics, operations center & planning depts. for company | The city of Columbus and state of Ohio offered nearly $100 million in tax breaks and job incentives, including $67.6 million for workforce-development tax breaks and job credits. $30 million in incentives were offered for area site improvements, loans and marketing. |
| Industrial | Boeing: South Carolina Campus - Manufacturing & Delivery Center | Charleston Air Force Base / International Airport (CHS) | 240 | 1,407,000 | .13 | 1 - 2 | yes | 5,000 | existing fuselage assembly plant; expanding to include new assembly facility for Boeing 787 Dreamliner, new space for employees, new space under development for aircraft delivery/pick-up center | The state of South Carolina approved financial incentives valued at approximately $450 million. Boeing would need to create at least 3,800 jobs and invest more than $750 million within seven years to take advantage. |
| Office, Industrial | Dell Computer Corporation: East Coast Fulfillment & Call Center | Nashville International Airport (BNA) | 72 | 660,000 | .21 | 2 - 3 | yes (cargo through the fence) | 1,000 | Dell facility relies on strategic relationship with air cargo carriers to provide daily shipments of computer parts and components used to satisfy customer orders in its assembly & distribution center located just off but adjacent to airport property | Economic incentives that lured Dell to Nashville included: free land for the site worth $6.5 million, 40 years of property tax abatements, $20 million in infrastructure improvements at the site funded by the city and state, one-time credits of $2,000 per employee against state franchise and excise taxes, Metro Nashville tax credits of $500 per employee for 40 years, industrial machinery state tax credits, and $4,000 per employee to pay for job training costs (refundable after workers were hired). |
| Industrial, Office | Cessna Manufacturing Facility (includes Citation Service Center) | Wichita Mid-Continent Airport (ICT) | 1,400 | 3,500,000 | .06 | 1 - 2 | yes | 8,000 | 50% of Cessna site located on airport-owned property; surrounding development includes: aircraft maintenance training center; military/aerospace interconnect products and services supplier/distributor; high-quality aerospace components supplier; aerospace inventory logistics firm; aircraft instruments sales, service, and repair | In 2008, the Kansas Senate authorized $33 million in funding for Cessna for the construction of an assembly facility for the Citation Columbus program. The money would also be used to pay for research, development, engineering, and manufacturing. |
| Industrial | FedEx SuperHub | Memphis International Airport (MEM) | 518 | 3,450,000 | .15 | 1 - 2 | yes | 15,000 | FedEx packaging design and development offices | A land exchange agreement was created to relocate the existing Tennessee Air National Guard facilities to a new location at the airport and allowed a landlocked FedEx to expand its operations by 103 acres. |
| Industrial | UPS WorldPort | Louisville International Airport (SDF) | 600 | 5,200,000 | .20 | 1 - 2 | yes | 20,000 | Embry-Riddle Aeronautical University | UPS received preliminary approval for $31.6 million in tax incentives for up to 10 years for the WorldPort Expansion in 2006. The incentives were based on job creation. |

Source: C&S Companies

| TPA EASTSIDE DEVELOPMENT AREA: INDUSTRY BENCHMARKING FOR SELECT CATALYTIC AVIATION-RELATED USES | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Land Use** | **Tenant** | **Airport Location** | **Estimated Land Size (acres)** | **Estimated Building Size (SF)** | **Estimated FAR[1]** | **# Stories** | **Airside/ Ramp Access** | **On-site Employment** | **Site Information / Surrounding Related Development** | **Special Economic Incentives Leveraged** |
| Industrial | Bombardier Learjet Manufacturing Facility | Wichita Mid-Continent Airport (ICT) | 76 | 1,400,000 | .42 | 1 - 2 | yes | 300 | Learjet site partially located on airport-owned property; surrounding development includes: military/aerospace interconnect products and services supplier/distributor; aerospace components supplier; aerospace parts manufacturer and sub-assembly | In 2010, the state of Kansas agreed to $27 million in bond financing to invest in improvements to the facility including a paint facility, customer delivery center, production flight test facility and expanded production hangers. |
| Industrial | Vought Aircraft | Nashville International Airport (BNA) | 97 | 2,100,000 | .50 | 1 - 2 | yes (through the fence) | 870 | facility produces aircraft wings and tail sections, manufactures composites and metal bonded structures, conducts design and stress tests | Legacy company with numerous buyouts. No specific information available. |
| Industrial | Vought Aircraft | Witham Field Airport (SUA) [Stuart, FL] | 66 | 411,000 | .14 | 1 | yes | 250 | aircraft parts and technical systems production, specific aircraft component repair station services | In 2009, Vought received an incentive package from the state of Florida and Martin County totaling $300,000 for the expansion of their facility. |
| Industrial | Honda Aircraft Company | Piedmont Triad International Airport (GSO) (Greensboro, NC) | 80 | 500,000 | .14 | 1 - 3 | yes | 650 | world headquarters, production and R&D facility; campus includes admin, engineering, sales & support, marketing, construction & assembly, world delivery center | In 2007, state and local government granted Honda Aircraft Company $8 million to build its $100 million headquarters at Piedmont Triad International. |
| Industrial | GE Engine Services Distribution | Cincinnati-Northern Kentucky International Airport (CVG) | 25 | 300,000 | .28 | 1 | yes (through the fence) | 110 | provides engine component repair, on-wing support, testing | No information available. |
| Industrial | Cessna Orlando Citation Service Center | Orlando International Airport (MCO) | 13 | 193,838 | .33 | 1 - 2 | yes | 200 | second largest Cessna Citation service center in the country (Wichita location is the largest) | Incentives included a $323,000 investment by the city through fee waivers and the state's Qualified Targeted Industry Tax Program. Additionally, Enterprise Florida and the Greater Orlando Aviation Authority agreed to pay for $1.8 million in infrastructure, roadway and taxiway extension work once promised new jobs were created. |
| Office | Dick's Sporting Goods Corporate Headquarters | Pittsburgh International Airport (PIT) | 116 | 735,000 | .15 | 7 | yes | 1,200 | site selected by company for corporate travel accessibility: 60,000 SF aviation center included in total SF; 1st phase of planned 2 million SF corporate complex | Dick's Sporting Goods received $7.25 million in grants from the state as well as a 10-year 50 percent tax abatement. |
| Industrial, Office | Clinton Commerce Park | Pittsburgh International Airport (PIT) | 400 | 700,000 | .04 | 1 | no | 600 | Warehouse distribution park with proximity to expressway; sites from 10 to 40 acres; Current tenants include FedEx, Knepper Press, Flabeg (solar panel manufacturer), and American Tire Distributors | Received about $7 million from the state for site improvements & $5 million from a TIF district set up for the project; located in a foreign trade zone |
| Industrial, Office | Alaska CargoPort | Ted Stevens Anchorage Int'l Airport (ANC) | 20 | 120,000 | .14 | 1 | yes | 500 | Located adjacent to UPS and FedEx facilities in the North Airpark location; site offers warehouse, maintenance shop, office, and aircraft parking space | The developer secured approximately $30 million in financing on its own, but later required more for the project. ANC took ownership of the facility to obtain tax exempt financing and then leased the facility back to the developer. |

Source: C&S Companies

| TPA EASTSIDE DEVELOPMENT AREA: INDUSTRY BENCHMARKING FOR SELECT CATALYTIC AVIATION-RELATED USES | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Land Use** | **Tenant** | **Airport Location** | **Estimated Land Size (acres)** | **Estimated Building Size (SF)** | **Estimated FAR[1]** | **# Stories** | **Airside/ Ramp Access** | **On-site Employment** | **Site Information / Surrounding Related Development** | **Special Economic Incentives Leveraged** |
| Office | Embraer Engineering Center | Melbourne International Airport (MLB) | 13 | 67,000 | 0.12 | 2 | no | 200 | Site is located across from Embraer's assembly plant and customer center at the airport. | Incentives offered by the airport included renovating and making available a temporary facility at the airport rent free for up to 18 months while the new facility was under construction. |
| **MRO - Commercial** | | | | | | | | | | |
| MRO - commercial | Proposed Midair USA, Inc. - maintenance, repair, painting and overhaul of wide body aircraft | Melbourne Int'l Airport, FL (MLB) | 24 | 360,000 | .35 | 1 | Yes - space to provide for the parking of not less than 4 Boeing 747 aircraft | Projected to be 450 | AAR Aviation Worldwide Services announced it will bring an additional 225 jobs to Melbourne | 40-year land lease with 2-five year options; Airport Authority obligated to apply for State Economic Development Transportation Fund Grant to construct taxiway access and apply for FAA-AIP grant to construct apron; Budget $200,000 of Authority funds for utility and storm water work; Midair provided with a no-cost 5-year Option to Lease for immediately adjacent 10 acre parcel; tax incentives |
| MRO - commercial | Proposed Laurentian - heavy maintenance of wide body aircraft | Plattsburgh Int'l Airport (PBG), NY | 18 | 273,000 | .36 | 1 | Yes | Projected to be 800 | Proximity to Montreal aerospace community | 40-year land lease; Incentive Proposal from Empire State Development (estimated to equal $12 million) including financial grants for construction and series of tax credits against NYS income tax, real property tax, sales tax refund on construction materials and exemption of 4% sales tax on purchases of goods and services; Clinton County Industrial Development Agency to issue tax-exempt bonds to finance a portion of the overall cost of the project; employee training through County sponsored training center |
| MRO - commercial | AeroTurbine - heavy maintenance of wide body and narrow body aircraft | Goodyear Airport, AZ (GYR) | 40 | 262,000 | .15 | 1 | Yes - storage parking for 150 aircraft | 100-250 | Lockheed Martin 500ksf campus centered near Goodyear Airport. | Under an asset purchase agreement, Aeroturbine, Inc. purchased the Goodyear, Arizona MRO facility from Triad International Maintenance Corporation (TIMCO). |
| MRO-commercial | AAR Aircraft Services | Miami International Airport (MIA) | 23 | 226,000 | 0.23 | 2 | yes | 1,200 | The facility includes three hangars. The facility also includes a two-story office/shop annex, engine maintenance facilities, warehousing and material storage. Located in an industrial area on the north side of the airport. In 2008, AAR acquired Avborne Heavy Maintenance, Inc. | No information available. |
| MRO-commercial | Delta TechOps Technical Operations Center - full service maintenance (engine & components) | Hartsfield-Jackson Atlanta International Airport (ATL) | 63 | 2,700,000 | 0.98 | 1-4 | yes | N/A | The Technical Operations center consists of three interconnected buildings/hangars. Building TOC-2 is one of the world's largest cantilevered buildings. TOC-3 houses 750,000 sq ft of shop and warehouse space and three state-of-the-are paint hangar bays spread out over four floors. | No information available. |

Source: C&S Companies

| TPA EASTSIDE DEVELOPMENT AREA: INDUSTRY BENCHMARKING FOR SELECT CATALYTIC AVIATION-RELATED USES | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Land Use** | **Tenant** | **Airport Location** | **Estimated Land Size (acres)** | **Estimated Building Size (SF)** | **Estimated FAR[1]** | **# Stories** | **Airside/ Ramp Access** | **On-site Employment** | **Site Information / Surrounding Related Development** | **Special Economic Incentives Leveraged** |
| MRO-commercial | American Airlines Maintenance & Engineering Center | Tulsa International Airport (TUL) | 260 | 3,300,000 | 0.29 | No information available | yes | 6,800 | The Maintenance and Engineering Center is located on the eastern edge of the Tulsa International Airport. The aviation facility is one of the largest aviation maintenance facilities in the world. | In September 2003, American received $22.3 million from Tulsa County's Vision 2025 improvement and incentive package for capital improvements. Between 1995 and 2006, the company received $32.5 million in payroll tax reimbursements as part of the Oklahoma Quality Jobs Program. In 2007, American received $5.7 million in state funds and $4.3 million in local funds to build a new overhaul and repair hangar. |
| **MRO - Regional/Business Jet** | | | | | | | | | | |
| MRO - regional jet | Proposed Pinnacle/Colgan Air - maintenance facility for Q400s | Albany International Airport (ALB), NY - Building 211 - 85 Sicker Rd | 5 | 23,257 | .10 | 1 | Yes | Projected increase of 30 employees (50 employed currently) | Expansion of existing facility to accommodate 2 aircraft simultaneously; adjacent industrial park and airport property both provide for aviation and non-aviation related commercial development | New York State through regional economic development council will provide $3.78 million and the Airport Authority will provide remaining $0.42 million (total project cost ($4.2 million) |
| MRO - business jet | Honda Aircraft Company - extensive repair and overhaul of HondaJet | Greensboro Piedmont Triad Airport (GSO), North Carolina | 20 | 80,000 | .09 | 1 | Yes | 419 | An $80 million expansion of company's headquarters at the airport was announced in October 2011--$20 million is for MRO construction. State of NC has 180 aerospace companies employing more than 9,500 workers with a concentration on the Piedmont Triad Region which also benefits from shipping resources from the FedEx hub | $1 million grant from the One North Carolina Fund; other partners included NC Department of Commerce, NC Department of Transportation, N.C. Community Colleges, Guilford County, City of Greensboro, Golden LEAF ($1 million grant to airport for taxiway construction), Piedmont Triad Int'l Airport ($8.1 million in infrastructure improvements), and Greensboro Economic Development Alliance |
| MRO - business jet | Standard Aero - interior refurbishment, painting, avionics retrofit, cabin electronics retrofit | Augusta Regional/Bush Field, Augusta, GA (AGS) - 1550 Hangar Rd | *8* | 136,000 | .39 | 1-2 | Yes | 185 | Located on airport property; primarily surrounded by industrial/warehouse space | Senate passed bill in April 2011 that extends a sales-tax exemption on parts used to repair out-of-state airplanes. It will benefit Standard Aero that repairs planes belonging to out-of-state owners who could fly them anywhere to avoid the tax. Signed a new 10-year lease in August 2011, which includes an additional 10-year option. |
| MRO - business jet | Cessna Citation Service Center | Phoenix - Mesa Gateway Airport, Mesa, AZ (IWA) | 12 | 101,000 | .19 | 1 | Yes | 75 | Room for expansion; more than 100 aerospace/aviation companies employing 10,000 adjacent to two airports - PHX Mesa Gateway and Falcon Field; proximity to CA, CO, UT, NM and NV; New and proposed infrastructure development | No primary Mesa property tax; Foreign Trade Zone benefits include real and personal property tax reductions; Military Reuse Zone benefits include reduction in property tax, tax credit for new employees and elimination of County and State sales tax on new construction; Customized job training |

Source: C&S Companies

| TPA EASTSIDE DEVELOPMENT AREA: INDUSTRY BENCHMARKING FOR SELECT CATALYTIC AVIATION-RELATED USES | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Land Use** | **Tenant** | **Airport Location** | **Estimated Land Size (acres)** | **Estimated Building Size (SF)** | **Estimated FAR[1]** | **# Stories** | **Airside/ Ramp Access** | **On-site Employment** | **Site Information / Surrounding Related Development** | **Special Economic Incentives Leveraged** |
| MRO - business jet | Embraer Executive Jets - Phenom 100 and Phenom 300 assembly plant | Melbourne Int'l Airport, FL (MLB) - 1205 General Aviation Dr | 28 | 150,000 | .12 | 1 | Yes | 200 | Includes production facility and customer support facility. MLB has inventory of more than 130 acres of prime office, commercial and mixed-use property. Parcels range from 4acres to nearly 30acres. Major tenants - Northrop Grumman, Harris Corp, GE, Embraer, Rockwell Collins, DRS, L-3 Communications, and LiveTV | County grant of $1.8 million, which is equivalent to and in lieu of a 10-year tax abatement; $8.5 million from the state of Florida; $1.2 million from Melbourne; $800,000 from county workforce development board for labor recruitment, screening, and training, plus a $280,000 grant that Embraer has agreed to match; $260,000 land lease waiver from Airport Authority |
| **MRO - Components** | | | | | | | | | | |
| MRO - components | TIMCO Aerosystems Interiors Engineering and Manufacturing - production of aircraft interiors products | Greensboro Piedmont Triad Airport (GSO), North Carolina | *90* | 600,000 | .15 | 1 | Yes | 1,300 | State of NC has 180 aerospace companies employing more than 9,500 workers with a concentration on the Piedmont Triad Region which also benefits from shipping resources from the FedEx hub. The TIMCO complex includes three wide body hangars as well as a fourth hangar for narrow body aircraft. The facility complex also includes corporate and customer offices, an on-site training center, shipping and receiving, and TIMCO's engineering design, integration and manufacturing division. | In 2002, TIMCO moved its corporate headquarters from Miami to Greensboro with no state assistance or incentives. |
| MRO - components | Avidyne - developer of Integrated Flight Deck Systems for light GA aircraft | Near Melbourne Int'l Airport, FL (MLB)- 710 North Dr | 4 | 80,000 | .44 | 1 | No | 180 | MLB has inventory of more than 130 acres of prime office, commercial and mixed-use property. Parcels range from 4acres to nearly 30acres. Major tenants - Northrop Grumman, Harris Corp, GE, Embraer, Rockwell Collins, DRS, L-3 Communications, and LiveTV | EDC aggressively pursued several incentives for Avidyne including the Brevard County Ad Valorem Tax (AVT) Abatement and the AVT Abatement from the City of Melbourne. Most recently, the EDC assisted Avidyne in securing the state-level Qualified Target Industry (QTI) Tax Refund incentive, a state-level incentive available for companies that create high wage jobs in targeted high value-added industries. |
| MRO - components | AMG Aero Technologies - overhaul and repair services for pneumatic, hydraulic, avionics, and electro-mechanical components and accessories for Airbus, Boeing, and regional jets | Near Miami International Airport (MIA) - 2200 NW 84th Ave | *2* | 32,000 | .39 | 1 | No | 120 | MIA cargo facilities comprise 17 warehouses amounting to over 2.7 million square feet of space. Most of MIA's facilities offer airside-to-landside access | No information available. |
| MRO - components | AMG Precision Electronics - repair of electronic and electro-mechanical accessories and instruments used on aircraft | Near Atlanta International Airport (ATL) - 5000-A Clark Howell Hwy | *3* | 26,000 | .24 | 1 | No | 70 | Located in an industrial parks comprised of warehouses/flex space. | Acquired by AMG in 2007 |

Source: C&S Companies

| TPA EASTSIDE DEVELOPMENT AREA: INDUSTRY BENCHMARKING FOR SELECT CATALYTIC AVIATION-RELATED USES | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Land Use** | **Tenant** | **Airport Location** | **Estimated Land Size (acres)** | **Estimated Building Size (SF)** | **Estimated FAR[1]** | **# Stories** | **Airside/ Ramp Access** | **On-site Employment** | **Site Information / Surrounding Related Development** | **Special Economic Incentives Leveraged** |
| MRO - components | GA Telesis, LLC - composite and structural repair for commercial and regional aircraft | Near Fort Lauderdale Executive Airport (FXE) - 3420 NW 53rd St | *4* | 45,000 | .26 | 1 | No | 50 | Over 1.5 million square feet of office and warehouse space in the Airport's Industrial Airpark and over 5 million square feet in the surrounding Uptown Business District. Businesses at the Industrial Airpark include Elite Panel Products, Telematics, Marriott Hotels, Citicorp Latino, Walgreens, Dry Clean USA, Lucent Technologies, and GE | GA Telesis acquired Ultimate Aircraft Composites' MRO facility in Fort Lauderdale in January of 2011. |
| MRO - components | Spirit Aerosystems - fuselages, under-wing components, composites, wings, spares/repairs | Mc Connell Air Force Base (IAB) - 3801 S Oliver St | *550* | 10,000,000 | .42 | 1-3 | No | 10,700 | Located on the Air Force base; primarily surrounded by residential properties. | In 2008, Spirit AeroSystems selected its Wichita facility as the site where the company would design and manufacture the fuselage for the new Cessna Citation Columbus. A new 375,000 s.f. factory was planned to accommodate the manufacturing and testing of the new product as well as provide additional capacity for existing products and other new programs. The Kansas Department of Commerce committed $14.5 million in funding to help secure the Spirit investment through its Investments in Major Projects and Comprehensive Training program and Kansas Economic Opportunity Initiatives Fund. The City of Wichita and Sedgwick County will commit $3.2 million total or $1.6 million each and 10-year property tax abatement. |
| MRO - components | AMG American Composites - specializes in repair of flight control surfaces, thrust reversers and cowling, interior panels, doors, radomes, and other sheet metal and composite repairs | Near Opa-Locka Executive Airport (OPF) and Miami International (MIA) - 9730 NW 114th Way, Miami FL | *2* | 74,000 | .77 | 1-2 | No | 50 | MIA cargo facilities comprise 17 warehouses amounting to over 2.7 million square feet of space. Most of MIA's facilities offer airside-to-landside access | Aero Maintenance Group (AMG) acquired American Composites in 2009. |
| MRO - components and overhaul | AMG Flite Components - repair, overhaul, and distribution of rotable and expendable components for regional and narrow body aircraft | Near Dallas Love Field, TX (DAL) - 1235 Profit Dr | *1* | 30,000 | .63 | 1 | No | 29 | Located in an industrial park area comprised of warehouses/flex space. | Aero Maintenance Group (AMG) acquired Flite Components in 2006. |
| MRO - components | Regent Aerospace - aircraft seating, interior refurbishment, parts support, and window repair services | Near Indianapolis Int'l Airport, IN (IND) - Plainfield, IN - 2501 Perry Rd | *8* | 100,000 | .29 | 1-2 | No | 300 | IND is home to the second largest FedEx Express operation in the world. According to ACI, IND is the nation's 8th largest cargo facility; 21st largest internationally. | In 2004, the Town of Plainfield approved a ten-year property tax abatement for Regent Aerospace's move to Plainfield. |

Source: C&S Companies

| TPA EASTSIDE DEVELOPMENT AREA: INDUSTRY BENCHMARKING FOR SELECT CATALYTIC AVIATION-RELATED USES | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Land Use** | **Tenant** | **Airport Location** | **Estimated Land Size (acres)** | **Estimated Building Size (SF)** | **Estimated FAR[1]** | **# Stories** | **Airside/ Ramp Access** | **On-site Employment** | **Site Information / Surrounding Related Development** | **Special Economic Incentives Leveraged** |
| MRO - components | Leading Edge Aviation Services - aircraft painting<br><br>Company also has locations at the following airports: Meacham Int'l Airport, Fort Worth, TX (FTW); Rick Husband Amarillo Int'l Airport, Amarillo, TX (AMA); Mid Delta Regional Airport, Greenville, MS (GLH); Donaldson Center Airport, Greenville, SC (GYH) | Southern California Logistics Airport, Victorville, CA (VCV) | *20* | 235,000 | .27 | 1 | Yes | 350 | State-of-the-art facility includes 5 hangars. Southern California Logistics Airport is a 5,000-acre multi-modal business complex that integrates manufacturing, industrial and office facilities with a dedicated international airport. Airport also offers 24-hour, seven-day-a-week operations with on site U.S. Customs. | Companies located at the airport can benefit from the following incentives, where applicable: 90,000-acre Redevelopment Project Area; Local Agency Military Base Recovery Act (LAMBRA) Zone credits and incentives; 2,600-acre Foreign Trade Zone (FTZ #243); Tax assistance from the State of California for employee training and equipment purchases; San Bernardino County incentives, including tax-exempt bonds; FAA program support; Local tax-exempt bond financing; City tax credits for hiring and equipment purchases; Victorville Municipal Utility Service, providing reliable electricity and gas at reduced rates |
| **Fulfillment & Education Centers** | | | | | | | | | | |
| Fulfillment Center | Amazon.com | Coffeyville Municipal Airport (CFV) | *104* | 750,000 | 0.17 | 1 | yes | 500+ | The site is located in an industrial park at the airport along with neighboring John Deere Coffeyville Works. | Coffeyville made $1 million in infrastructure improvements and offered up to $3.5 million in cash grants based upon Amazon employing 1,000 people a year for 10 years. |
| Fulfillment Center | Amazon.com | Near New Castle Airport, DE (ILG) | 15 | 200,000 | 0.31 | 1 | no | 500 | Center is located a few miles southeast of New Castle airport in an industrial area. | No information available. |
| Fulfillment Center | Amazon.com | Near Phoenix Goodyear Airport (GYR) | *45* | 800,000 | 0.41 | 1 | no | 600+ | Located at Goodyear Crossing, a 250-acre industrial park located 2 miles West of Phoenix Goodyear Airport. | No information available. |
| Fulfillment Center | Trilogy Fulfillment, a division of Eddie Bauer | Near Rickenbacker International Airport (LCK) | 127 | 2,200,000 | 0.40 | 1-2 | no | 650 | Located at the Rickenback Global Logistics Park north of Rickenbacker International Airport. The facility is responsible for handling two retailers' fulfillment services. | In 2010, the retailer received a $75,000 grant from the state, as well as a tax credit valued at $400,000 for machinery, equipment, and renovations to the facility. |
| Fulfillment Center | Macy's/Bloomingdale's | Near Phoenix Goodyear Airport (GYR) | *35* | 600,000 | 0.39 | 1 | no | 250-500 | Located at Goodyear Crossing, a 250-acre industrial park located 2 miles West of Phoenix Goodyear Airport. In December 2010, Macy's purchased a 12-acre parcel adjacent to the current facility for a possible expansion. The center handles direct-to-consumer and online orders for the company's growing businesses, including macys.com, bloomingdales.com, Bloomingdale's By Mail, macysweddingchannel.com and bloomingdalesweddingchannel.com. | No information available. |

Source: C&S Companies

| TPA EASTSIDE DEVELOPMENT AREA: INDUSTRY BENCHMARKING FOR SELECT CATALYTIC AVIATION-RELATED USES | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Land Use** | **Tenant** | **Airport Location** | **Estimated Land Size (acres)** | **Estimated Building Size (SF)** | **Estimated FAR[1]** | **# Stories** | **Airside/ Ramp Access** | **On-site Employment** | **Site Information / Surrounding Related Development** | **Special Economic Incentives Leveraged** |
| Fulfillment Center | Nordstrom Direct Contact and Fulfillment Center | Near The Eastern Iowa Airport (CID) | 50 | 600,000 | 0.28 | 1-3 | no | 960 | Located north of the Eastern Iowa Airport, the facility fulfills orders for the retailer's online division, Nordstrom Direct. | No information available. |
| Education Center | Southern Illinois Carbondale Transportation Education Center (TEC) | Southern Illinois Airport (MDH) | *15* | 230,000 | 0.35 | 1-2 | yes | 750 (employees and students) | The TEC complex includes five existing buildings and three new buildings including classrooms, corporate facilities and meeting rooms, a computer center, libraries, laboratories, flight simulator and an engine test cell to safely test operating airplane engines. | $56.7 million came from a statewide capital construction plan |

*Italicized figures are estimates

[1] FARs presented reflect calculations based on non-rounded acreages which contain additional significant digits beyond those acreages presented in the estimated land size column

Source: C&S Companies

In addition to benchmarking, industry research was conducted which focused on the operations of the aviation-related use categories to define current industry status and identify future potential.

Catalytic aviation-related uses typically occur in the marketplace as office or industrial land uses on-airport or proximate, and trend towards larger scale manufacturing or logistics facilities. Factors driving the site selection for such uses include being able to physically accommodate the size of these facilities and their potential expansion areas, having a skilled labor force in place with the necessary training required by these operations, and economic development incentives and grants. Opportunities are greatest in the logistics arena, as global inventories are produced and transported on an increasingly just-in-time basis. Key to such opportunities are the base economies in which these uses and associated facilities must locate in order to compete regionally, nationally and globally. The Tampa MSA offers a strong base economy which has historically been attractive to corporate tenants and associated enterprises, and therefore, could promote capitalizing on new opportunities to connect markets.

MRO sector trends include industry consolidation, pursuit of low labor costs and global geographic presence. As the global economy recovers, there are prospects for strong growth within the commercial aircraft MRO market going forward. Strong medium to long-term growth for the commercial MRO industry will be driven by the aviation industry emerging from the financial crisis which began in 2009 with airlines and operators wanting to clear the backlog of deferred maintenance of aircraft to maximize fleet potential. In addition, smaller airlines and operators with ageing fleets who lack capital to purchase new aircraft will increasingly look to fleet maintenance. A driving force behind air travel growth has been the industrialization of countries such as India and China. As these highly populated countries continue to develop and invest in the aviation industry, and the aviation industry in the Middle East continues to expand, strong, sustained growth is forecast within the global commercial aircraft MRO market as more and more airlines begin operations.

There are three broad categories of MRO organizations including airline-affiliated MROs, Original Equipment Manufacturers (OEM), and independent MROs. At present, approximately three-fourths of the MRO market is comprised of component overhaul, engine overhaul and line maintenance. The commercial aircraft engine MRO market is the largest submarket of the global commercial aircraft MRO market. Strong growth rates for this submarket are forecast based on the complexity and expense of the new engines, less reliance on labor rates than other submarkets, and the soaring growth in air travel which is providing opportunities for each submarket of the global commercial aircraft MRO industry. As the aviation industry adapts to soaring demand for air travel, a wealth of opportunities for expansion of the commercial aircraft MRO market looks certain. In emerging and mature markets, fleet upgrades and expansions to accommodate soaring demand for air travel will provide new sources of demand for MRO activity.

The market for MRO facilities reflects levels of demand for direct aircraft maintenance activities including line maintenance, base maintenance and component overhaul as well as supporting activities such as technical services including engineering, maintenance planning, publications, purchasing and materials management, and quality assurance and control. Line maintenance activities include pre-flight and transit checks, daily checks/48 hour checks, weekly checks, A-checks, and technical fault and troubleshooting and rectification. Base or heavy maintenance is performed on out-of-service aircraft and includes major system modifications, schedule checks

above the A-level, special inspections due to Airworthiness Directives, aircraft interior modifications and aircraft painting. Component overhaul involves maintenance of specialized equipment on aircraft such as engines, landing gear, avionics, hydraulic and pneumatic systems. Airline-contracted MRO work includes services such as heavy maintenance checks, conversion of passenger aircraft to freighters, and modifications to existing aircraft.

In terms of U.S. MRO market outlook, the U.S. Bureau of Labor Statistics projects a 6.3 percent increase in aircraft mechanic and service technician job openings between 2010 and 2020. In total, just more than 45,000 job openings in these categories are projected during the period due to employee retirements, natural attrition and existing skilled labor shortages. The following **Table 5.3** presents these projections.

**Table 5.3**
**Projected Increase in U.S. Aircraft Mechanic and Service Technician Job Openings (2010-2020)**

| Projected Change, 2010-2020 | | *Total Job Openings 2010-2020 |
|---|---|---|
| Number of Job Openings | Percent | |
| 7,800 | 6.3% | 45,200 |
| Note: Total job openings due to growth and replacement needs | | |

ureau of Labor Statistics (SOC Code Number 49-3011); C&S Companies

Further, the Tampa-St. Petersburg-Clearwater, FL, Metropolitan Statistical Area (MSA) currently employs the fourth greatest number of aircraft mechanics and service technicians in Florida and also has average hourly and annual salaries which are among the lowest in the country, providing a competitive advantage for attracting and retaining MRO operations. **Table 5.4** presents employment numbers and corresponding wage data for the Florida market as well as selected competitive states.

**Table 5.4**

**2011 Occupation & Wage Estimates for U.S. Aircraft Mechanics and Service Technicians**

| MSA | Employment | Average Hourly | Average Annual |
|---|---|---|---|
| U.S. | 117,320 | $26.20 | $54,500 |
| Florida | 8,410 | $23.25 | $48,370 |
| Miami-Fort Lauderdale-Pompano Beach FL | 3,340 | $22.87 | $47,570 |
| Orlando-Kissimmee-Sanford FL | 1,380 | $24.31 | $50,570 |
| Jacksonville FL | 940 | $23.58 | $49,050 |
| **Tampa-St. Petersburg-Clearwater FL** | **590** | **$23.34** | **$48,540** |
| Palm Bay-Melbourne-Titusville FL | 280 | $23.21 | $48,280 |
| Cape Coral-Fort Myers, FL | 150 | $25.64 | $53,340 |
| Deltona-Daytona Beach-Ormond Beach FL | 100 | $20.62 | $42,890 |
| North Port-Bradenton-Sarasota FL | 70 | $21.71 | $45,160 |
| Panama City-Lynn Haven-Panama City Beach FL | 60 | $16.86 | $35,070 |
| Texas | 12,460 | $25.20 | $52,420 |
| California | 11,750 | $28.10 | $58,440 |
| Georgia | 7,780 | $27.03 | $56,210 |
| Arizona | 3,930 | $23.69 | $49,260 |
| New York | 2,680 | $26.68 | $55,490 |
| Virginia | 1,930 | $24.52 | $51,000 |
| Ohio | 1,910 | $25.16 | $52,330 |
| Michigan | 1,760 | $24.62 | $51,200 |

ureau of Labor Statistics (SOC Code Number 49-3011); C&S Companies

Ultimately, in addition to strong economic development incentives required to compete with other regions, MRO operators seek large, flexible, uncongested facilities without curfews, low comparable airport costs, demonstrated ability and readiness to meet workforce recruitment and training needs, expansion potential, and supply chain connectivity.

#### 5.2.2.3 Benchmarking Conclusions and Recommended Development Focus

As a result of the industry benchmarking analysis conducted for aviation-related uses, uses found to have the greatest industry and associated supportability in the prevailing markets included the following:

- MRO suppliers located proximate existing MRO operations ;
- Fulfillment and logistics centers with direct airfield or secure tug access; and
- Continued accommodation of Air Cargo based on the forecast level of demand while preserving area to accommodate unforeseen demand or new opportunities.

Research indicated the middle of the marketplace *or the average physical characteristics typical of benchmarked* aviation-related uses benchmarked displayed the following characteristics as presented in **Table 5.5**.

**Table 5.5**
**Aviation Related Development Characteristics**

| Use | Acreage | Building SF | FAR | Airside/ Ramp Access |
|---|---|---|---|---|
| Office/ Industrial | 15-20 | 200,000 - 250,000 | 0.25 - 0.30 | Yes |
| MRO – Commercial | 25-30 | 250,000 - 350,000 | 0.30 - 0.35 | Yes |
| MRO – Regional/ Business Jet | 10-15 | 75,000 - 125,000 | 0.15 - 0.20 | Yes |
| MRO – Components | 2-5 | 30,000 - 80,000 | 0.30 - 0.80 | No |

*Source: C&S Companies*

Given the critical mass of MRO operations already established at TPA, demonstrated ability and ongoing initiatives to meet workforce recruitment and training needs, primary expansion potential and the ability to accommodate supply chain factors on-site, we recommend the focus of development concepts be centered around balancing air cargo facility demands with MRO expansion and supply chain facilities with an aviation logistics complement integrated to maintain market flexibility to respond to aviation industry demands over the master plan horizon.

Observed market activity/need suggests MRO suppliers could potentially include tenants who provide services related to composites, avionics/instruments, landing gear, galley/lavatory refurbishment, hydraulic systems, structural, testing labs, supporting shop spaces, and painting.

As noted above, several aviation related development activities were identified. These included a continued focus on meeting demand for air cargo at TPA, expansion of the range of activities in the MRO arena through location of new businesses to support current and/or future MRO providers and create an MRO Center of Excellence at TPA. The final focus is in the arena of just-in-time inventory/fulfillment center land use concepts. Additionally, the Eastside Aviation Development Area is already home to an array of highly important airport support activities and the long-term viability of these must also be ensured. Finally, one parcel of land is physically separated from being able to access the airfield and has been identified for potential revenue supporting commercial activity.

The next step in the planning process was focused on defining recommendations and concepts to best meet the future facility requirements for those uses and facilities currently located within the Eastside Aviation Development Area. Simultaneously, concept plans were developed for the uses identified in the benchmarking process. The following sections will address the alternatives and recommended actions to plan for the following future major activities in the Eastside Aviation Development Area:

- Airport Support Facilities
- Air Cargo Facilities
- MRO and MRO Support Uses
- Fulfillment/Distribution Uses
- Revenue Support Commercial Uses

## 5.2.3 Support Facility Alternatives

As referenced previously, the Eastside Development Area is presently home to a number of essential facilities and uses that provide critical support to the day to day operations of Tampa International Airport. These existing airport support uses were previously depicted in **Figure 5.3**. In some cases based on the analysis contained in the Facility Requirements assessment (Section 4) a specific support facility was determined to be adequate to meet the projected need over the 20-year horizon. In those instances the alternatives analysis has focused on the identification of land area that should potentially be reserved to meet long term needs. Additionally, several of the specific uses have been recently located in the Eastside Development area. Notably among these is the new Airport Surveillance Radar, the Ground Service Equipment Maintenance building and the new Belly Haul Cargo Building. These facilities were all completed within the last two years and were developed so as to accommodate current and projected long-term growth. The support facilities analyzed in this alternatives analysis consist of the following:

- Airport Fuel Farm
- Belly Cargo Facility
- GSE Maintenance Facility
- Airport Maintenance Facilities
- ARFF Training Facility
- Central Concessions Warehouse
- Airport Police Training and Support Building

### 5.2.3.1 Airport Fuel Farm

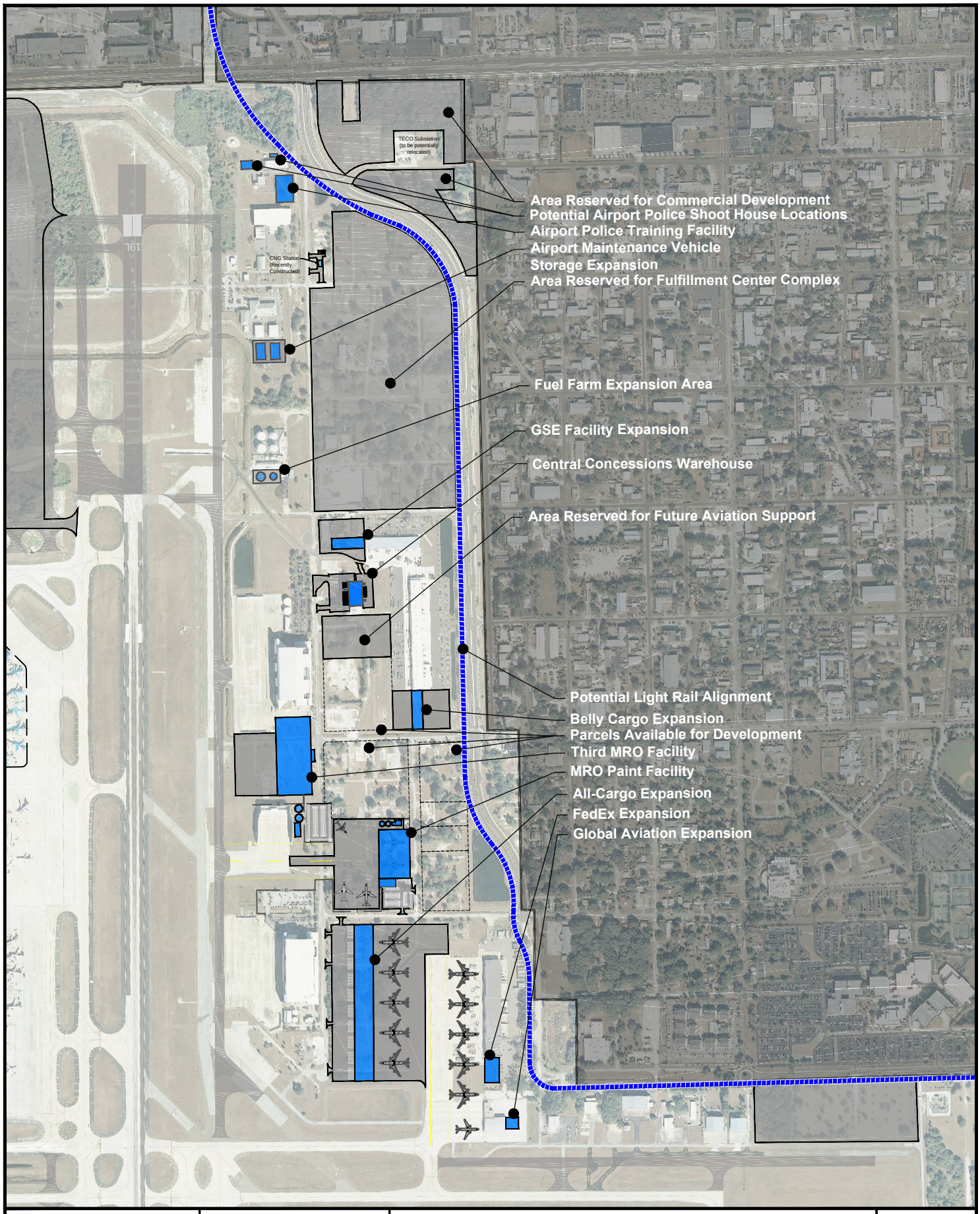
The current airport fuel farm was identified as being amply sized to meet the projected level of demand over the planning period. Additionally, the consortium that owns and operates the facility indicated that given the efficiency of aircraft that have entered the fleet and continue to enter the fleet, the need for additional storage capability beyond the current 3.5 million gallons of storage capacity is considered highly unlikely.

While unlikely, the expansion of the facility was considered to ensure that if the need did arise due to unforeseen events, space would be preserved to accommodate the additional need. The Consultant reviewed the existing leasehold boundary and the configuration of the current fuel farm tank and manifold layout to determine an optimum location to accommodate two additional one million gallon storage tanks. Space exists on three of the four sides of the current tank farm to accommodate the addition of two tanks. The only side not viable is to the west where a large drainage basin is situated.

Placing the tanks to the north of the current storage facilities would be more costly and difficult due to the location of the tank manifolds on the south end of the fuel farm. Placing the requisite piping would entail a greater distance and cost than other options and there is no compelling reason to incur added cost unless no other viable alternative existed. Placing the tanks to the immediate east of the on-site access drive would also be viable and would situate them in closer proximity to the fuel manifolds. However, in discussions with the fuel farm

operator a concern was expressed about ensuring an adequate buffer between facilities and public areas. By shifting future tanks to the east, they are placed closer to roadways that are currently public. This position would also place them closer to future airport related development.

Space also is available to the immediate south of the existing fuel manifold within area presently leased by the fuel farm consortium. Retaining space to the south of the current fuel farm is recommended as the preferred option in that it is ideally situated to minimize the complexity of connecting to existing facilities and as such should reduce costs. The minimum land area to be reserved is depicted in **Figure 5.7. T**he additional undeveloped space in the vicinity could also be available if needed. Further, the location will be removed from public uses or roadways based on development concepts considered for the East Development Area. Thus, a site totaling between approximately 30,000 SF and 1 acre should be preserved south of the current fuel farm to provide a location for future tank expansion should demand present itself.




0' 500' 1,000'

SCALE: 1" = 1,000'

HNTB

# Eastside Development Area Plan

TAMPA INTERNATIONAL AIRPORT
TAMPA, FLORIDA

DATE: Jul 03, 2013

Figure: 5.7

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#### 5.2.3.2 Belly Cargo Facility

The existing belly haul cargo building located in the Eastside Development Area is situated facing Air Cargo Road between Martin Luther King Boulevard on the south and West Cayuga Street on the north. In the fall of 2012 space in the building was available and approximately 19,000 SF of the structure was being used as a storage warehouse by a non-belly cargo user. The facility requirements analysis did not identify a need for additional space noting that freeing up the existing space in the current facility for use as belly cargo space would be the most cost effective means of providing for demand beyond that forecast in the Master Plan Update.

In the event that this could not be accomplished and a build alternative was required, land to the immediate south of the belly cargo building is available and could accommodate an expansion of the current facility of approximately 26,000 SF along with the extension of the vehicle parking lot, loading area and secure equipment storage and tug maneuvering area behind the building. The land area required for this extension has been identified on **Figure 5.7** and is preserved for the potential expansion of the Belly Cargo building if, and when such an extension need would arise. Preservation of this area was done to ensure the future capability of the facility and to ensure this viability would not be impacted by an overall development concept prepared for the East Development Area.

#### 5.2.3.3 Airport Maintenance Facility

Existing airport maintenance facilities were quantified and discussed in the previous section and future facility needs were quantified. Generally, the existing airport maintenance facilities are adequate to meet the anticipated demand over the planning period with only one exception. Based on the master plan review and discussions with representatives from the Airport Maintenance Division the current space available for storage of maintenance vehicles is not sufficient and will become increasingly deficient over the planning period. Enclosed storage space is important to maintaining the condition and life expectancy of often highly sophisticated equipment used by the Airport. Continual exposure to the elements adversely impacts vehicle components and over time can reduce the lifespan of equipment by 3 to 5 years. A need was identified for an approximate doubling of the existing enclosed equipment storage space over the planning period. This would result in approximately 18,400 SF of additional storage which includes an additional 25 percent over the existing amount of space to accommodate associated support areas.

In evaluating the options on where best to position these facilities, several factors were considered including:

- Maintaining the ability to accommodate future facility expansion beyond the timeframe of this Master Plan Update.
- Maintaining accessibility to both airside and landside areas of the Airport.
- Maintaining the configuration of current maintenance facilities and interrelationships between functions within the maintenance area

Equipment storage buildings are presently located to the south of the Airport Maintenance Office and Vehicle Maintenance Building. These facilities are situated inside the security fence and equipment can exit the buildings and move directly to the airfield, through the RPZ and to

the terminal area via a secure roadway. Land area is available to the east of the equipment storage buildings and to the south of the same storage buildings that is more than adequate to accommodate the placement of additional storage building space as well as accommodating other potential maintenance related facility needs. Additional storage shelter is shown directly south of the existing facilities for illustrative purposes. See **Figure 5.7** for a graphical depiction**.**

#### 5.2.3.4 GSE Maintenance Facility

The Airport constructed a specific facility to accommodate the maintenance of airline ground service equipment that opened in 2010. Based on the facility requirements the existing facility is adequate to meet demand for the planning period. While expansion of the facility is not anticipated based on the project level of activity at TPA, it is prudent to consider preserving an area to accommodate future needs that may occur beyond the 20-year planning period or may result from unforeseen events prior to the end of the planning period.

Currently there is limited area on the east end of the current building that would allow for a minimal extension of the facility that would likely be capable of accommodating a single tenant addition. If a larger area was required land west of the GSE building was acquired in 2012 that would allow for the westerly extension of the GSE building to the east Right of Way line of N. Westshore Blvd. This could accommodate almost double the presently available GSE Maintenance space. The areas reserved for potential expansion beyond the current master plan timeframe are depicted in **Figure 5.7.**

#### 5.2.3.5 ARFF Training Facility

The 2005 Master Plan developed a concept for a larger Airport Rescue and Fire Fighting Training area that was to be located within the boundary of the Eastside Development Area. This training facility was intended to replace a smaller ARFF training site that was, and remains in the North Terminal Area. Recognizing that there are no viable locations in the South Development Area to accommodate an ARFF training area and that the current site would ultimately have to be abandoned during the later stages of the North Terminal Development Program, the focus of the evaluation of where a potential replacement site could be accommodated focused on locations on the east side of the Airport. This area was focused on due to land constraints elsewhere on the Airport and the future development of a component of the North Terminal where the current ARFF Training area is located.

As a part of this effort several meetings were conducted with HCAA personnel. As a first step in the process, the facility components and requisite safety zones surrounding the facility and requirements associated with each zone were identified. Early in the assessment process it was found that due to a 1,000 foot zone that precluded any residential development, the site that was originally depicted in the previous Master Plan would not be viable without the need to acquire additional property on the east side of Air Cargo Road. Furthermore, representatives from the Airport fire department indicated that the former master plan site along with a series of alternative sites that were preliminarily identified in areas to the north of West Osborne Avenue were not deemed viable due to response time requirements from the training areas of the airfield should an incident occur. This input removed from consideration sites north of the current Ground Service Equipment building.

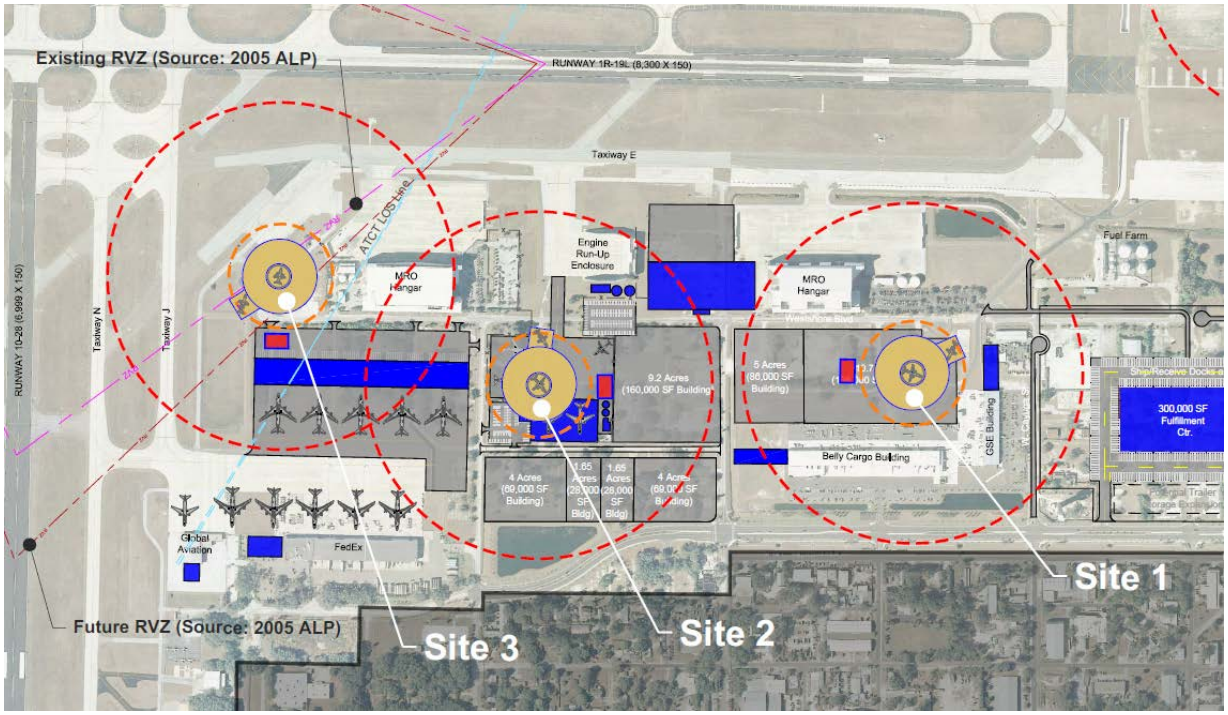
An additional site was identified that was located along the south side of West Tampa Bay Boulevard to the east of the line of existing general aviation hangars. Adequate space existed to accommodate the physical requirements for the facility, and it was possible to site the facility so as to not include any residential use in the 1,000 foot zone, however, the facility would be located immediately across from the Hillsborough County Community College and in relatively proximity to North Dale Mabry Highway. Finally, the placement of the facility would place it even further removed from the primary runway system and the terminal than was the case with the locations north of the GSE building. This location was also dismissed from further consideration.

Given the need for unimpeded access to the airfield to meet minimum response time requirements coupled with the potential impacts to adjacent off-airport areas associated with smoke generated from the staging of fire training scenarios, the analysis focused on finding locations as far to the west within the Eastside Development Area as possible. While this would place the facility closer to the active airfield, prevailing winds in the Tampa area predominate from northwest, west and southwest much of the time which would move the plume away from the approach/departure path of Runway 1R/19L.

Based on the initial review of potential sites, three alternative locations were identified and carried forward for review as a potential location for a relocated ARFF Training facility. The three areas that were identified are depicted in **Figure 5.8** and are discussed below.

**Figure 5.8**

**ARFF Training Site Alternatives**



*ARFF Training Site 1*

ARFF Training Site 1 is located on currently undeveloped property southwest of the existing GSE building west of the Belly Cargo building and northeast of the northernmost PEMCO maintenance hangar. The facility would be placed on the northern end of a 15-acre parcel with landside access provided by way of North Westshore Blvd. Direct airside access would be afforded by way of the existing secure road that currently provides access to the airfield from the Belly Cargo and GSE buildings. The tract of land is situated immediately adjacent to other airport support facilities and could be incorporated within the airport security perimeter with a minimum amount of difficulty. The positive and negative features of Site 1 are outlined in the listing below:

*Attributes*

- The site is outside of runway approach and any other object or visibility zones.
- No public vehicle parking is within the 300 foot radius nor are there any residences within 1,000 foot radius, as set forth in design guidance.
- Access to airfield is provided by the existing secure airport roadway that connects on the north end of Taxiway E. This access point does not require passing through security gates or access checkpoints.
- There is a direct line of access across Runway 1R/19L to Taxiway Bravo and Taxilane A to access northern half of Runway 1L/19R
- There is direct access via Taxiway E to Runway 10-28.
- Site One is the closest site to the previously selected ARFF Training site that was located to the north of Site One in the previous Master Plan.
- The site minimizes impact to prime developable concepts and minimizes impact to planned MRO cluster development area.

*Constraints*

- A decentralized location such as Alternative 1 extends primary and secondary response times. (Note: this is under the assumption that primary and secondary ARFF response vehicles are used for training and that duplicates are not available for response purposes).
- Ability to meet response time to Runway 1L/19R and the future third parallel runway are questioned by airport personnel unless some equipment remains at station.
- It precludes future development of aviation related facilities (i.e. cargo/MRO etc.).
- It precludes proposed land uses in this area that based on reasonable valuation would generate a land lease of approximately $5 per SF which for a 10 acre site is approximately $2,178,000 annually to the Airport.
- While possible, placement of the training facility in between active belly cargo, MRO, and GSE facilities is somewhat atypical. Most training installations are located at the outer limits of an airport's property away from other development and aviation activity.

Some such as the new Jacksonville fire training facility that is being funded by FAA are even located at off-airport locations.

- ARFF vehicles must cross an active runway (1R/19L) to get to 1L/19R.

ARFF Training Site 1 has the benefit of having access to an existing secure road that would facilitate unimpeded access to the airfield, without having to pass through a security gate and face the associated response delay. While Site 1 is located near existing airport support facilities the area is sufficient to meet the required safety zones around the facility and would not be located so as to impact ATCT lines of sight or be in the center of a proposed development area. Concentration of potential smoke within proximity of existing support facilities does not lend Site 1 to be an ideal location to relocate the facility.

*ARFF Training Site 2*

ARFF Training Site 2 is located on currently undeveloped property east/southeast of the existing ground run-up enclosure. The facility would be placed in the approximate center of a 9.6 acre parcel with landside access provided by way of West Ohio Avenue. The tract of land is situated immediately adjacent to other undeveloped parcels reserved for airport support uses and could be incorporated within the airport security perimeter with a minimum of difficulty. The positive and negative features of Site 2 are outlined in the listing below:

*Attributes*

- Site 2 is outside of any runway approach zone or other object free or restricted visibility area.
- No public parking or places of residence within the 300 or 1,000 foot radii, respectfully.

*Constraints*

- Decentralized location extends primary and secondary response times. (Note: this is under the assumption that primary and secondary ARFF response vehicles are used for training and that duplicates are not available at the ARFF station for initial response purposes).
- Access to the airfield would either require the closure of North Westshore Blvd. and the development of a secure dedicated roadway to the existing taxilane extending from Taxiway E to the run-up enclosure or vehicles would be required to use public roads to access a security gate to enter the airfield.
- Response to Runway 1L/19R and future third parallel would need to be analyzed given the potential delay of crossing/using public roads and having to access via security gates. This could result in even greater response time than under Site One.
- Alternative Two (Site Two) would negate the ability to develop the final parcel of land with reasonable potential for airfield access for future large hangar/MRO hangar development. Preserving this potential was a key recommendation of the Eastside development program. Other proposed MRO-centric land uses in this area have much greater potential revenue and return-on-investment to the Airport.

- It precludes proposed land uses in this area that based on reasonable valuation would generate a land lease of approximately $5 per SF which for a 10 acre site is approximately $2,178,000 annually in possible revenue to the Airport.
- While possible and similar to Site One, placement of training facility in between active aviation uses or in an area that will be the future site for these uses is somewhat atypical. Most training installations are located at the outer limits of an airport's property away from other development and aviation activity. Some are even located on off-airport exclaves.
- ARFF vehicles must cross an active runway to get to 1L/19R.

ARFF Training Site 2, while being considered a possible site for the ARFF Training facility was not determined to be the most desirable or viable site due to the current lack of direct and quick access to the airfield for ARFF response. Further, the parcel of land that would be used for the ARFF Training Facility under this option would be located in the center of a proposed development area for an array of land uses intended to enhance the viability of MRO activities at TPA. It was believed that the development of the ARFF Training area with its activities and potential impacts, in the center of the MRO area could act to discourage the ability to attract new or expanded business to the area. Finally, it was noted that the parcel in question is the one area off of the current flightline that had reasonable viability for development of added hangar facilities should such demand emerge. It was noted that this capability should be maintained as long as possible to ensure that should demand emerge a site proximate to other large MRO facilities could be developed. This option is therefore deemed to not be ideal.

*ARFF Training Site 3*

The third alternative site for an ARFF Training facility was identified at a location to the south/southeast of the southernmost PEMCO maintenance hangar near the southern terminus of North Westshore Blvd. Within this general area a single site was initially identified that was on the west side of North Westshore Blvd south of PEMCO. As the site was considered, a second configuration of a facility in the same general vicinity was identified along the east side of North Westshore Blvd, just west of the existing air cargo ramp located in the Eastside Development Area. Landside access to both potential locations within Site 3 would be provided via West Ohio Avenue to North Westshore Blvd.

Access to the airside is provided via several possible means that include the use of the existing on-airport secure roadway to reach Taxiway F and use of Taxiway F to access either Taxiway E or Taxiway J and the remainder of the airfield. Of all of the sites considered this general location provided the most direct accessibility to the airfield in the event of an incident occurring while training activity was underway. While possessing a number of positive features or attributes as noted in the items listed below, the location also had a number of serious challenges that needed to be considered as well. One very significant challenge is the location of Site 3 near the intersection of Runway 1R/19L and Runway 10-28 in or immediately adjacent to the Runway Visibility Zone (depending upon the concept for site 3) and also in the line of sight of the Air Traffic Control Tower to operations occurring on Runway 28 and Taxiway N. The positive and negative characteristics of ARFF Training Site 3 are delineated below:

*Attributes*

- Most centrally located site with better ability to provide primary and secondary ARFF response if/when necessary. (Note: this is under the assumption that primary and secondary ARFF response vehicles are used and that duplicates are not available for training purposes).
- Direct airfield access from site to Site 3 via Taxiway E, Taxiway F and Taxiway J.
- Open 270 degree perspective of airfield can improve response to a real incident.
- Outside of runway approach zones.
- No public parking or places of residence within 300 or 1,000 foot radii.
- Does not preclude or negate any other development activity or recommended land uses as is the case with Site One and Site Two.

*Constraints*

- Constrained site due to minimization of facilities in RVZ and adjacent airfield and airport facilities. Any shift of the facility to the east would generate increased adverse impact to future cargo facility development space.
- Vehicles would be required to be within the RVZ with the potential of impacting visibility.
- Placement of fuselage mock ups and staging of fire-fighting training with the resulting smoke at this site could create potential pilot confusion for operators landing on Runway 19L and Runway 28
- The location is partially within the existing runway visibility zone, which is believed likely to trigger concern or potential opposition to the site during the Safety Risk Management process associated with the Airport Layout Plan.
- Would be brought within the runway visibility zone resulting from long-term runway extensions to Runway 19L. Placement here would typically require a waiver from the FAA or the facility could require relocation at the time of an extension of Runway 1R/19L.
- Resulting smoke from facility could pose a perceived “hazard” for runway visibility, although scheduling of activity could be used to reduce this issue.
- Resulting smoke and thermal plume from facility could pose a “hazard” for ATCT controllers, by adversely impacting visibility to the existing Runway 28 threshold and/or approaches to the Runway 28 end.
- Depending on times of operations for such a facility it is a potential eyesore for arriving/departing passengers and also could confuse travelers that may not realize it is a training facility.
- ARFF vehicles must cross an active runway to get to 1L/19R

Based on the above considerations Site 3 was not identified as a potential location that should be carried forward. While having excellent access to the airfield from a response time perspective, the impact of the runway visibility zone, concern over ATCT visibility and the

potential distraction/confusion for pilots associated with the facility being located proximate to the operational runways were determined to overshadow the positive features of the proposed alternative.

Based on the above and the determination that the North Terminal Complex would not be required until beyond the 20 year horizon of the Master Plan Update, the focus of the ARFF Training analysis shifted. The immediacy of the perceived need to relocate the facility was removed and the decision was made to maintain the current ARFF Training Facility in its present location in the North Terminal Development Area and undertake reasonable upgrades to the existing facility. Due to the constraints at all three sites, the preferred solution was to re-evaluate Site 3 in the future. There is a potential to move Site 3 further to the east within the future cargo area. The facility would occupy the southern half of the area where the future cargo facility is shown. This would require the Airport to take a look at a new cargo forecast to determine if space would be available. This alternative continues to be under study.

#### 5.2.3.6 Central Concessions Warehouse

The focus of this section is to explore alternatives to provide a Central Concessions Warehouse facility at TPA. Currently the airport does not have a facility where all merchandise and other deliveries can be concentrated, screened and then distributed to the airsides and landside concessions. Deliveries currently are received on the lower level of the north side of the main terminal building which is a constrained area which limits the size of trucks that can be accommodated. Deliveries also contribute to truck traffic on the terminal circulation roadway. The constrained nature of the existing operation is the impetus for exploring a more optimal and feasible location for a Central Concessions Warehouse facility.

The Manager of Concessions initiated the effort to define a location for the possible development of a Central Concessions Receiving and Distribution Warehouse that would provide approximately 20,000 to 25,000 SF of space for receipt, screening, storage, refrigeration and build-up of deliveries to airside and landside concessions.

Siting of the Central Concessions Warehouse considered several key facility parameters that included:

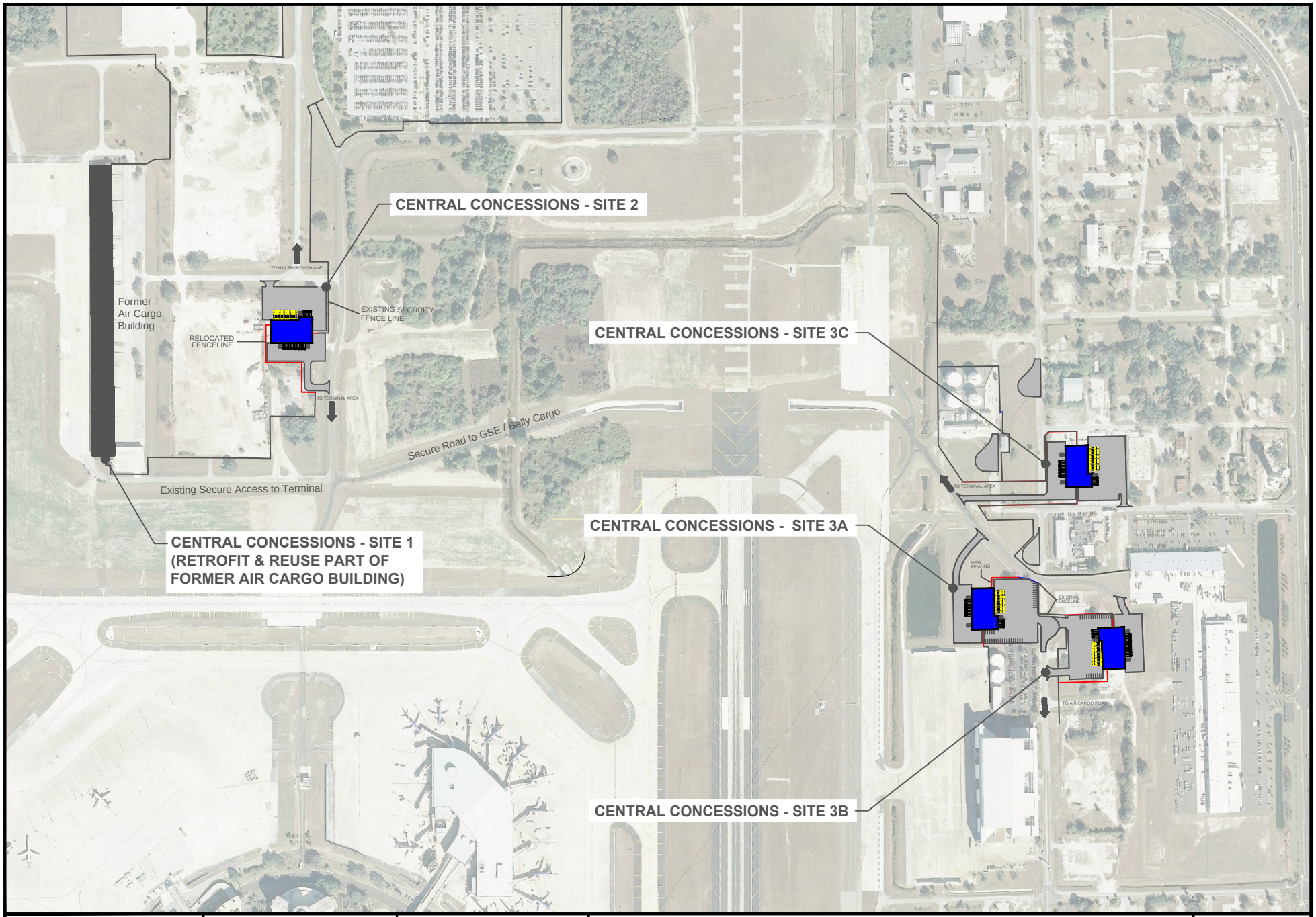
- Direct and efficient access to the landside face of the facility.
- Provision of adequate depth for truck maneuvering on the delivery and distribution side of the facility.
- Direct connection of the distribution side of the facility to the SIDA, keeping all delivery vehicles distributing product to the airside within the secured perimeter.
- Minimize the travel time and distance from the warehouse to the terminal complex.
- Capable of accommodating special facility needs, including security screening and refrigeration.

*Site Selection Process*

Several areas were initially identified as possible locations for the facility. These included the potential placement of the warehouse as follows: somewhere within the South Development Area; potential re-use of part of the former air cargo building in the North Terminal Development Area; development of a greenfield site in the North Terminal Area; and finally, consideration of sites in the Eastside Development Area.

The South Development Area was quickly removed from consideration due to the inability to move vehicles from any location within the South Development Area to the terminal complex without having to either cross an active runway or exit the secured area and utilize a public roadway. Given other demands for space in the South Development Area, the ability to accommodate another facility was not found to be feasible. This led to the identification of options within the North Terminal Area and the Eastside Development Area.

Two North Terminal Area alternatives were identified. These sites are depicted on the alternatives overview in **Figure 5.9.** The first alternative consisted of the potential rehabilitation and re-use of a portion of the former air cargo building located along the east side of Runway 1L/19R. In recent years the HCAA had undertaken actions to remove facilities from the area north of Taxiway Bravo between the two north/south parallel runways. One of the actions taken was the development of the new belly cargo building and GSE Maintenance Building in the Eastside Development Area and the resulting relocation of cargo facilities from the north terminal area to the east side of the Airport. These actions were in anticipation of the initial construction phase of the North Terminal Complex, which, based on projected demand in the 2005 Master Plan was to be initiated when the Airport reached the 25 Million Annual Passenger Level (MAP). This level of activity was forecast to occur between 2015 and 2020. With the deep recession of 2007, the subsequent impact this had on aviation activity, and the revised forecast of demand undertaken in the 2012 Master Plan update, the timing of the need for the north terminal has shifted significantly further into the future.

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# Concessions Warehouse Alternatives Overview

TAMPA INTERNATIONAL AIRPORT
TAMPA, FLORIDA

DATE:
Apr 09, 2013

FIGURE:
5.9

*Alternatives Discussion*

The following sections discuss each of the alternate locations and their attributes and constraints. Ultimately the discussion concludes by identifying a preferred alternative.

*Alternative 1 – Reuse of a Part of the Former Air Cargo Building*

The former air cargo building has not been demolished. The building is approximately 95 feet wide and 1,350 feet in length and provides an estimated 128,250 SF of enclosed space. The available area is well in excess of the area needed for the central warehouse facility. Landside access is provided from Hillsborough Avenue by the southerly extension of North Hoover Blvd and an internal airport road that connects to the former air cargo building landside area. The location of the former air cargo building is delineated on **Figure 5.9**. The existing building is already configured with truck dock positions and affiliated maneuvering area to accommodate vehicle sizes up to semi-tractor trailers for landside deliveries.

Similarly, and consistent with the operation of a central concessions facility, there is sufficient existing paved area on the west side of the former cargo building within the Security Identification Display Area (SIDA) to accommodate delivery trucks used to make deliveries of product to the airsides and the terminal. Thus, the building is well situated to allow for deliveries on the non-secure side, to process and screen these deliveries in the building and to distribute them to vehicles parked within the SIDA for delivery:

*Attributes*

- Allows for the reuse of a portion of an existing building that is currently vacant.
- Secure access is already available to the former air cargo building.
- Landside truck maneuvering areas are already in place, although a pavement overlay of these areas is likely necessary.
- Does not result in the construction of new buildings within the boundaries of the North Terminal Development Area.

*Constraints*

- The airside truck maneuvering area is on the same level as the building floor, creating difficulty in the movement of deliveries from the building to distribution trucks. Excavation and development of a depressed loading dock space for direct transfer from the building floor level to the truck floor level is anticipated to be required.
- Overlay of the Cargo Access Road is likely necessary to accommodate truck traffic.
- Addressing the secure-side truck dock issue will necessitate potentially challenging and costly drainage improvements to ensure dock areas do not flood.
- Requires retrofitting a building that was originally developed for pass-through cargo processing with only limited actual warehousing. Retrofitting to accommodate enhanced security screening of deliveries, potential bulk refrigeration and the typical process flows associated with a central warehouse facility will be a challenge.

- The existing air cargo building is estimated to be roughly 40 years old and is in need of upgrades to address issues with the condition of the facility.
- Cost estimates developed by the HCAA indicate that the re-use of the former cargo building for the intended purpose is costly, and given the other issues noted, is not a desirable alternative when compared to development at a greenfield site.

*Alternative 2 – New North Terminal Area Concessions Warehouse*

The second alternative involves the development of a specifically designed stand-alone facility to serve as a Centralized Concessions Warehouse. The alternative is based on the fact that the development of the North Terminal is being shifted much further into the future and is not anticipated until after the 20 year planning horizon of the 2012 Master Plan update. Given this anticipated delay in the need for the north terminal, the development of limited facilities such as a 20,000 to 25,000 SF structure and paved vehicle operations areas would be viable and not of a sufficient size or cost to impede the future terminal if or when it is required. The Central Concessions Warehouse plays a vital role in supporting the Main Terminal Complex. Having the facility as close to the main terminal as possible is important and increases the efficiency of the concession operations and the North Terminal Development Area is the closest area to the Main Terminal Complex of those identified.

The site identified for Alternative 2 comprises 2.85 acres that would include both the warehouse facility and the landside and airside truck loading, maneuvering and vehicle parking areas. The center of the proposed site is located approximately 2,500 feet south of Hillsborough Avenue, 1,170 feet north of the Taxiway B Bridge and 825 feet east of the former air cargo building. The location of the Alternative 2 Concessions Warehouse is approximately 2,910 feet from the north face of the existing Main Terminal. The Alternative 2 Central Concessions Warehouse is depicted in **Figure 5.9.**

Landside access to the proposed facility would be from Hillsborough Avenue south by way of the current non-secure alignment of North Hoover Boulevard. The current intersection of Hillsborough and North Hoover has traffic signals and a dedicated left turn lane off of the eastbound lanes of Hillsborough. The alignment of North Hoover Boulevard south of Hillsborough Avenue is a two lane paved roadway that has previously accommodated truck traffic to and from the former air cargo area. The proposed site is currently located adjacent to, but outside of the security fence requiring a minor realignment of the fencing to divide the landside operations from those that would be accessing the airsides and the terminal. Access from the warehouse to the terminal complex would be provided by an existing north/south two-lane roadway that is located entirely inside the security fence. This road runs immediately east of the proposed site and would be connected by an access drive to the secure side of the warehouse facility. The road extends south to a security checkpoint prior to the alignment of crossfield Taxiway B and then proceeds under the Taxiway B Bridge across Taxilane A to the main terminal ramp and terminal buildings:

*Attributes*

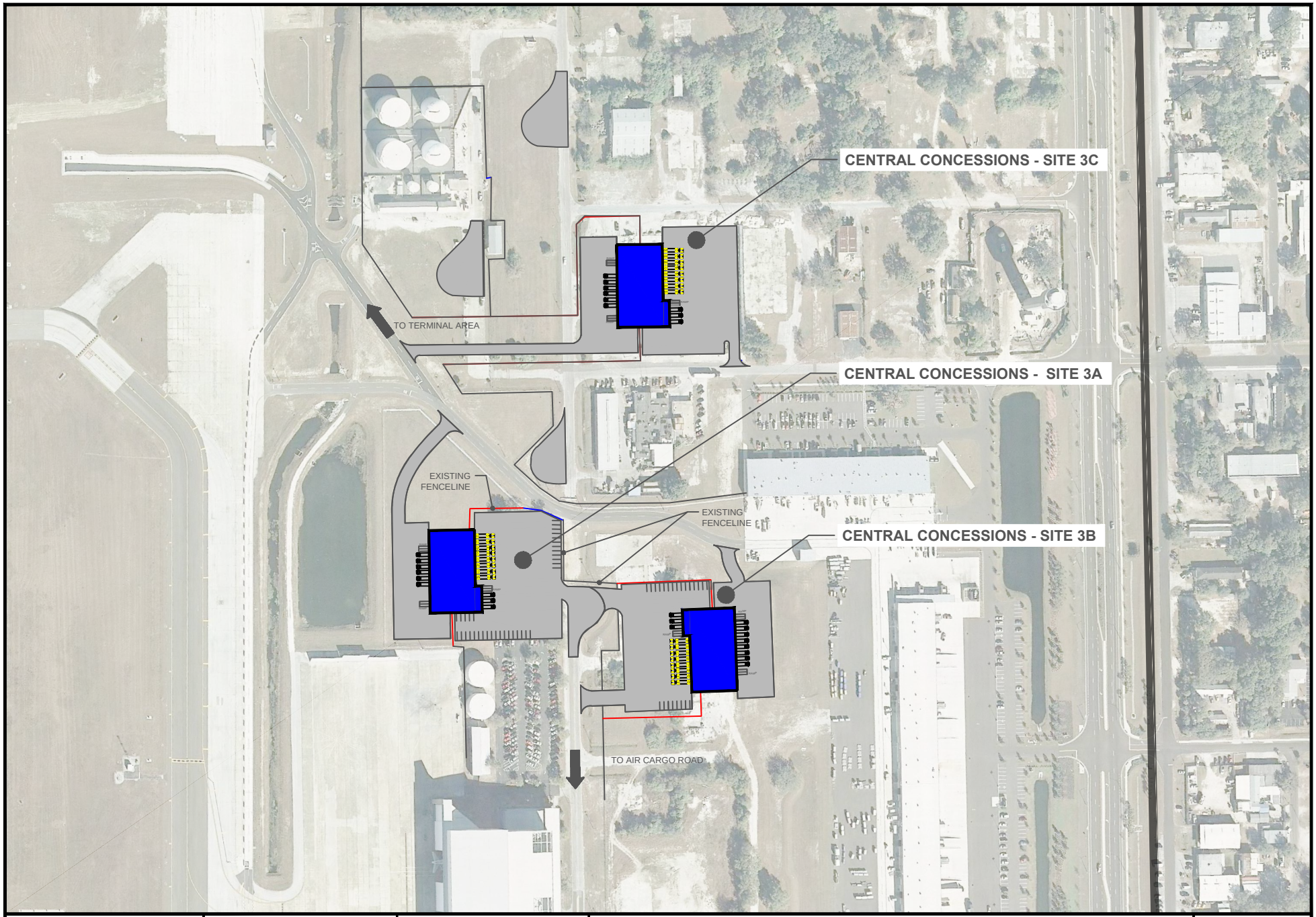
- No Improvements to the Hillsborough Avenue/North Hoover Boulevard intersection are deemed necessary to support the project.

- Proposed facility would be specifically designed and constructed to serve the intended role removing possible configuration or layout issues associated with the first alternative.
- Alternative 2 is located in closest proximity to the main terminal area of the alternatives identified, providing the most direct and quickest access to and from all areas of the Main Terminal Complex.
- Access to the site is direct and off of a major regional roadway with direct access to an interstate grade highway.

*Constraints*

- Places a completely new facility in area that the HCAA has committed considerable funding in recent years to relocate facilities out of to render the area suitable and available for future terminal development.
- It is anticipated that some extension and/or upgrade of supporting utility infrastructure would be necessary to support development on the site.
- Expenditure of funds to build the facility would be relying on the belief that there will be no need whatsoever for the North Terminal until after the concessions facility would be depreciated. While this is currently forecast, the dynamic and changing nature of the aviation industry always presents an element of uncertainty.
- Ultimately the North Terminal will be constructed in a phased program and the first phase of that program would require relocation of the proposed concessions facility.

The three remaining alternative sites are clustered in a relatively small portion of the Eastside Development Area and are generally located to the northwest, south/southwest and west of the existing GSE Maintenance Building. Due to their close proximity to one another they tend to share similar attributes and constraints with only a few variations from location to location. Each site is situated in close proximity to the existing secure roadway that currently provides secure access between the GSE and Belly Cargo buildings and the main terminal and terminal airsides. A secure roadway connection to the airsides and Main Terminal Complex is a key requirement for the central concessions warehouse. The three Eastside Development Area alternatives are depicted in Figure 5.9 and **Figure 5.10**.

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# Concessions Warehouse Alt 3A-3B-3C

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DATE:
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FIGURE:
5.10

*Alternative 3A – Eastside Development Area north of PEMCO Hangar*

Alternative 3A considers placing the concessions warehouse on a partially vacant parcel to the north of the northern PEMCO MRO hangars. The facility would be located to the immediate east of an existing stormwater detention pond, south of the secure road serving the belly cargo building, west of a portion of North Westshore Boulevard and north of the PEMCO hangar. To facilitate the land area requirements associated with the concessions warehouse, approximately half of the vehicle parking for the PEMCO facility would have to be relocated, and could be accommodated on currently vacant property to the east/southeast of the hangar. The configuration of Alternative 3A is presented in **Figure 5.10**.

Alternative 3A is located on a 4.04 acre site. As conceptually configured, the facility would front to the east facing North Westshore Boulevard and the secure airside portion of the operations would be located on the west side of the warehouse structure. A short connector drive would extend from the west side secure truck maneuvering area north to intersect with the existing alignment of the belly cargo/GSE secure road. Landside access to the facility would be provided from Cargo Road to the site via West Dr. Martin Luther King Jr. Boulevard to North Westshore Boulevard and then north to the facility location. Improvements to both West Dr. M.L. King Jr. Blvd. and to North Westshore Blvd, totaling approximately 2,300 feet of roadway, would be required to accommodate the added truck traffic that would be expected. Landside access to Alternative 3A is more circuitous than that associated with Alternative 1 or 2 or Alternative 3C, as vehicles would typically travel via Cargo Road turning south of the site onto Dr. M.L. King Jr. Blvd. and then to North Westshore where they would turn back to the north to access Alternative 3A. While a consideration, this is not a fatal flaw with the alternative.

While located between North Westshore Boulevard and Taxiway E, Alternative 3A makes use of a tract of land that has limitations, which reduce its viability for aircraft related use. Typically, land located adjacent to the airfield is reserved for uses requiring aircraft access and those uses that do not directly support aircraft are placed elsewhere. The site for Alternative 3A is blocked from accessing Taxiway E by a detention pond located along most of the west side of the site. However, Alternative 3A has the third best accessibility to the Main Terminal Complex of the options under consideration. Although the first two alternatives are closer than Alternative 3A, there would be no potential need in the future to relocate from this site as is the case under the first two alternatives.

Development of Alternative 3A would impact vehicle parking associated with the northern PEMCO MRO hangar. As conceptually configured, approximately 34,500 SF of existing PEMCO parking lot would be affected and would have to be replaced in the general vicinity of the north hangar. While land is currently available to the south of the hangar, this site has been identified as a potential location for a third hangar to meet PEMCO's needs and the HCAA has in the past been in discussions about this possible facility with PEMCO. As a result, the impacted parking would likely have to be shifted to a location across North Westshore Boulevard immediately east of the northernmost PEMCO MRO hangar. While land is available, this area has been identified as a potential site for development of a multi-tenant building to house MRO support and other airport support uses:

*Attributes*

- Utilizes a site that has limited viability for use by an entity requiring aircraft access to the airside; although it could be used for some ramp expansion by PEMCO if demand were to warrant it.
- The proposed facility would be specifically designed and constructed to serve the intended role, removing possible configuration or layout issues associated with the first alternative.
- While not as close to the Main Terminal Complex as Alternative 1 or 2, Alternative 3A is slightly closer than the other two concession warehouse alternatives in the Eastside Development Area.
- Would not face the potential for having to be relocated in the future to accommodate the North Terminal Complex as is the case with Alternatives 1 and 2.
- Does not require the closure of any existing right of way to access the main terminal as is the case under Alternative 3C.
- Has excellent proximity to the existing secure roadway that connects the Eastside Development Area to the Main Terminal Complex.

*Constraints*

- The alternative impacts approximately half of the existing PEMCO parking lot north of the northern PEMCO hangar, requiring the relocation of this parking elsewhere in proximity to the hangar.
- Additional PEMCO parking would impact land that has been identified for development of a revenue producing MRO support or other aviation use support multi-tenant building.
- Development of Site 3A is anticipated to require renegotiation of the lease with PEMCO to allow for the use of the site.
- Landside access to the site is one of the most circuitous routes of the options identified and reviewed.
- Anticipated to require upgrades to both West M.L. King Jr Boulevard and North Westshore Boulevard totaling approximately 2,300 feet of improved roadway length constructed to a typical Hillsborough County roadway section standard.

*Alternative 3B – Eastside Development Area southwest of GSE building*

The Concessions Warehouse as configured under Alternative 3B would front to the west facing North Westshore Boulevard. The secure airside portion of the operations, located on the east side of the warehouse, would face towards the back side of the belly cargo building and affiliated secure tug and vehicle apron. A short connector drive would extend from the secure east side truck maneuvering area north to intersect with the existing alignment of the belly cargo/GSE secure road. Landside access to the facility would be provided from Cargo Road to the site via West Dr. Martin Luther King Jr. Boulevard to North Westshore Boulevard and then north to the facility location. The alignment of both West M.L. King Boulevard and North Westshore Boulevard would require improvement to accommodate the added truck traffic.

Landside access to Alternative 3B is essentially the same as that associated with Alternative 3A. Both sites result in a more circuitous landside access route than that associated with Alternative 1, 2 or 3C. This is because vehicles would typically travel via Cargo Road turning south of the site onto Dr. M.L. King Jr. Blvd. and then to North Westshore where they would turn back to the north to access the site of Alternative 3B. While a consideration, this is not a fatal flaw with the alternative. The location and configuration of Alternative 3A is presented in **Figure 5.10**.

The general area in which the site for Alternative 3B is situated is identified for the development of airport support facilities and the central concessions processing warehouse falls into this category of activity. However, the location that is identified for Alternative 3B was previously identified, evaluated and recommended as the potential future location for the ARFF Training Facility that would be relocated once the North Terminal was developed. It should be noted that options for a relocated ARFF Training Area are highly constrained due to operational requirements, design criteria, surrounding land uses and the goals set forth for the Eastside Aviation Development Area planning process.

While it would be possible to move the Concessions facility further south to accommodate the ARFF Training Area, this would increase the distance of the facility from the terminal area with an attendant increase in travel distance and travel time to and from the concessions use area. The idea of moving the facility to a location further south was presented to the HCAA Concessions Manager, and based on input received, a more southerly location was not considered a viable option. Additionally, shifting the facility further to the south would result in the loss of developable land identified as part of the MRO cluster development area as a potential site for a multi-tenant building housing a variety of MRO support businesses:

*Attributes*

- It is not anticipated that this alternative would impact any existing long-term leases or require any renegotiation of lease provisions as is the case with Alternative 3A.
- The site is presently undeveloped and available.
- The site is immediately adjacent to the existing secure roadway connecting the Eastside Development Area to the Main Terminal Complex.
- Proposed facility would be specifically designed and constructed to serve the intended role removing possible configuration or layout issues associated with the first alternative.
- Does not require the closure of any right of way to provide access to the main terminal as is the case with Alternative 3C.

*Constraints*

- A constraint of Alternative 3B is the fact that it would negate the recommendation for the site to be reserved for a future ARFF Training relocation as the Concession Warehouse alternative is within the same property envelope. Limited options exist on existing airport property for the relocation of the ARFF Training Facility.
- Landside access to the site is somewhat more circuitous when compared against Alternatives 1, 2 and 3C.

- Development of Site 3B is anticipated to require upgrades to approximately 2,300 feet of roadway. These improvements would involve bringing the road up to a Hillsborough County typical section standard.

*Alternative 3C – Eastside Development Area Northwest of GSE Building*

The third and final Concessions Processing Warehouse alternative identified in the Eastside Aviation Development Area is located northwest of the existing GSE Service Building at the northeast corner of West Cayuga Street and North Westshore Boulevard. While it would be possible to configure access off of West Curtis Street, due to the configuration of Cargo Road, access would be limited to right turn in and right turn out movements only. This is the basis for selecting West Cayuga Street as the primary point of ingress and egress. Additionally, the Fulfillment Center concepts that are discussed later in this section would result in the closure of West Curtis Street to provide a fully consolidated and unimpeded site for future development. The facility would be oriented with the landside receiving activities facing to the east and the secure side distribution activities on the west side of the building. The total development tract, including the 405 foot long access roadway to the existing tug road, encompasses 3.95 acres of land that was originally identified as part of the overall fulfillment center/distribution development area. **Figure 5.10** shows the location and conceptual layout of Alternative 3C.

Alternative 3C was identified as an alternative after attempts at accommodating the Concessions Warehouse footprint on land west of North Westshore Blvd, south of the existing fuel farm was not deemed viable. This was due to the configuration of the parcel and the potential need for land to be preserved for the future southerly expansion of the fuel storage capacity. In lieu of the site south of the fuel farm, Alternative 3C was identified.

Alternative 3C has the most direct landside accessibility of the three Eastside Development Area options. It also results in more limited improvements required for eastside roadways to support the facility. Improvements to West Cayuga Street could be limited to an 800 foot section from Cargo Road to the entrance of the landside truck dock area of the Concessions Facility. While improvements to West Cayuga are less than the improvements to public roads under the other eastside options, Alternative 3C would require construction of a longer access drive between the secure side of the facility and the existing belly cargo tug road. It would also necessitate the construction of a new drive connector from the fuel farm facility to the truncated end of North Westshore Blvd. To facilitate the future provision of tug access to the fulfillment/distribution center tract north of the Concessions Warehouse, North Westshore Boulevard would need to be converted to a cul-de-sac at a point north of its current intersection with West Curtis Street. This would trigger the need to reconfigure the roadway serving the fuel farm in one of two ways. A turnaround within the existing fuel farm site could be developed to allow trucks the capacity to exit using the same entrance driveway that is presently used to enter the site, or a new exit drive could be developed that would connect to the North Westshore Blvd cul-de-sac north of West Curtis Street, as depicted on **Figure 5.10**. The attributes and constraints associated with Alternative 3C are delineated below:

*Attributes*

- It is not anticipated that this alternative would impact any existing long-term leases or require any renegotiation of lease provisions as is the case with Alternative 3A.

- The site is presently undeveloped and available.
- Landside access to Alternative 3C is less circuitous than that associated with Alternatives 3A and 3B with a more direct route to and from the Air Cargo Road.
- The extent of roadway improvement is approximately half of that associated with Alternatives 3A and 3B, involving the upgrade of the alignment of West Cayuga from Cargo Road to the intersection with North Westshore Blvd.

*Constraints*

- The proposed alternative would result in a limited reduction in the acreage originally identified for development of a distribution/fulfillment center use.
- More extensive site preparation would be required on Alternative 3C to remove existing paved slabs that were part of commercial/industrial structures that were formerly on the site.
- Development of Alternative 3C is anticipated to require upgrades to approximately 2,300 feet of roadway. These improvements would involve bringing the road up to a Hillsborough County typical section standard.
- Requires the truncation of North Westshore Blvd prior to its current intersection with West Cayuga Street to provide a secure route for connecting to the existing cargo/GSE tug road. However, the truncation of North Westshore Blvd has been identified as being required to support tug access to the future fulfillment/distribution center.
- The alternative would require the construction of a new exit roadway from the fuel farm to connect with the truncated end of North Westshore Blvd.

*Recommendation*

Based on the discussion above, Alternative 3B is the recommended option for the development of a central concessions processing and warehouse facility. This alternative does not result in the development of the facility in a location that could one day conflict with the future terminal or the fulfillment center development area. It is not situated within an area that is presently leased to another tenant at the Airport as was the case with Alternative 3A.

#### 5.2.3.7 Airport Police Training and Support Facilities

The focus of this section is to explore the long-term needs of the Airport Police training and support facilities at TPA.

Presently, the HCAA airport police have facilities in the Airport Service Building, immediately adjacent to the Red Side Arrivals Curb. They have additional facilities, including the police firing range, K-9 training area and other supporting uses, located at the far north end of the Eastside Aviation Development Area. The facilities in the Eastside Aviation Development Area are located within an area of approximately 5.7 acres. The area is currently cleared of significant tree cover and is outside of potential wetland areas. Based on discussions with the HCAA Chief of Police, a review of current facilities in the Service Building and the fact that the Service Building will have to be demolished during the planning period, there is a need to address

existing deficiencies, provide for replacement space and to consider the addition of specialized uses to facilitate enhanced training for Airport Police.

Not all of the activities currently housed in the Service Building are anticipated to transfer to the eastside police training area. Facilities such as the Communications Center, evidence lockers, detention and interview rooms, records rooms, personnel offices and others will remain either in the terminal area or will be relocated to the proposed HCAA Office in the South Development Area. Activities anticipated to shift to the Eastside Area would include weight training and locker rooms, along with dividable multi-purpose space that could be used for personnel combat training as well for classrooms. Associated storage space and limited office and administrative space would also be anticipated to be included in the relocated training facility. Given the proposed uses anticipated in the facility, a building size of approximately 7,500 SF was defined.

In addition to the expanded training facility, a second facility consisting of a live fire shoot house was considered. The shoot house would facilitate training to respond to potential criminal or terrorist events. The size and complexity of a shoot house can vary depending upon the scenario under consideration. To ensure that the plan is capable of meeting a robust facility requirement, it has been assumed that a facility replicating a commercial structure would be employed. Based on a review of various shoot house floor plans, a facility of approximately 1,500 SF and dimensions of 60 feet in length by approximately 25 feet in width has been used for site planning.

A review of the existing acreage that is cleared, available and outside of potential wetland areas resulted in the identification of a concept that would fully satisfy the identified requirements. The concept and siting of the future facility would allow for added expansion in the future and not significantly impact the configuration of existing activities in the area. Accommodation of the shoot house can be accomplished by placing the facility immediately north of the current firing range. This would necessitate the relocation of an existing outdoor physical training course, which could be relocated to a site immediately west across an access drive from the shooting range. Ample space exists to accommodate the identified shoot house, while parking could be provided at the shooting range building or across the access road entering the site in a shared lot that would also support the training building.

*Recommendation*

The proposed 7,500 SF training facility is recommended to be placed to the southeast of the K-9 training facility. Adequate space is available in this location to provide for the structure and affiliated parking. However, the development will require the reconfiguration of an existing dry retention basin to provide for the required stormwater management. Addressing the stormwater needs might be achieved through the development of added retention capability to the west of the K-9 site on property that is currently unoccupied.

## 5.2.4 Air Cargo Facility Development

The focus of this section is centered on addressing long-term cargo needs at TPA.

### 5.2.4.1 Existing Facilities

All dedicated air cargo facilities are currently located at the southern end of the Eastside Aviation Development Area. As noted in the discussion of existing cargo facilities, these are comprised of a small operation conducted by Flight Express, and a much larger dedicated air cargo ramp and sort operation conducted by FedEx. The cargo facilities associated with FedEx are relatively new and essentially replace operations that were formerly supported out of the air cargo facility located in the North Terminal Development Area.

FedEx is the sole major air cargo operator/integrated cargo operator at TPA. The United Parcel Service (UPS) presently operates its aircraft out of St. Petersburg Clearwater International Airport, while DHL operates its fleet of aircraft out of two Florida airports; Orlando International and Miami International. The Airport has experienced some activity by other cargo carriers in the past. Some of these carriers no longer exist or have ceased air operations, such as Airborne (owned by DHL) and BAX Global. In general, air cargo operations at TPA by carriers other than FedEx have declined sharply, and by 2011 only consisted of a few operations per year.

### 5.2.4.2 Facility Requirements Overview

As discussed in Section 4 Facility Requirements, the existing (all cargo and belly cargo) facilities were determined to be adequate for accommodating forecast all-cargo and belly cargo demand at TPA. As such, the anticipated demand levels alone do not justify the need for developing additional facilities.

It is, however, good planning to preserve an area for expansion to accommodate planning horizon activity levels, to accommodate unanticipated growth during the planning period, and to accommodate additional space that could be needed for potential changes in cargo screening requirements. To prepare for this and maintain maximum flexibility for the range of scenarios that may arise, adequate space should be reserved for the expansion. The following discussion explores the drivers of potential cargo activity and what would be needed to accommodate that demand.

### 5.2.4.3 Drivers of Potential Cargo Facility Alternatives

Three potential items need to be considered in defining future air cargo alternatives at TPA. These are listed below:

- Baseline forecast of future All-Cargo activity
- Ability to accommodate new All-Cargo service
- All-Cargo operations consolidation and unforeseen demand
- Potential changes in cargo screening requirements

*Forecast of Future All Cargo Activity*

The FAA approved forecasts for TPA included a forecast of future air cargo volume for both Belly Cargo (accommodated in passenger aircraft) and the volume carried by All-Cargo carriers such as FedEx. Based on this forecast, the level of All-Cargo tonnage was projected to grow, but to do so modestly, increasing from approximately 76,400 enplaned and deplaned tons in 2011 to approximately 112,000 tons by the end of the twenty year planning period in 2031 (+46 percent).

Based on the analysis conducted in the Facility Requirements section, this increase would trigger only a very minimal need for added cargo building or ramp space by the end of the planning period. The ability to meet this projected level of demand is incorporated in the defined concept.

*Facilitation of Ability to Accommodate New All-Cargo Service or Unforeseen Demand Growth*

The second factor to guide the analysis was making sure that any concept defined would provide the ability to meet the demands generated if a new All-Cargo carrier (not presently located at the Airport) were to start operations from TPA. Presently, an existing facility does not exist to accommodate the operations of an All-Cargo carrier other than FedEx, as this carrier occupies all the space in the present facility. The viability of temporarily operating from the former air cargo building in the North Terminal Development Area was negated when taxilane access to the airside of this facility was removed. While there is no indication at this time that UPS, DHL or some other carrier is considering to commence routine operations from TPA, the plan for future air cargo operations should provide the flexibility to respond to these opportunities should they emerge.

To address unforeseen demand, a benchmark analysis of other major airports was conducted. Other airport cargo volumes were identified and used to define area requirements that would be needed to meet the level of activity that would be reasonable to consider as a sensitivity test. The airports considered, their affiliated cargo volume, and rank nationally in cargo tonnage handled, are presented in **Table 5.6**. The ability to meet this projected level of demand is incorporated in the defined concept.

**Table 5.6**
**Air Cargo Benchmark Airports**

| Airport | Cargo Tonnage (Metric tons) | 2010 ACI U.S. Rank | Cargo Activity Characteristics Cargo Hub (Y/N) |
|---|---|---|---|
| Miami International | 1,835,797 | 4th | Yes – FedEx Regional |
| Atlanta Hartsfield-Jackson | 659,129 | 10th | No Specific Cargo Hub |
| Philadelphia International | 414,702 | 15th | Yes – UPS NE Regional |
| Cincinnati Northern Kentucky | 371,297 | 16th | Yes – DHL National |
| Ontario International | 355,932 | 17th | Yes – UPS West Coast |
| Dulles International | 332,275 | 18th | No Specific Cargo Hub |
| Orlando International | 135,895 | 28th | Yes – FedEx Small Regional |
| Ft. Lauderdale Hollywood | 88,965 | 37th | No Specific Cargo Hub |
| **TAMPA INTERNATIONAL** | **87,882** | **38th** | **No Specific Cargo Hub** |
| Piedmont Triad International | 86,998 | 40th | Yes – FedEx SE Regional |
| Columbia Metropolitan | 62,592 | 52nd | Yes – UPS SE Regional |
| **POTENTIAL MARKETS THAT MIGHT CONSOLIDATE** | | | |
| Southwest Florida International | 15,948 | 90th | No Specific Cargo Hub |
| St. Petersburg- Clearwater | 14,069 | 92nd | No Specific Cargo Hub |

*Source: Airports Council International*

*Market Consolidation by Existing All-Cargo Operators*

The final factor considered in the concept development process was assessing the potential for:

- current cargo carriers at TPA to consolidate their operations and shift cargo consolidation between markets; and also
- to accommodate significant unforeseen growth in cargo volume at TPA beyond that contained in the aviation activity forecasts.

To define the potential for consolidation of cargo from other airports into a facility at Tampa, airports generally located within a two to three hour drive time were reviewed for their cargo tonnages. These airports were then reviewed for their potential for consolidation and whether Tampa would be the logical choice for a consolidation of cargo volume.

Based on this review, it was determined that two candidates existed: St. Petersburg Clearwater International and Southwest Florida International Airport. Their respective cargo tonnages are also depicted in **Table 5.6**. As can be seen from the Table, neither market individually, nor both markets combined (which would equate to approximately 118,000 annual metric tons or +34 percent over existing activity levels) would significantly impact the quantity of cargo processed through Tampa if their operations were consolidated.

TPA can accommodate a significant increase in cargo activity by adequately addressing forecast level of demand with the potential for cargo volume consolidation. TPA is historically ranked between 37th and 40th nationally, in terms of All-Cargo tonnage. To guarantee the long-term capability to accommodate an increase in cargo activity, it was decided to base concept planning on a scenario in which TPA would expand its penetration of the cargo market to a national ranking of between 15th and 20th.

Such a move could be driven by a number of possible changes including:

- a limited shift of cargo from another major airport due to capacity or other factors;
- cargo consolidations by carriers;
- opening of a new operation by an independent cargo carrier; and
- expansion of the local business base that might drive specific product shipping needs.

Approaching the development of a cargo concept in this manner ensures that the HCAA will be capable of meeting the forecast level of cargo demand and ensures the ability to respond should events occur that might drive a higher level of activity. As proven by the events of the past 10years, the aviation industry is dynamic and unforeseen events, both positive and negative, will arise. Thus, the concept planning for air cargo has been based on accommodating between approximately 300,000 to 400,000 tons of All Cargo demand annually. This would be roughly a four-fold increase in All Cargo tonnage.

To address the various needs that might arise, any concept must consider actions that would be needed to meet the baseline forecast level of All-Cargo activity at TPA. This assumes the continued service of the single major cargo carrier at the Airport (FedEx). The concept must also be capable of meeting the potential demand and facility needs associated with initiation of service by another carrier in addition to the existing All-Cargo carrier at TPA. The concept must be sufficiently flexible to allow for a phased expansion program in order to accommodate activity associated with the unforeseen demand scenario noted above. The cargo concept should also focus on centralizing similar facilities with one another. This is similar to what was done for the airport support facilities, which have been clustered in proximity to one another.

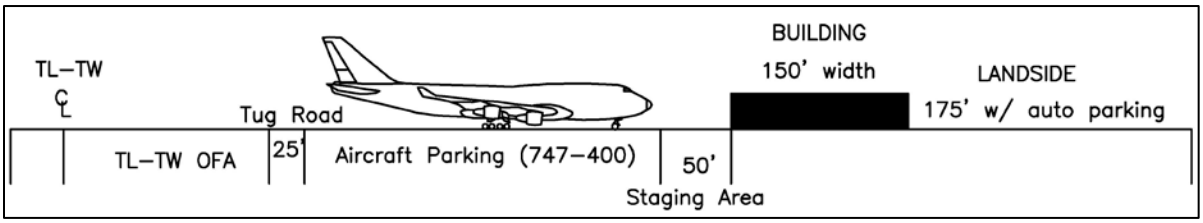
Addressing the forecast level of All-Cargo activity required the consideration of options to expand the current air cargo building. This is under the assumption that the vast majority of volume is handled by FedEx or a single air cargo entity (as is currently the case). An option that would expand the current structure to the south of its current southern end is recommended. This direction of expansion would not result in the loss of any truck dock positions as would occur if the building were extended to the north, nor would it impact an existing equipment staging and storage apron that is located at the north end of the existing air cargo ramp. As configured, the southerly extension would add 22,500 SF of cargo processing space to the existing building. This would increase the cargo throughput capacity to an estimated 133,605 tons annually (based on the 1.5 ton per SF metric), which exceeds the projected 112,000 tons of all cargo projected at the end of the twenty year planning period. Thus, there is adequate space to construct a limited expansion of the existing air cargo building to meet the projected All-Cargo carrier volume should the Airport continue to be served by a single carrier.

To address the two alternative demand scenarios described above, the 22.7 acre tract of land located immediately west of the existing air cargo ramp was identified as the most viable location for a large scale expansion of air cargo facilities. The tract of land was also considered appropriate for the phased development of facilities that might support the initiation of service by another all-cargo carrier at Tampa. The tract of land is bordered by the existing air cargo ramp area to the east, West Ohio Street to the north, North Westshore Boulevard to the west and an existing retention basin and the airport perimeter roadway to the south. The property is approximately 785 feet deep in an east to west orientation and approximately 1,290 feet along

a north/south axis. With these dimensions in mind, the site was evaluated against a series of cargo facility planning criteria to determine if a facility meeting current planning standards could be accommodated on the site. The primary planning criteria employed are listed below:

**Figure 5.11**

**Typical Cargo Facility Cross-Section**




- Cargo processing rates of 1.5 to 2.0 tons per SF, excluding office areas.
- Optimal building width of 150'.
- 50' setback from rear of building to nose of aircraft.
- Ramp positions designed to accommodate up to a B747-400F configuration (ADG-V).
- Taxilane designed to ADG-V standard.
- Truck docks sized to a 10' X 40' dimension.
- Deducted 10% of total floor space for office use.
- Truck maneuvering area is 2X the length of largest truck plus lateral circulation.

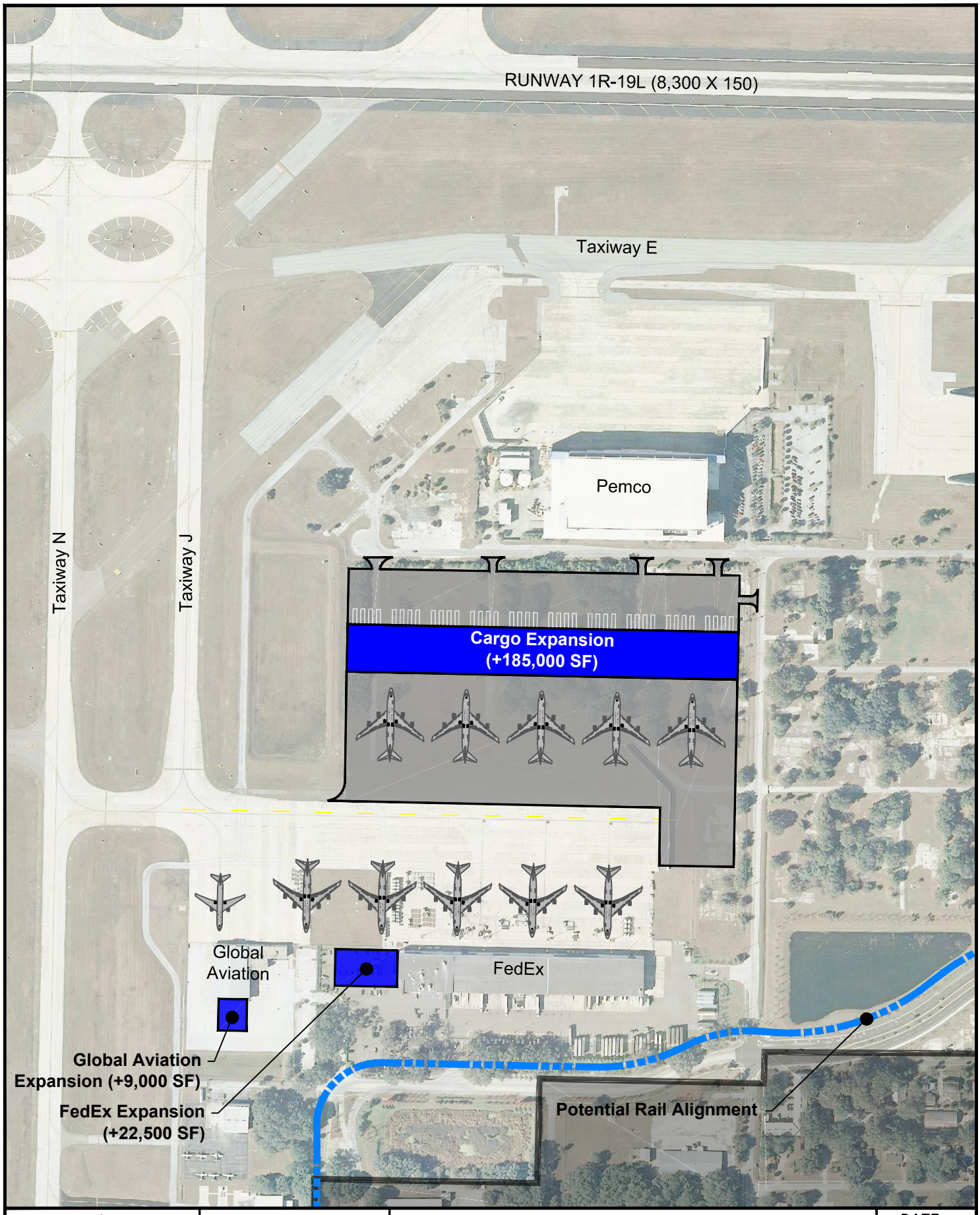
Using the above criteria, a concept was developed that would accommodate an air cargo building of up to 185,000 SF. The building would provide up to five B747-400F-sized aircraft parking positions and would be able to accommodate an additional six or more cargo aircraft of a smaller size on the ramp, which would be approximately 61,625 SY in size. Extensive truck dock capability exists on the landside of the facility, along with interspersed vehicle parking and truck trailer staging space. Access to the facility would extend off of Cargo Road via a section of West Ohio Street that would be improved to Hillsborough County/City of Tampa standards to accommodate the level of truck activity that is typically associated with an air cargo facility of this size. The proposed cargo development concept, including the recommended future addition to the existing cargo building, is depicted in **Figure 5.12.**

As configured, the proposed cargo expansion area could be phased over time with facility sections being constructed as cargo volume or cargo tenant demand dictate. Given the heavy utilization that presently occurs on the Global Aviation and FedEx ramp, the construction of additional ramp area that could be used for overflow parking could be a highly desirable first phase of an air cargo facility expansion. This added ramp could serve the current operators in the cargo area while providing future ramp to support an initial phase of a cargo building that would support other possible tenants.

The overall cargo concept meets a number of key goals as delineated below:

- The concept fully satisfies the baseline forecast level of demand for the 20-year planning horizon.
- The concept provides a consolidated air cargo complex at TPA.
- The concept provides the ability to accommodate additional cargo carriers which is not possible under the current situation.
- The concept is expandable and is scalable to the level of demand.

The concept has the ability to satisfy an extensive increase in the level of cargo consistent with the goal of providing the flexibility to meet a significant level of unforeseen demand. Total throughput of the entire build-out of cargo processing space would be approximately 383,350 tons annually at the conservative 1.5 ton per SF processing rate.

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# Cargo Development Alternative

TAMPA INTERNATIONAL AIRPORT
TAMPA, FLORIDA

DATE:
Apr 09, 2013

Figure:
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## 5.2.5 MRO/MRO Support Facilities

The focus of this section is centered on providing a plan for the continued accommodation and growth of MRO services at TPA.

### 5.2.5.1 Introduction

The aviation use benchmarking process identified the development of MRO and MRO support uses as a focus for the future development of the Eastside Development Area. In part, this was in recognition that the Airport owns two major assets consisting of the former US Airways and Delta Airlines maintenance hangars that lie adjacent to the east side of Taxiway E. Combined, the two hangars encompass approximately 275,000 SF of hangar, supporting shop and parts areas, office area and other affiliated spaces that front onto an estimated 81,150 square yards of aircraft parking apron. These facilities are presently leased to PEMCO World Air Services. PEMCO specializes in maintenance repair and overhaul (MRO) services on regional, narrow-body and wide-body aircraft, and the conversion of aircraft to serve the air cargo market.

The last several years have been very difficult in the MRO sector. However, the Airport has two excellent assets that can form the nucleus around which other businesses could be situated to serve the activities of PEMCO and of other maintenance providers in the eastern U.S. Developing the synergy between PEMCO and other supporting businesses could enhance the viability of MRO activities within the entire complex. For example, PEMCO has historically had to ship certain components of their overhaul services to other companies elsewhere in the country. With the tight schedules associated with providing MRO services to the airlines, adding transit time can sometimes make the difference between meeting or not meeting a delivery schedule. This is particularly the case when components are being shipped for hundreds of miles from Tampa. Facilitating the growth of these support activities adjacent to the MRO hangars could significantly enhance delivery schedule reliability, reduce turn times for MRO and increase the number of aircraft that could pass through the facility on a monthly basis. Potential activities that might be targeted may include, but not be limited to:

- Galley, seating and lavatory refurbishment
- Composites repair
- Engine Overhaul
- Avionics
- Aircraft Painting Services
- Specialized Component services

Leveraging these opportunities will not only require a location for the facilities to accommodate potential businesses, but also requires linkages to training. Training will ensure the skillsets to support companies that might relocate to the Tampa Bay area. Partnering with one of the 10 aviation schools in the State of Florida or cooperatively developing specific technical courses with local institutions, such as the Hillsborough County Community College, will further improve the possibilities of successfully leveraging potential interested firms. Finally, partnering with local and state economic development entities will be an important key to the overall

development process. With this in mind, attention must now be directed to addressing where the potential MRO uses should be focused.

Looking at the available land to accommodate MRO and MRO support facilities, the Eastside Development Area is essentially divided in half by the already developed Belly Cargo Building and the GSE Building that are located roughly in the center of the Eastside Development Area. To the north of these uses is a large tract of generally undeveloped property encompassing approximately 55 acres that could be considered as a potential site. Additionally, between the GSE Building and excluding the tract reserved for airport support facility expansion on the north and the area being reserved for All-Cargo development to the south, there is an area of approximately 53 acres of land that could also be considered for the concentration of MRO uses.

This second concentration of acreage was identified as the most appropriate location for the development of a future MRO cluster for several reasons, including:

- The 55+/- acre tract north of the GSE Building is less accessible to the existing MRO facilities due to the placement of the GSE Building, Belly Cargo Building and secure tug road that essentially blocks direct access between the two areas.
- Development of any future facilities requiring aircraft access is significantly more complicated in the northern tract due to engineering challenges involving the current primary stormwater drainage canal that parallels Taxiway E.
- The southern tract of land provides essentially an equivalent amount of area as is available to the north and is located immediately adjacent to the existing MRO hangars at TPA.

For these reasons, it was determined that the land area generally south of the existing GSE Building and Belly Cargo facilities would be designated for the potential development of a concentration of MRO and affiliated MRO support uses. The specific users that might locate within the area have not yet been identified. Therefore, the focus of the concept development process has been to define the mix of potential parcel sizes that would provide for the development of a variety of building sizes and configurations. The concept development process also considers maintaining the flexibility to provide additional areas with airside access should need for added MRO hangar or specialty aircraft services arise.

The planning effort developed and evaluated MRO-centric concepts which reflect flexible site development modules based on the industry benchmarking research conducted to respond to evolving market conditions. These concepts translate value to adjacent properties by accommodating the future aviation-related expansion needs of the existing MRO operations and their suppliers. MRO suppliers can be co-located and clustered to leverage the synergy among aviation industry supply chains while taking advantage of existing roadway infrastructure and utility easements. For the two MRO development concepts delineated, see **Figures 5.13** and **5.14.**

The two concepts have a considerable level of similarity. Both concepts show the potential for a 170,000 SF third MRO hangar and affiliated expanded ramp to be located immediately north of the existing Engine Run-up Enclosure. This expansion would provide additional room for MRO activities along the primary flight line and is in proximity of the two existing MRO hangars. The Ground Run-Up Enclosure has been retained in its current location based on discussion with

representatives of PEMCO and Hawker-Beechcraft who provide maintenance services for business jets and turbo-prop aircraft at TPA. Both concepts show a seven acre parcel in the northeast quadrant of West Dr. Martin Luther King, Jr Boulevard and North Westshore Boulevard. This parcel could be the site for a single large structure or could accommodate a multi-tenant building to house a number of smaller individual MRO support businesses, such as avionics and other specialty services. Assuming a very reasonable floor area ratio (FAR) of .40, this would generate a structure of approximately 123,000 SF.

Another area of similarity between the two concepts relates to the retention and improvement of approximately 1,400 feet of N. Trask Avenue between West Dr. Martin Luther King, Jr. Boulevard and West Ohio Avenue. Additionally, both concepts include the designation of approximately 11.3 acres of currently undeveloped land between N. Trask Avenue and Cargo Road for the development of MRO Support uses. Neither this property nor the previously identified seven acre site would have direct airside access. Under both alternatives, the area located along the east side of N. Trask Avenue has been configured as a multiple lot development area. While depicted as having two four-acre parcels and two 1.65-acre parcels, the ultimate configuration of the overall 11.3 acre tract would be driven by market factors and demand. As was the case with the seven acre site, this area could also accommodate the development of a single multi-tenant building which, assuming a 0.40 FAR, would result in a building of approximately 195,000 SF.


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Concept 1 - MRO Development - Tug Access

TAMPA INTERNATIONAL AIRPORT
TAMPA, FLORIDA

DATE:
Apr 09, 2013

Figure:
5.13

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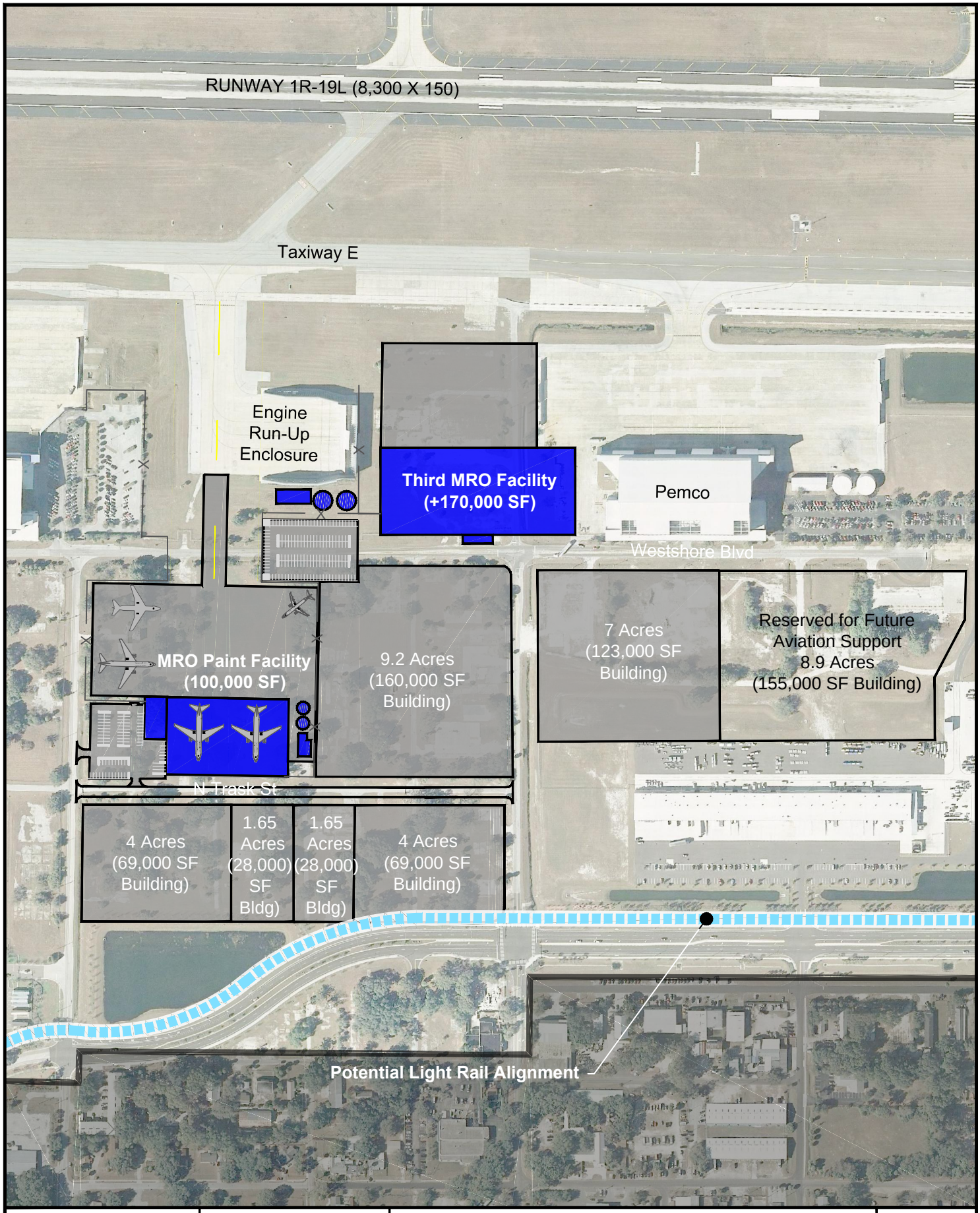


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# Concept 2 - MRO Development - Aircraft Access

TAMPA INTERNATIONAL AIRPORT
TAMPA, FLORIDA

DATE: Apr 09, 2013

Figure: 5.14

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#### 5.2.5.2 Concept 1 - MRO Development Concept with Tug Access

**Figure 5.13** depicts the first MRO Development Concept layout. The figure shows the noted areas of commonality between the two development concepts along with two added large potential landside development parcels. The potential parcels are situated between North Trask Street on the east and North Westshore Boulevard on the west and between West Ohio Avenue on the south and West Dr. Martin Luther King Jr. Boulevard on the north. These two development parcels are 9.6 acres and 9.5 acres, respectively. The parcels are divided by a new east-west street that would extend from North Trask Street to North Westshore Boulevard and divide the two large parcels.

The first concept does not significantly impact the existing roadway/street system within the MRO development area as is the case with the second development concept, which results in the closure of North Westshore Boulevard at a point east of the Ground Run-up Enclosure. Development of the new east-west street between Trask and N. Westshore, facilitates access to both of the large landside development parcels from all four sides of each site, increasing the flexibility of each site from a development perspective. Combined, the two parcels would add an additional 332,000 SF of potential development space to the overall MRO development area. This would result in a total build-out of 649,000 SF of building space having landside access to the existing MRO hangars along with an additional 170,000 SF of new MRO hangar and affiliated shop space.

#### 5.2.5.3 Concept 2 - MRO Development Concept with Aircraft Access

The second MRO Development Concept was developed to address the fact that much of the land area fronting onto parallel Taxiway E is presently developed. As a result, once a third hangar is developed in the area north of the Ground Run-up Enclosure, there are limited opportunities to accommodate new MRO support hangar development in an area proximate to the defined MRO development area. In short, should demand arise for either a fourth MRO hangar or for the development of a specialty facility such as an aircraft painting operation (both of which would require access by aircraft to and from the active airfield), this alternative could accommodate either.

As noted, this second concept includes the development of a third MRO hangar north of the Engine Run-up Enclosure, maintains the same seven acre parcel behind the Belly Cargo Building and also maintains the same 11.3 acre parcel south of the Belly Cargo Building and east of N. Trask Street. The concept also incorporates the upgrade of North Trask Street. Concept Two departs from the first concept plan through the reconfiguration of the two large 9+ acre parcels. Concept Two increases the size of the southern parcel slightly and slightly reduces the size of the northern tract. The adjustment in size is undertaken to allow for the development of a fourth large hangar of approximately 90,000 SF with a 9,000 SF attached office and parts/storage area. The facility would front onto N. Trask Street and have an aircraft apron area of approximately 29,400 sq. yds.

The most direct and least circuitous alternative for providing access to the fourth hangar facility involves constructing a 350 foot long by 75 foot wide ADG-V taxilane extending from the existing Engine Run-Up Enclosure across North Westshore Boulevard to the fourth hangar parking ramp, as shown in **Figure 5.14**. The taxilane extension would require the closure of North Westshore between West Ohio Street and West Dr. Martin Luther King Jr. Boulevard. This closure would

have an impact on the convenience of landside access between the southern and northern PEMCO hangars. Vehicles would be required to detour east to the improved alignment of North Trask Avenue. While being an inconvenience, this issue should not be viewed as a fatal flaw as it is of limited impact to the operations at PEMCO.

Based on the configuration of facilities and parcels under Concept Two, a total of 289,000 SF of additional hangar and shop space would be provided under this alternative. Additionally, Concept Two would provide 27.5 acres of MRO support area that could be flexibly developed to yield upwards of 477,000 SF of buildable space within a variety of single and multi-tenant buildings.

#### 5.2.5.4 Recommendation

The recommendation for which concept should be used to move forward with the MRO development is more an issue of timing than of one concept versus the other. Given the significant changes in the aviation industry, maintaining flexibility is an essential element of any planning concept. In the case of the MRO development area either option is viable. However, the best recommendation would ensure the ability/flexibility to respond to opportunities and possible market demand by keeping options open.

The identified parcel sizes are offered solely to indicate the need to maintain a range of land parcels available for tenants of varying land requirements. As a result, it is recommended that potential MRO and MRO support opportunities that do not require direct aircraft access to or from the airfield be developed on those parcels depicted in **Figure 5.14** (Concept Two), which are not shown as having airside access. The parcel having the ability to be connected to the airfield is in a highly desirable and central location. Unless it is believed certain that demand for a fourth large hangar demand will not emerge, the location depicted for this facility should be retained as long as possible. Retaining this location will provide the flexibility to accommodate a fourth hangar capability in the MRO development area until no other option remains to meet MRO support needs.

### 5.2.6 Fulfillment/Distribution Center Concepts

With the completion of the analysis of concepts for airport support facilities, air cargo, and MRO and MRO related facilities, there remained one large tract of property with potential direct airside access within the Eastside Aviation Development Area. This tract consists of approximately 54 acres located to the north of the GSE Building and generally east of the airport fuel farm and airport maintenance area. The land has extensive frontage along Cargo Road and additional points of access via North Westshore Blvd, West Cayuga Street, West Curtis Street and West South Street.

During the benchmarking process, the potential use of property at the Airport for the accommodation of a fulfillment/distribution center use was identified as a targeted activity for TPA. A fulfillment center operates on a just-in-time inventory management basis whereby inventory is stocked in the facility and orders are filled rapidly and shipped by air/ground transportation to their destinations. Examples of such facilities include the Dell Computer center at Nashville International Airport, Trilogy Fulfillment (a division of Eddie Bauer) and other distribution centers on and adjacent to Rickenbacker Airport in Columbus, Ohio, Amazon.Com distribution center at Coffeeville Kansas Municipal Airport, and distribution center facilities at Huntsville International Airport, (See **Appendix I** for further details). Given the available acreage, the linkage that these facilities need to aviation assets, the proximity of TPA to major roadways (Veterans Expressway, Interstate 275, Interstate 4 and Interstate 75 as examples) and the potential benefits that such development could have for the Airport such as increased cargo activity and the community at large in terms of jobs, HCAA indicated that concepts for accommodation of this form of development should be considered.

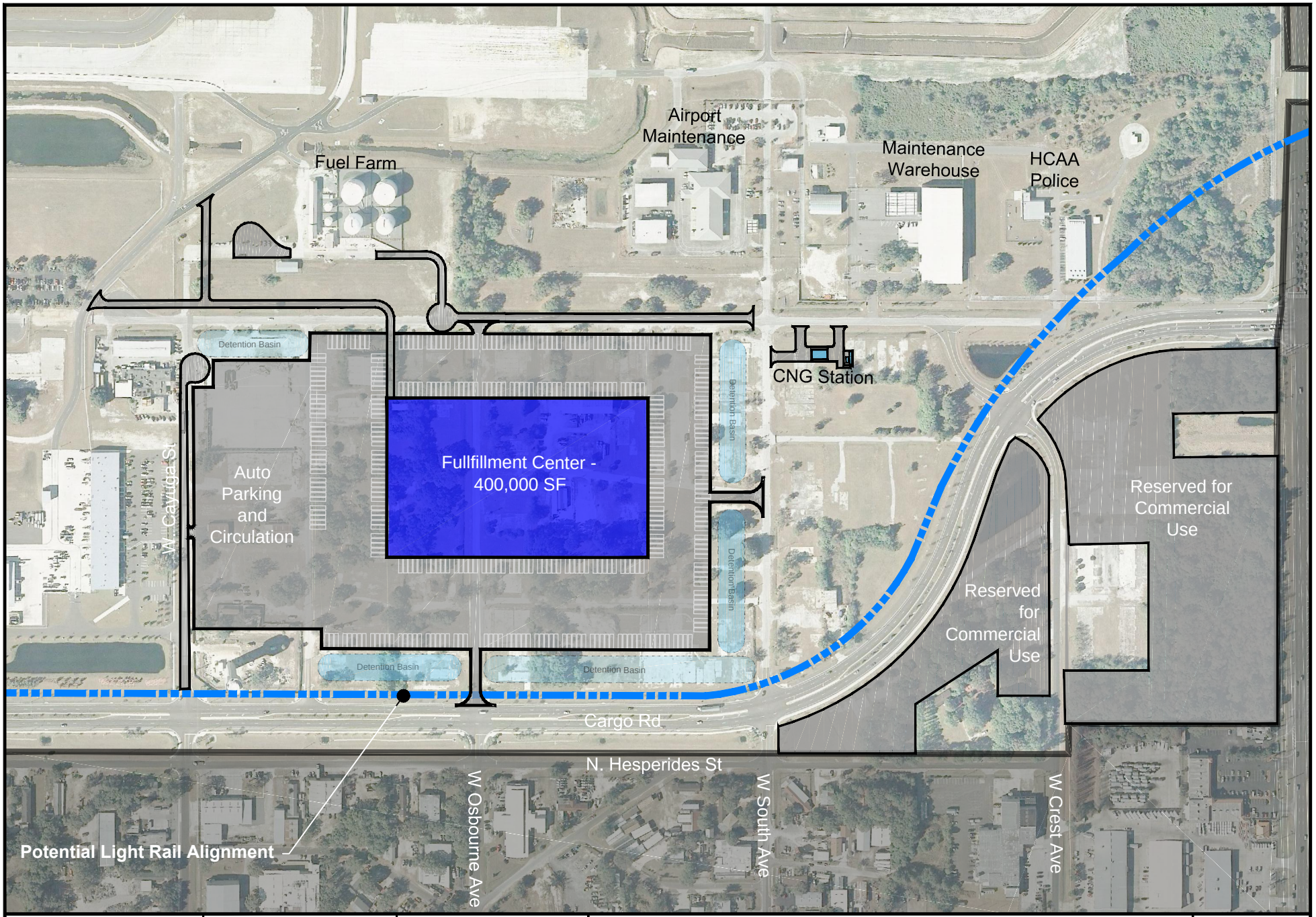
To this end, the planning process has developed and evaluated aviation-related fulfillment/distribution center concepts within the limits of the 54-acre site. The boundary of the 54-acre Fulfillment/Distribution Center development site extends north from the current alignment of West Cayuga Street on the south, excluding area occupied by the existing ASR. The site includes all property east of North Westshore Blvd and west/south of Cargo Road with the exception of the existing CNG station. Four parcels of land, totaling approximately 3 total acres, within the limits of the proposed development site remain to be acquired by the HCAA. The Authority continues its efforts at finalizing the acquisition of the last few pieces of remaining property in the Drew Park acquisition area. Given the ultimate 54-acre available site size, theoretically the site could accommodate up to 600,000 SF of building space while maintaining a very reasonable 0.30 FAR. Based on the concepts that were developed, accommodating a facility of this size would be challenged by the configuration of the available acreage and other development related requirements.

For planning purposes, facilities of a more conservative square footage have been displayed. This allows the Airport to retain some acreage to provide a buffer should unforeseen events require acreage for potential expansion of other activities or uses in the Eastside Aviation Development Area. The acreage buffer could also accommodate potential uses or activities to support the fulfillment/distribution center use. The concepts used in this analysis include a relatively large (approximately 400,000 SF) facility centered in the site and a concept showing two small to medium-scale 200,000 SF facilities. Ultimately the sizing will depend upon the tenants being accommodated, the extent, if any of acreage retained by HCAA for other unforeseen activities and on market interest. The concept plans have also assumed a minimum

200' wide paved area around the conceptual buildings to provide space for truck docks, lateral circulation and potential staging of truck trailers. Additional area under each option has been reserved to provide room for employee parking and for additional trailer storage/staging. Highly conceptual locations for stormwater retention/detention ponds have also been included for illustrative purposes. Thus, the concept plans developed in this document are intended for illustrative purposes to display potential development options and the attributes and issues with each. The fulfillment/distribution center concept is supported by the roadway improvements made to the Eastside Development Area including the construction of Cargo Road and proximity to the Veterans Expressway via Hillsborough Avenue.

The fulfillment center development area has been planned to accommodate ramp connectivity primarily via tug access. While it is potentially feasible to provide aircraft access to the development area, the access would be challenging. Access could be provided via a northerly extension of Taxiway E, connecting with a taxilane extending east from a location north of the fuel farm, and south of the Airport Maintenance facilities. Development of airside access to the fulfillment center area at the location noted was discussed with HCAA representatives and it was noted that such an extension had been previously considered. The extension was found to be complicated and prohibitively expensive due to infrastructure in the area, including the extensive drainage canal system that would have to be crossed. It should be noted that the 2005 Master Plan included a recommendation to extend Runway 1R and Taxiway E at the point in time when the fourth north terminal airside is constructed. However, even in the 2005 Master Plan this action was a very long-term action and is now anticipated to occur beyond the 2050 timeframe.

Two site planning concepts for the fulfillment/distribution center module were prepared. These concepts display a single larger facility as shown in **Figure 5.15** and a multi building concept as depicted in **Figure 5.16**. In both concepts it has been assumed that access to the airside would be provided via a secure tug access route. It must be noted that, as was the case with the MRO concepts, the alternative configurations shown for the Fulfillment/Distribution module of the overall Eastside Development Area are illustrative of what options may be considered. The final configuration of any development will be based on prevailing market factors at the time that a use or uses are secured. The planning analysis is intended to indicate the viability of accommodating multiple medium sized facilities or a single very large distribution center use within the acreage, as opposed to fragmenting the development of the overall parcel in a manner that could generate a pattern not overly dissimilar to the land use pattern east of Cargo Road. Given the examples of similar development at other U.S. airports and noted in the benchmarking analysis, the recommended form of development has precedence for being located on airports. Additionally, the general size of these uses is consistent with, and in several instances larger than, the size shown in the concepts presented in this Master Plan.

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SCALE: 1" = 400'

HNTB

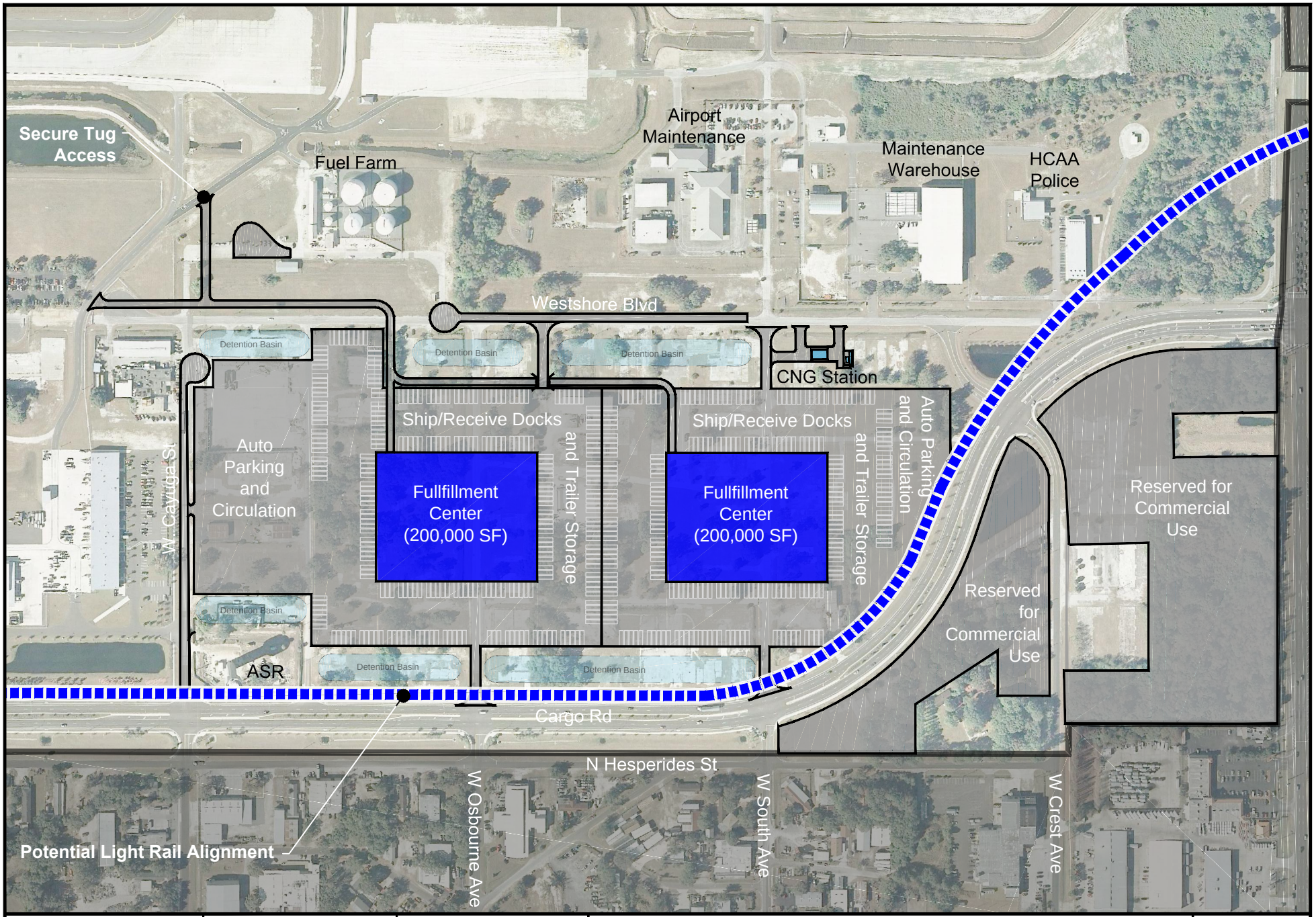
2900 SOUTH QUINCY STREET,
SUITE 200
ARLINGTON, VIRGINIA 22206
PH (703) 824-5100
FAX (703) 671-6210

# Fulfillment Center - Single Large Facility

TAMPA INTERNATIONAL AIRPORT
TAMPA, FLORIDA

DATE:
Jul 02, 2013

FIGURE:
5.15

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# Fulfillment Center - Multiple Smaller Facilities

TAMPA INTERNATIONAL AIRPORT
TAMPA, FLORIDA

DATE:
Jul 02, 2013

FIGURE:
5.16

#### 5.2.6.1 Fulfillment/Distribution Center Concept One

Concept One displays the potential development of a single large distribution facility within the 54-acre site. As is evident in **Figure 5.15**, there is ample room not only for the 400,000 SF distribution center, but also for the following: vehicle parking, truck dock operations and site circulation, storage of empty tractor-trailers that need to be staged on the site and for the development of stormwater retention/detention ponds to address site runoff. Even with these facilities in place there remains additional space to the north of the proposed facility. This space could be used should a larger fulfillment center need to be constructed or to accommodate support or spin off development associated with the proposed facility.

Concept One will impact a number of the roads that currently bisect the 54-acre site, requiring their closure and likely removal of pavement. This will include closure of the following streets:

- West Curtis Street between Cargo Road and N. Westshore Blvd.
- West Osborne Avenue between Cargo Road and N. Westshore Blvd.
- North Renellie Drive between W. Osborne Ave. and W. South Ave.
- North Cooper Place between W. Osborne Ave. and W. South Ave.
- Closure of N. Westshore Blvd with placement of a cul-de-sac immediately south of the entrance to the fuel farm

These closures allow for the consolidation of several blocks of site acreage currently separated by streets into a single large site with a second smaller tract situated west of Cargo Road and north of West South Avenue. This second smaller tract of land is approximately 10.6 acres and somewhat oddly configured due to the curvature of Cargo Road and the development of the recently completed CNG fueling station. Depending upon the ultimate size of a fulfillment/distribution center, this smaller parcel may or may not be needed to provide supporting parking or equipment storage space to support a facility configured in Concept One. If not needed for the primary facility, then consideration could be given to its retention for a smaller distribution concept. The parcel could also potentially be banked to accommodate expansion of airport support space or for uses that would support the overall Eastside Aviation Development Area.

As configured, Concept One provides ingress and egress to the main distribution building via access points off of Cargo Road on the east, West South Ave on the North, North Westshore on the west and West Cayuga on the south. This four sided accessibility will contribute to reducing congestion in the immediate building vicinity. The multiple points of access will allow arriving and departing vehicles to utilize the most closely situated access point and avoid having to drive around a large portion of the building to reach an access point. Each of the access streets facilitate both north and southbound movements onto or off of Cargo Road, which contributes to the management of flows on this roadway.

Secure airside access from the fulfillment/distribution facility is provided by a dedicated and secured route from the southwestern end of the conceptual building to the former alignment of N. Westshore Blvd. The route then goes south to intersect the secure roadway extending from the proposed Concessions Processing/Warehouse Facility which connects to the existing secure roadway serving the GSE and Belly Cargo Facility. This tug route would negate the ability to

fully drive around the fulfillment/distribution facility. However, this impact is mitigated by the multiple access points and the value of having direct access to the belly cargo area, all cargo via the perimeter road and the terminal area via the current secure road.

The proposed layout of the facility takes into account the requisite maneuvering requirements of semi-tractor trailers to maneuver into and out of truck docks. The layout also provides ample space for the hook-up and movement of staged trailers at the west and north boundary of the site, and in dedicated lots on the west and south side of the facility. Employee and other vehicle parking is conceptually accommodated in dedicated lots along the west side of the building and in a dedicated lot to the south of the facility. In the event that additional parking space is required, a portion of the 10.6 acres tract located north of West South Ave could be converted to parking. The tract could also be used for trailer storage, allowing area nearer the fulfillment facility to be converted to vehicle parking.

As identified earlier in the analysis, the site is well served by existing key utilities. A 16 inch water main extends along the entire east side of the site, while a 12 inch main extends along N. Westshore Blvd on the site's west side. This system has two 12 inch interconnections which extend from Cargo Road to N. Westshore Blvd along both W. South Ave and W. Osborne Ave. The line along W. Osborne Ave could require relocation to avoid running beneath the proposed fulfillment/distribution center. Sanitary sewer is available via an 18 inch gravity main along the northeastern side of the site and also by way of a 10 inch gravity main along the southwest side of the area. Finally, while the site is located in relative proximity to a major drainage canal serving this portion of the Airport, it has been assumed that on-site retention/detention will be required. Therefore, the concept includes the placement of several possible basins to help mitigate stormwater quantities.

#### 5.2.6.2 Fulfillment/Distribution Center Concept Two

Concept Two for the 54-acre fulfillment/distribution center development area was prepared to consider the potential building area yield that could be achieved if more than one facility were to be placed on the site. The same general criteria relative to truck docking and maneuvering were applied to each facility as was done with Concept One. The analysis focused on defining the largest structures while maintaining the planning criteria and also providing sites that were generally uniform in boundary characteristics. Based on these parameters, two moderately sized (200,000 SF) fulfillment/distribution centers are designated for potential development within the 54-acre property. Development of two facilities on the site is more challenging to accommodate as the buildings and associated parking, on- site circulation, truck docks and truck trailer storage areas and other support uses must be provided for each facility individually. Additionally, the irregular boundary of the overall development area impacts the ability to develop facility layouts fully consistent with the general design parameters.

The second concept is depicted in **Figure 5.16**. The concept depicted shows two 400' X 500' buildings located within the 54-acre site. The buildings are placed to generally front Cargo Road with access to both structures also provided from North Westshore Blvd. In the case of the southernmost building, access is also provided via West Cayuga Street. While both buildings show truck dock positions and tractor trailer storage on all four sides of the distribution building, it is typical for a portion of the vehicle parking for employees to be accommodated at points interspersed around the facilities. Area to accommodate additional vehicle parking has also been shown for both facilities.

Concept Two also impacts a number of the roads that currently bisect the 54-acre site, requiring their closure and likely removal of pavement. Included in the roads impacted is West South St. which was not affected under Concept One. Streets impacted include the following:

- West South Street between Cargo Road and N. Westshore Blvd.
- West Curtis Street between Cargo Road and N. Westshore Blvd.
- West Osborne Avenue between Cargo Road and N. Westshore Blvd.
- North Renellie Drive from W. Osborne Ave. to just south of Cargo Road.
- North Cooper Place between W. Osborne Ave. and W. South Ave.
- Closure of N. Westshore Blvd with placement of a cul-de-sac immediately south of the entrance to the fuel farm.

These closures allow for the consolidation of all the acreage within the designated fulfillment/distribution center development area into a single large site.

Two points of ingress and egress have been provided to the northern building site. These include an access on the west side of the facility using the existing alignment of West South St. and an access on the east side using what would be the former alignment of West South St. The ability to provide a third point of access to this site is not deemed viable as it would likely have to be placed along the curved section of Cargo Road between West Crest St. and West South St. Given speed limits on Cargo Road and the relatively short distance between the two noted streets, a third point of access would create potential traffic issues. The southern facility has been conceptually shown with access to the site on three sides; one off of Cargo Road, one off West Cayuga Street and a final access via North Westshore Blvd approximately 700' south of W. South Street.

As previously noted, a key consideration in accommodating the fulfillment/distribution center concept is the provision of direct secured tug access to and from the Secure Identification Display Area (SIDA) of the Airport. Providing this access to the southernmost building is relatively easy and not too dissimilar to how the access is provided under Concept One. Providing a secure connection to the northernmost building under Concept Two is slightly more challenging as a result of the need to maintain the alignment of North Westshore Blvd. from West South Street south to the entrance to the existing fuel farm. Further, the western access to the southern fulfillment center site has to cross the alignment of any secure tug route from the northern fulfillment center to the existing secure roadway serving the belly cargo and GSE uses. It is this point of access to the southern building that impacts the manner in which secure tug access can be provided to the northern building to and from other locations and facilities within the secured perimeter at TPA.

To address this issue, the tug road for the northern building must cross the truck docking/maneuvering area and turn to the south to run parallel to the rear (west) side of the truck maneuvering area for both facilities. In order to retain the truck access drive to the southern facility from North Westshore Blvd, the tug roadway from the northern facility must either be depressed to run beneath the access drive from the west or be elevated to bridge over the entrance drive from N. Westshore Blvd. Based on the preliminary concept depicted in **Figure 5.16**, there would be sufficient distance to grade the access drive from N. Westshore

separately from the alignment of the secure tug road. This would provide an estimated 14 feet of clearance assuming a 3.5 to 4.0 percent slope on the tug road.

As was noted, the boundary of the fulfillment/distribution development area poses some challenges. This boundary is influenced by the placement of two existing facilities (ASR and CNG Station) that project into the site and must be planned around. Finally, the alignment of Cargo Road north of W. South Street results in an oddly shaped north boundary. This impacts the development potential and configuration of the facilities under Concept Two to a greater degree than under Concept One, which did not necessarily require significant property north of West South St.

To address the extensive amount of impervious surface that would be constructed under Concept Two, a number of retention/detention facilities have been conceptually placed around the periphery of the area. Stormwater from the area would generally flow to the west, entering the drainage channel that is immediately west of the fuel farm and airport maintenance facilities, and would flow north and then west through the airport site. To accommodate potential stormwater, two large basins have been placed along Cargo Road, two smaller basins have been located at the south end of the site just north of W. Cayuga Street and two have been placed along the western fulfillment center boundary adjacent to the east side of N Westshore Blvd. In addition to these six basins, land area has been left open on the south side of West Crest Street to the immediate north and northeast of the CNG station that could accommodate a seventh basin if needed.

The configuration of the designated fulfillment/distribution center area poses some challenges, particularly for the northern building concept. However, the conceptual plan presented in **Figure 5.16** establishes that it is viable to accommodate up to 400,000 SF of facility space in two independent facilities, should market factors drive the development process in this direction. The configuration also meets planning criteria for truck movements and tractor trailer vehicle storage for a site that depicts the level of truck activity at a maximized extent. Realistically, truck activity would likely be limited to three of the four sides of the facility with one side reserved for vehicle parking outside and office/administration and processing space inside. As an example, this is the configuration utilized at the Dell Computer Fulfillment Center located at Nashville International Airport. Additionally, the concept plan establishes that it is possible to ensure secure access to and from the SIDA. This would greatly facility the ability to screen that portion of the product stream within the building and deliver it directly to either the belly cargo facility, directly to the terminal airside or to the all-cargo area at the southern end of the Eastside Aviation Development Area. The ultimate development concept for this portion of the Eastside Aviation Development Area will be driven by what the Tampa market requirements dictate in terms of the facility size and the specific planning requirements of the specific developer/user.

## 5.2.7 Commercial Land Use

The focus of this section is to discuss and assess the best use of available tracts of land in the Eastside Development Area. In general this development area is referred to as Area 7. The usable parcels within this area are Tracts 1 and 2.

Area 7 is located in the northeast corner of the Eastside Aviation Development Area and was discussed in the evaluation of uses in the concept planning for this overall development area plan. The area was originally part of a larger land acquisition that had been anticipated to be used for aviation purposes. However, when the planning of an alignment for Air Cargo Road occurred, the Airport was unable to acquire all of the acreage along the west side of Hesperides Avenue. Therefore, the alignment of the land acquisition was shifted to the west to avoid the area that had not been acquired, resulting in the separation of this acreage from having direct access to the airfield.

Due to this change in the alignment of Air Cargo Road and the physical separation of the property from the rest of the Eastside Aviation Development Area, the question of how to best use the property arose. This section assesses and recommends the development of uses whose revenue could be used for airport development and operations and maintenance support. For additional information refer to **Appendix J**.

### 5.2.7.1 Area 7 Tract Description

This portion of the Eastside Aviation Development Area has 1,160 feet of Hillsborough Ave frontage and is comprised of two tracts of land that are separated by the alignment of West Crest Avenue. Tract 1, located north of West Crest Avenue and with frontage on both Air Cargo Road and Hillsborough Ave, has a total area of approximately 13.59 acres. However, within this area are two parcels that have been subtracted from the total available acreage. This consists of a 2.25 acre area controlled by the Tampa Electric Company and a 1.51 acre tract that consists of a perpetual easement that appears to be associated with a stormwater management area. This leaves approximately 13.59 acres of land in Tract 1, the northern part of Area 7. Portions of this northern tract also display vegetation characteristics typically associated with wetland areas. More study is necessary to define the extent of these areas and assess the presence of wetlands. **Figure 5.17** delineates the configuration of the subject property and its location in reference to the rest of the Eastside Aviation Development Area. **Figure 5.18** shows the subject property location in the greater context of the airport, and **Figure 5.19** shows Area 7 and the surrounding land use designations (per the 2005 Master Plan Update).

Tract 2 is located to the south of Tract 1 and is currently separated from the northern part of the area by the alignment of West Crest Avenue. This second tract is generally bordered by W. Crest Avenue to the north, N. Hesperides St. to the east, a short segment of W. South Avenue to the south and Air Cargo Road to the west. Within the area is a single-family dwelling situated on a lot approximately 1.95 acres in size. In addition to the residential use, a portion of the site near the intersection of Air Cargo Road and W. Crest Ave. is occupied by a stormwater detention pond leaving an area of 4.6 acres available for potential development.


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SCALE: 1" = 800'

HNTB

Commercial Land Use - Area 7

TAMPA INTERNATIONAL AIRPORT
TAMPA, FLORIDA

DATE: Apr 09, 2013

Figure: 5.17

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SCALE: 1" = 2,200'

HNTB

# Land Use Analysis Parcels

TAMPA INTERNATIONAL AIRPORT
TAMPA, FLORIDA

DATE: Dec 17, 2012

Figure: 5.18

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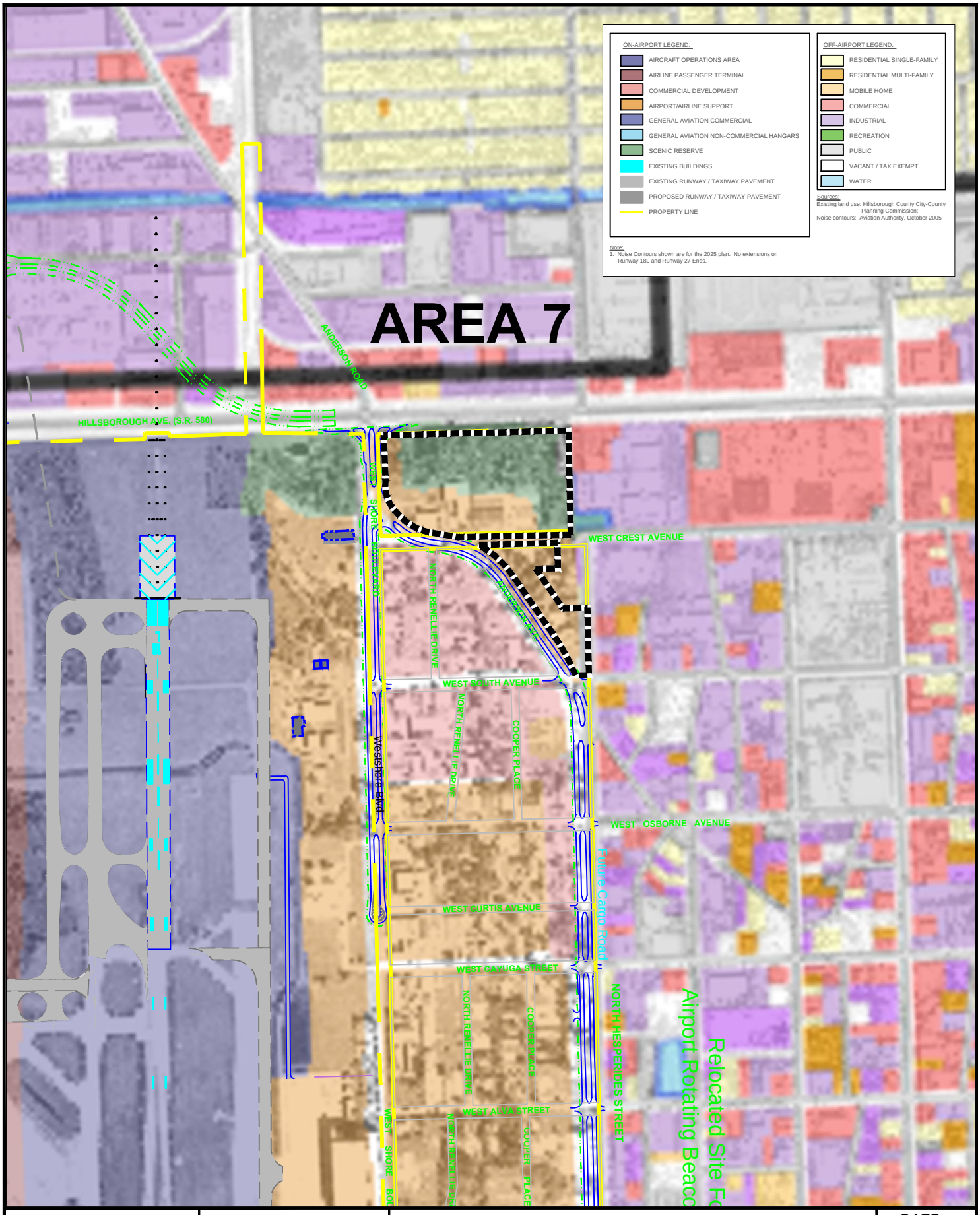


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HNTB

Area 7 - Land Use Designation from 2006 ALP Set

TAMPA INTERNATIONAL AIRPORT
TAMPA, FLORIDA

DATE: Dec 17, 2012

Figure: 5.19

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#### 5.2.7.2 Existing Parcel Land Use/Zoning Designations

The two tracts in Area 7 were reviewed for their potential to accommodate aviation related development. Area 7 is separated from the rest of the Eastside Aviation Development Area by the alignment of Cargo Road, a four-lane median divided boulevard, which effectively precludes the ability to provide reasonable airside access.

The tracts of land under review are situated completely within the City of Tampa limits and are, therefore, subject to the zoning laws of the City. Based on a review of the City of Tampa Zoning Atlas, it was determined that the current zoning of all parcels contained within the site are IG – Industrial General. IG provides for areas of light manufacturing, wholesaling, warehousing, assembly or product processing. The area is intended to permit development compatible with uses of residential property adjoining or surrounding the parcels. Therefore, the focus is on less intense industrial activities that do not present the potential impacts on adjacent uses that heavy industrial uses would.

The current City of Tampa Land Use Map shows the tracts within a mix of Light Industrial use and Public/Semi Public classifications. This second land use category is consistent with the land use that is also depicted on the future land use map for the vast majority of the airport property. The 2006 airport land use map for this part of the Eastside Aviation Development Area identified two land use designations. The first designation consisted of a Scenic Reserve designation along the southern side of Hillsborough Avenue and along the east side of the area between W. Crest Ave and Hillsborough Avenue. The remainder of the area was identified as Airport and Airline Support Uses.

#### 5.2.7.3 Proposed Changes to Land Use Designation

Area 7 and the available HCAA owned tracts within were reviewed as part of the overall Eastside Development Area plan and were determined to not be needed over the 20-year master planning period for aviation support uses. While aviation support uses are being concentrated in the Eastside Aviation Development Area, the locations identified for support facilities are all located west of Air Cargo Road and it has been determined that sufficient space is available to meet the projected 20-year demand in that area.

Due to the relative inability to provide direct airside access, the availability of developable airport support parcels in the main Eastside Development Area, and the advantageous location along Air Cargo and Hillsborough Avenue, this Plan proposes that the two tracts in Area 7 be designated for commercial land use.

#### 5.2.7.4 Rationale for Recommended Action

The re-designation of this portion of the Eastside Aviation Development Area from its current designation on the airport land use map of Scenic Reserve and Airport/Airline Support to a Commercial designation is supported by several key considerations.

The Master Plan Update has studied the project facility requirements and concluded that demand for airport and airline support facilities can be fully met for the 20-year master plan timeframe without the use of the subject property, which is not well suited to providing efficient airport support activity. While it is possible that acreage in this area could be considered for an

airport support activity, leaving the area vacant and non-productive would result in a loss of a potential revenue source to the Airport that could be otherwise used to support the operation and maintenance of current facilities as well as capital development. Development of the site for revenue support purposes would not preclude the ability of the Airport to convert the property back to an airport support activity at a later date should demand emerge that would require the property. The airport routinely includes language in its agreements that address this potential need.

The subject tracts are presently zoned by the City of Tampa as light industrial or heavy commercial development. A change from Scenic Reserve and Airport and Airline Support to a commercial designation, which is presently used elsewhere on the existing on-airport land use map, would bring the property into consistency with the overlying City zoning category. Development of commercial uses on this property would support the overall development area by providing the ability to place uses on the site that could serve the needs of the aviation related uses that decide to locate within the Eastside Aviation Development Area. Finally, a commercial designation is fully supported by the land use patterns along both sides of Hillsborough Avenue and much of Air Cargo Road.

The area encompassed within this Scenic Reserve extends approximately 970 feet along the south frontage on Hillsborough Avenue and also along the entire east side of the site between Hillsborough Avenue and W. Crest Ave. Combined, the Scenic Reserve category overlies approximately 60 percent of the area between Hillsborough Ave. and W. Crest Ave. This category establishes a zone having no economic value or economic return to the Airport. No other Scenic Reserve is located outside of the Airport on nearby property along either Hillsborough Ave. or Air Cargo Road.

Opposite the Scenic Reserve, along the north side of Hillsborough Avenue, are light industrial and commercial uses situated in multi-tenant buildings, and large single tenant facilities. This pattern of land use is also apparent to the immediate east of Area 7 and extends in an unbroken fashion to N. Dale Mabry Highway. No Scenic Reserve or landscaped buffer is evident along the frontage of this roadway on off-airport parcels. Continued designation of the area as Scenic Reserve denies the HCAA the use of the parcel as a revenue producing asset while presenting no adverse impact to the viability of the Airport's ability to meet its designated role over the entire master planning period Further, given the pattern of development in the surrounding areas and the lack of a consistent process of providing scenic reserves along frontage of Hillsborough Avenue, the continued designation of the property in this use category serves no realistic public interest.

#### 5.2.7.5 Summary

Based on the preceding review of the existing land use classifications, a change in land use to a commercial designation would provide significant value to the Airport. Additionally, the change in land use would not adversely impact the ability of the Airport to meet the future demand or to provide the requisite facilities to support demand over the twenty year planning horizon of the current Master Plan Update.

Market review, local fieldwork and windshield surveys were conducted to define the forms of land use that would be most appropriate on this section of the Eastside Aviation Development Area. These studies included an overview of general prevailing market conditions and

development patterns within the immediate vicinity of the subject parcel. The resulting analysis suggest potentially appropriate forms of commercial use of the property might include, (but are not limited to) activities such as lower intensity commercial office warehouse, low-rise self-storage facilities, and wholesale sales activities. Additionally, higher value commercial outparcel uses such as a convenience store, drugstore, fast food/restaurant and other similar forms of use that could support the employment base in the Eastside Aviation Development Area are possible. These uses could draw customers from the high volume of passing traffic on Hillsborough Ave. and could be considered on the southeast hard corner of Air Cargo Road and Hillsborough Ave. and the western frontage of Air Cargo Road. The uses identified were specified to provide only a general indication of a range of commercial activities that might be considered given the surrounding area and the existing land uses that are evident in this area.

### 5.2.8 Eastside Aviation Development Area Planning Concept

The preceding sections have identified a set of focused recommendations and concepts to ensure adequacy of essential airport support facilities. This section aims to take the recommendations made for each functional element discussed and present the final recommended development scheme for the Eastside Development Area.

This analysis has also defined actions to ensure the ability to meet the forecast level of cargo demand in the current cargo area while also ensuring the flexibility and ability to respond to unforeseen cargo growth, introduction of new all-cargo carriers and to address long-term demand beyond this Master Plan's timeframe within the Eastside Aviation Development Area. The preceding has also evaluated and recommended steps to ensure that land area is reserved for a variety of other current activities performed in the Eastside Aviation Development Area to address unforeseen events and provide development capability to meet potential needs beyond the 20-year planning horizon addressed in this Master Plan Update.

At the commencement of the planning process, it was generally agreed that the unused or under-utilized acreage available within the Eastside Aviation Development Area provided a significant opportunity to meet facility needs for support uses and needs for other activities currently operating at the Airport while providing an opportunity to accommodate additional aviation related uses. A central focus of the planning effort was to define actions and development targets that would benefit existing airport users and tenants, the Airport and the Tampa Region as a whole. The benchmarking process was undertaken to review a range of potential activities and identify those activities that would best serve to benefit the existing tenant base and the community.

From this process a set of potential aviation related development targets were defined that the HCAA could target for potential location or expansion at TPA, while also providing the rationale behind why these activities were targeted. The process identified and reviewed a variety of aviation related development activities occurring at airports in the U.S. and internationally. This resulted in a recommendation to focus on expanding the existing base of MRO activities through actions to bring other businesses that would support the core MRO activities of PEMCO or other MRO providers regionally. The supporting businesses would provide significant cost and schedule efficiencies to the current MRO by being located in proximity to their facilities.

The second output of the benchmarking process was the recommendation to target the fulfillment/distribution center concept within the Eastside Aviation Development Area. These

facilities have increasingly been seen on or immediately adjacent to airports in the U.S. and overseas. Their value to communities in terms of the level of job creation is significant. Their value to an airport from the revenues that can be generated from land leases and the diversification of the airport revenue stream is highly beneficial. The benefit to existing airport users and tenants can also be considerable in the form of increased belly cargo lift and all-cargo tonnage associated with the distribution of products and receipt of components. Given the fact that almost two-thirds of the current cargo volume at TPA is composed of mail, the development of new cargo market opportunities will provide significant business and financial value to passenger and cargo carriers alike.

Five major development targets were defined for the Eastside Aviation Development Area. The basis and potential concept for each has been discussed and recommendations defined in the preceding sections. Within the Eastside Aviation Development Area these targets have been provided distinct development areas that best fit the needs of each activity. The targets listed geographically from south to north consist of the following:

- All-Cargo Operations
- MRO and MRO Support Uses
- Airport Support Uses (Belly Cargo, GSE, Fuel Farm, Concessions Warehouse, Airport Maintenance, Airport Police & property reserved for potential ARFF Training in the future)
- Fulfillment/Distribution Center(s)
- Commercial Use of Property separated from the SIDA by Cargo Road

When the individual sector planning efforts for each of these major categories, and in some cases individual elements within the categories, are combined, they form an integrated overall development plan for the Eastside Aviation Development Area. See **Figure 5.20** for the Eastside Development Plan**.**

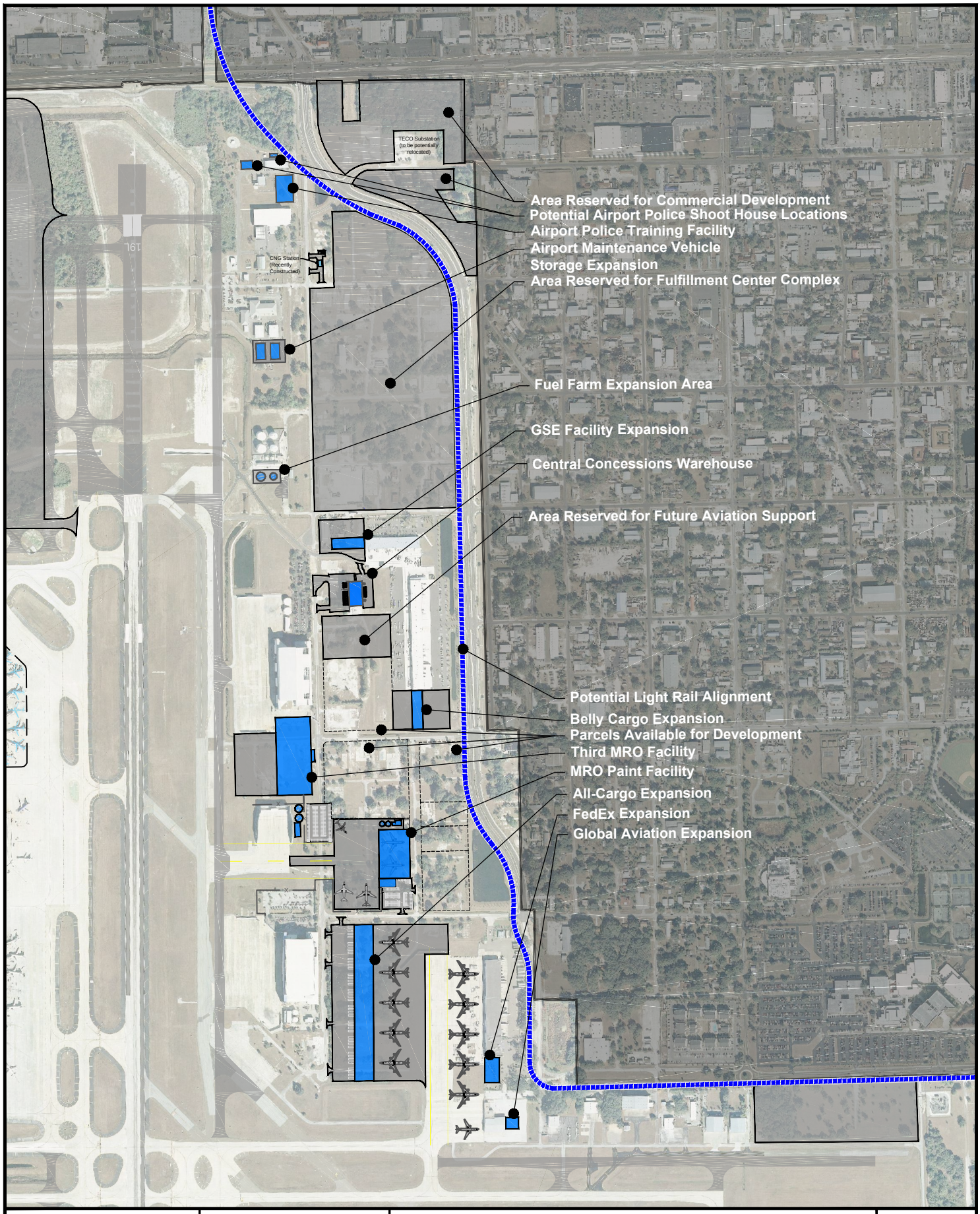
#### 5.2.8.1 Eastside Development Area Recommendation Summary

The recommended development alternative for the Eastside Aviation Development Area balances MRO/MRO supporting development with cargo, fulfillment center, airport support functions, and commercial development. This includes the ability to more than double all-cargo capacity, provides a large area to support fulfillment/distribution center operations, meet and expand essential airport support activities and develop an area of commercial use that provides revenue support to the Airport and amenities to those working in the Eastside Aviation Development Area.

The proposed elements of the recommended Eastside Aviation Development Area Plan are summarized below by functional element:

- Cargo
    - 185,000 SF additional cargo facility with ramp accommodating five additional 747-400 positions.
    - 22,500 SF expansion of the existing FedEx cargo facility.

  - 9,000 SF warehouse expansion of the Global Aviation facility by Global.
- MRO
  - a third MRO hangar facility (170,000+/- SF).
  - a fourth airline maintenance/aircraft paint facility (100,000 SF).
  - a cluster of six flex development parcels intended for MRO support businesses.
- Fulfillment Center/Just-In-Time Distribution Facility
  - A large fulfillment center (400,000 +/- SF) and associated support campus within a 54-acre development site having secure tug access to the SIDA.
- Airport Support
  - 22,000 SF expansion of GSE facility with supporting secure apron space.
  - Expanded airport maintenance equipment storage.
  - Expanded airport police training facilities.
  - Acreage reserved to provide a site for relocated ARFF Training facility should the need arise.
  - Area reserved for expansion of the Airport Fuel Farm.
  - Area to accommodate a 26,000 SF expansion of the existing belly cargo facility and supporting apron.
- Flex Development
  - Support Commercial parcel east and north of Cargo Road along the south side of Hillsborough Ave.
- Roadway and Transit Amenities
  - Preservation of area along Cargo Road to accommodate a possible rail transit alignment.
  - Improvements to sections of N. Westshore Blvd to accommodate expanded truck usage. (Meet City of Tampa Standard)
  - Improvements to sections of West Ohio Street to accommodate expanded truck usage. (Meet City of Tampa Standard)
  - Improvements to sections of West Dr. Martin Luther King, Jr. Blvd. to accommodate expanded truck usage. (Meet City of Tampa Standard)
  - Improvements to sections of West Cayuga Street to accommodate expanded truck usage. (Meet City of Tampa Standard)
  - Depending upon Fulfillment Center concept, potential improvement to West South Street to accommodate expanded truck usage (Meet City of Tampa Standard)

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HNTB

# Eastside Development Area Plan

TAMPA INTERNATIONAL AIRPORT
TAMPA, FLORIDA

DATE: Jul 01, 2013

Figure: 5.20

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#### 5.2.8.2 Implementation Steps

*Targeted Marketing*

Based on the industry benchmarking research conducted, a targeted marketing plan should be developed. The marketing plan should attract tenants from those industry sectors experiencing the greatest increase in projected market activity and whose operations benefit greatest from close proximity to customers at TPA. These potentially include MRO suppliers and service providers associated with composites, avionics and instruments, landing gear, galley and lavatory refurbishment, hydraulic systems, structural testing labs, supporting shop spaces, and painting, among others. Such tenants stand to achieve the greatest economic efficiencies as a result of co-locations with MROs, providing existing on-site MRO operators a more competitive position in serving aircraft owners. In addition, just-in-time fulfillment and distribution center tenants in the expanding healthcare, education and information technology sectors could be a focus of marketing efforts. Identifying the specific siting requirements of such tenants and implementing corresponding land asset framing and corresponding infrastructure enhancement/development could competitively position TPA to attract these tenants.

*Stakeholder Partnerships and Potential Incentive Programs*

As a result of a series of internal and external stakeholder interviews conducted as part of the planning process, there are key stakeholder partnerships which remain critical to the success of the concepts outlined. Most importantly, existing Eastside Aviation Development Area tenants must continue to be engaged in discussions regarding the evolving MRO-centric module and their respective connection to it. The economic synergy created among existing and future tenants remains a marketplace differentiator. Likewise, the maintenance of existing operations during future construction and relocation activities is essential. Ongoing tenant communications will promote efficient transition of vacant property into new aviation-related uses. The HCAA has been working with the Hillsborough County Community College (HCCC) to develop new curricula which are now available and in process for training the skilled workforce required by the concepts outlined to meet future labor demands. Available skilled workforce, along with competitive labor rates, is a crucial element of the community's infrastructure that is highly sought out by employers looking to relocate business operations.

Economic development incentives are a common tool utilized by states and local areas alike, often working in partnership, to attract new companies to the community. This is done to assist existing firms in expanding their market presence with larger facilities and additional jobs, or to train and retain a competitive labor force. The premise behind the utilization of such economic development tools is that, if not for the incentives and assistance provided by these programs, a competitive project or high-potential company in a targeted industry would not choose to locate or expand its operations here. In Florida, as in other states, many key economic development and business incentive programs are offered at the state level to provide the leveraging capability and engagement capacity necessary to compete for projects of statewide significance or regional magnitude. Available resource programs range from:

- Sales tax refunds.
- Tax credits for capital investment.
- Performance grants for target industries.

- Location-based bonuses for designated enterprise zones and redevelopment areas.
- Transportation improvement funds.
- Workforce development training and retention programs.

While program oversight is tasked to the State's Department of Economic Opportunity, the programs themselves are accessed through and applied for via a process administered by a separate entity, Enterprise Florida, a not-for-profit organization that represents interests of both the state government and private businesses in partnership. This one-stop shop is the statewide conduit for economic development incentive information, coordination and assistance, serving as the main point of contact and information access for businesses interested in locating to or expanding within the State. Enterprise Florida provides a variety of valuable services to prospective companies from site identification and community research to permitting and regulatory assistance. This arrangement also facilitates connections between prospective businesses and the various economic development partner organizations and government agencies throughout the state and within the relevant area. The Tampa metro area boasts a number of these partner organizations which are helping to identify, coordinate, and promote a strong business and economic development vision for the Tampa Bay community as the economic hub of the State's central west coast region.

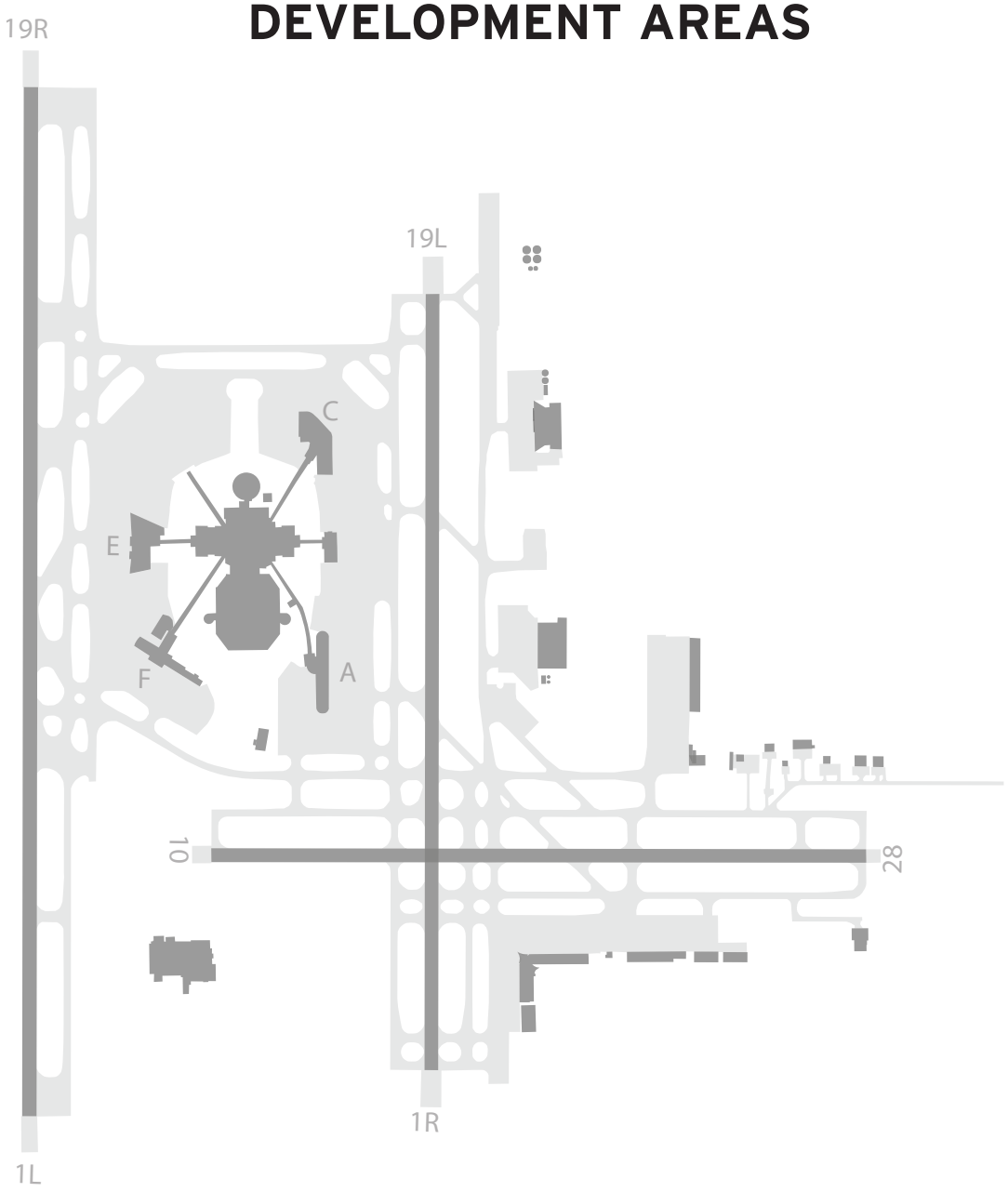
The Economic Development Departments of the City of Tampa and Hillsborough County play a crucial role in economic development coordination within the Tampa area. While they also offer a selected number of incentive programs for specific projects, these departments serve as gateways to a variety of economic development initiatives, funding sources, and technical assistance programs. Through these departments and their partner agencies and organizations, a number of incentives are available to businesses, including tax benefits such as ad valorem tax exemptions, various grants including bonuses for job creation, and mitigation options for impact fees associated with development. These partner organizations include the Tampa Hillsborough Economic Development Corporation, Tampa Bay Partnership, and Tampa Bay and Company, among many others engaged in promoting and advancing the economic wellbeing of the community. For eligible companies, Hillsborough County also offers the financial and logistical benefits of a foreign trade zone designation as part of the Tampa Foreign Trade Zone (FTZ), established by the U.S. Department of Commerce in 1982. The Tampa FTZ operates in select locations throughout the county, including active subzones at the Tampa International Airport.

A matrix summarizing select economic development incentive programs with pertinence to TPA's Eastside Aviation Development Area is presented in **Appendix I**.

#### 5.2.8.3 Conclusion

The preceding has provided a series of options for the development and/or reservation of property in the East Airfield Planning Area to address existing and future facilities and facility needs.

# NORTH AND SOUTH GA DEVELOPMENT AREAS



## 5.3 North GA Development Area

The North GA Development Area is located north of Runway 10-28 and east of the FedEx facility and Flight Express. The area, served by Taxiway T houses six GA tenants on the north side of the taxiway. These tenants are private operators who base their development around independent business factors. As such, they were not included in the facility requirements analysis nor will they undergo a detailed alternatives analysis.

For the purposes of the Master Plan and preserving future developable area for compatible land uses, it is necessary to reserve undeveloped land in this vicinity to flexibly accommodate future GA demand. East of the existing hangars is an area that is roughly 1,300 feet long by 400 feet deep (approximately 11.9 Acres) that is available for future development. This area can accommodate a wide range of hangar sizes, airside configurations and support area for future tenants. It is recommended that this area be reserved for future GA/Corporate development. Taxiway T will ultimately be reconfigured and extended to the east in parallel with future development to serve the currently undeveloped parcels. For a graphical depiction of the area that is to be reserved see **Figure 5.21**.

In the event that this area isn't sufficient for an operator or developer looking to be located at TPA additional space south of Landmark aviation in the South GA Development Area is available.

## 5.4 South GA Development Area

The South GA Development Area is located south of Runway 10-28 and east of the southern leg of Runway 1R/19L in the southeast quadrant of the Airport. The area is built off of the existing runways which intersect at a ninety degree angle. Appropriately, the South GA development area is L-shaped, echoing the runway configuration. The area houses the two main FBOs, Landmark Aviation and the Tampa International Jet Center, Customs and Border Protection and a single private corporate hangar.

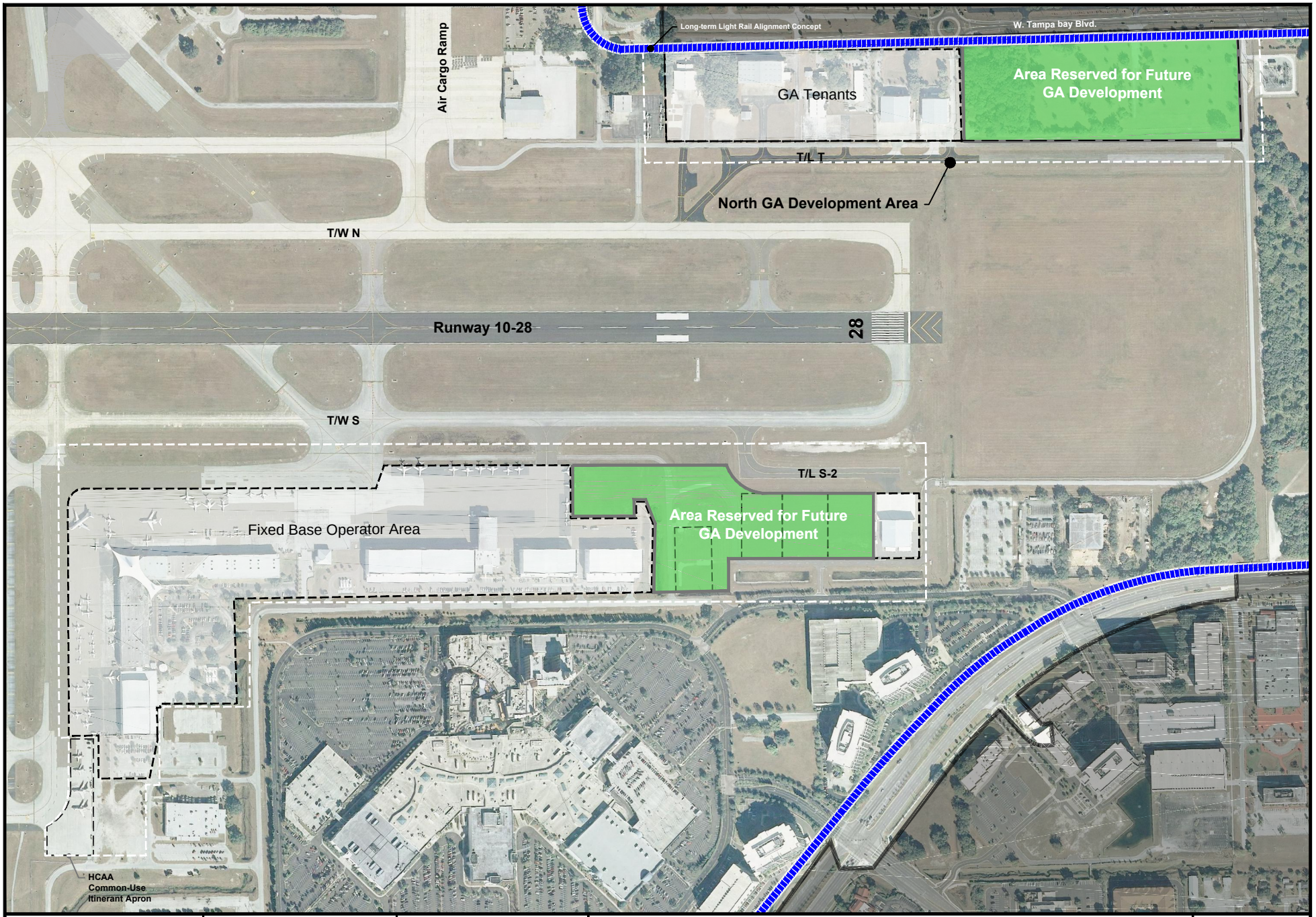
For this area, the Facility Requirements section primarily assessed the two FBOs. The analysis included; hangar/office space, transient/based apron, POV parking, jet A fuel storage, and AvGas fuel storage.

The results of the analysis indicated that the existing facilities were adequate to accommodate forecasted activity levels through the planning horizon. Despite having no identified need for additional facilities, business decisions may be made by existing tenants that would require additional facilities. In the case that additional facilities are needed there are two locations on the Airport for additional corporate hangar development. These locations consist of presently undeveloped property located east of the existing corporate hangars (between Tampa Bay Boulevard and the alignment of Runway 10-28) and a second site situated to the east of the TIJC leasehold. Ample area is presently allocated to fully accommodate the need for additional corporate hangar development throughout the 20-year planning horizon. For a graphical depiction of the area that is to be reserved see **Figure 5.21**.

In addition to the two areas mentioned above, the common-use ramp owned by HCAA is available south of Hawker Beechcraft and east of the Runway 1R end. This apron is used by the FBO's during periods of very high demand. The ramp is approximately 110 by 550 feet (6700 SY)

and is used as overflow aircraft storage for the Airport. It can be made available should additional itinerant space be required for the FBOs and air carrier operators on an as-needed basis.

It is recommended that these areas be reserved for future GA facility development.

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SCALE: 1" = 600'

HNTB

2900 SOUTH QUINCY STREET,
SUITE 200
ARLINGTON, VIRGINIA 22206
PH (703) 824-5100
FAX (703) 671-6210

# Area Reserved for GA Development

TAMPA INTERNATIONAL AIRPORT
TAMPA, FLORIDA

DATE:
May 07, 2013

FIGURE:
5.21

C:\Temp\AcPublish_1172\TPA_GA_Facility_Land Reserve_recover.dwg 6 - GA Foc Alts May 07, 2013 - 5:10pm

## 5.5 Central Core Planning Area

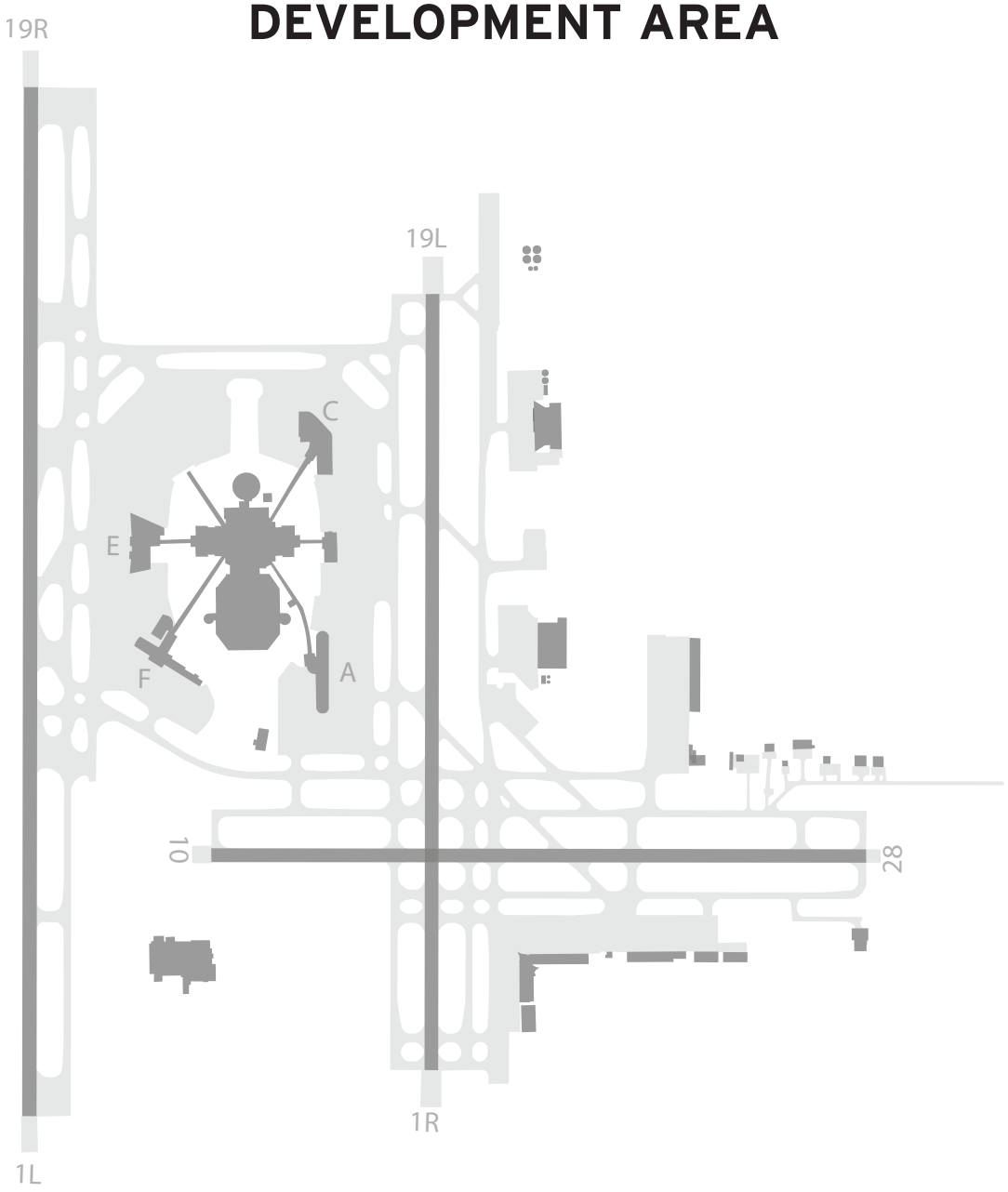
The Central Core Planning Area is a large portion of the airport that lies to the west of the alignment of Runway 1R/19L, to the western extent of the Airport's property which is bordered by the north/south-running Veterans Expressway. The area lies generally between Spruce Street on the south and Hillsborough Avenue to the north. Within this portion of the Airport is a mix of terminal facilities, airfield, and terminal support facilities (airport roadways, ARFF, parking facilities, rental car facilities, flight kitchen etc.) Additionally, there are multiple areas that are currently unused and available for future expansion of aviation related uses and other activities. For a graphical depiction of the Central Core Planning Area see **Figure 5.1**.

The areas that make up the Central Core Planning area are referred to as follows:

- North Terminal Development Area
- Terminal Development Area
- South Development Area
- Future Airfield Development Area

These individual areas are each addressed in the coming sections.

# NORTH TERMINAL DEVELOPMENT AREA



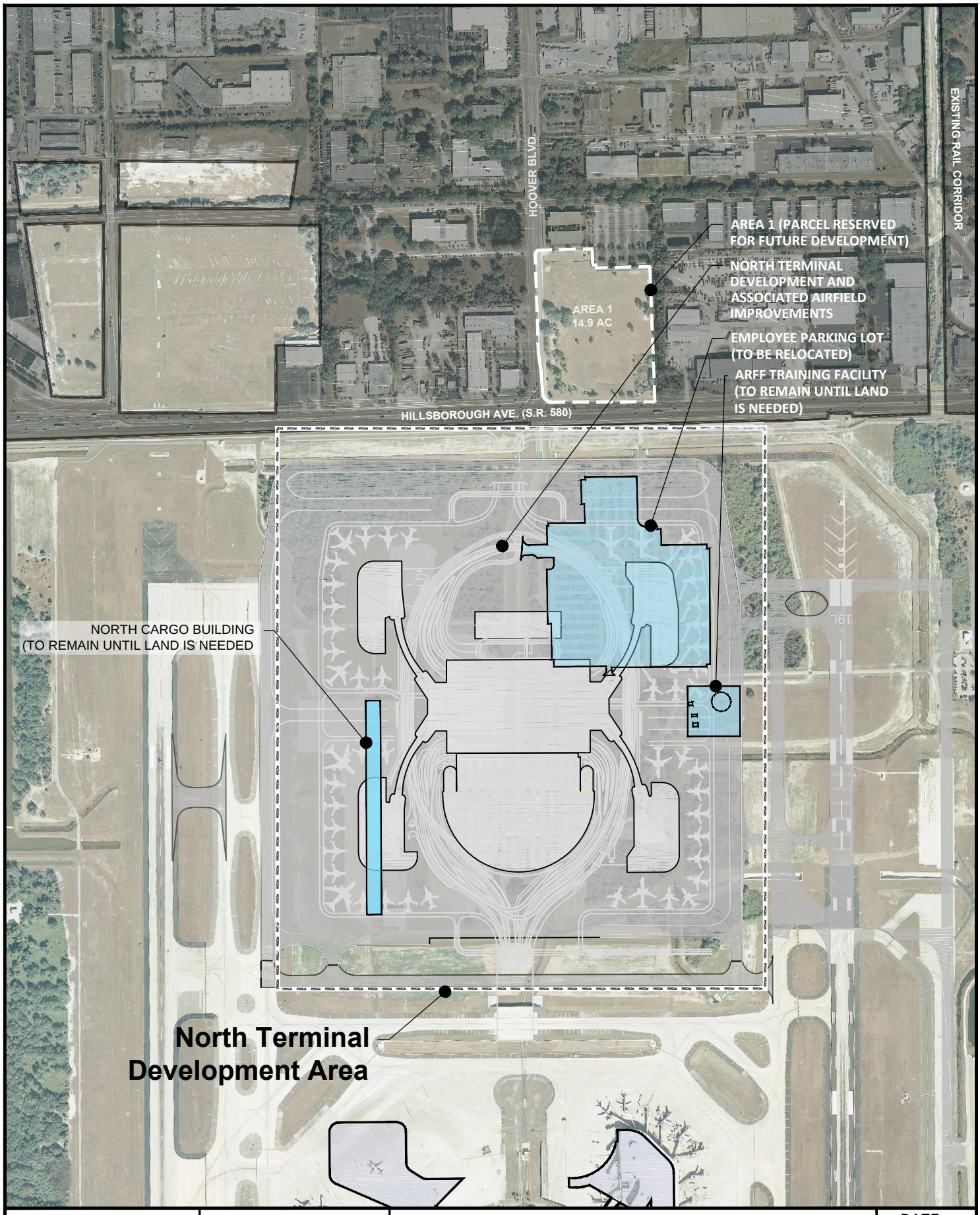
## 5.6 North Terminal Development Area

The North Terminal Development Area is located directly north of the existing terminal complex. The Area is bordered by the cross-field Taxiway B to the south, Hillsborough Avenue to the north, Taxiway V and Runway 1L/19R to the west, and the extended centerline of Runway 1R/19L to the East. See **Figure 5.22** for a depiction of the North Terminal Development Area.

The Area has been reserved for future development, but still houses a number of airport support facilities. The remaining facilities in this area are as follows:

- The Employee Parking Lot
- The ARFF Training Facility
- the North Cargo Building (Vacated)

The Employee Parking Lot and the ARFF Training Facility are still utilized, while the north cargo building has been vacated since the completion of the belly cargo facility located in the eastside development area. The north cargo building now sits empty. These facilities are called out in Figure 5.22 and are shown in relation to the planned North Terminal Development Complex from the 2005 Master Plan.

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HNTB

# North Terminal Development Area

TAMPA INTERNATIONAL AIRPORT
TAMPA, FLORIDA

DATE: Jun 26, 2013

Figure: 5.22

P:_Projects\57785 – Tampa MP\00-CADD\HNTB_Team_Dwg_files\TPA_North Terminal Development Area.dwg N Terminal Area Jun 26, 2013 – 10:51am

## 5.6.1 Proposed Development Contained in 2005 Airport Master Plan

The North Terminal Development Area was set aside in the 2005 Master Plan to accommodate the future terminal expansion that was anticipated within the planning period of that effort (2005-2025). Airport activity at the time was at a historic upward swing and the Master Planning Team was assessing the need to accommodate long-term demand by constructing a secondary terminal facility and associated airfield and support functions. The existing facility was assessed to have an estimated capacity of 25 MAP (forecasted to occur between 2015 and 2020). This capacity threshold represented the effective operating capacity (or "practical capacity") of the terminal complex while maintaining an acceptable level of service. It was this activity trigger that would necessitate additional terminal facilities to maintain a high level of service.

Since the 2005 Master Plan was completed a global recession occurred which resulted in a significant global economic decline that began in late 2007 through to the second quarter of 2009. Naturally this economic decline affected the health of the aviation industry and had subsequent impacts to passenger demand and airline services provided. Aviation activity at TPA was also affected with a decline in aviation activity significant enough to drastically alter the likelihood that the trigger of 25 MAP would be reached as anticipated.

### 5.6.1.1 Terminal Concept and Development Timing

The full build-out of the terminal facility included a similarly configured arrangement of a landside core and supporting airside facilities as the existing facility does. This buildout would include four separate airside concourses which would each have between 11 and 14 gates, providing a total of 50 gates. The facility would have a separate FIS and dual parking/rental car garages. The facility would also be served by a new APM. A schematic depiction of the facility and associated airfield improvements as planned in the 2005 Master Plan is shown in **Figure 5.22.** Also shown in Figure 5.22 is Area 1, a parcel previously reserved to accommodate an ultimate build-out of the North Terminal Complex. This option previously required a segment of Hillsborough Boulevard to shift to the north to circumvent the proposed terminal development. This option has since been discarded and Area 1 has been designated for alternate uses.

### 5.6.1.2 Airfield Enhancements Required

Associated with the proposed development of future terminal facilities were a series of additional airfield facilities. These were shown on the Airport Layout Plan as approved with the 2005 Airport Master Plan and included the following elements:

- Parallel Runway 18-35 – 150 ft. x 9,962 ft.
    - Future Taxiway Z and associated connector taxiways.
- Cross-field Taxiway M and associated connector taxiways to existing Taxiway B.
- Runway 19L Extension – 150 ft. X 2,200 ft. (Total Length = 10,500) to solve TERPS issues associated with the North Terminal Complex.
    - Future Taxiway C Extension and associated connector taxiways.
    - Future Taxiway A Extension and associated connector taxiways.

- Relocated Taxiway E and associated connector taxiways.
- Taxiway D connector stubs.

## 5.6.2 Improvements and Actions since the 2005 Airport Master Plan

### 5.6.2.1 Facility Relocations

Since the 2005 Master Plan was completed the initiative for the North Terminal Development Area has been to prepare and reserve the site to accommodate the development of the North Terminal Complex. To accommodate that development it was essential to phase out and relocate existing facilities to alternate locations. Currently only three facilities remain in this area:

- the Employee Parking lot
- the ARFF Training Area
- the North Cargo Building

### 5.6.2.2 Air Cargo and GSE facilities

This included the relocation of the north cargo building which is located on the proposed site for the initial development phase of the North Terminal facilities. At the time of this master plan effort, the North Cargo Building has since been vacated and a new facility constructed in the eastside development area.

### 5.6.2.3 North Terminal Development Complex Refinement

Since the completion of the 2005 Master Plan and the proposal of a North Terminal Development Complex additional study was conducted to refine the layout and design of the facility. Subsequently, the planning of the facility was advanced to a preliminary design level of detail. The resulting layout is depicted in **Figure 5.22**.

## 5.6.3 Area 1 Land Use Summary

Area 1 is located on the north side of Hillsborough Avenue in the northeast quadrant of North Hoover Blvd. and Hillsborough Avenue. The parcel is a presently underdeveloped tract of land totaling approximately 14.9 acres. The parcel is a rectangular tract approximately 700 feet in width along an east/west orientation and approximately 960 feet long at its longest point from north to south. The tract is generally clear of tree cover and level with no discernible wetlands or areas of ponding with the exception of one small area in the southeast corner of the site. The site is bordered on the south by the alignment of Hillsborough Avenue and on the west by North Hoover Boulevard. At present, the only curb access to the site is off of North Hoover Boulevard via a single curb cut opposite Hangar Court at the north border of the site.

The land use designation (Airline Passenger Terminal) depicted on the Airport Land Use map for the northeast quadrant of Hillsborough Avenue and Hoover Boulevard no longer reflects a logical designation given the delay in building a North Terminal and the changes made to the North Terminal concepts. The recommended change to a commercial designation is reasonable because:

a. The land is not required for the North Terminal or related roadway realignment on which the previous designation was based;

b. The property should be retained to preserve the option of its future use for aviation support purposes, but in the interim the land can provide revenue to support current airport operations and capital programs;

c. It does not adversely impact the ability of Tampa International Airport to meet the long-term forecast of aviation demand, nor does it impact the ability to accommodate any segment of the aviation industry at TPA over the current 20-year master plan horizon.

d. Market analytics and local fieldwork conducted by the HCAA's land use and real estate advisors suggest potential commercial use of the property includes but is not limited to single-story retail, low-rise industrial, flex, self-storage, or lower intensity office activities, all of which are compatible with airport operations and could provide space for businesses providing goods or services to airport tenants and users. From a land use perspective, the change from Passenger Terminal Use and Public Use to a general commercial designation is a logical and appropriate action.

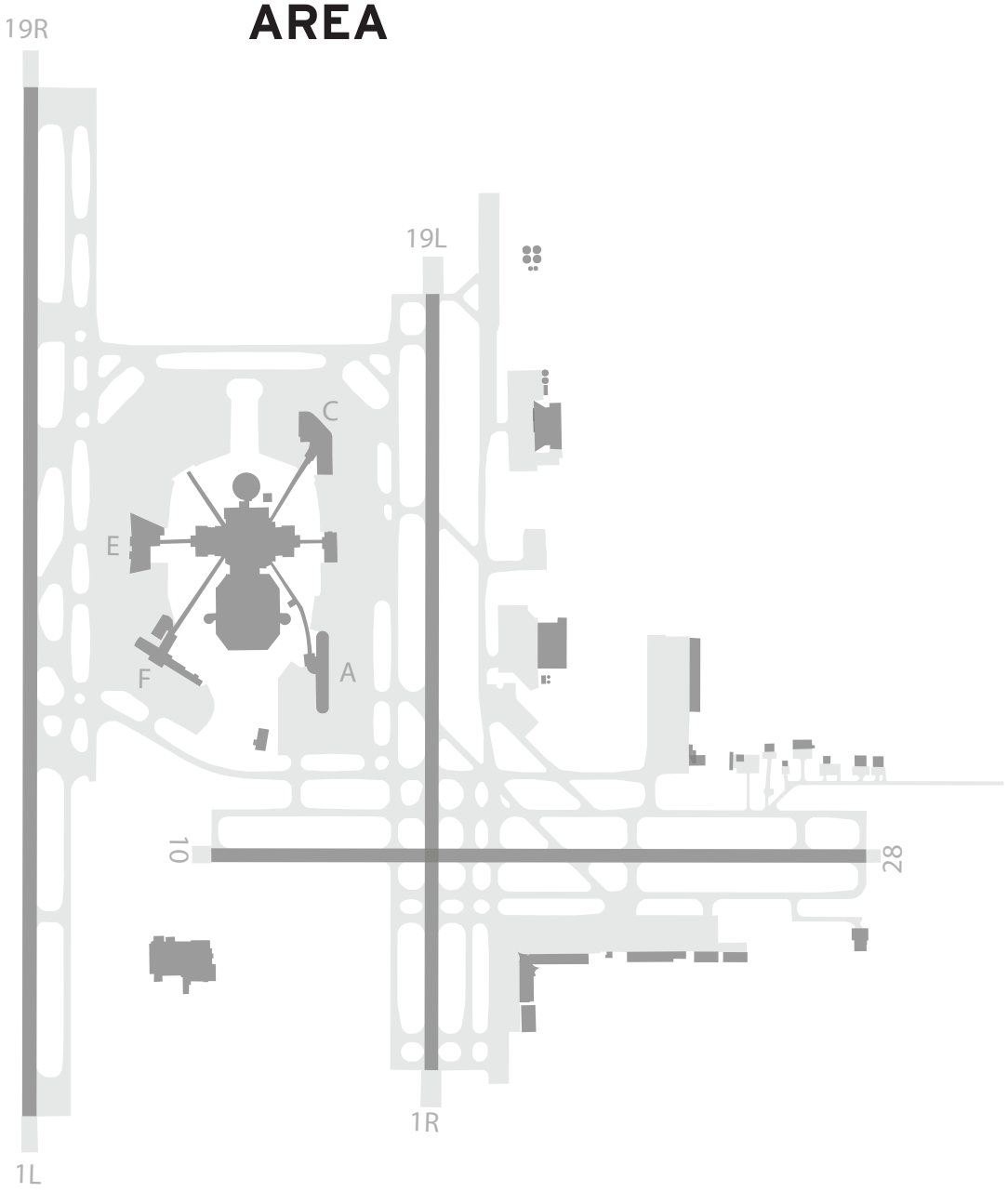
Further detail on this parcel is available in **Appendix J**, where a thorough discussion and background are featured.

### 5.6.4 Recommended Actions

While demand levels that would necessitate the development of the North Terminal Complex are not anticipated to occur within the existing planning period (2011 – 2031) the Master Plan continues to recommend that the area shown in **Figure 5.22** be reserved for the long-term development of the North Terminal complex. With the reality that economic change and subsequent impacts to aviation activity are always fluctuating, the Master Plan recommends that the Airport continue to make provisions in the North Development Area for the time that additional terminal facilities may be needed. To reasonably achieve this, the following actions are recommended:

- Continue to reserve the North Terminal Development Area for future terminal development.
- Relocate the employee parking lot to the South Development Area.
- Allow the North Cargo facility to remain until the facility either reaches the end of its useful life or the land is needed for immediate terminal development.
    - In the meantime, consider the possibility of allowing short-term leasing of the facility for aviation support related uses as a source of additional revenue.
- Allow the ARFF training facility to remain until the land is needed for immediate terminal development. At such point the facility can be relocated to its proposed location in the Eastside Development Area.
- Perimeter Parcel Number One (Area 1) should be reserved for general commercial use.

# TERMINAL DEVELOPMENT AREA



## 5.7 Terminal Development Area

This Master Plan Update is a consolidation of existing airport planning efforts and additional investigation and study. It focuses on development that is affordable, sustainable and balanced to support anticipated growth through a flexible and scalable plan, combining the Airport's vision and airport requirements. Terminal development planning adheres to core aspects initiated in the original terminal design while at the same time remaining open to modern concepts that grow business, improve passenger level of service and create revenue opportunities. Numerous questions and issues were addressed during the process, including:

- Expansion
    - Maximize area within the Main Terminal Complex to exceed capacity of existing facilities past 25 million annual passengers (MAP)
    - Improve current operations to enhance passenger level of service and customer experience
    - Develop potential for international gates on a new Airside D, as well as provide direct access to a new CBP facility
    - Develop potential for future CBP connectivity to Airside C to accommodate international flights
- Renovation
    - Reallocate space to become more efficient
    - Increase the airside concessions program
    - Incorporate new technologies to enhance capacity and improve efficiency
- Tradition
    - Maintain high levels of passenger convenience and comfort
    - Keep walking distances under 700 ft.
    - Maintain Automated People Mover (APM)/Shuttle Technology
- Development of incremental changes for long term capacity growth

A key initiative of the Master Plan Update is to defer the construction of the North Terminal Complex while accommodating projected activity with an expansion of the existing terminal facility. The very nature of the aviation industry requires that the development of airport facilities be part of a step by step, flexible program that can adapt to the required changes demanded as the Airport grows. The following modifications presented below are intended to allow maximum growth within this framework of flexibility.

### 5.7.1 Terminal Requirements Overview

The facility requirements section identified functional areas that need to be addressed as the Airport continues to grow over the next twenty years. The major areas of concern are illustrated in the Stoplight charts (diagrams showing the relationship between level of service and demand) found in Section 4.2.10 and are summarized below:

Terminal Area:

- Transfer Level circulation area deficiencies between vertical circulation cores and Airside Shuttle stations
- Concessionaire offices
- HCAA administrative offices

Airside A:

- News/Gifts/Retail concessions
- Food and Beverage concessions
- Services (concessions)
- Baggage make-up area

Airside C:

- Security Screening Checkpoint (SSCP)
- Checked Baggage Inspection System (CBIS)
- Food and Beverage concessions
- Baggage make-up area
- Services (concessions)
- News/Gifts/Retail concessions

Airside E

- News/Gifts/Retail concessions
- Services (concessions)
- Food and Beverage concessions
- Duty Free

Airside F

- News/Gifts/Retail concessions
- Services (concessions)
- Food and Beverage concessions
- Duty Free
- Airline operations areas
- Baggage make-up areas
- Holdrooms
- Customs and Border Protection (CBP)
- Airline/VIP clubs

The capacity enhancement alternatives that follow in this section were developed to meet the projected future demands while accommodating the ability of passengers to move and airlines to operate efficiently and conveniently throughout the terminal complex. The goal is to keep a high level of user satisfaction while expanding the existing facility to grow and adapt to the changing nature of demand.

## 5.7.2 Transfer Level Improvements

The facility requirements analysis reveals that of the three levels of the terminal, the Transfer Level requires the greatest amount of attention as passenger demand returns to 2007 levels and higher. Peak period populations on the Transfer Level are projected to increase significantly. Enplaning and deplaning passengers and their well-wishers and meeter/greeters will soon exceed the area available between the vertical circulation cores and the shuttle stations. The vertical circulation modes and the shuttle systems themselves were shown through simulation modeling to have sufficient capacity for the expected passenger levels, but the level of service in the lobbies outside the shuttle stations will continue to degrade during peak periods due to the inability to segregate inbound and outbound passenger flows.

Another issue identified is that once passengers exit the escalators or elevators used to reach the Transfer Level, most walk immediately toward their shuttle station, turning their back on the concession core situated in the middle of the terminal. For the most part, restaurants and bars are located near the center of the Transfer Level and not close to the shuttle stations where meeter/greeters would be more likely to enjoy a drink or something to eat while watching for their party to exit the shuttle. Likewise, newsstands and retail shops containing impulse buys, magazines and other carry-on items ideally should be located along the path between the vertical cores and the stations.

The transfer level can be modified to accommodate predicted growth and enhance the opportunity for non-aeronautical revenue earnings in the following ways:

- Expansion over plaza decks
- Reconfiguration of escalator cores
- Redevelopment and reconfiguration of concessions
- Relocation of shuttle stations at Airsides A, E and F

### 5.7.2.1 Expansion Over Plaza Decks

The transfer level should be expanded at each of the four corners, built out onto the rooftop areas covering the ticketing level, also known as the plaza decks. According to HCAA staff, the plaza decks are structured to allow one additional floor level. This requires constructing a new floor equal in elevation to the existing Transfer Level, new perimeter walls and a roof structure in the areas shown in **Figure 5.23**. There are a number of identified opportunities for this expanded area, including:

- Roof garden
- Business center

- Children's play areas
- Spa
- Airport lounge
- Conference center
- Seating areas
- Full-service restaurants
- Food court
- Retail concessions

New heating, ventilating and air conditioning (HVAC) units should be constructed in mechanical rooms over the expanded plaza deck areas to replace HVAC units currently located on mezzanines over the Terminal shuttle stations for Airsides A, B, E, and F.

#### 5.7.2.2 Reconfiguration of Escalator Cores

It is recommended that the up escalators from the Ticketing/Check-in Level be reconfigured, redirecting the flow of people to reduce congestion and allow simplified movement from check-in to each airside. Four renovated or new escalators should be installed at the east and west escalator cores, changing one up escalator to a down escalator at each set as shown in **Figure 5.24**. In the center of the terminal, four up escalators will replace the two existing down escalators using the same floor openings. The orientation of these new escalators is 180-degrees from the existing. This allows greater exposure to a reconfigured central concessions area and a more direct flow to the new consolidated security checkpoint that is proposed to the north. Reversing the flow of these escalators will help to segregate passenger flows by routing passengers to the existing shuttle stations around the four escalator cores, and not through them. A key element of this reconfiguration is to arrange concessions, seating areas, and other elements in such a way as to discourage passengers from flowing between the escalators leading down to the Baggage Claim Level. This area is a decision point for arriving passengers trying to choose which escalators to take to claim their bags, so a counter-flow of passengers through this area should be avoided.

The HCAA Concessions Department estimates this escalator reconfiguration will increase concession revenue by 4-6% a year and the construction cost is projected to be recovered through approximately 1.5 years of improved concessions sales. Similar to European airports, creative circuitous routes through the central space will give travelers greater exposure to concessions.

**Figure 5.23**

**Plaza Deck Expansion**

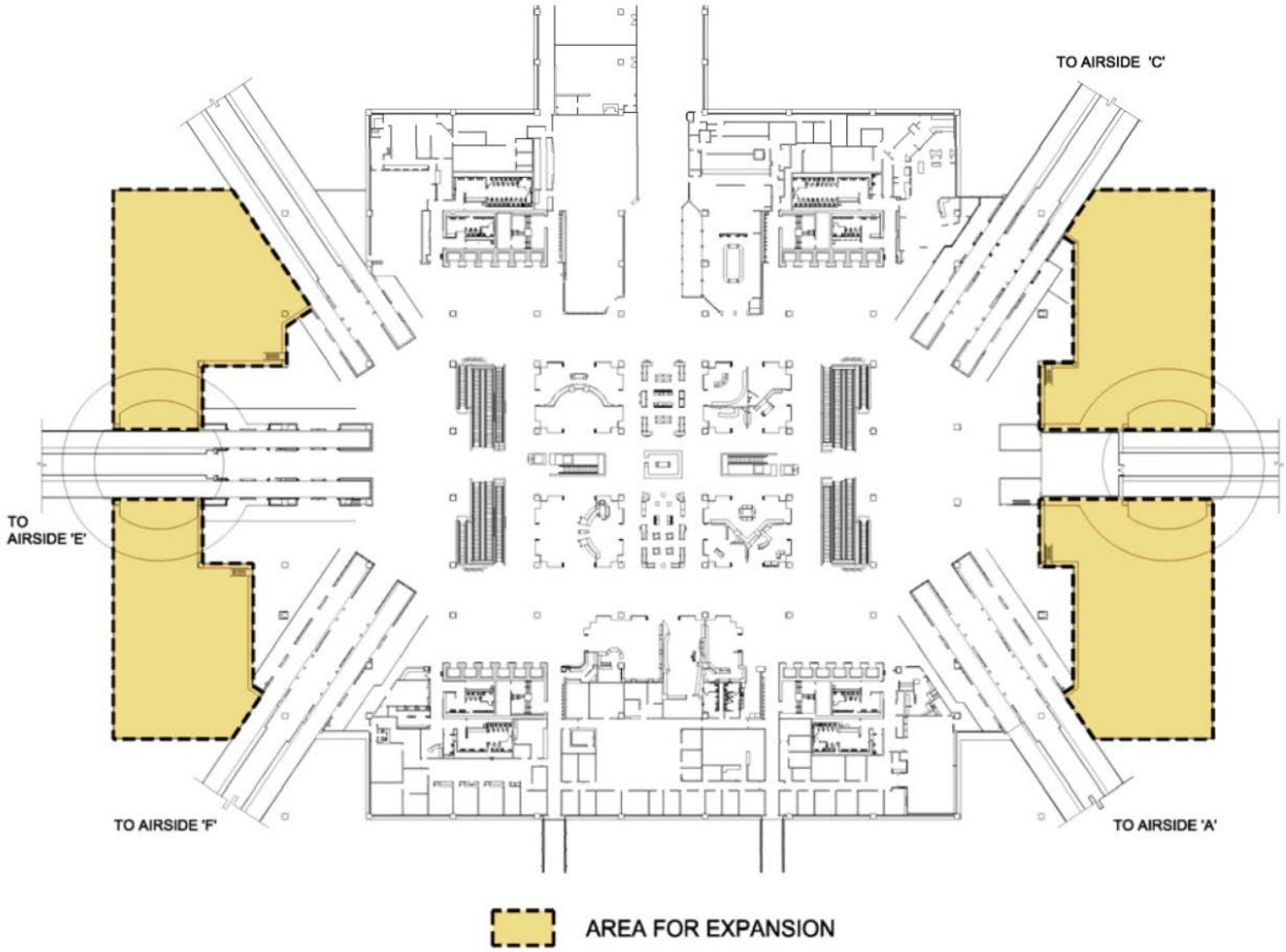
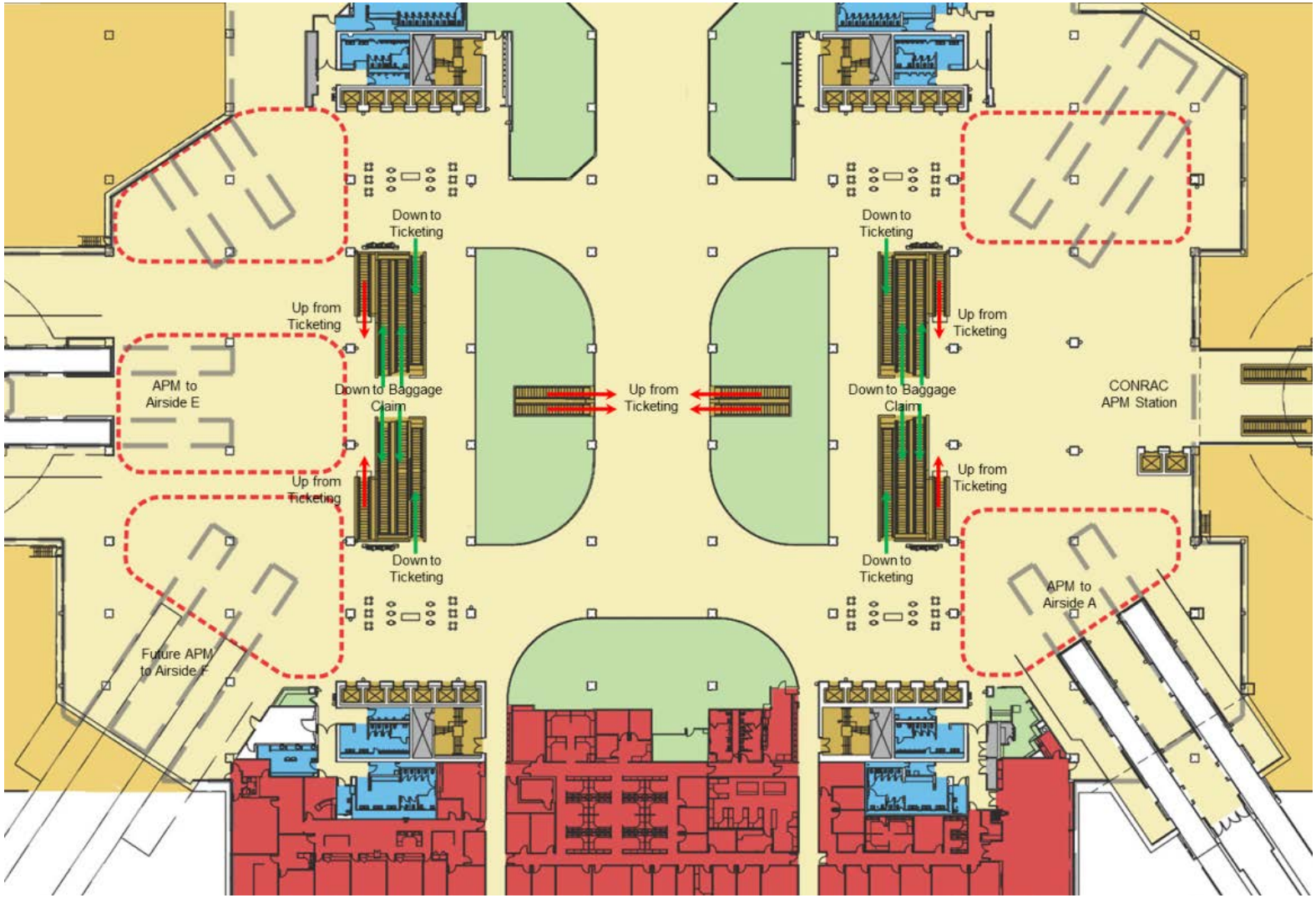


**Figure 5.24**

**Escalator Reconfiguration**



### 5.7.2.3 Relocation of Shuttle Stations at Airsides A, E and F

As noted in Section 4.2.9.2 Circulation, the east and west shuttle lobbies will become increasingly congested as passenger traffic increases. These lobbies accommodate a diverse mix of people, including departing and terminating passengers, meeter-greeters, well-wishers, employees, and flows to and from the new Terminal APM Station (east lobby only). The shuttle lobbies experienced significant crowding during peak times of the day in 2007, the Airport's highest recorded passenger levels, and these spaces are anticipated to reach or exceed the 2007 passenger levels by 2016.

A range of options with varying levels of construction complexity and potential for disruption to terminal operations were considered to provide additional seating and circulation area. Solutions explored include changing the shuttle operation to simplify the station configuration at the terminal and multiple options for relocating the shuttle stations outward by varying distances to increase the size of the shuttle lobbies. Each concept expands the transfer level onto the plaza decks, assumes a new International Airside D is constructed, and assumes the shuttle station for Airside F is removed. However, all of these concept options will still apply if Airside F remains in operation and the Airside D shuttle station is demolished.

*Pinched Loop Reconfiguration*

Part of the challenge with today's shuttle lobbies is the co-mingling of enplaning and deplaning passengers with their well-wishers and meeter/greeters. All four types occupy the same general area. At times, enplaning passengers and their well-wishers form lines at the document checkers, hampering the flow of deplaning passengers exiting the station who are trying to orient themselves to baggage claim or ground transportation services. Meeter/greeters must position themselves so they can see their passenger exit one of the two station exits. If the passenger flows and the meeter/greeter waiting areas can be segregated, passenger wayfinding and congestion can be improved.

The "Pinched Loop" concept maintains the position of one shuttle track coming into the terminal but removes the other, creating a pinched loop for the shuttle trains to come and go in an alternating fashion. This configuration allows the location of the removed track and the new space extended over the plaza decks to become a meeter/greeter lobby, leaving the existing shuttle lobby space purely as circulation for passengers. **Figure 5.25** illustrates how, separated by a railing, meeter/greeters can wait in a dedicated lobby at the side of the station with a clear view of exiting passengers. Enplaning passengers queue on the opposite side of the station. This concept segregates passenger flows to and from the station and allows better use of underutilized seating areas. Concessions could be provided in the lobbies or over the plaza decks to serve waiting customers.

This solution solves some circulation and space problems, but has several drawbacks from a shuttle operation perspective:

- Greater operation and maintenance costs for maintaining the track switch
- More complicated train controls
- Very difficult to construct while maintaining existing operations

- The switch cuts off the walkway to airside, which passengers use when the shuttle malfunctions or loses power
- Slightly greater headway time due to one train negotiating the switch and curve, and
- Risk of one of the trains breaking down in the only terminal station.

In a 'must ride' system, redundancy is critical. If you eliminate one of the station platforms and introduce the switch, the entire system would be shut down if a train breaks down in the remaining station platform or as it passes through the switch. Therefore, operationally, this concept is not recommended.

*Shuttle Relocation Options*

**Table 5.7** shows the available and required meeter/greeter and circulation areas required for the east and west shuttle lobbies.

**Table 5.7**

**Existing Shuttle Lobby Space Analysis 1**

| Existing Lobbies | Shuttle Lobby (sf) | |
|---|---|---|
| | West (Airsides E & F) | East (Airsides A & C) |
| Existing Available Shuttle Lobby Area | 7,507 | 9,757 |
| 2031 Combined Shuttle Lobby Requirement (LOS C) | 13,160 | 14,468 |
| Surplus/(Deficiency) | (5,653) | (4,711) |

As illustrated in the table above, if no changes are made both the east and west shuttle lobbies will have a significant shortfall of space by the time the Airport reaches 28.7 million annual passengers (MAP). Five concept options were developed illustrating the varying degrees to which the shuttle stations can be relocated, or slid outward, to provide additional space in the shuttle lobbies. **Table 5.8** compares the results of each relocation option using Level of Service B or C spatial criteria. All options meet the LOS C space standards, but several options fall short of meeting LOS B during peak periods.

**Table 5.8**

**Existing Shuttle Lobby Space Analysis 2**

| | | Airside A | Airside C | Airside D | Airside E |
|---|---|---|---|---|---|
| 2031 Space Requirements at LOS C (sf) | | 4,608 | 9,855 | 7,965 | 5,196 |
| 2031 Space Requirements at LOS B (sf) | | 5,332 | 11,914 | 9,151 | 6,280 |
| | | | | | |
| **Option 1** | | | | | |
| | Area Available (sf) | 10,250 | 10,250 | 9,180 | 6,120 |
| | Surplus/(Deficiency) at LOS C (sf) | 5,642 | 395 | 1,215 | 924 |
| | Surplus/(Deficiency) at LOS B (sf) | 4,918 | (1,664) | 29 | (160) |
| | | | | | |
| **Option 2** | | | | | |
| | Area Available (sf) | 10,250 | 10,250 | 8,350 | 8,360 |
| | Surplus/(Deficiency) at LOS C (sf) | 5,642 | 395 | 385 | 3,164 |
| | Surplus/(Deficiency) at LOS B (sf) | 4,918 | (1,664) | (801) | 2,080 |
| | | | | | |
| **Option 3** | | | | | |
| | Area Available (sf) | 10,250 | 10,250 | 11,870 | 9,880 |
| | Surplus/(Deficiency) at LOS C (sf) | 5,642 | 395 | 3,905 | 4,684 |
| | Surplus/(Deficiency) at LOS B (sf) | 4,918 | (1,664) | 2,719 | 3,600 |
| | | | | | |
| **Option 4** | | | | | |
| | Area Available (sf) | 10,250 | 10,250 | 9,190 | 9,960 |
| | Surplus/(Deficiency) at LOS C (sf) | 5,642 | 395 | 1,225 | 4,764 |
| | Surplus/(Deficiency) at LOS B (sf) | 4,918 | (1,664) | 39 | 3,680 |
| | | | | | |
| **Option 5** | | | | | |
| | Area Available (sf) | 5,445 | 11,980 | 9,190 | 9,960 |
| | Surplus/(Deficiency) at LOS C (sf) | 837 | 2,125 | 1,225 | 4,764 |
| | Surplus/(Deficiency) at LOS B (sf) | 113 | 66 | 39 | 3,680 |

*Relocation Option 1*

F**igure 5.26** shows the first relocation option, which relocates or "slides" the shuttle stations for Airsides A and C out one shuttle car length (approximately 45 feet) and the Airside D station out two shuttle car lengths (approximately 80 feet). The Airside E station remains in its current location. This creates two distinct meeter/greeter areas for Airsides D and E, and a single, larger area for the Airsides A and C. The tan area shown in plan in front of each shuttle station indicates the practical area available for each shuttle lobby. The blue and red dashed lines show the area required to meet LOS B and LOS C respectively.

*Relocation Option 2*

**Figure 5.27** shows Relocation Option 2, which relocates or slides the stations at Airsides A, C and D out one shuttle car length. Airside E shuttle Station should be relocated approximately 60 feet

to the west. This creates one large shuttle lobby space for Airsides A and C and another large lobby for Airsides D and E.

*Relocation Option 3*

At just 650' in length, the Airside E shuttle is one of the shortest shuttle systems in existence. Relocation Option 3, shown in **Figure 5.28**, replaces the Airside E shuttle with an enclosed pedestrian bridge containing moving sidewalks running parallel to today's shuttle track. The moving sidewalks will run in both directions with a circulation corridor in between and baggage conveyors running below. The total length of the new pedestrian walkway is approximately 600 feet. This concept also slides the stations at Airsides A, C and D out one shuttle car length creating one large shuttle lobby space for Airsides A and C and individual lobby areas for Airsides D and E.

*Relocation Option 4*

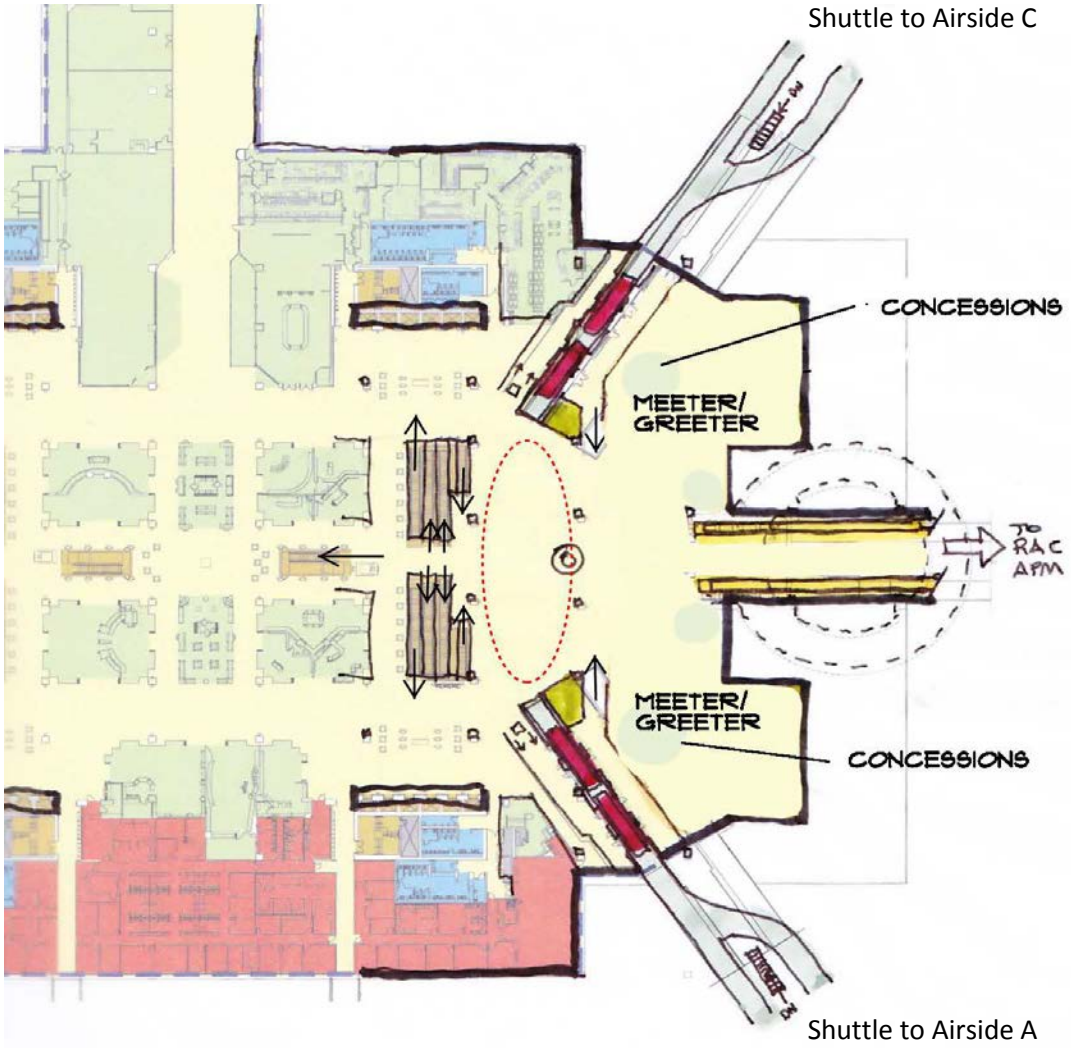
This option is similar to Option 3, except the Airside A shuttle station is not relocated. This configuration provides adequate space at both shuttle lobbies through the planning period. **Figure 5.29** shows that relocating Airside A is not necessary to provide adequate circulation and waiting area at the east shuttle lobby. However, it also illustrates that the Airside A station blocks the view of the southeast corner of the Transfer Level, making that area less viable for concessions or other public uses.

*Recommended Option*

As the Master Plan process evolved and the capital improvement program was established, it was determined that the Transfer Level must be improved in the near-term while construction of a new Airside D will not occur until near the end of the planning period. Thus, the Airside F station will remain active and the remaining elements of the former Airside D shuttle station should be demolished. With regard to the concepts described above, the west shuttle lobby concepts can be mirrored to apply the Airside D shuttle station changes to the Airside F station in the short-term. Because of the symmetrical plan, the improvements at Airside F will realize the same advantages as shown for Airside D.

It was also decided not to pursue replacing the shuttle station to Airside E with pedestrian bridges containing moving sidewalks. Tampa International Airport is known for being the first airport to implement a shuttle train system and the Airport is proud to uphold that reputation and maintain the convenience the trains provide passengers traveling to and from all Airsides.

**Figure 5.30** shows the recommended short-term option. This plan was developed over the three terminal planning charrettes and utilizes elements of several of the original concept alternatives. It was determined that Airsides A and F should be relocated approximately one shuttle train length outward. The Airside E station should be relocated approximately 60 feet to the west and the Airside C station should remain in its current position until the terminal is expanded northward and the Airside C shuttle system is replaced. The Airside D station should be demolished to provide additional space for the Transfer Level concessions reconfiguration.




0 100' 200'

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**Figure 5.25**
**PINCHED LOOP RECONFIGURATION**

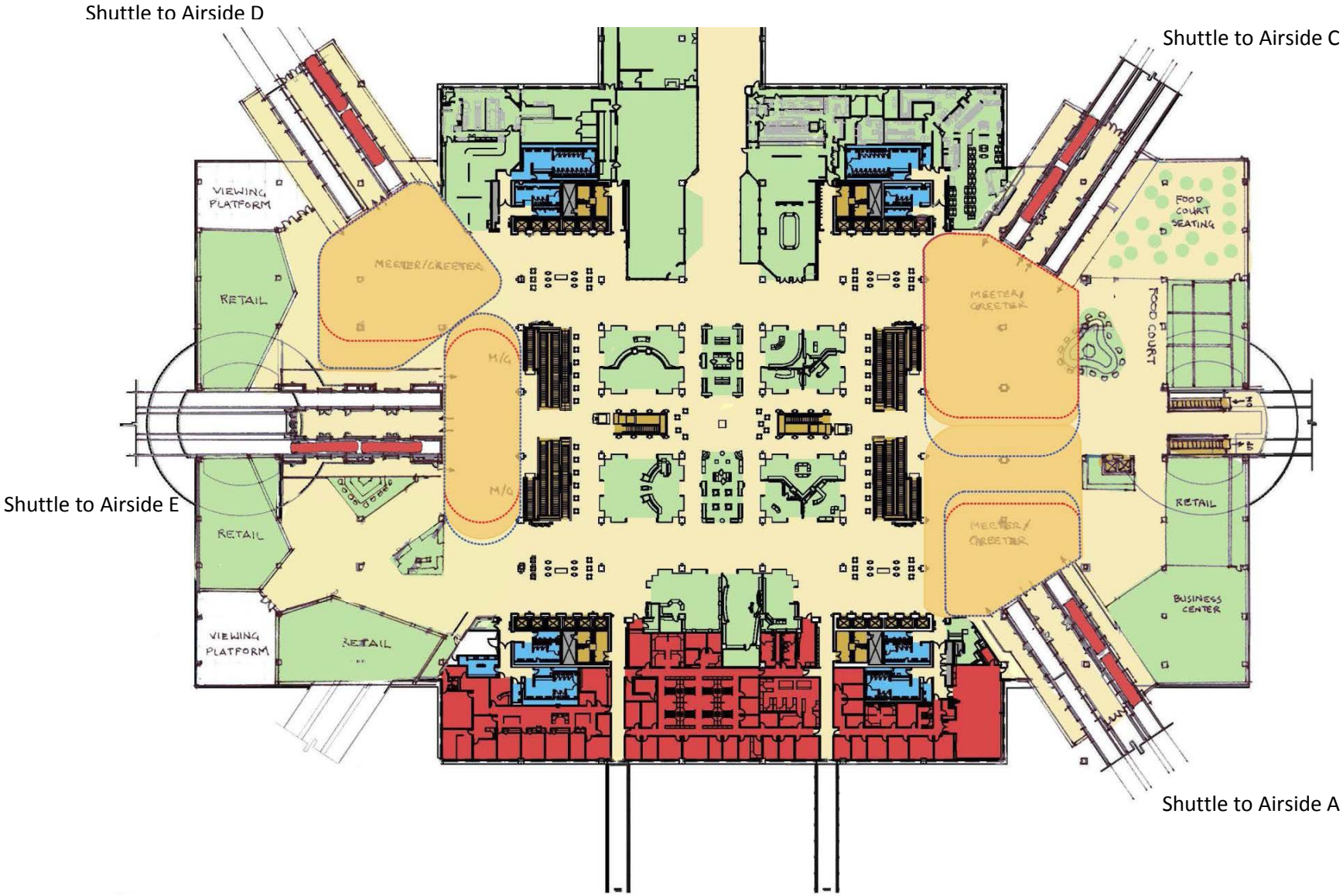



**Figure 5.26**
**RELOCATION OPTION 1**

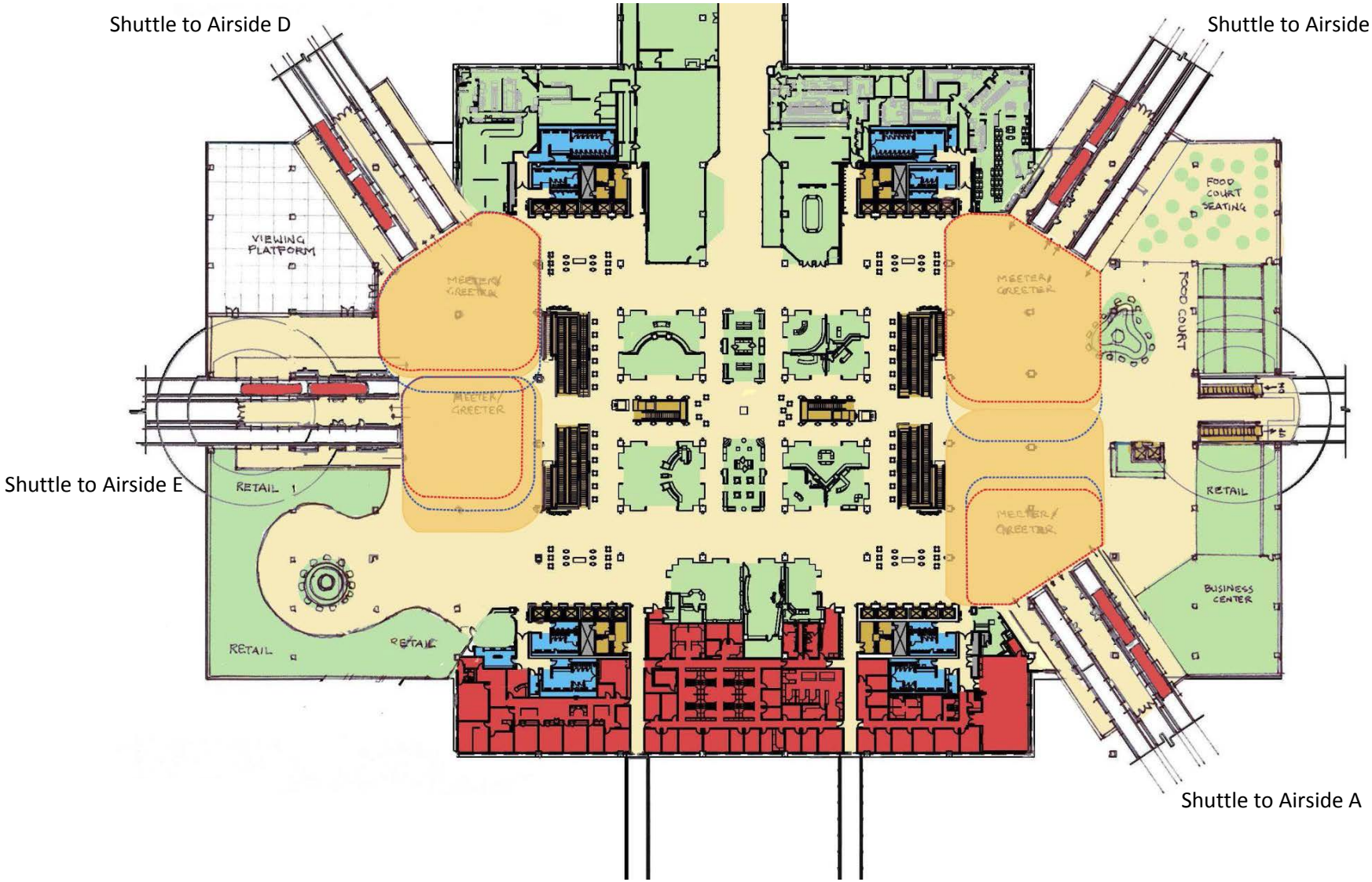



**Figure 5.27**
**RELOCATION OPTION 2**

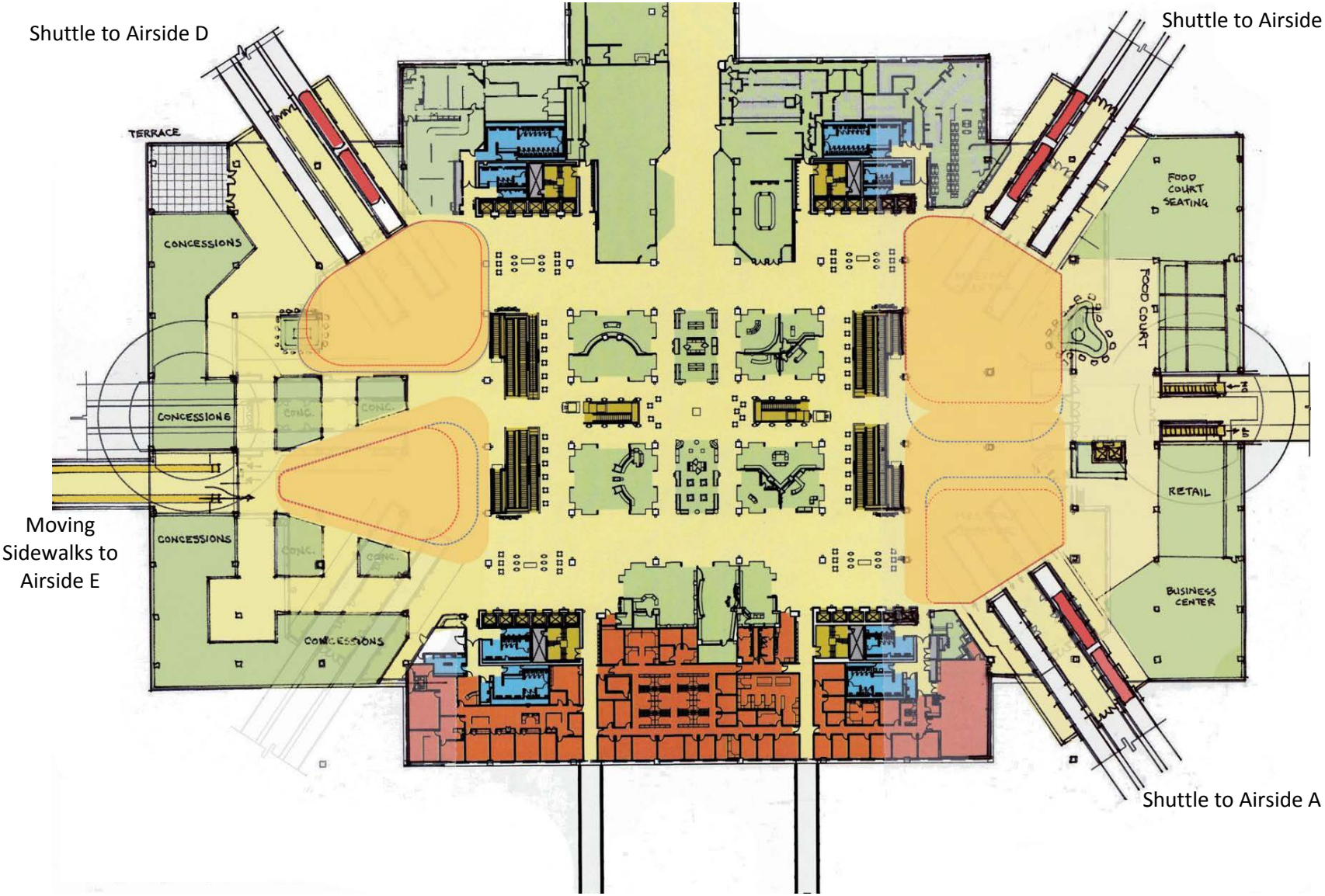



**Figure 5.28**
**RELOCATION OPTION 3**

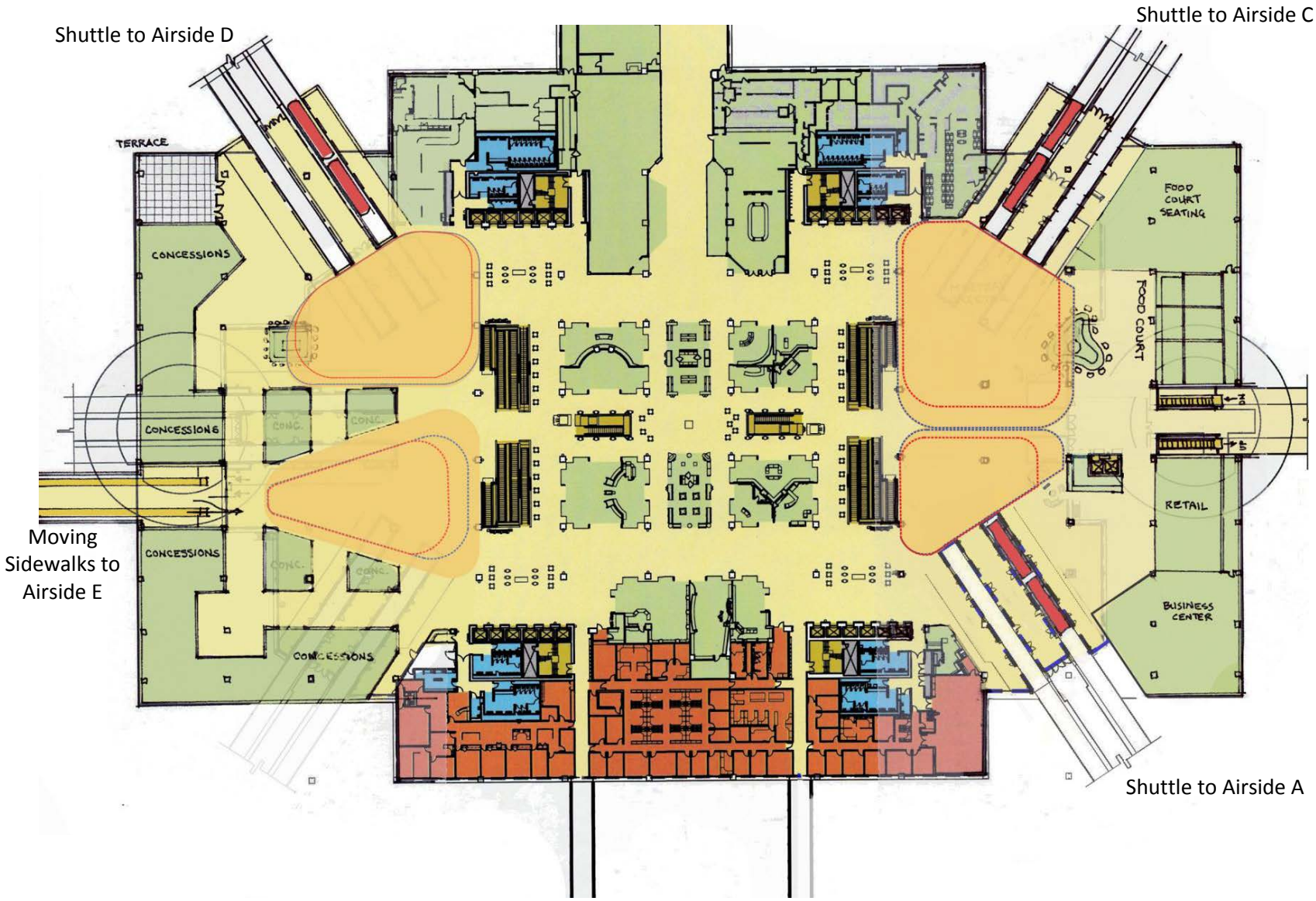



**Figure 5.29**
**RELOCATION OPTION 4**


0 100' 200'

HNTB

2900 SOUTH QUINCY STREET,
SUITE 200
ARLINGTON, VIRGINIA 22206
PH (703) 824-5100
FAX (703) 671-6210

TRANSFER LEVEL- RECOMMENDED SHORT-TERM PLAN

TAMPA INTERNATIONAL AIRPORT
TAMPA, FLORIDA

DATE:
May 2013

FIGURE 5.30

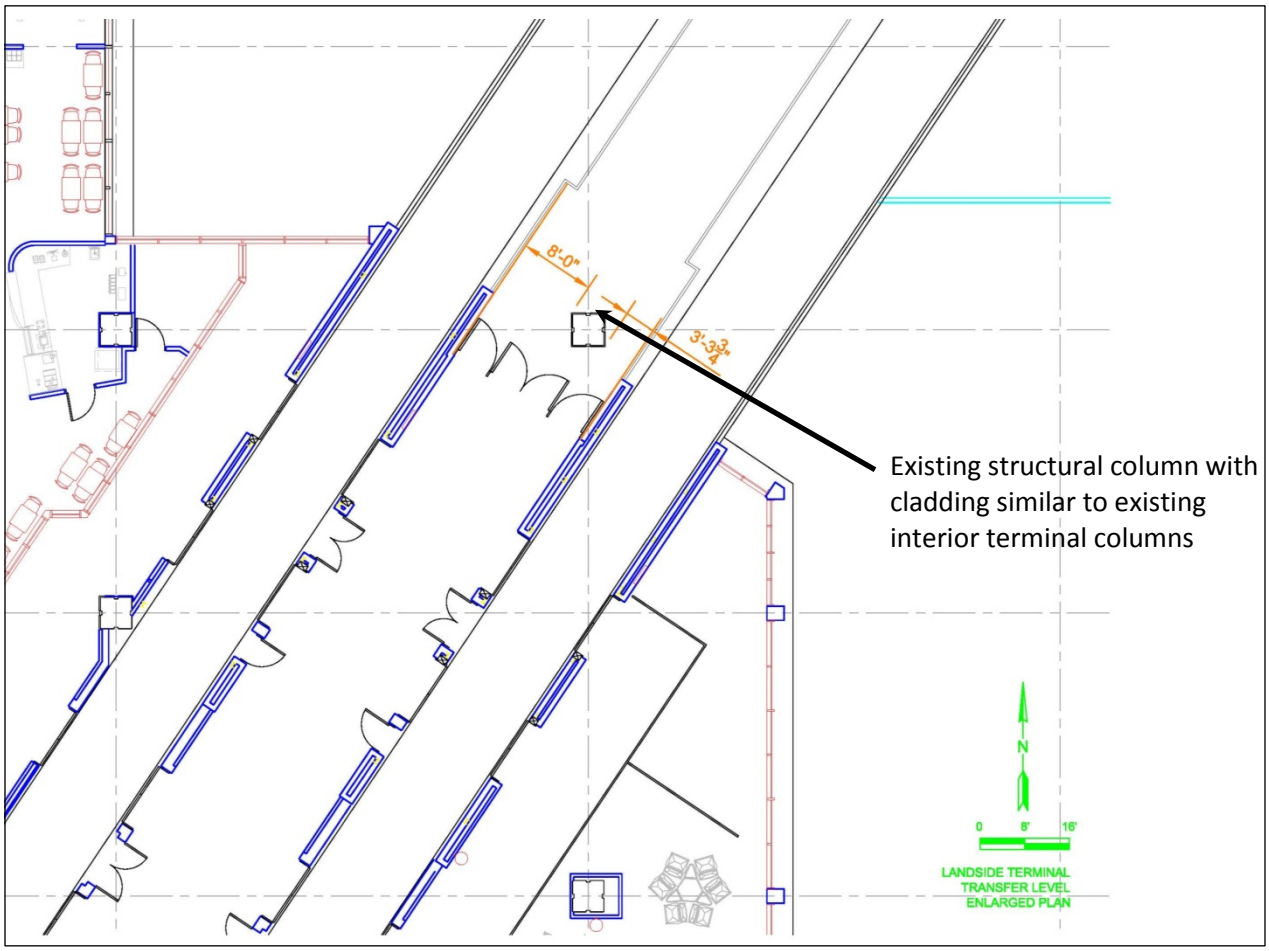
*Additional Considerations*

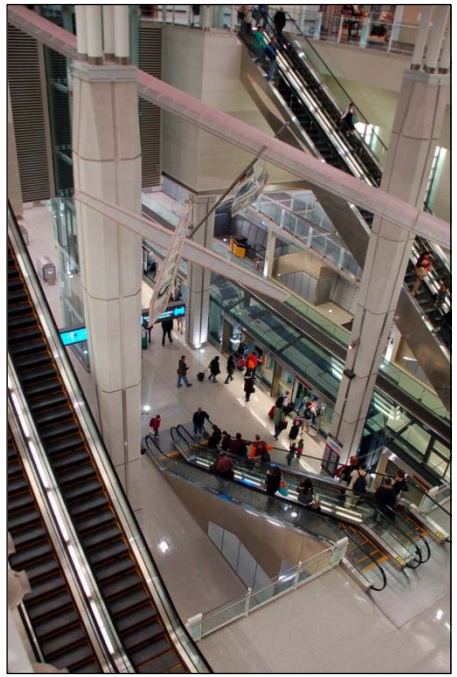
The shuttle stations at the corners of the Transfer Level each have a structural column located in between the guideways. When the stations are rebuilt further out, care must be taken to position the train doors such that the column does not interfere with operations. Ideally, the column should align between train cars. As illustrated in **Figure 5.31**, there is sufficient space for passengers metered by the I.D. checker process to circulate around the column once the column is cladded similar to other interior columns.

When the shuttle Stations are relocated and renovated in the main terminal, there is the opportunity to modernize the overall aesthetic of the shuttle enclosures. The heavy, dated brick surfaces can be replaced with a light, glowing glass enclosure, offering a visual connection to the arrival and departure of the trains. The stations can become streamlined focal points in the terminal, much like those seen in Orlando and Dulles International Airports shown in **Figure 5.32**.

**Figure 5.31**

**Existing Shuttle Lobby Space Analysis**





Orlando International Airport, FL, above

Dulles International Airport, VA, above and to right

**Figure 5.32**
**EXAMPLES OF SHUTTLE TUNNEL ENCLOSURES**

## 5.7.3 CONRAC APM Station at Terminal

As described in Section 4.3.5, the terminal area rental car facilities were analyzed and determined to be insufficient to support future growth and efficient operations. A new consolidated rental car facility will be constructed in the South Terminal Support Development Area connected to the terminal by an APM train. This APM may also connect passengers to a new hotel, the existing economy parking garage, employee parking facilities, the Westshore Multimodal Center, and a new HCAA Administration building, all located in the South Terminal Support Development Area. Additionally, there are plans for all off-airport parking and rental car companies to drop off their passengers at the consolidated rental car facility APM station to help reduce traffic on the terminal roadways and curbs.

Three alternatives were developed and studied to determine the best and most efficient location for siting the terminal APM station:

1. Above the terminal
2. South, between the terminal and long-term parking
3. East of the terminal

The APM station must provide convenient access to Ticketing /Check-in facilities for inbound passengers and streamlined access for arriving passengers from the baggage claim areas. Passengers not checking bags should have direct access to and from the Transfer Level as well. The APM track and station must be sited to allow future extension of the track to a potential new North Terminal Complex in the future.

### 5.7.3.1 APM Station above the Terminal

The first concept explored the ability to run the APM through the seventh floor of the long-term parking garage and into the fifth floor of the short-term parking garage in a similar alignment to the monorail train running on those floors today. The station, shown in red in **Figure 5.33**, is built over the center of the terminal with access to all three passenger terminal levels via the four existing elevator cores.

This concept was quickly identified to contain a number of significant challenges, including:

1. Head height – the garage ceiling heights are insufficient for large capacity APM trains to pass through the existing garage without removing the floor above the tracks. This bifurcates each garage on two levels, requiring vehicle ramp modifications at both decks.
2. Track slope – The APM route must go under Taxiway Juliet, cross Bessie Coleman Blvd., cross George J. Bean Inbound Parkway and climb to enter the south face at the fifth floor of the garage. This requires track slopes around 6%, which exceeds the comfort level for many passengers, particularly those with rolling bags, carts, strollers and/or wheelchairs.
3. The garages and the terminal are not structurally designed to support an APM track running through them. Large structural columns and foundations will be required to support the track and station, piercing the center of all three passenger terminal levels.

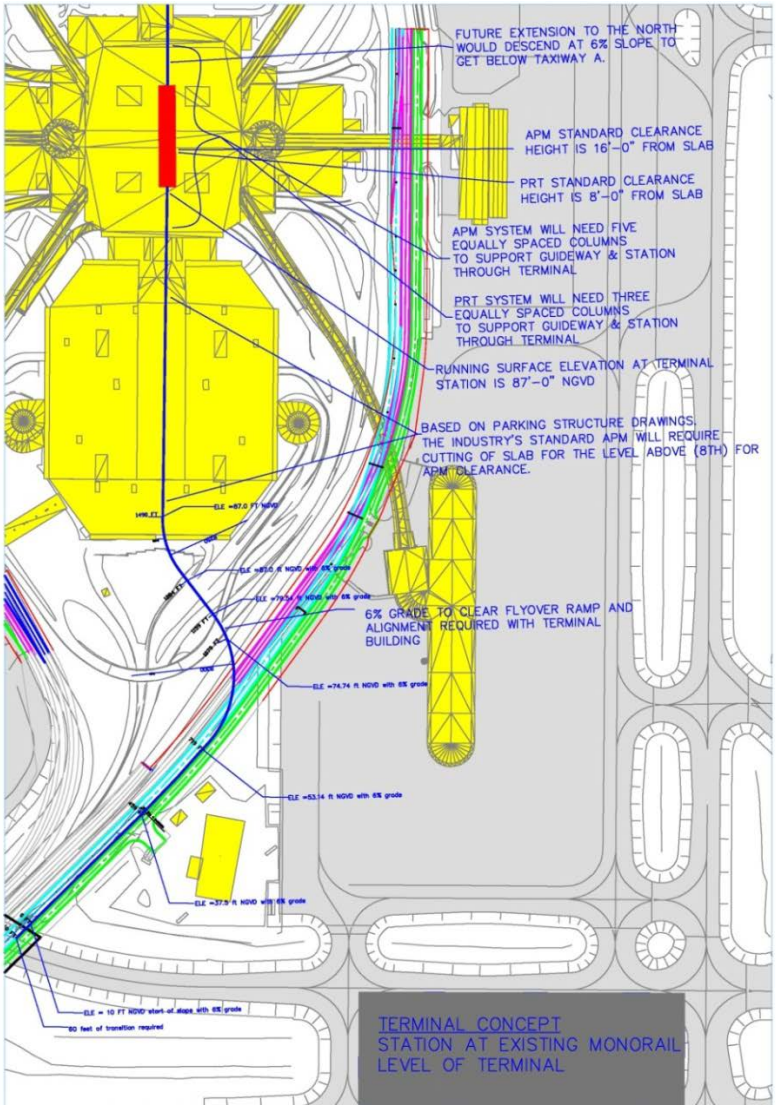
This creates a sea of columns that will have functional impacts to baggage handling and screening systems, concessions, and passenger circulation.

Consideration was given to utilizing a smaller, lighter Personal Rapid Transit (PRT) system, also called a podcar. This transport mode features small automated vehicles operating on a network of specially built guideways. PRT are sized for individual or small group travel, typically carrying three to six passengers and their luggage per vehicle. The system allows for non-stop, point-to-point travel, taking travelers to only the station at their destination, skipping intermediate stops, and has been compared to a horizontal elevator.

Analysis by Lea Elliott showed that the capacity of a PRT system is insufficient to handle the number of passengers forecasted to use the APM system. Providing a station above the terminal was removed from consideration based on the issues noted above.

**Figure 5.33**

**APM Station Above the Terminal Concept**




Source: Lea Elliott, July 2012

#### 5.7.3.2 South APM Station

The second concept creates an APM station on the south side of the terminal between the long-term and short-term parking decks as shown in **Figure 5.34**. This station's platform is built at an elevation slightly lower than Level 4 in the short-term parking deck. Inbound passengers can exit the train platform by going down escalators/elevators to pedestrian bridges leading directly to the Transfer Level. New escalators, shown in **Figures 5.36** and **5.37**, are provided along the way to access the Ticketing Level. Alternatively, passengers can ascend one level to Level 5 of the terminal where they take moving sidewalks to one of the four terminal elevator cores. The moving sidewalks at Level 5 replace the existing monorail system.

Terminating passengers without baggage may use the pedestrian bridges at the south end of the Transfer Level to access escalators/elevators leading to the APM station platform. Passengers coming from the Baggage Claim Level use any of the four terminal elevator cores to reach Level 5 and then travel along moving sidewalks to the station where they descend escalators or elevators to the train platform.

This concept provides a good level of service for originating and terminating passengers who do not check baggage. The following disadvantages were identified:

1. Multiple escalator/elevator rides for passengers who use ticket counters
2. Baggage claim passengers must use multiple elevators to reach APM platform
3. Tight APM track turning radius at curve before the terminal station requires slower train speeds
4. Requires more APM guideway to extend to a new North Terminal Complex

#### 5.7.3.3 East APM Station

The third concept, shown in **Figure 5.35**, places the APM on the east side of the terminal over the East Quad Deck. The APM platform is constructed at Level 4, which allows the guideway to pass over the shuttle systems serving Airsides A and C. The plans in **Figure 5.38** and the section in **Figure 5.39** show how enplaning passengers descend escalators/elevators to the Transfer Level where they have the option of going directly through the Transfer Level to their gate or descending a second set of escalators/elevators to reach the Ticketing Level. In this concept, passengers coming from the Baggage Claim Level take a single escalator or elevator ride up to the APM train platform.

Modifications to the Ticketing Level include using one structural bay of the valet parking area next to the Network Operations Center (NOC) for construction of a new escalator/elevator lobby. From this lobby, a corridor is cut through the existing Southwest airline ticket offices and ticket counters to provide a new east end access to the ticketing/check-in lobby. It is estimated that approximately 3 agent positions will be lost to the new ticket lobby entrance. Construction of this entrance will require modification to the baggage conveyor running behind the Southwest Airlines ticket counter. The conveyor north of the new entrance will turn and descend through a new floor opening to the baggage claim level. A new conveyor with a new floor opening will be provided for the ticket counters to the south of the new entrance.

This concept provides good access to the Transfer Level for enplaning and deplaning passengers that do not check baggage and direct access to the APM platform for passengers that use baggage claim. It provides the shortest guideway length for future expansion to a new North Terminal Complex. The disadvantages of this concept include two escalator/elevator rides for originating passengers who use ticket counters and part or all of the Quad Deck must be demolished and replaced to construct the new station.

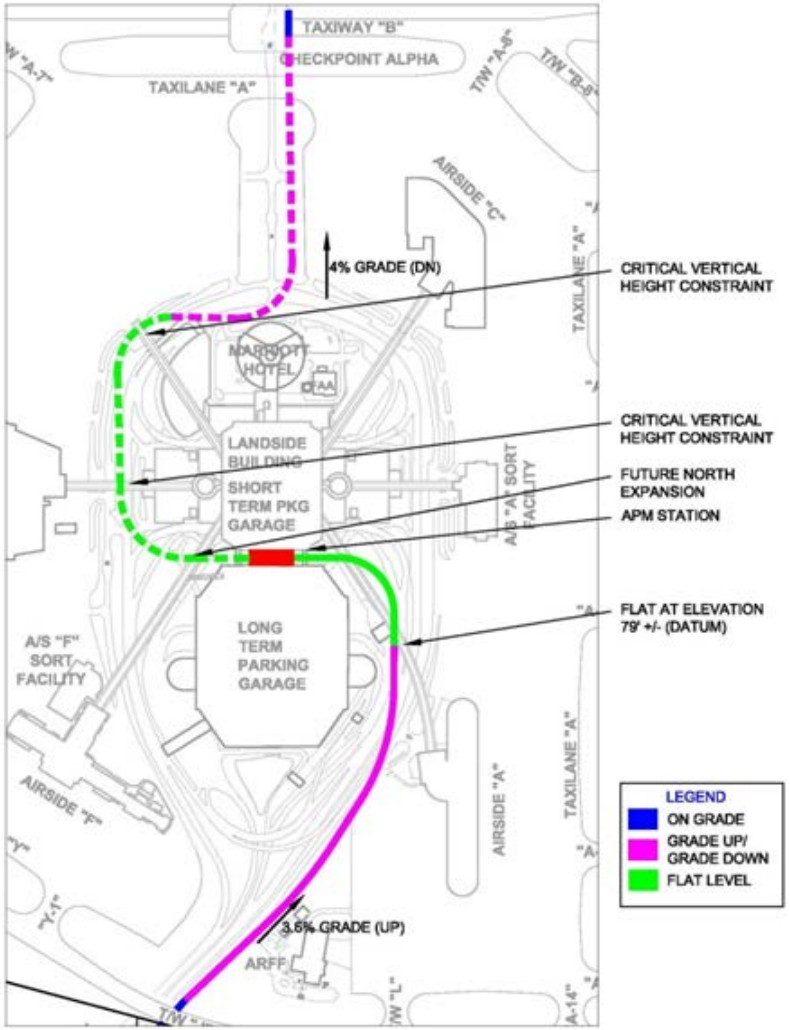
An analysis comparing the walking distance and time from the nearest and farthest baggage claim devices to the nearest rental car center today and a proposed East APM Station is shown in **Figure 5.40**.

#### 5.7.3.4 Recommended Concept

The East APM Station concept was chosen as the recommended alternative based on the following advantages:

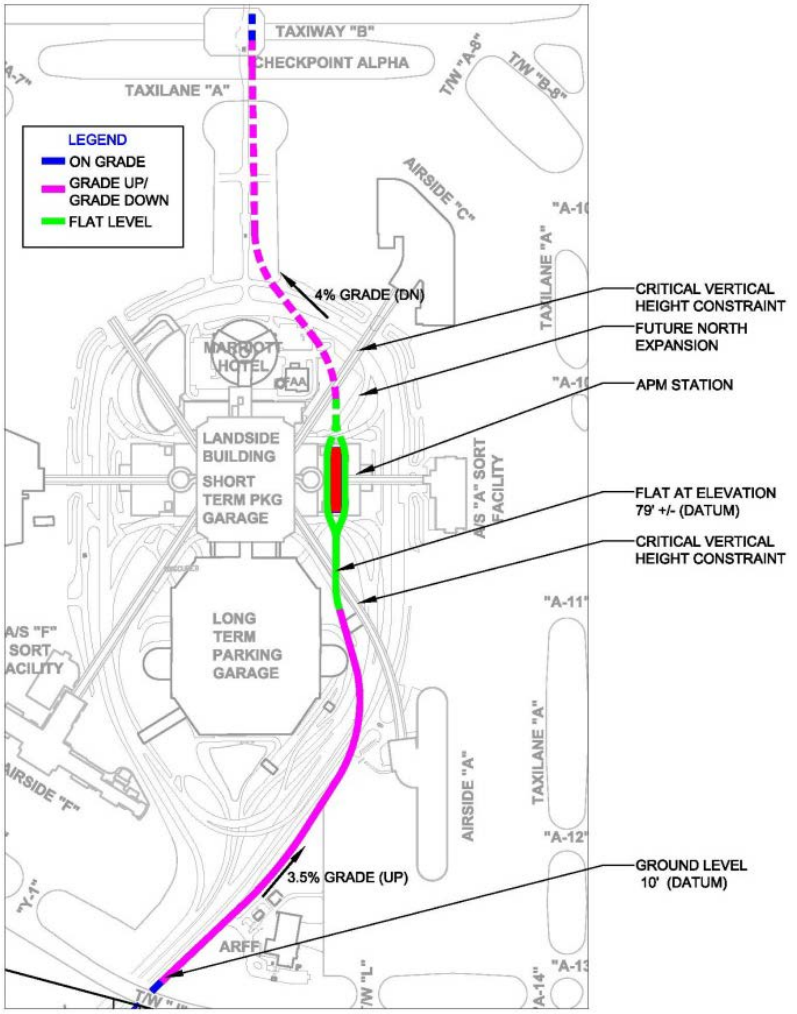
- Equal access from both baggage claim lobbies using only one escalator or elevator
- Convenient access to and from the Transfer Level
- Shorter guideway required to expand to a future North Terminal Complex
- Straighter guideway alignment allows for more efficient train operations
- Simpler construction at end of terminal rather than through the terminal or next to curbside operations

**Figure 5.34**
**South APM Station Concept**




Source: Lea Elliott, July 2012

**Figure 5.35**
**East APM Station Concept**




Source: Lea Elliott, July 2012

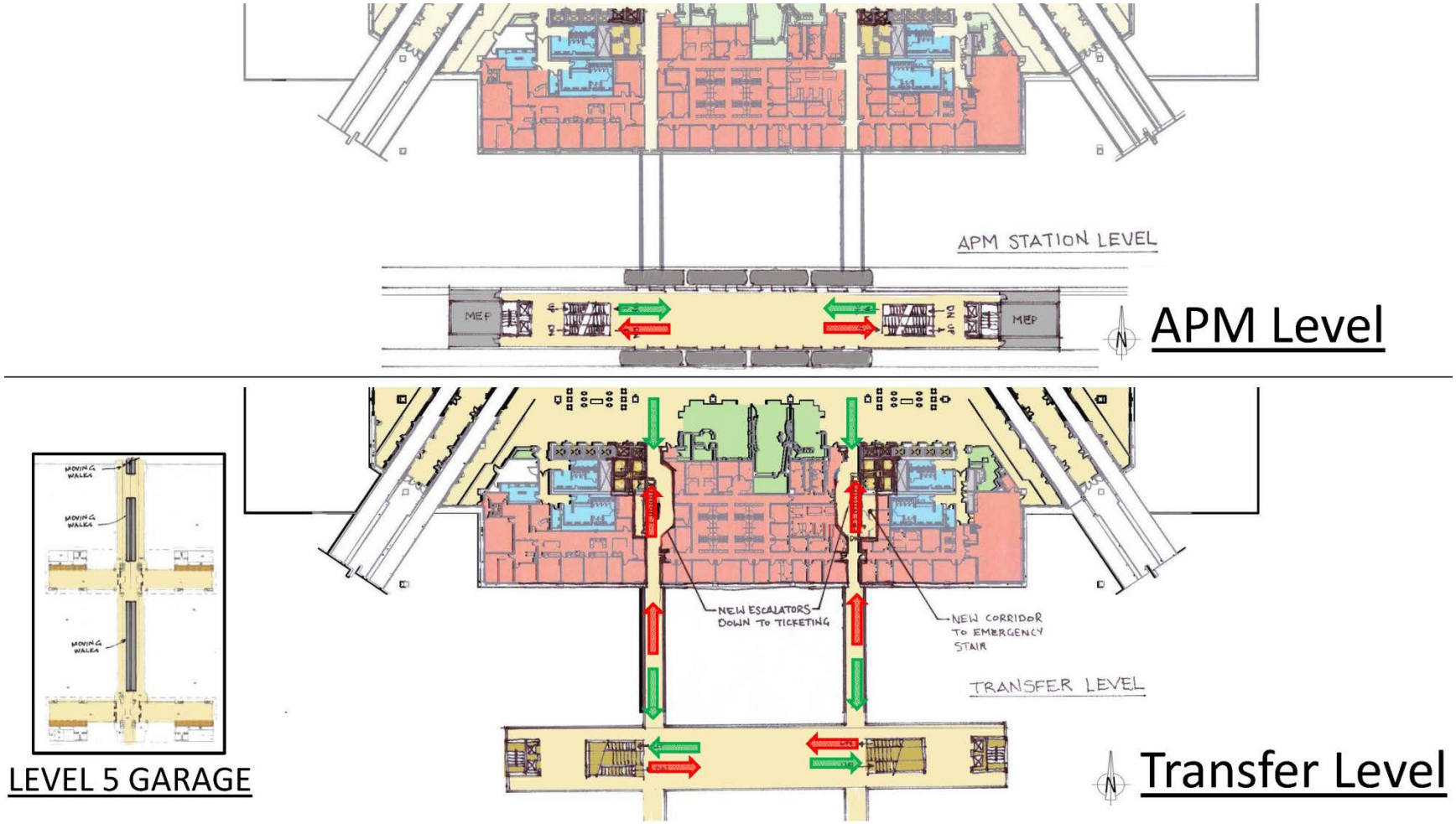
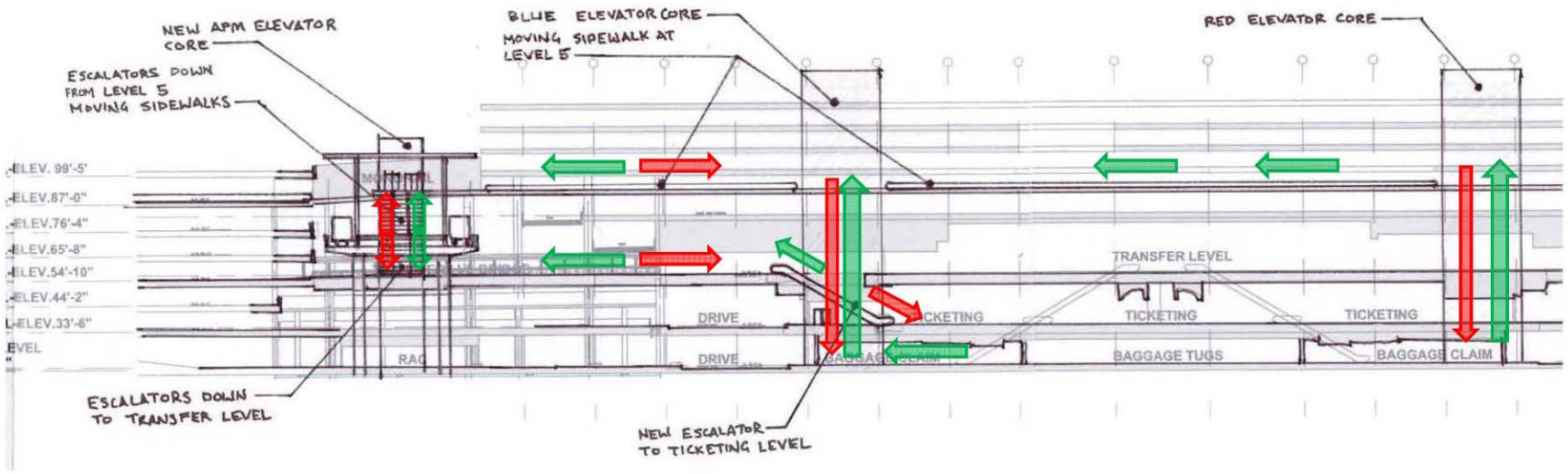



**Figure 5.36**
**SOUTH APM STATION PLANS**




Departures

Arrivals

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**Figure 5.37**
**SOUTH APM STATION SECTION**

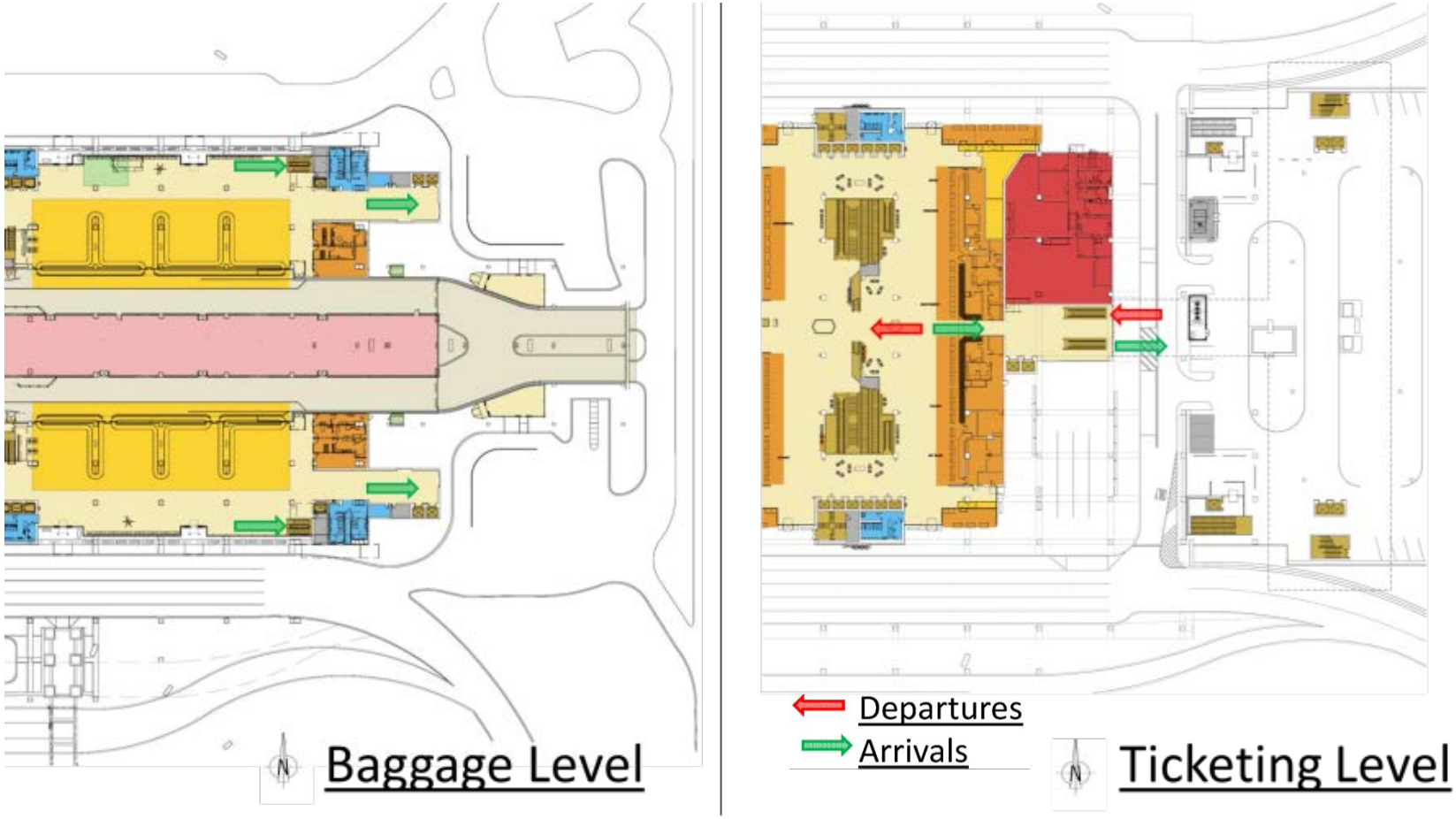


**Figure 5.38**
**EAST APM STATION PLANS**

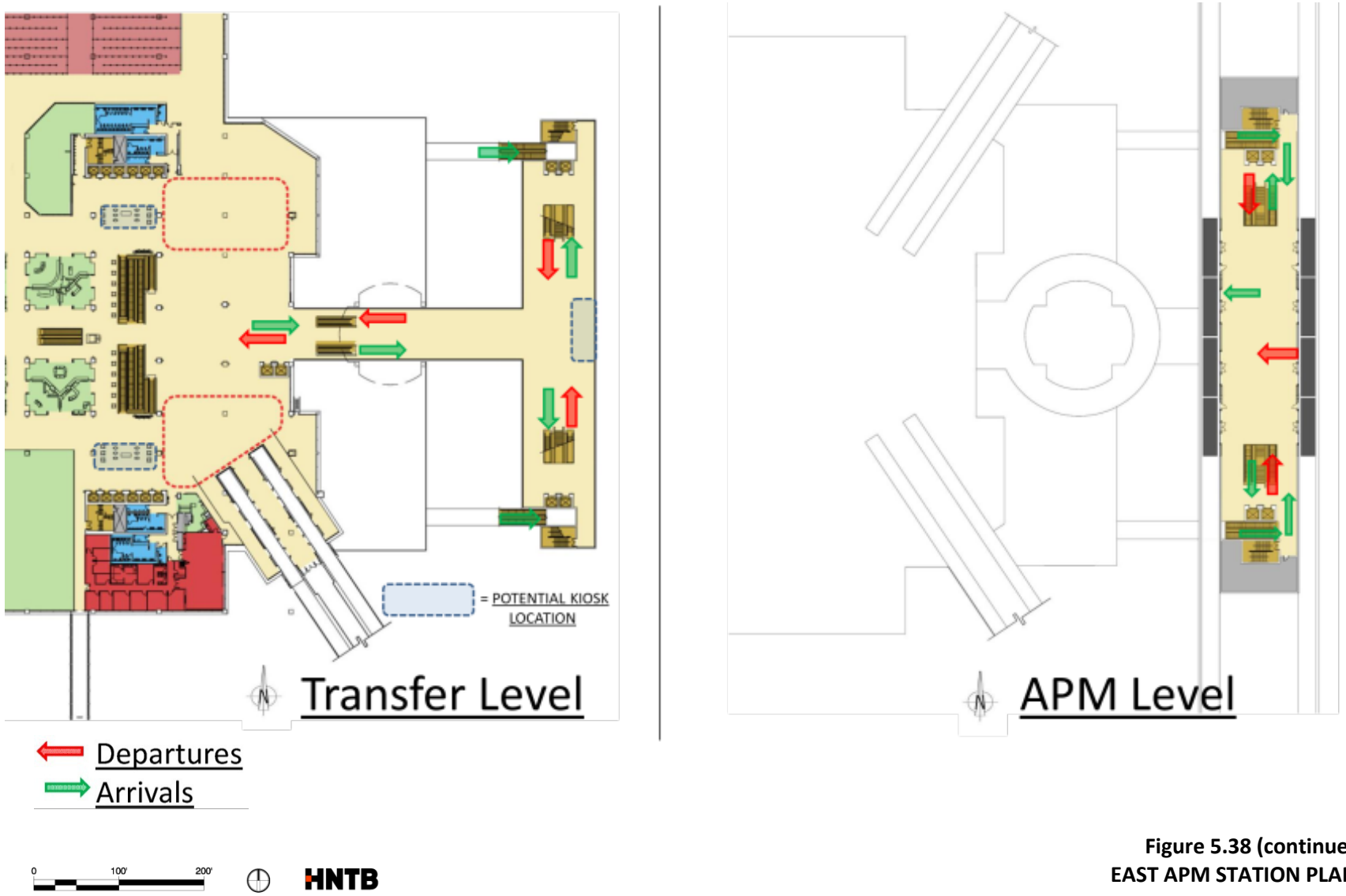


**Figure 5.38 (continued)**
**EAST APM STATION PLANS**

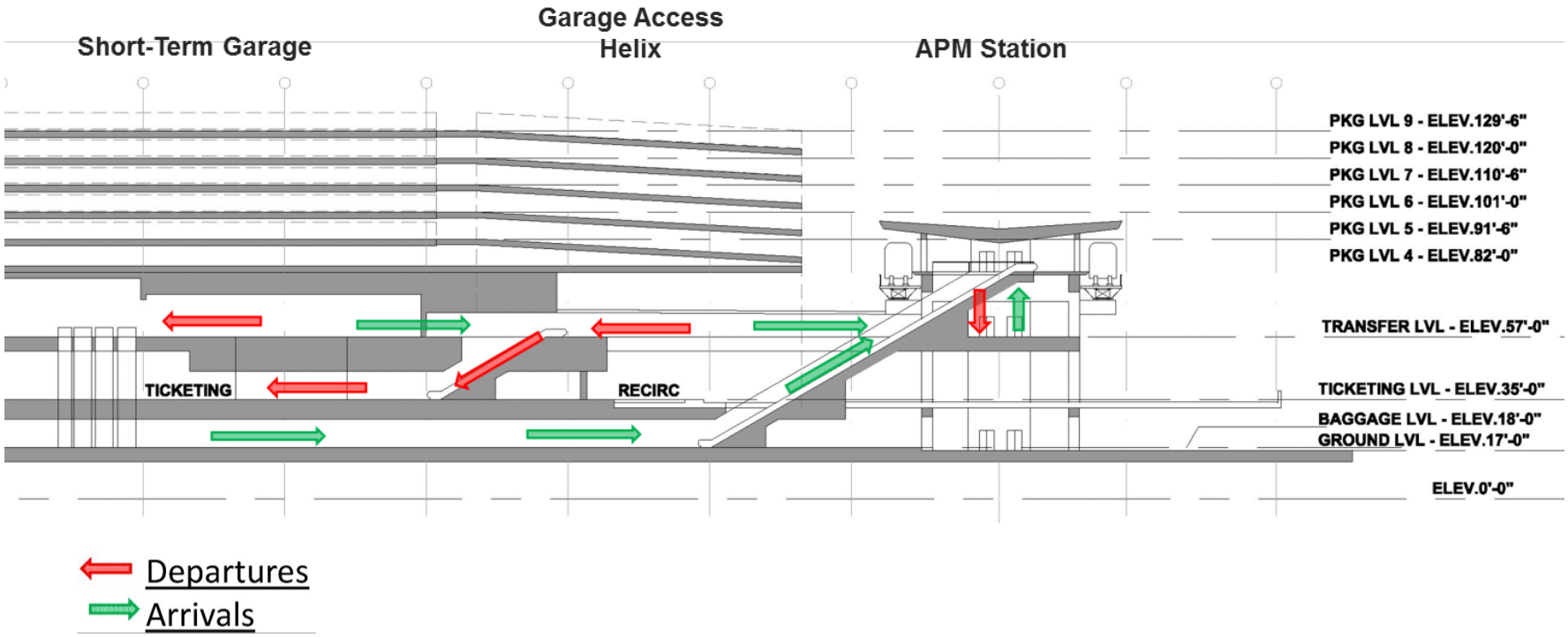


**Figure 5.39**
**EAST APM STATION SECTION**

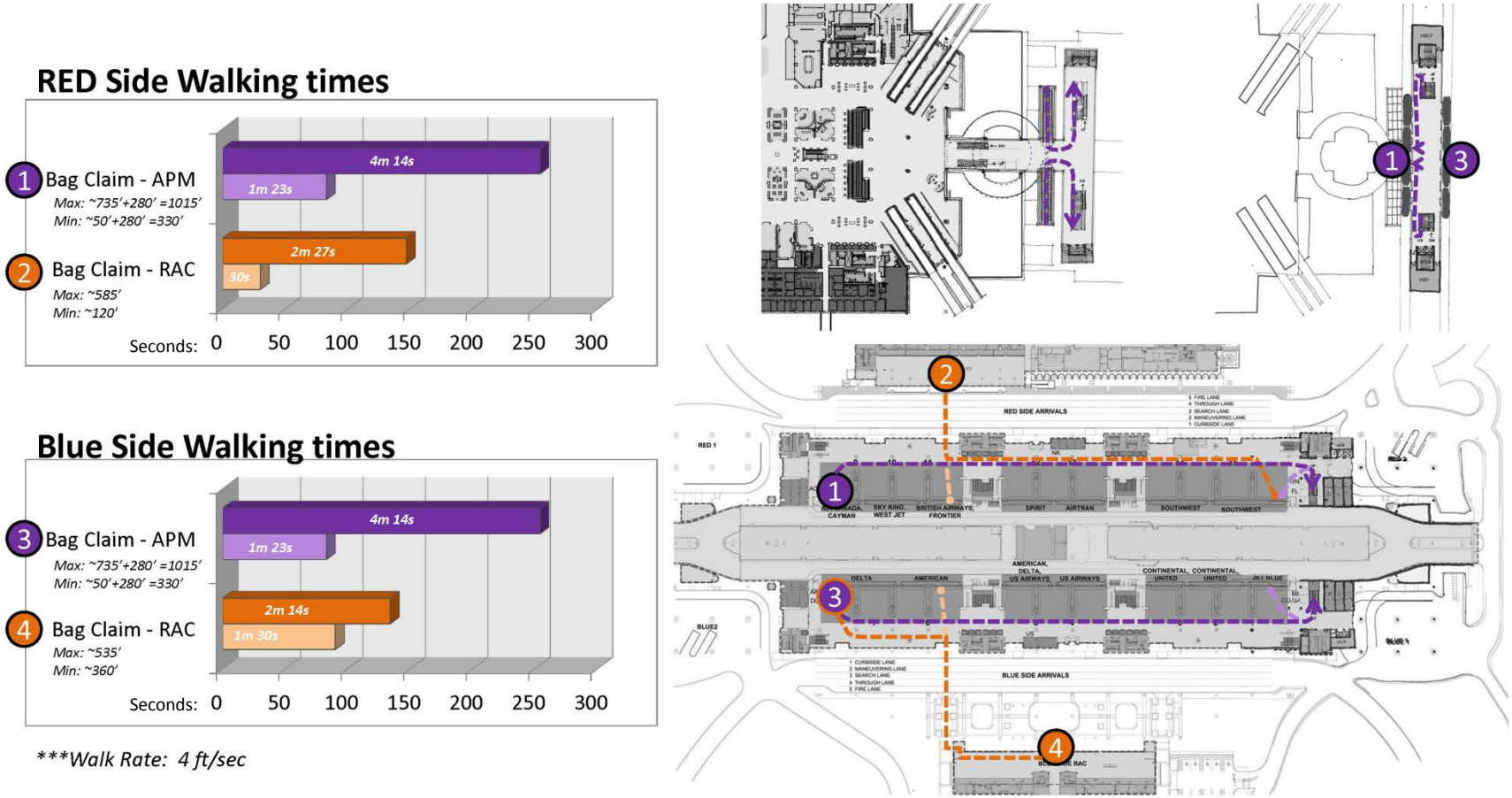


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**Figure 5.40**
**EAST APM STATION WALKING DISTANCE ANALYSIS**

### 5.7.4 Ticketing Level

The planning team discussed the potential changes that may occur in the Ticketing/Check-in Lobby at length and made the following assumptions:

- Emerging technologies like self-service baggage check-in and mobile check-in allow the ticketing area to remain similar in size despite growth in passenger traffic levels.
- The growing use of mobile and Internet check-in is quickly reducing the number of passengers that must use the ticket lobby to those who are checking baggage or do not have the means to check in before arriving at the Airport.
- Self-service baggage check-in technology exists in a number of forms, but is anticipated to be led and implemented by the airlines.
- Airline ticket offices may reduce in size over time, but they will not go away completely.
- The current ticket lobbies provide adequate space and circulation to allow improvements in check-in technology to be implemented by the carriers without major reconfiguration.
- Shared-use passenger processing systems (SUPPS) should be installed per the CUPPS/SUPPS Master Plan document being developed concurrently with this document.

Minimal changes are proposed for the ticketing level. Two new up escalators, shown in **Figure 5.41,** will be installed in the center of the ticketing level, replacing the existing down escalators in the same floor opening and each vertical circulation core will have one up escalator replaced with a down escalator to improve Transfer Level passenger flows. A new lobby and entrance will be added on the east side of the ticket lobby providing access from the new East APM Station to the Ticketing Level (see Section 5.7.3.3).

The Initial CUPPS/SUPPS Feasibility Report findings show:

- SUPPS provides distinct and immediate benefits:
    - Increases efficiency of check-in (ticket) counter utilization
    - Increases efficiency of passenger movement and processing through the check-in process and boarding process
    - Increases capacity of Airside E and F Ticket Counters
    - Provides gate podiums for Airside A and F
    - Meets identified needs expressed by existing carriers
- Shared/Common use check-in equipment provides benefits, as well:
    - Facilitates new market entry and existing carrier expansion
    - Relieves ticket counter constraints in the ticketing lobby and can defer costly expansion
    - Facilitates efficient utilization of airport resources and space through strategically placed self-service kiosks

- Provides flexibility for reassignment of gate resources due to irregular operations, delayed flights, or construction efforts
- Eases adjustments for resource scheduled maintenance or operational breakdown

Implementation of SUPPS in the ticketing lobby will occur in phases, as outlined in the TPA CUPPS/SUPPS Master Plan document. Existing ticket counter shell millwork should not require replacement. Ticket counter millwork inserts and baggage scales will most likely be replaced when SUPPS equipment is installed.

Operationally, the Blue side curbs, ticket counters and baggage claim areas are significantly busier during the peak hour and throughout the day than the Red side. Consequently, all new entrants are slated to use the Red Side facilities so as not to further imbalance the two sides. Consideration should be given to a periodic operational rebalancing of the terminal facilities as carriers merge, grow or contract, discontinue service and new entrants begin operations at TPA. This rebalancing effort does not drive the need for additional facilities, but will help to balance the facility operationally and can improve passenger levels of service, particularly on the curbs and terminal roadways (also see **Section 5.7.13.2**).

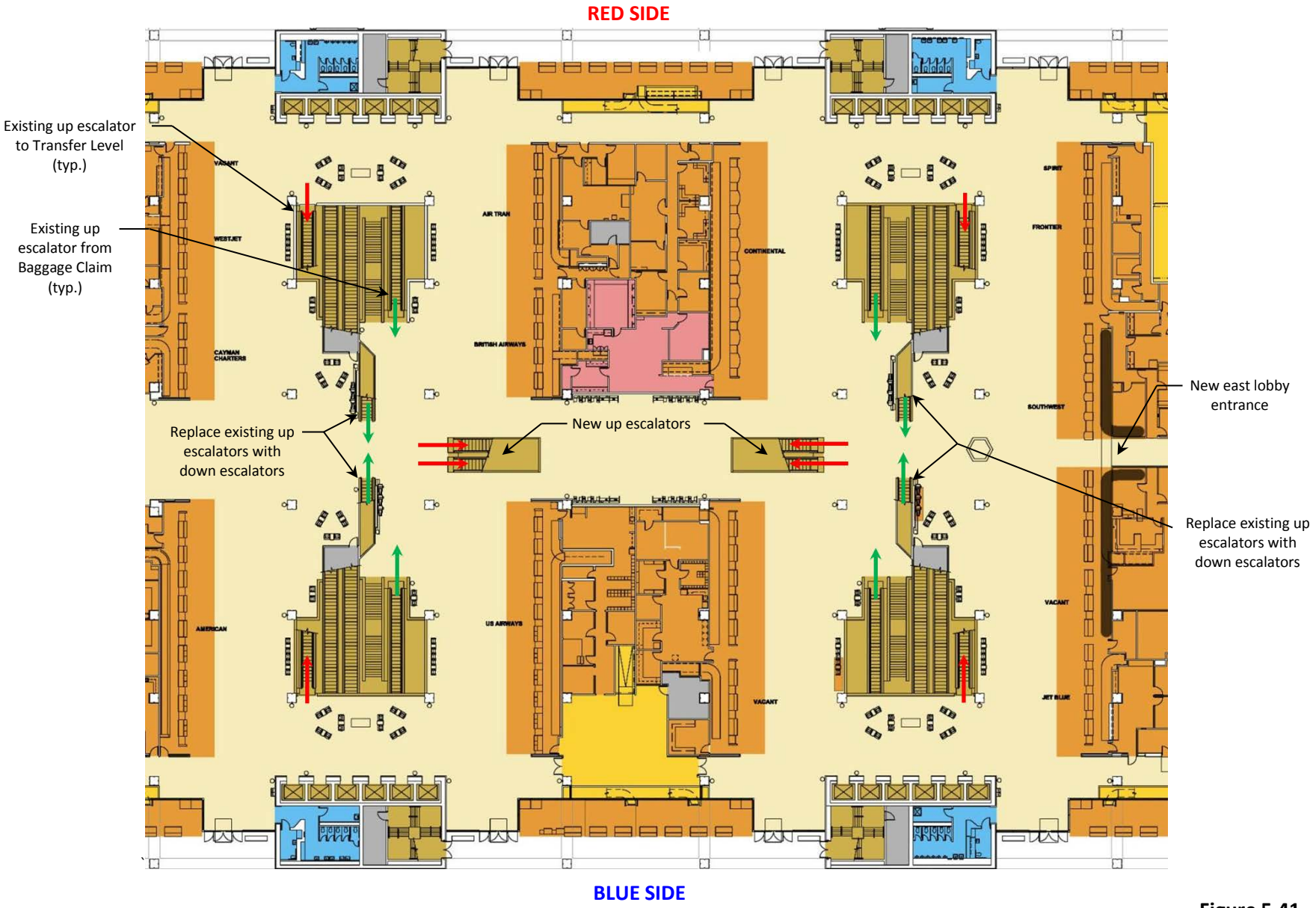



**Figure 5.41**
**ESCALATOR CHANGES AT TICKETING LEVEL**

## 5.7.5 Baggage Claim Level

The baggage level is sufficiently sized to handle forecasted growth. When the East APM is constructed, the Red and Blue baggage claim lobbies will be expanded eastward to provide enclosed access to the elevators serving the new station. In addition, there will be a new pair of up escalators located across from baggage claim carousels 1 and 15 taking passengers to the APM station level.

## 5.7.6 Baggage Handling/Checked Baggage Inspection Systems

The facility requirements revealed two significant issues with the terminal's existing baggage handling system (BHS) and checked baggage inspection system (CBIS):

- The forecasted growth of a merged Southwest Airlines and AirTran Airways is projected to overload the CBIS pods serving Airside C today.
- There are not enough ticket counters with baggage conveyors leading to the CBIS pods serving Airside F, or future Airside D, to accommodate the forecasted number of new entrant international carriers.

### 5.7.6.1 AIRSIDE C BHS/CBIS

CBIS pods 5 and 6, located on the Baggage Claim Level of the terminal, screen bags from Southwest Airlines and AirTran Airways. Pod 5 screens bags from Southwest's ticket counters and AirTran's curbside check-in counters and Pod 6 screens bags from AirTran's ticket counters and Southwest's curbside check-in counters. The 2011 peak baggage demand for Pod 5 was around 767 bags per hour and the estimated throughput capacity of the pod with all EDS equipment running is 900 bags per hour. By the time the Airport reaches 28.7 MAP, the baggage demand on Pod 5 generated by the existing conveyor inputs is estimated to grow to just over 1,500 bags in the peak hour. Pod 6 was screening around 225 peak hour bags in 2011 and is anticipated to receive around 735 bags per hour by 28.7 MAP. Its screening capacity is estimated to be 720 bags per hour.

There is limited connectivity in the existing conveyor system between Pods to allow offloading of bags from a busy pod to an adjacent, less busy pod. This was discussed with HCAA Maintenance who noted that tests of the system's offload capability had proven unsuccessful for large numbers of bags and they did not recommend it as a permanent solution to the forecasted capacity issues at Pods 5 and 6.

The simulation modeling of the baggage system shows that Pod 7 was the least used Pod in the CBIS in 2011. In fact, HCAA Maintenance and TSA frequently shut down Pod 7 to save energy costs because no ticket counters associated with Pod 7 are actively processing passengers. By 28.7 MAP, Pod 7, which has an estimated capacity of 750 bags per hour, is projected to be processing only 140 peak hour bags, leaving significant excess capacity that may be tapped if the baggage handling system can be modified to distribute bags from Southwest Airlines across Pods 5, 6 and 7.

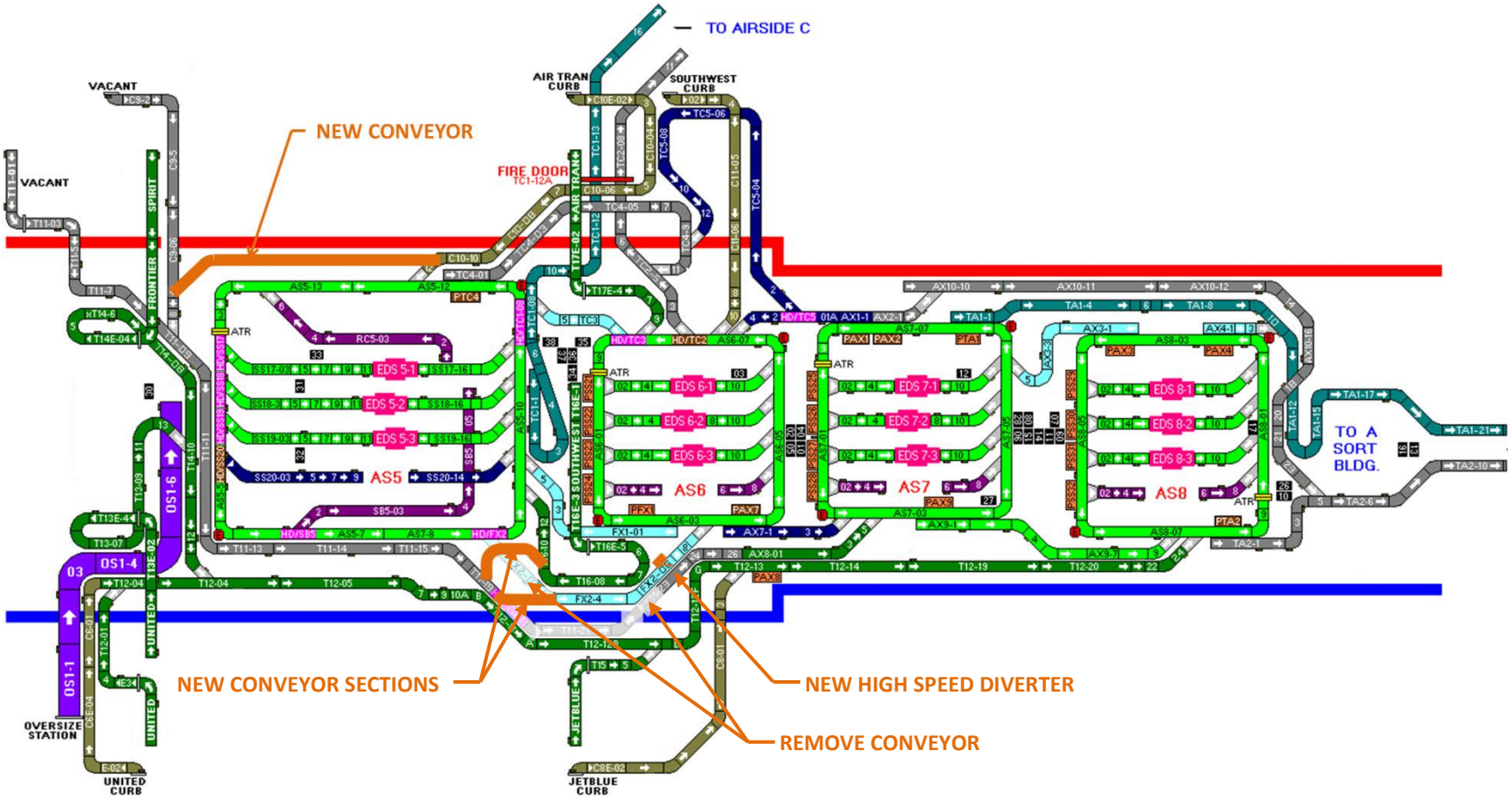
After discussing the capacity issues with the HCAA Maintenance Department, they developed the conceptual solution shown in **Figure 5.42** that provides the capability to divert bags from

Southwest's ticket counters and AirTran's curbside check-in counters to Pod 7 for CBIS screening. From a high planning level, this solution appears viable and should be studied and validated by a qualified BHS designer. It was not within the scope of the master plan effort to fully explore baggage handling solutions.

#### 5.7.6.2 AIRSIDE F (AND FUTURE AIRSIDE D) TICKET COUNTER CAPACITY

As new international entrants arrive at TPA they should be assigned ticket counter positions with baggage conveyors that deliver their bags to the Airside F baggage make-up area. In the future, when Airside D is built, the baggage system must be reconfigured so the conveyors feeding Airside F are diverted to the new baggage make-up area in Airside D. When the baggage handling system was simulated by a computer model it became apparent that there are no vacant ticket counters capable of delivering bags to Airside F. It was not within the scope of the master plan effort to fully explore baggage handling solutions in the detail required to solve this issue. Therefore, it is recommended the Authority contract a baggage system designer to study this issue and seek ways to reconfigure the BHS as follows:

- Reconfigure BHS from the vacant ticket counters adjacent to British Airways to feed Pod 3 or 4
- Reconfigure BHS from the vacant ticket counters adjacent to WestJet to feed Pod 3 or 4
- Reconfigure BHS from the vacant ticket counters adjacent to Air Canada to feed Pod 3 or 4




# LANDSIDE (PODS:5-6-7-8)

Source: HCAA Maintenance Department, September 2012

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**Figure 5.42**
**BHS/CBIS Reconfiguration Concept for Southwest Airlines**

### 5.7.7 Customs and Border Protection Facility Alternatives

The facility requirements revealed the largest number of facility deficiencies reside at Airside F. As international travel grows at Tampa, several functional components at Airside F will eventually reach their capacity. There is no room to accommodate new entrant airline operations space on the ramp level, the Airside F baggage make-up area is nearing capacity (unless international carriers share carousels), the existing holdrooms are inadequately sized for forecasted larger international aircraft, the Customs and Border Protection facility will need two additional primary inspection (Immigrations) booths to maintain forecasted passenger growth by 28.7 MAP, and an additional 25,000 sf of concessions area could be supported by Airside F passenger traffic if space were available. Additionally, two additional widebody gates with CBP access are projected to be needed before the end of the planning period. Individually, none of these deficiencies drive the need for replacing Airside F. However, collectively, these items will lead to lower levels of service and the inability to conduct efficient airline operations. It is anticipated that a replacement facility will be needed in the 2021 – 2026 time period.

The former Airside D site was identified early in the planning process as a favorable candidate to replace Airside F. The Authority requested the replacement Customs and Border Protection (CBP) facility meet one important criterion: the CBP exit should occur at the terminal, not at the airside as it does today. International passengers that claim their bags at the existing CBP facility must either carry their bags back to the terminal on the shuttle, or recheck their baggage at the airside where it is transported by tug and cart to a baggage claim carousel in the Red Baggage Claim lobby for reclaim. This latter process is time consuming, labor intensive and infrequently used by passengers. The Authority's preference is for passengers to exit the CBP near the curb with good access to ground transportation facilities and the new East APM station.

The Authority also requested the new CBP facilities provide maximum flexibility to accommodate international aircraft, not just from Airside D, but potentially from Airside C as well. Southwest Airlines, who was in the process of merging with AirTran Airways during the period in which this Master Plan study was conducted, made no requests or indications they were interested in providing international flights to and from Tampa. Southwest currently does not fly international routes, but AirTran does and Southwest is expected to continue many of those routes once the merger is complete. The new CBP concepts explore the flexibility for serving international gates from both airsides and the potential to provide a physical connection between Airsides C and D that will maximize flexibility for airline operations to extend across multiple airsides. In this era of consolidation, such connectivity allows carriers the flexibility to grow and contract at TPA without the limitations of operating out of a finite number of gates on a single airside.

Multiple concept alternatives were developed studying CBP placement and an Airside D configuration. The facility requirements identify a need for 16 gates at a new Airside D by 28.7 MAP as shown in **Table 5.9**.

**Table 5.9**

**Airside D Aircraft Fleet Mix**

| Aircraft Type | Quantity |
|---|---|
| Aircraft Design Group III (B737-800w) | 10 |
| Aircraft Design Group IV (B757-200w) | 3 |
| Aircraft Design Group V (B787-900) | 2 |
| Aircraft Design Group V (B747-400) | 1 |
| **Total** | **16** |

TPA is in the site selection process for a replacement Federal Aviation Administration (FAA) Air Traffic Control Tower (ATCT) and associated TRACON facility. When the master plan study began to look at options for a new CBP and Airside D, the Authority provided the most current site plan showing the recommended layout of the ATCT and TRACON facilities at the southeast edge of the Airside D site. They also provided previously developed roadway plans for accessing a future North Terminal Complex. **Figure 5.43** shows the proposed FAA facility and roadways utilized by the Master Plan Team in developing their terminal area concepts. In this plan, there is a conflict between the secure roadway system and TRACON facility and its parking once the new roads to the north are added.

The proposed base building will be in the range of 21,000 to 26,850 sf, depending on whether District offices are accommodated on site (larger footprint) or remotely (smaller footprint). The tower location is consistently shown in the same location in all concept alternatives, but the base building/TRACON is seen as flexible and may be arranged on two or more levels and located on any side of the tower. Recent ATCT installations at other airports have integrated the tower and base building within the passenger facility (e.g. San Francisco International Airport and Washington Reagan National Airport).

There are approximately 113 parking spaces included in the current plan (Figure 5.43). However, in the proposed Airside D Concept alternatives, there is insufficient space to accommodate FAA parking adjacent to the tower. Secure parking is located in the Red Side Garage or on the site previously occupied by the Red Side Garage, depending on the concept alternative. In most alternatives, an elevator and stairs are installed in the parking lot and the APM structure is retrofitted to provide an elevated pedestrian bridge between the FAA ATCT and TRACON facility and the parking lot. This pedestrian bridge can have a protective canopy to protect staff as they go between the FAA facility and their parking area.


**Figure 5.43**
**PROPOSED FAA ATCT AND TRACON W/ FUTURE ROADWAY SYSTEM TO NORTH TERMINAL COMPLEX**

#### 5.7.7.1 CBP Option 1: Red Side Garage

The first concept creates a linear procession of CBP processors running between Airside D and the terminal. International passengers deplane and take an escalator or elevator to the third level, shown in **Figure 5.44**, where they take moving sidewalks (not shown) through a sterile corridor system to CBP Primary processing. The queue and primary processing booths are constructed on a bridge over the Airport roadway system and between Airside D and the Red Rental Car garage. Once passengers clear CBP primary, they descend escalators or elevators to the ground level where they claim their baggage at the International Baggage Claim Area shown in **Figure 5.45**. The Customs facility is built on the ground level of the Red Side Rental Car Garage. After clearing Customs they exit the CBP into an International Arrivals Lobby where they can go to parking, cross the domestic arrival curb and enter the terminal, or be picked up on the adjacent international arrivals curb located between the Red Garage and the Marriott Hotel.

A pedestrian bridge can be provided between Airside C and Airside D providing sterile and secure connections between the two airsides. Airside C is expanded toward Airside D providing reoriented holdrooms, a third level sterile corridor serving two international capable gates, additional concessions, and a fourth baggage make-up device at the Ramp Level (not shown).

This configuration meets the facility program, providing 16 aircraft parking positions at each airside. The Air Traffic Control Tower is integrated into Airside D with offices and a TRACON occupying two levels at the southeast end of the airside. This concept maintains the integrity of the Marriott Hotel and the existing FAA facility/ATCT should the tower not be relocated. A portion of the Red Side Garage is remains and may be used for FAA, CBP and HCAA employee parking.

**Figure 5.46** shows the Boarding Level plan. Originating passengers travel on moving sidewalks along the path of the existing shuttle guideway to the Airside D security screening checkpoint (SSCP). The length of these moving sidewalks is approximately 600 feet. Holdrooms line the perimeter of Airside D with circulation corridors, concessions, restrooms and amenities conveniently located in the center.

The original Airside D site has a rather limited footprint due to the configuration of Airside E to the south, the service roadway leading to the North Airfield on its east side, and the diagonal Taxiway B-6 and Taxilane A on the northwest side. To accommodate the full fleet mix required, Taxiway B-6 is eliminated and Taxilane A is extended west to Taxilane V. This provides additional area at the northwest corner of the site to accommodate the fleet mix.

Taxilane A, Taxilane V and the taxilane on the east side of Airside D are designed to accommodate Aircraft Design Group (ADG) V. The taxilane between Airsides D and E is limited to ADG IV.

*Advantages*

- Maximizes aircraft parking on the site with 16 positions
- Preserves Marriott Hotel, existing FAA ATCT, and HCAA Service Building

- Leaves most of Red Side Rental Car Garage available for FAA, CBP, and employee parking
- Dedicated international arrivals curb

*Disadvantages*

- CBP Baggage Claim is located in lower level of Red Side Rental Car Garage with limited ceiling heights and natural light
- No expansion capability for CBP Secondary and international baggage claim due to roadways
- Lengthy travel distance for Airside C international arrivals to CBP
- Construction of CBP Primary inspection facility over active terminal roadways

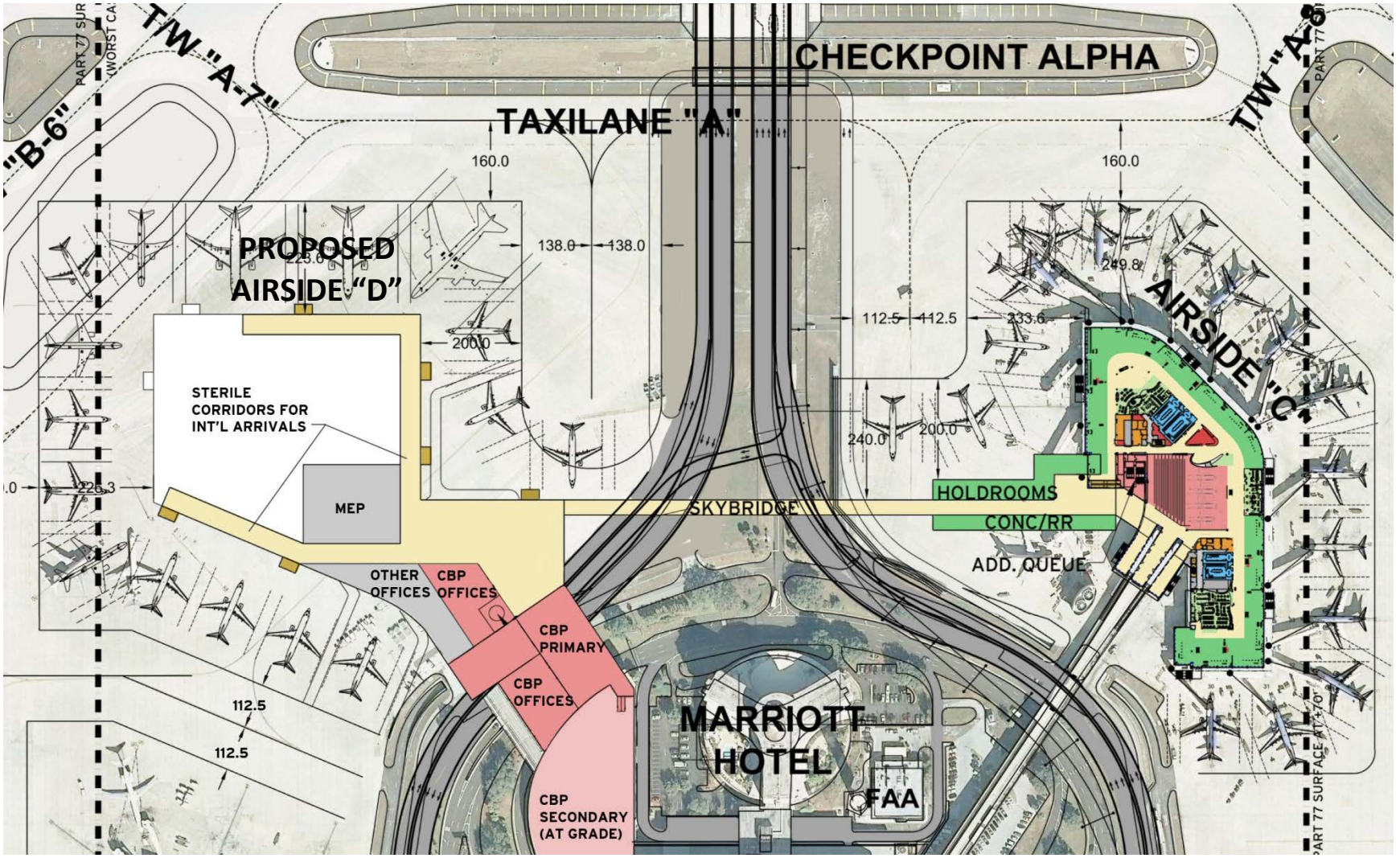


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**Figure 5.44**
**CBP OPTION 1: RED RENTAL CAR GARAGE - STERILE LEVEL**

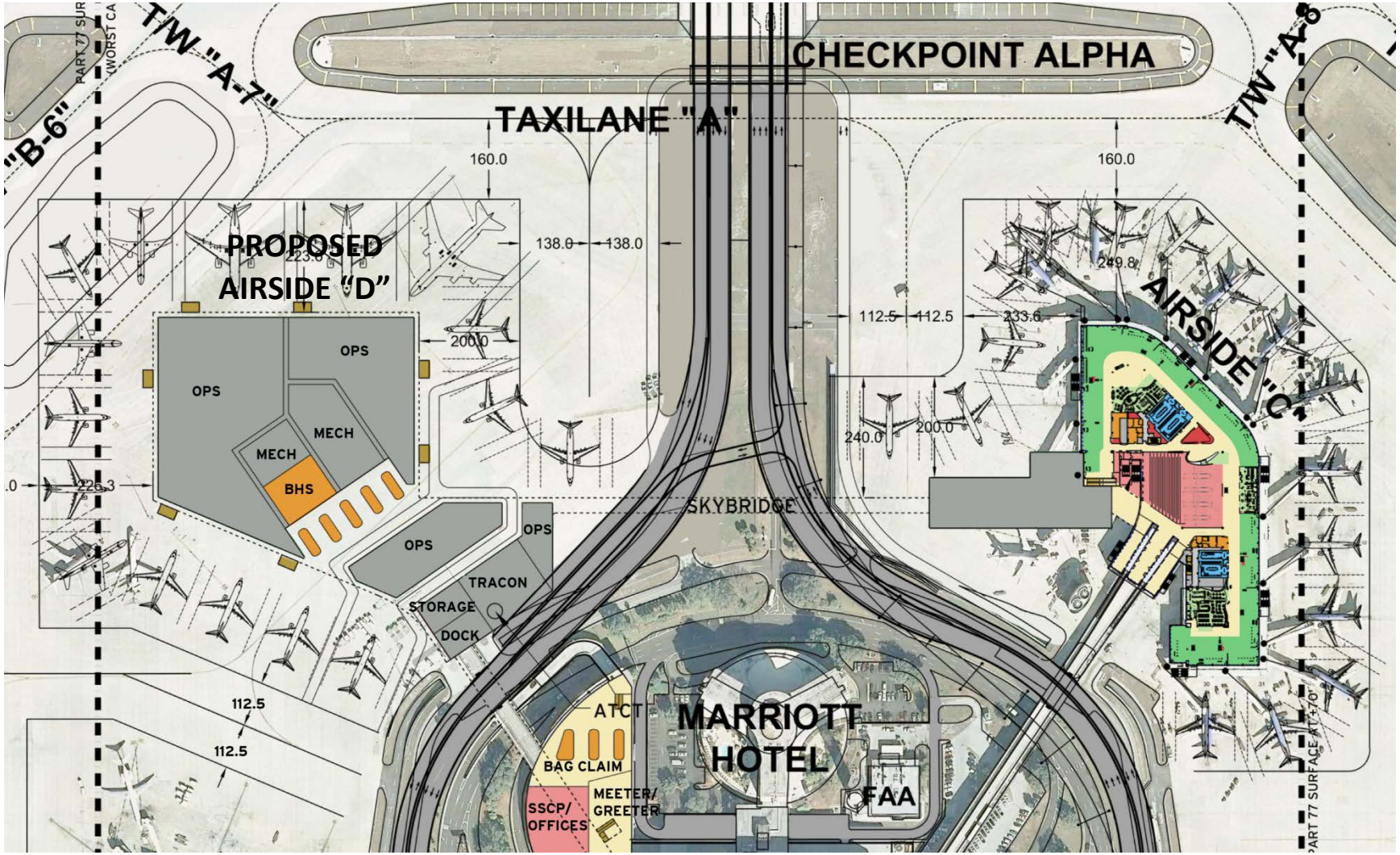



**Figure 5.45**
**CBP OPTION 1: RED RENTAL CAR GARAGE - APRON LEVEL**

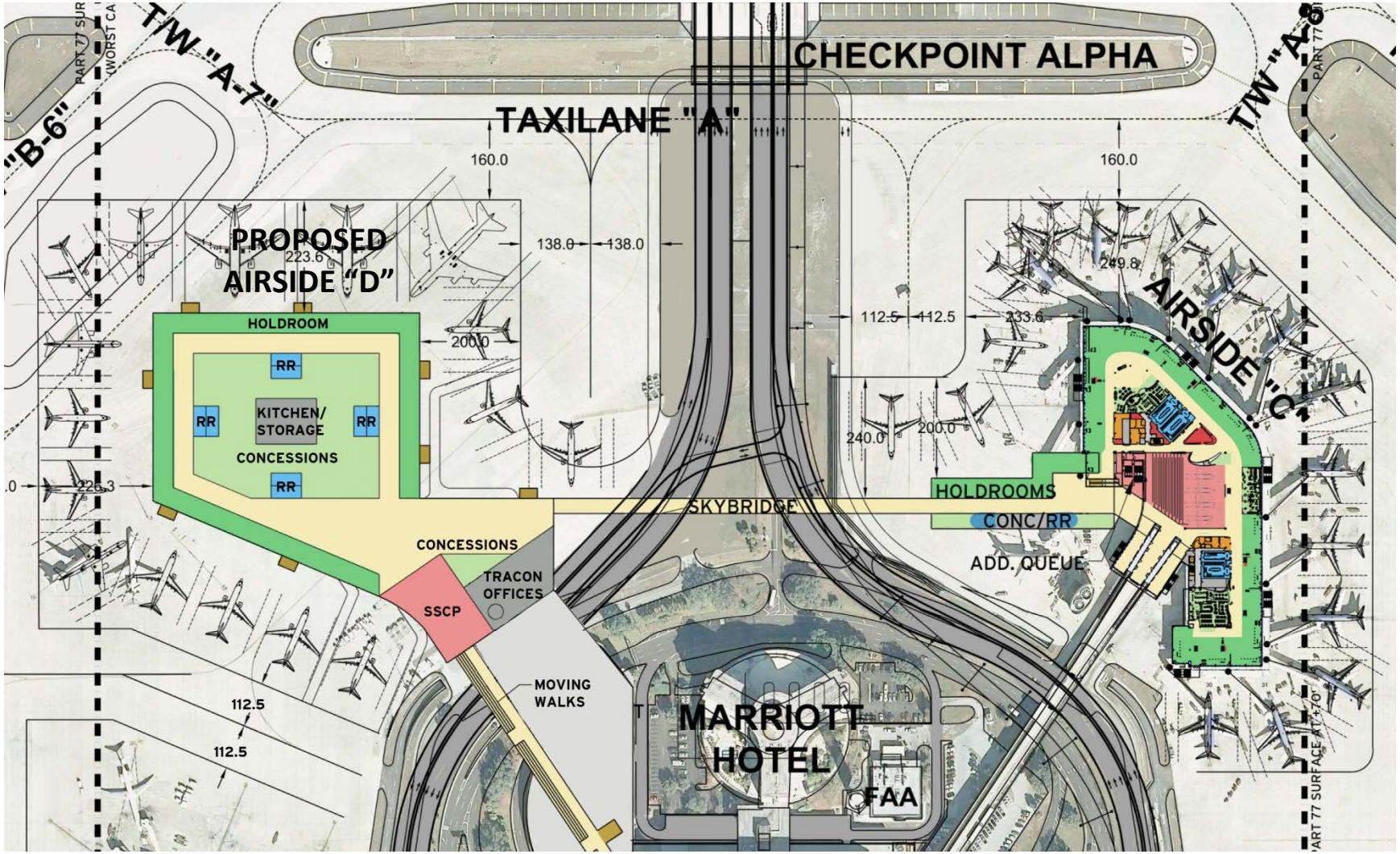



**Figure 5.46**
**CBP OPTION 1: RED RENTAL CAR GARAGE - DEPARTURE LEVEL**

#### 5.7.7.2 CBP Option 2: Red Side Garage

Like the first concept, this alternative creates a linear CBP procession running between Airside D and the terminal. International passengers deplane the aircraft and take an escalator or elevator to the third level, shown in **Figure 5.47**, where they take moving sidewalks (not shown) through a sterile corridor system to CBP Primary processing. The queue and primary processing booths are constructed at the southeast end of Airside D. Once passengers clear CBP primary, they cross Bessie Coleman Blvd and George J. Beam Outbound Parkway on a pedestrian bridge before descending escalators or elevators one level where they claim their baggage at the International Baggage Claim Area shown in **Figure 5.48**. The southwest half of the Red Side Rental Car Garage has been demolished and the International baggage claim area and Customs facilities, which extend over the baggage claim roadway, are constructed on a level that is equivalent to the Transfer Level in the terminal.

After clearing Customs passengers exit the CBP by crossing another pedestrian bridge to an International Arrivals Lobby built on the northwest plaza deck adjacent to the shuttle station for Airside D. The International Arrivals Lobby shown at the right side of Figure 5.26 is on the Transfer Level where passengers have easy access to the East APM Station or the parking deck elevators. A down escalator and elevator are provided in the Arrivals Lobby for passengers to descend two levels to the Red Arrivals Curb where they can access ground transportation.

This configuration meets the facility program, providing 16 aircraft parking positions at each airside. The Air Traffic Control Tower and TRACON facility are integrated into Airside D with offices and a TRACON occupying two levels at the southeast end of the airside. FAA, CBP and employee parking occupies the remainder of the Red Side Garage. This concept maintains the integrity of the Marriott Hotel and the existing FAA facility/ATCT should the tower not be relocated.

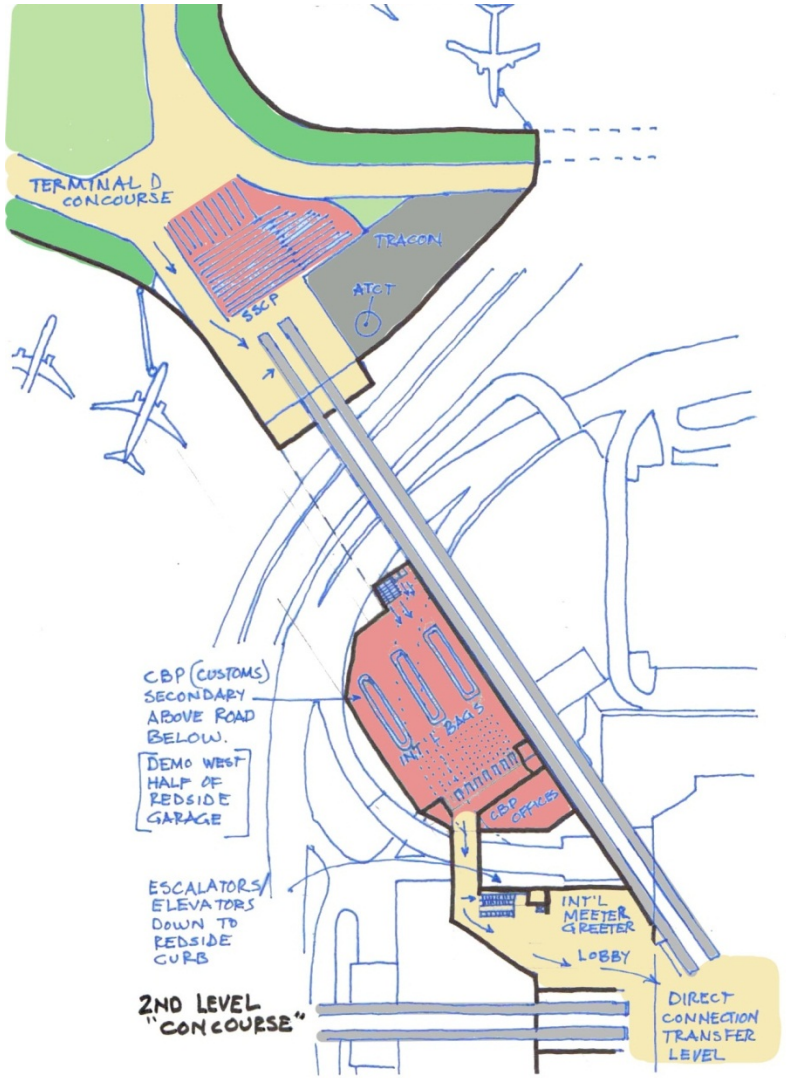
In this concept originating passengers travel to Airside D on trains using the existing shuttle guideway, similar to other airsides. There is a security screening checkpoint at the station's exit on the new airside.

*Advantages*

- Preserves Marriott Hotel, existing FAA ATCT, and HCAA Service Building
- Leaves half of Red Side Rental Car Garage available for FAA, CBP, and employee parking
- Convenient access to Transfer Level and East APM Station
- International arrivals utilize the existing Red Side curb and commercial vehicle lot

*Disadvantages*

- No expansion capability for CBP Secondary and international baggage claim due without demolishing remainder of Red Side Garage
- Lengthy travel distance for Airside C international arrivals to CBP
- Construction of CBP international baggage claim over active terminal roadways



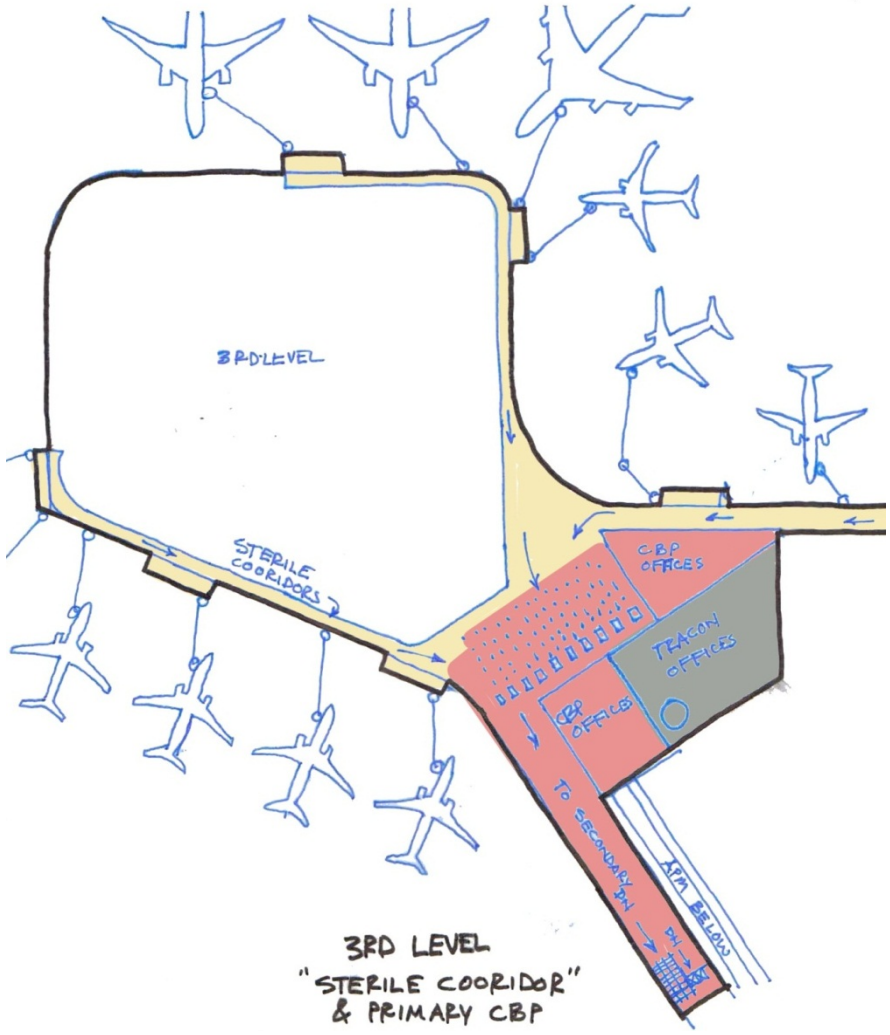




**Figure 5.47**
**CBP OPTION 2: RED RENTAL CAR GARAGE**

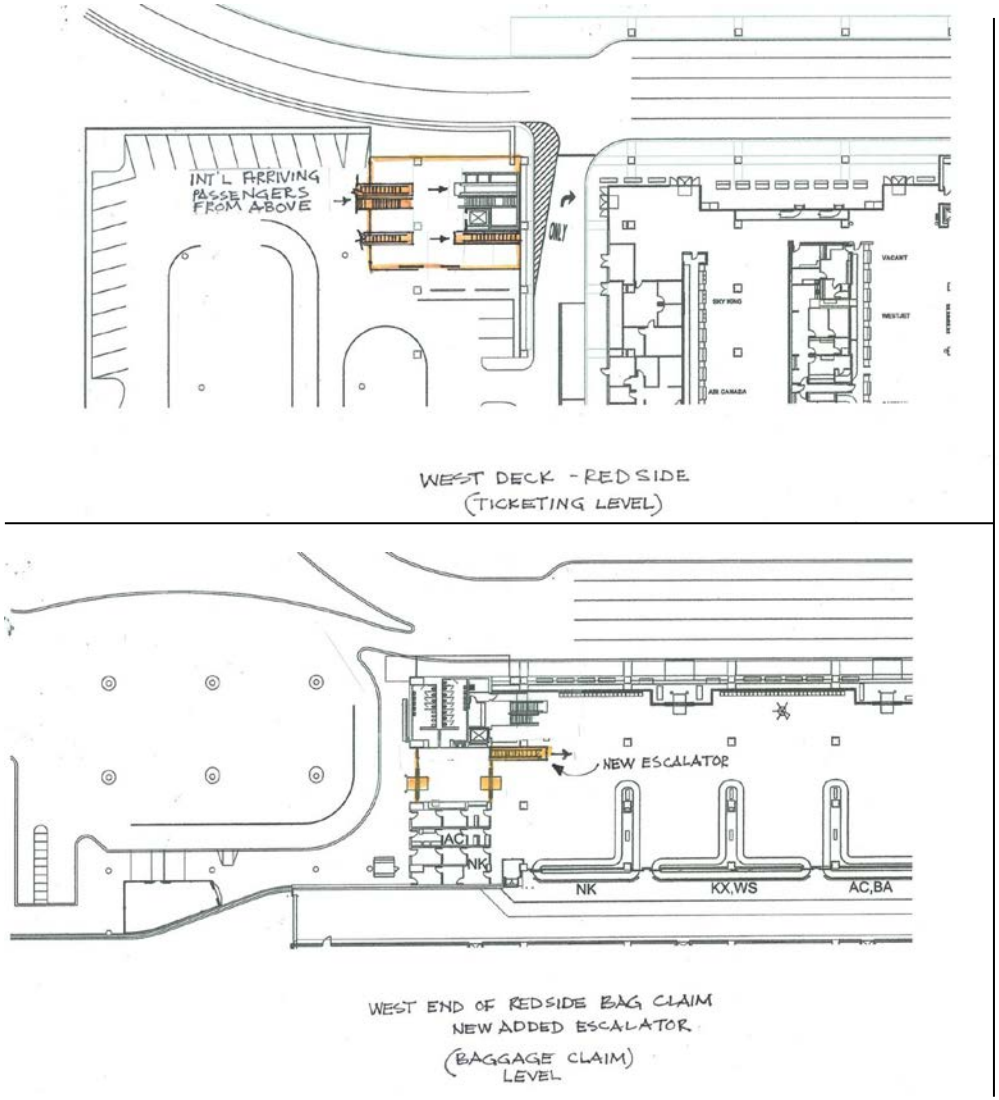



**Figure 5.48**
**CBP OPTION 2: RED RENTAL CAR GARAGE**

### 5.7.7.3 CBP Option 3: Marriott Hotel Site

This concept utilizes the land where the Marriott Hotel and FAA ATCT and offices are currently located; creating a two-level centralized CBP Facility. In **Figure 5.49,** a pedestrian bridge from the sterile third level of Airside D connects passengers to the CBP Primary. Once passengers clear Immigration, they descend escalators or elevators to the ground level (**Figure 5.50**) where they claim their luggage and are processed through Customs. Upon exiting the CBP, an International Arrivals Lobby provides passengers opportunities for ground transportation at a dedicated international arrivals curb or escalators and elevators leading up to the Transfer Level where they can access the APM to the Rental Car Center or parking garages. Similar to CBP Concept 1, outbound passengers use moving sidewalks on a pedestrian bridge constructed atop the former Airside D shuttle guideway to get to the SSCP at Airside D.

This configuration meets the facility program, providing 16 aircraft parking positions at each airside. As shown in **Figure 5.51**, the Air Traffic Control Tower and TRACON facility is integrated into Airside D with offices and a TRACON occupying two levels at the southeast end of the airside. The Red Rental Car Garage and HCAA Service/Administration Building are not impacted by this concept. The Red Side Parking Garage is available for CBP, FAA and HCAA employee parking.

*Advantages*

- Maximizes aircraft parking on the site with 16 positions
- Somewhat improved travel distance for Airside C passengers compared to CBP Options 1 & 2
- Dedicated international arrivals curb

*Disadvantages*

- Requires demolition of Marriott Hotel and FAA ATCT
- Does not resolve SSCP deficiencies at Airside C

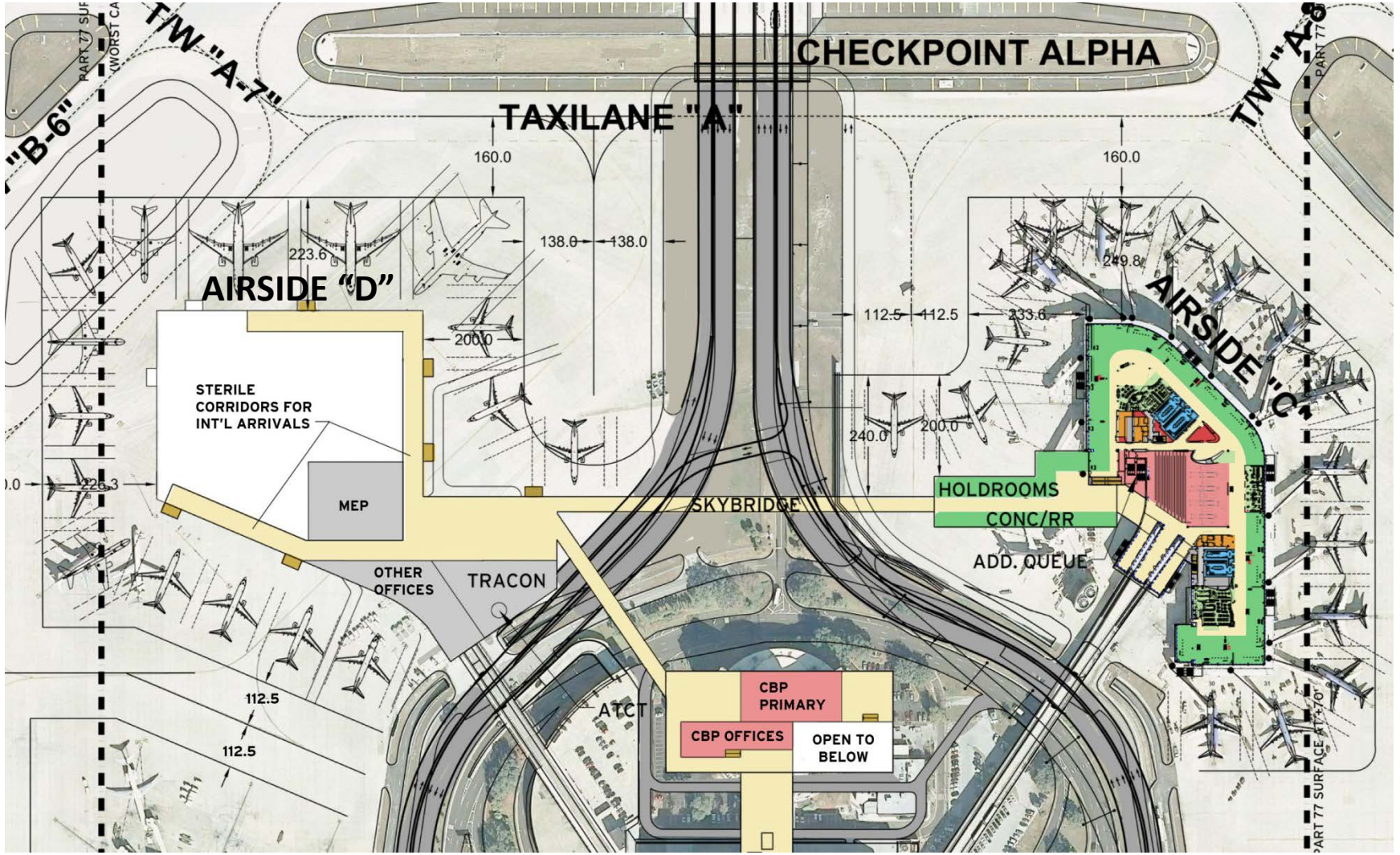



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**Figure 5.49**
**CBP OPTION 3: MARRIOTT HOTEL SITE - STERILE LEVEL**

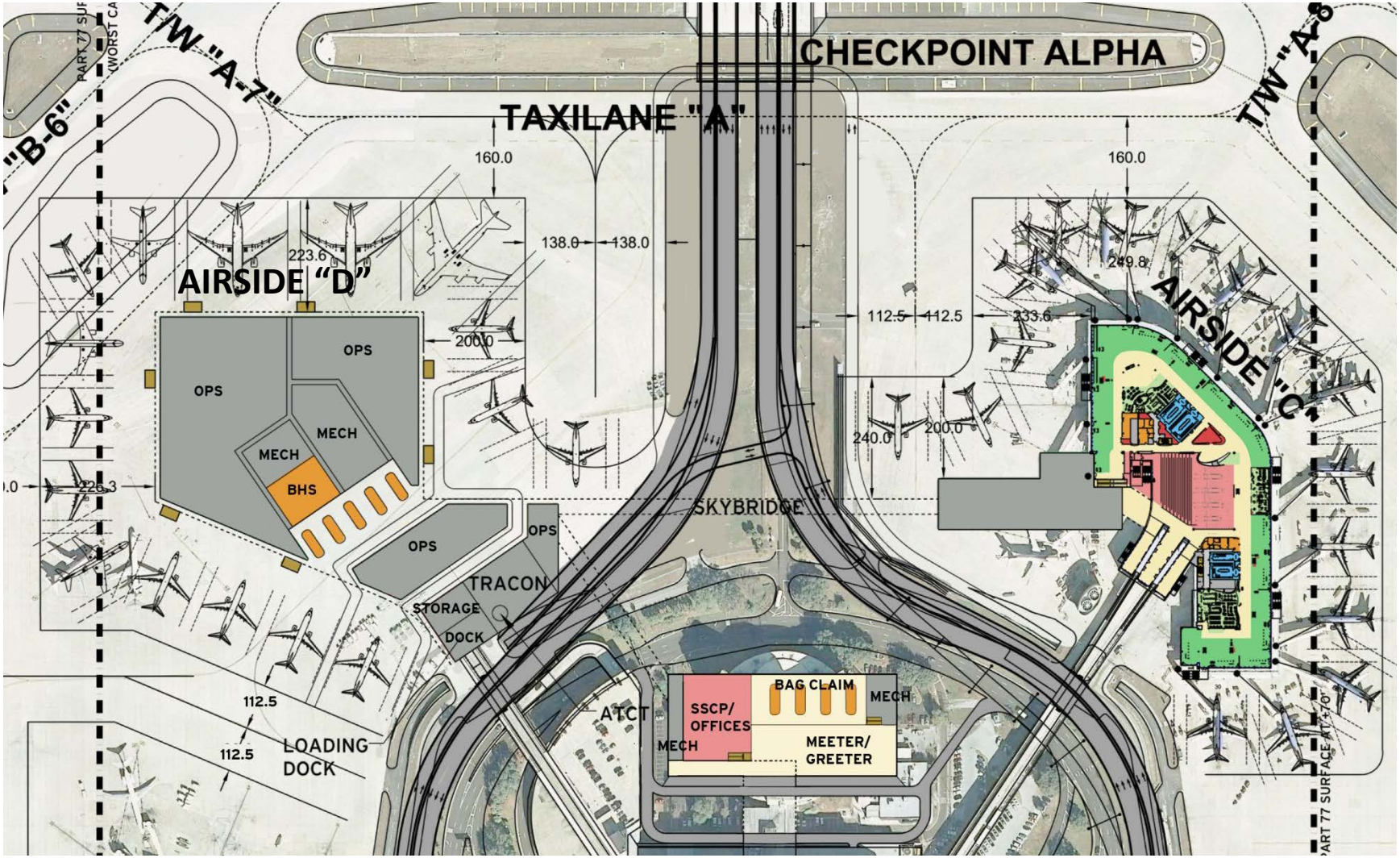


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**Figure 5.50**
**CBP OPTION 3: MARRIOTT HOTEL SITE - APRON LEVEL**

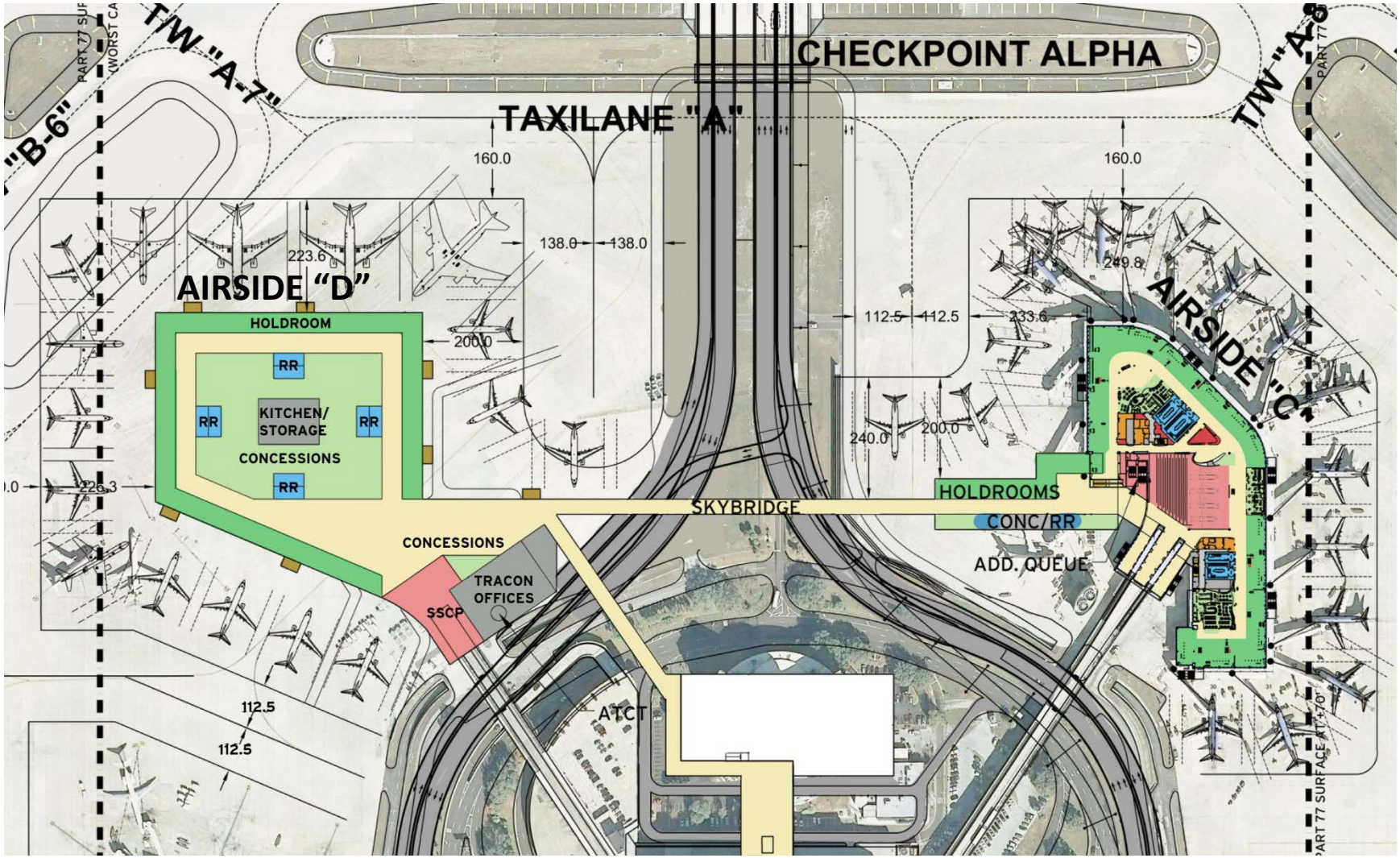


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**Figure 5.51**
**CBP OPTION 3: MARRIOTT HOTEL SITE - DEPARTURE LEVEL**

#### 5.7.7.4 CBP Option 4: Marriott Hotel Site (Central SSCP Access to Airsides C and D)

Option 4 incorporates a centralized CBP facility on the former Marriott Hotel site with access from both Airsides C and D via moving sidewalks. This reduces the lengthy walk from Airside C to D by international arrivals found in CBP Options 1 - 3 by creating a central access point to the CBP. Third level sterile corridors, shown in **Figure 5.52**, lead international arriving passengers to CBP primary inspection. Once processed, passengers descend to the international baggage claim and Customs on the Transfer Level. Down escalators and elevators are provided near the CBP exit for passengers to access a dedicated international arrivals curb below the CBP, or they may meet their party in a nearby international arrivals lobby.

**Figure 5.53** shows how a limited number of international gates can initially be built at Airside D. Then, as demand dictates, additional gates may be added by completing the build-out at Airside D.

The Transfer Level also adds concessions, a food court and a new security screening checkpoint that provides the additional lanes required for Airside C and sufficient lanes to support the initial build at Airside D. Once the remainder of Airside D is constructed, a new shuttle system will bring passengers to an airside station and SSCP at the southeast end of the boarding level.

Offices, concessions storage and a new central plant occupy the ground floor of the terminal expansion shown in **Figure 5.54**. The Airside D site also integrates a new air traffic control tower and TRACON facility at the southeast end of the building. This concept requires removal of the hotel, FAA ATCT facility, and HCAA Service Building. The Red Side Rental Car Garage is kept intact for FAA, CBP and HCAA employee parking.

*Advantages*

- Allows incremental gate construction at Airside D
- Leaves most of Red Side Rental Car Garage available for FAA, CBP, and employee parking
- Dedicated international arrivals curb
- Equal travel distance for international arrivals from Airsides C & D
- Concept provides replacement HCAA offices

*Disadvantages*

- Requires demolition of Marriott Hotel, existing FAA ATCT, and HCAA Service Building
- Requires partial demolition of south east end of Red Side Rental Car Garage
- Concept shows more Transfer Level concessions than required

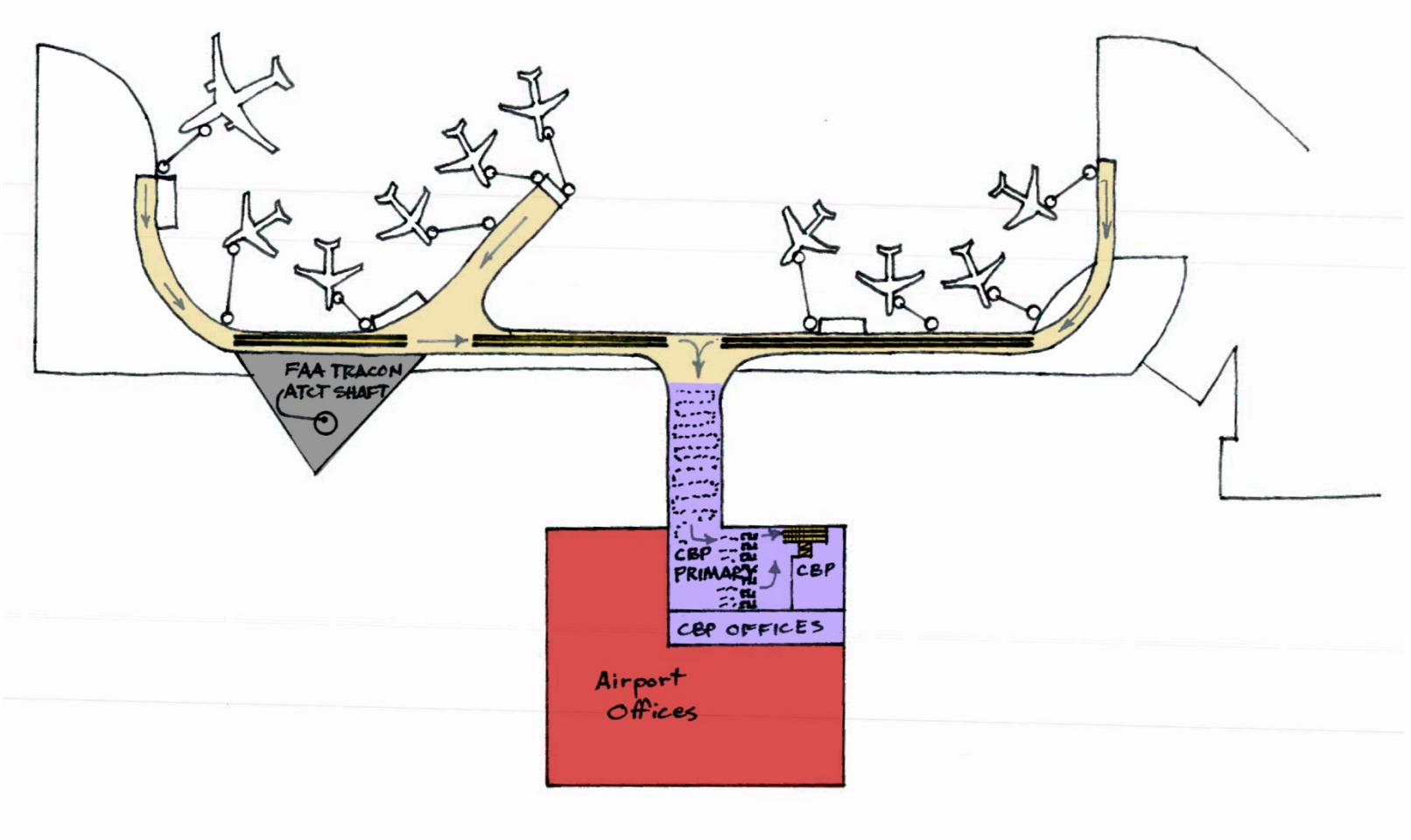


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**Figure 5.52**
**CBP OPTION 4: MARRIOTT HOTEL SITE - STERILE CORRIDOR/PRIMARY INSPECTION**

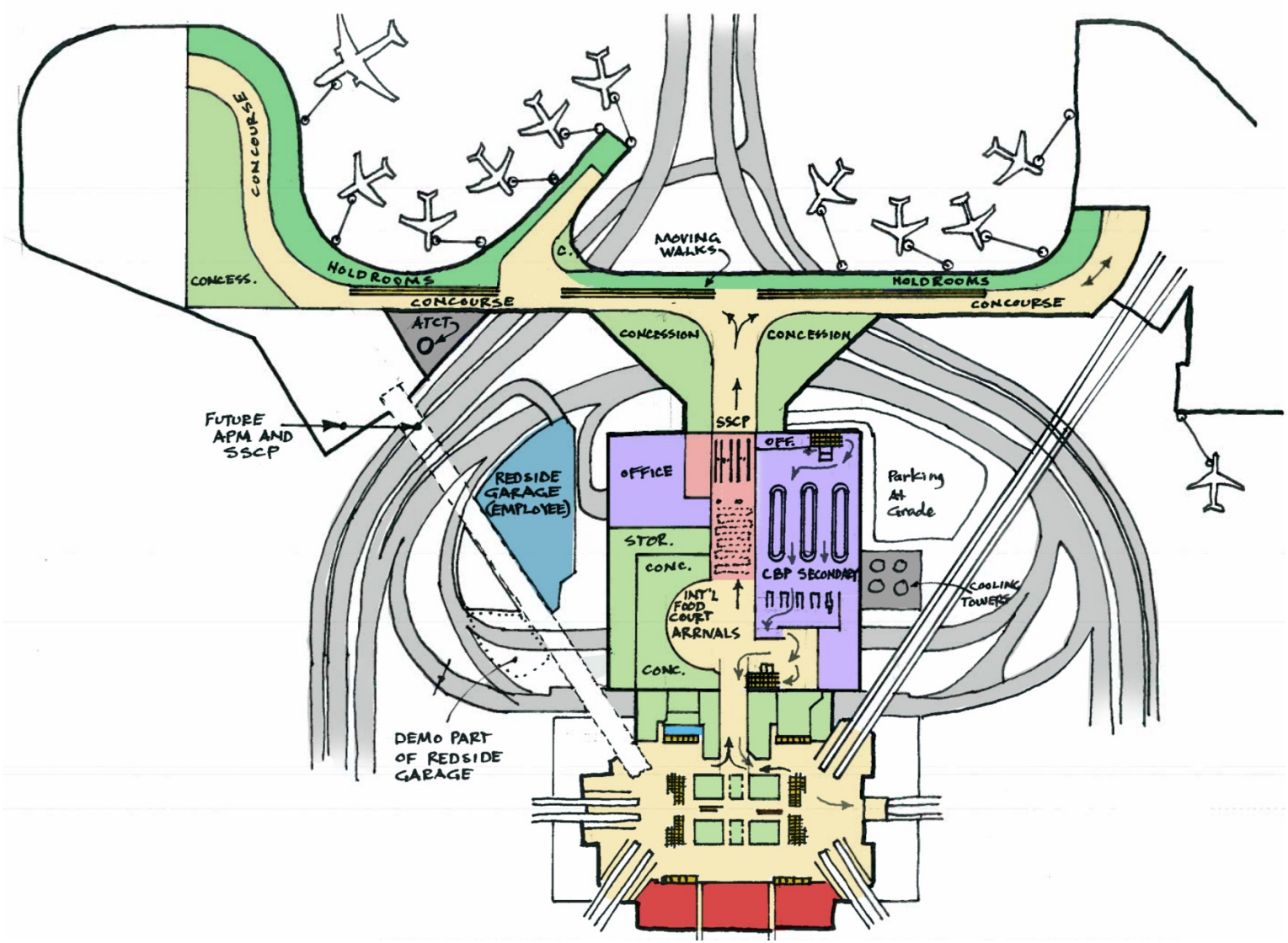


**Figure 5.53**
**CBP OPTION 4: MARRIOTT HOTEL SITE - CBP SECONDARY/ TRANSFER LEVEL**

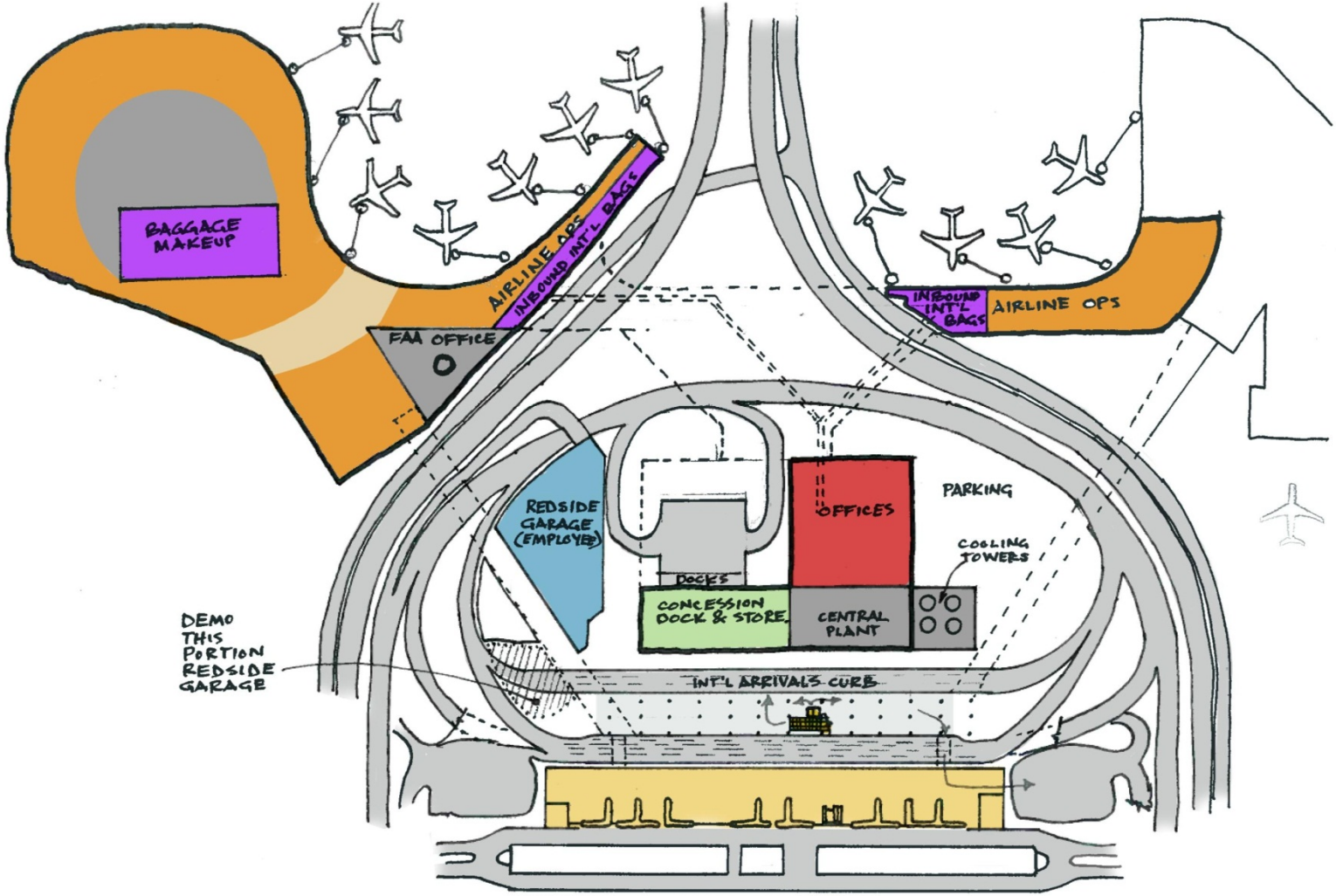


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**Figure 5.54**
**CBP OPTION 4: MARRIOTT HOTEL SITE - BAGGAGE CLAIM LEVEL**

#### 5.7.7.5 CBP Option 5: Centralized FIS Facility + Consolidated Security Checkpoint

CBP Option 5 proposes a central CBP facility on the Marriott Hotel site combined with a consolidated security screening checkpoint serving Airsides C and D constructed north of the existing terminal. Once passengers clear the new SSCP, they board secure shuttle cars that take them to their airside. Inbound international passengers are collected in sterile corridor systems at the third level of each airside and guided to a sterile shuttle station. The front two shuttle cars going to the terminal are dedicated to carrying only sterile (inbound international) passengers headed to the CBP. Once the shuttle arrives at the terminal, shown in **Figure 5.55**, passengers disembark and descend escalators or elevators one level to the CBP Primary Processing Area shown in **Figure 5.56**. After they clear Immigration, passengers descend another set of escalators or elevators to the ground level shown in **Figure 5.57** where they claim their luggage and are processed through Customs. They exit CBP into an international arrivals hall that has easy access to a dedicated international arrivals curb, a new "quad court" provided for commercial vehicle pick-up, and an escalator/elevator core that takes passengers up to the Transfer Level to reach parking or the East APM that will take them to the rental car center or economy parking.

This concept requires the demolition of the Marriott Hotel, HCAA Service Building, FAA ATCT/support facilities and the Red Side Rental Car Garage, creating a large site available for constructing a dedicated roadway and curbs for international passengers. It also provides surface parking areas for CBP and FAA staff, a commercial vehicle lot, and adequate space for a new loading dock to serve the terminal.

A single checkpoint serves both Airside C and Airside D, reducing TSA staffing and overall security equipment requirements. The peak hour requirement for serving both Airsides C and D with a consolidated checkpoint is 16 lanes; versus 12 at Airside C and 6 at Airside D at 28.7 MAP. The consolidated SSCP in this concept shows expansion capability for up to 18 checkpoint lanes. By moving the security checkpoint to the terminal, significant space is made available to add concessions at each airside. The security checkpoints for Airside A and Airside E are also brought into the terminal in Figure 5.33, creating more space for concessions on those airsides as well. However, the area available for these checkpoints is tight and awkwardly arranged, consuming valuable space for terminal concessions and other opportunities.

This concept assumes new shuttle stations for Airsides C and D are built just beyond the consolidated SSCP providing the opportunity for connecting passengers to transfer between the two airsides without having to be rescreened at a security checkpoint. The new shuttle guideways merge with the existing shuttle guideways midway between the terminal and the airsides. Consultation with Lea+Elliott regarding the logistics of merging the two guideways revealed the following:

- For extended periods, only one shuttle guideway can remain operational while the other one is constructed.
- Once the new terminal station is operational, the old terminal station is decommissioned and the second track to the new station is constructed.
- Testing and commissioning a shuttle system typically takes four to six months.

- Phasing the new track alignment with the existing track is expensive, disruptive and will cause the airside to be served by only one shuttle at a time for up to 3 years during construction, commissioning and testing.
- Adding the sterile shuttle platform to the existing station at Airside C will reduce the shuttle operation to a single track at Airside C for an extended period of time.
- Standby contingency provisions (i.e. a replacement shuttle bus service) should be made in the event the single operating shuttle system fails during construction.

This system, by design, has twice the number of train cars as the existing Airside shuttle systems because you cannot mix sterile and non-sterile passenger in the same train cars. Twice the number of cars means a larger initial capital cost, more maintenance space, additional maintenance cost (spare parts, O&M personnel), and higher operating costs. Because the sterile cars cannot be decoupled from the rest of the train and stored when there are no international passengers, many trips to the terminal and all trips to the airside will run empty.

From a landside perspective, the creation of an independent International Arrivals Building and associated curbs will further imbalance the peak hour demands on the Red Curb (less busy without the international carriers) versus the Blue Curb, which remains the same with almost 50% more traffic than the Red side. This provides an opportunity for the Authority to rework the allocations of airlines between the sides to stave off or eliminate congestion and the expense of building further landside facilities to relieve the congestion.

*Advantages*

- Dedicated international arrivals curb
- Equal travel distance for international arrivals from Airsides C & D
- Consolidated SSCP allows additional concessions to be added at airsides
- Passengers may transfer between Airsides C and D without being rescreened at a SSCP
- Improved concessions exposure for passengers going from ticketing to SSCP
- CBP has expansion capability
- Once enabling projects are completed, large site available for construction

*Disadvantages*

- Requires demolition of Marriott Hotel, existing FAA ATCT, Red Side Rental Car Garage and HCAA Service Building
- Concept shows more Transfer Level concessions than required
- SSCP at Airside A has an awkwardly configured queue due to space constraints
- Challenging construction phasing to modify shuttle guideways
- International arrivals roadway entrance and exits occur in high-traffic section of George J Bean Parkway, which may create difficult merging situations
- Requires construction of a new FAA ATCT and TRACON facility

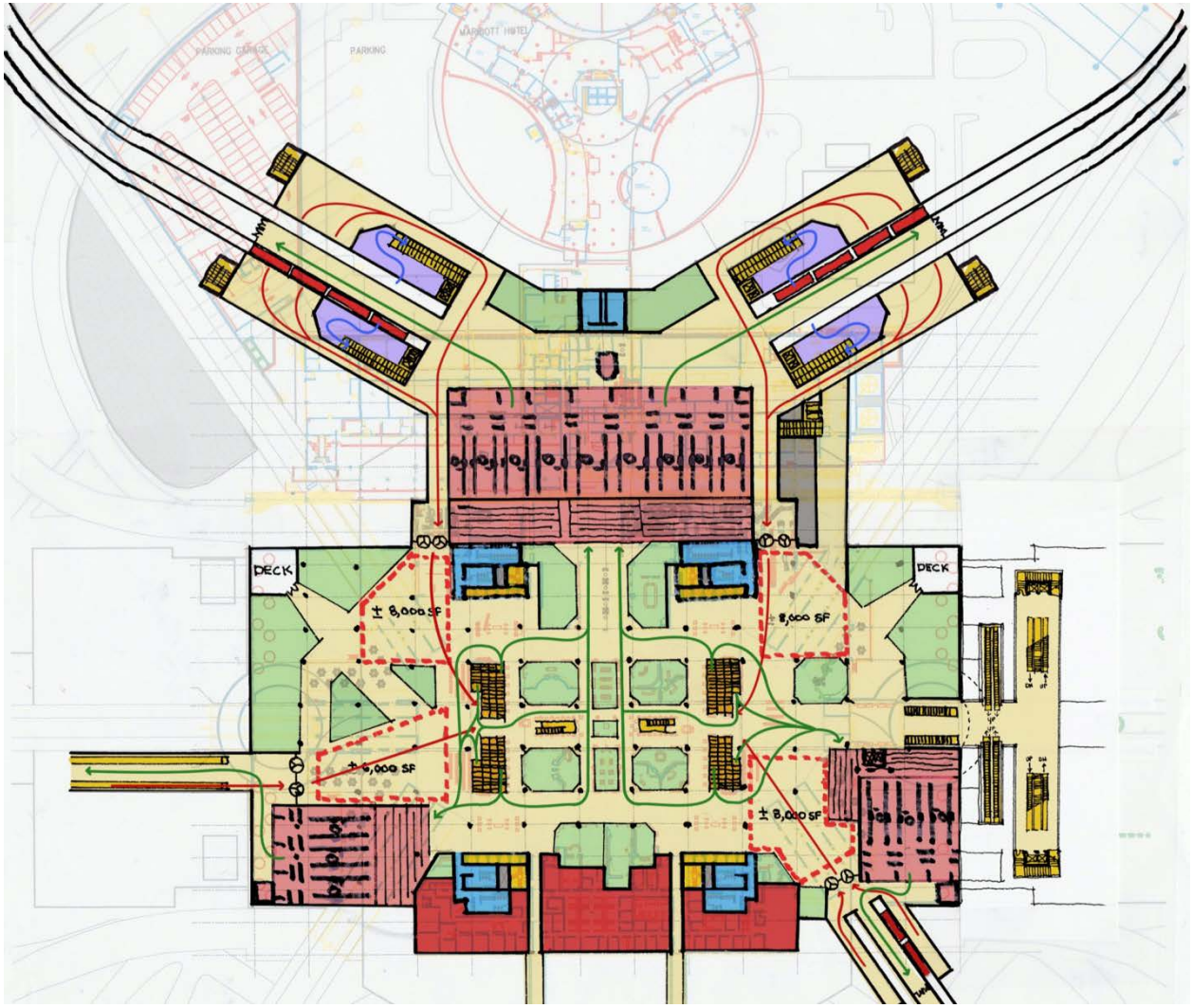


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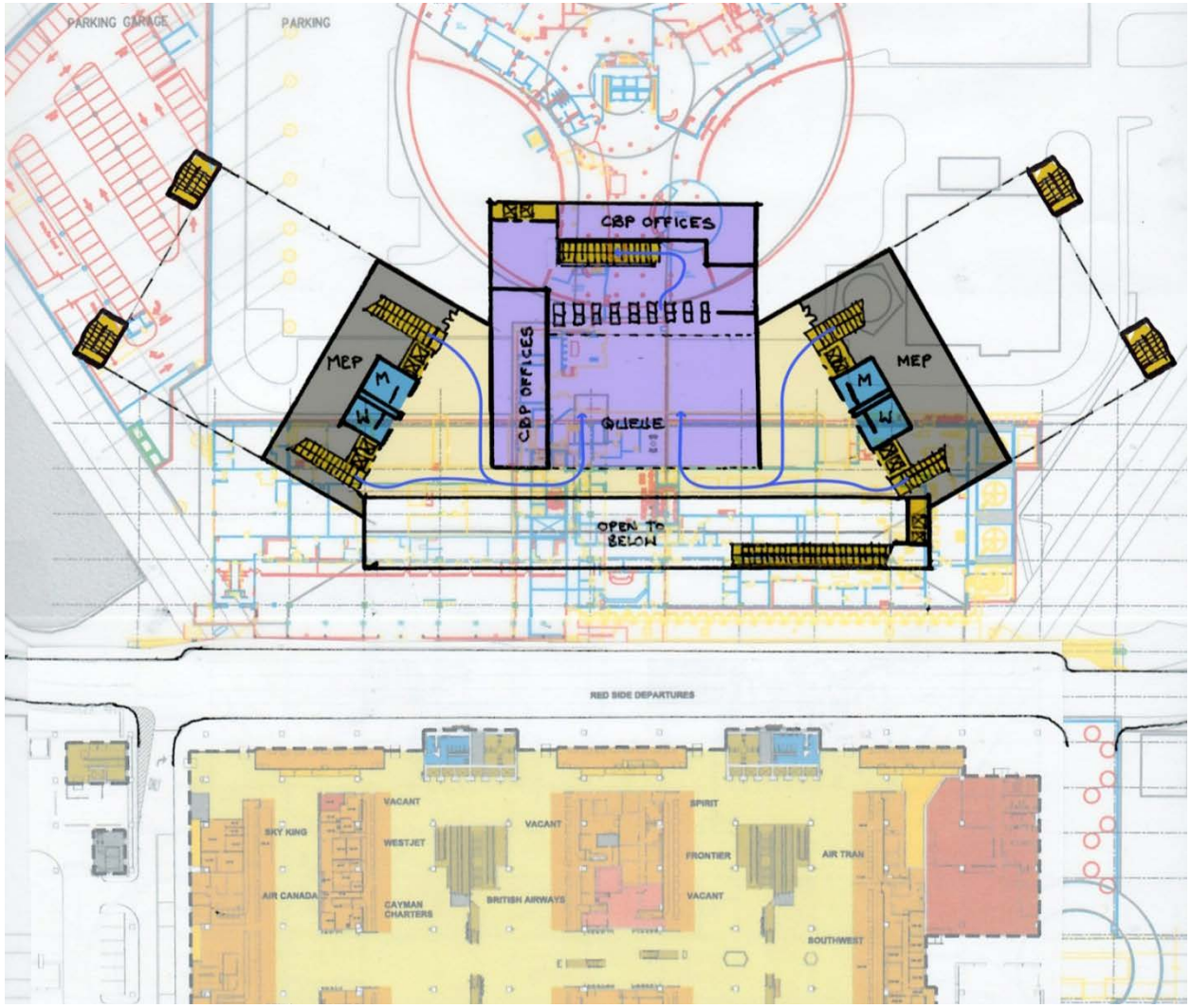
**Figure 5.55**
**CBP OPTION 5: CONSOLIDATED CHECKPOINT - TRANSFER LEVEL**

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HNTB

**Figure 5.56**
**CBP OPTION 5: CONSOLIDATED CHECKPOINT - TICKETING/ IMMIGRATION LEVEL**

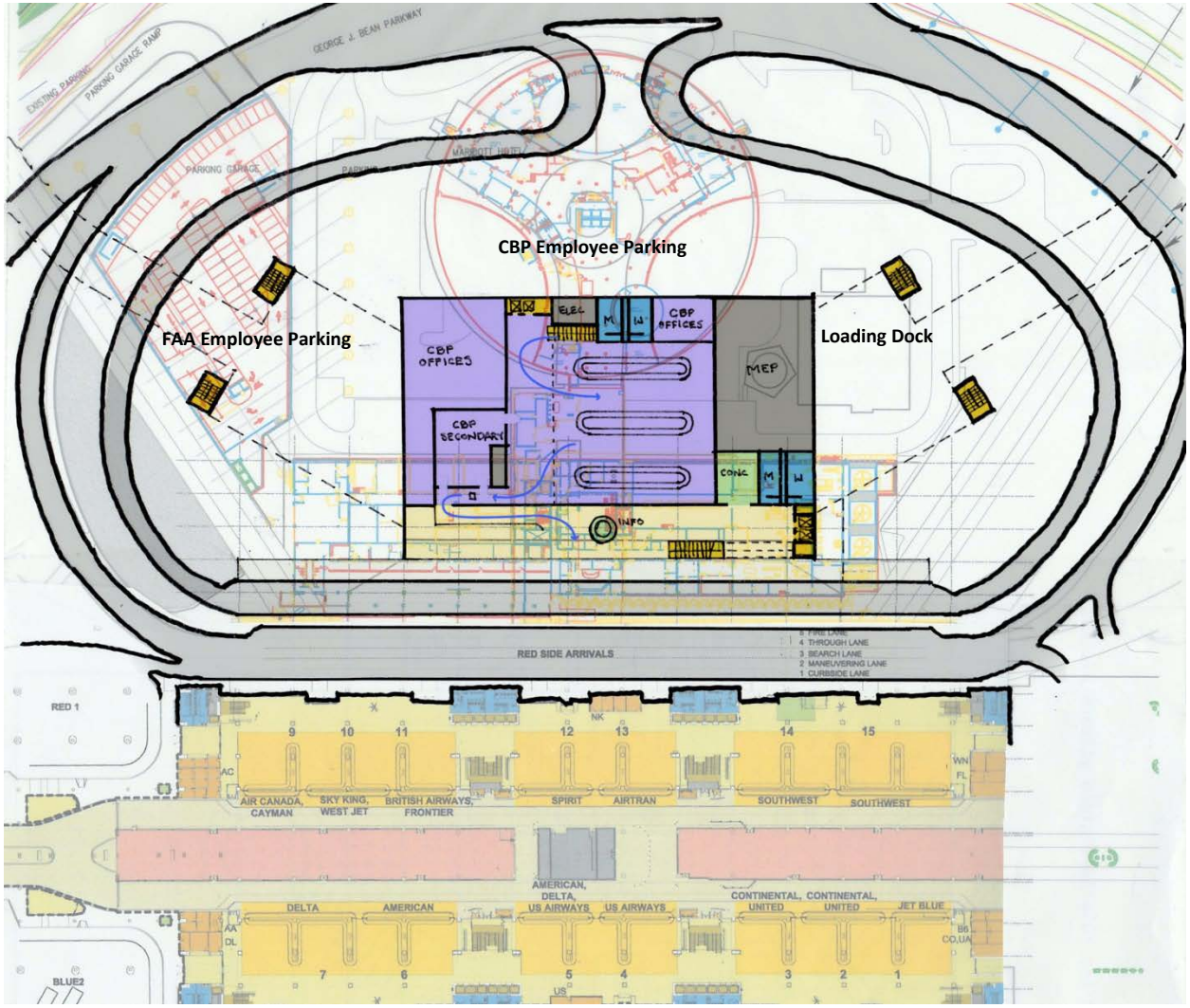


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**Figure 5.57**
**CBP OPTION 5: - CONSOLIDATED CHECKPOINT - BAGGAGE CLAIM/CUSTOMS LEVEL**

### 5.7.7.6 CBP Option 6: Integrated Hotel

Option 6 incorporates a new hotel alongside a central CBP facility. The hotel tower, shown in **Figure 5.61**, will have a minimum of seven levels and 50 rooms at each level, for a total of 350 rooms. **Figure 5.58** shows the sterile corridor systems serving portions of both Airside C and Airside D leading to the CBP Primary Inspection area. Passengers descend two levels to the CBP Baggage Claim, shown in **Figure 5.60**, where they have access to an International Curb. **Figure 5.59** shows the transfer level, which includes a consolidated security checkpoint with ample concessions just beyond. Due to the extensive expansion to the north, moving sidewalks replace the current shuttle systems to Airsides C and D. The distances between the terminal and the airsides are too short to justify the cost of a new shuttle system. A new FAA ATCT and TRACON facility is integrated into the new Airside D, similar to the other concepts. Parking for CBP and FAA employees and hotel guests is accommodated in the Red Side Parking Garage.

Option 6 does not adequately combine all necessary functions in an efficient way. Combining the CBP Facility, Red Side Garage, and a new Hotel creates a confusing roadway system with many confining elements limiting future expansion. The hotel layout is limited on the lower floors due to competition for space with the CBP, concessions storage, physical plant, and garage. The airport also wants to uphold its reputation for innovative technology by providing shuttle systems to every airside, instead of opting for moving sidewalks, even when it is more economical.

*Advantages*

- Dedicated international arrivals curb
- Equal travel distance for international arrivals from Airsides C & D
- Consolidated SSCP allows additional concessions to be added at airsides
- Passengers may transfer between Airsides C and D without being rescreened at a SSCP
- Improved concessions exposure for passengers going from ticketing to SSCP
- CBP has expansion capability

*Disadvantages*

- Requires demolition of Marriott Hotel, existing FAA ATCT and HCAA Service Building
- Adding a hotel to the concept makes it difficult to accommodate all landside functional components
- Concept shows more Transfer Level concessions than required
- Challenging construction phasing to modify shuttle guideways
- International arrivals roadway entrance and exits occur in high-traffic section of George J Bean Parkway, which may create difficult merging situations

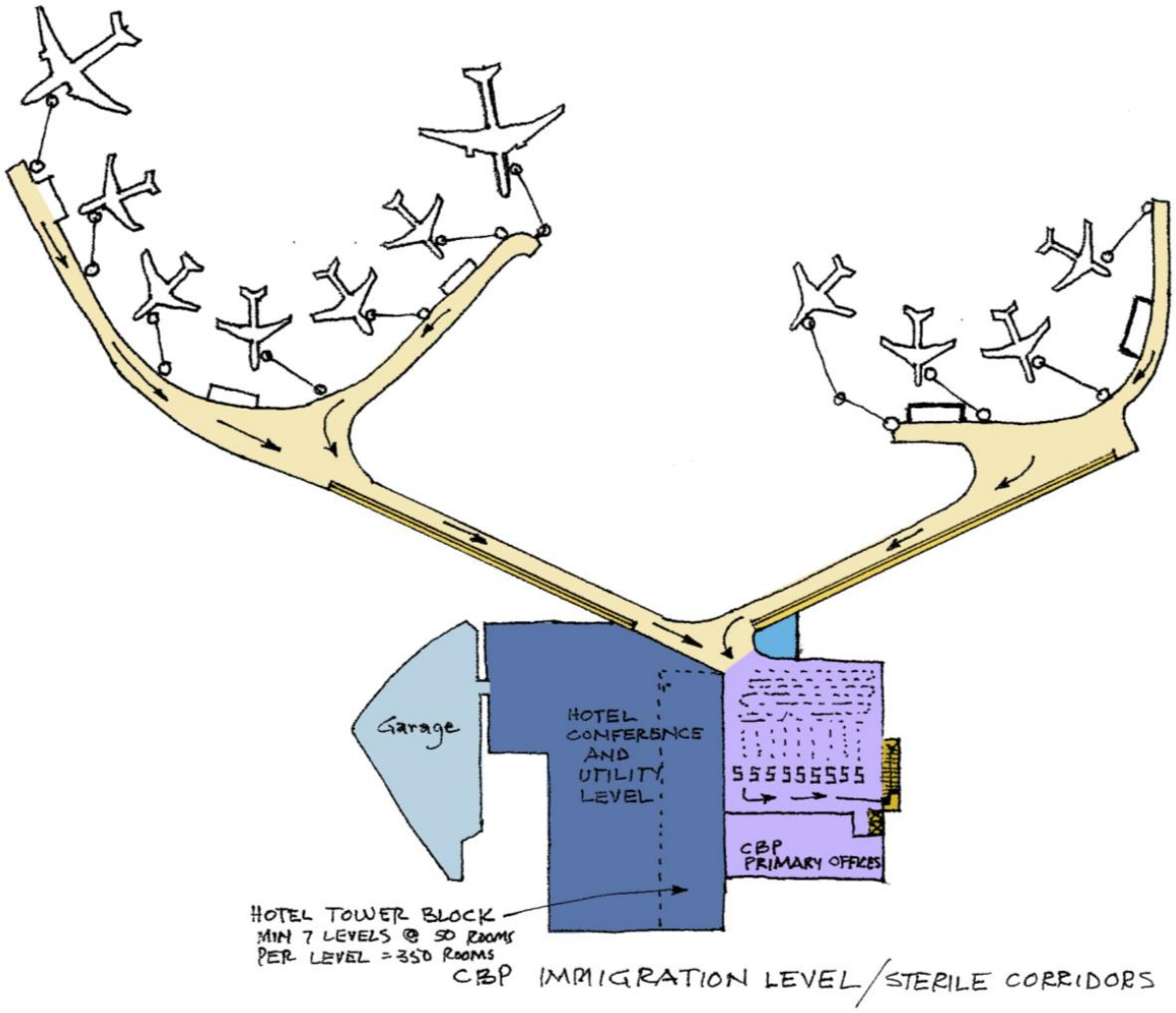


**Figure 5.58**

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**CBP OPTION 6: INTEGRATED HOTEL - STERILE CORRIDOR/ CBP PRIMARY/ HOTEL CONFERENCE LEVEL**

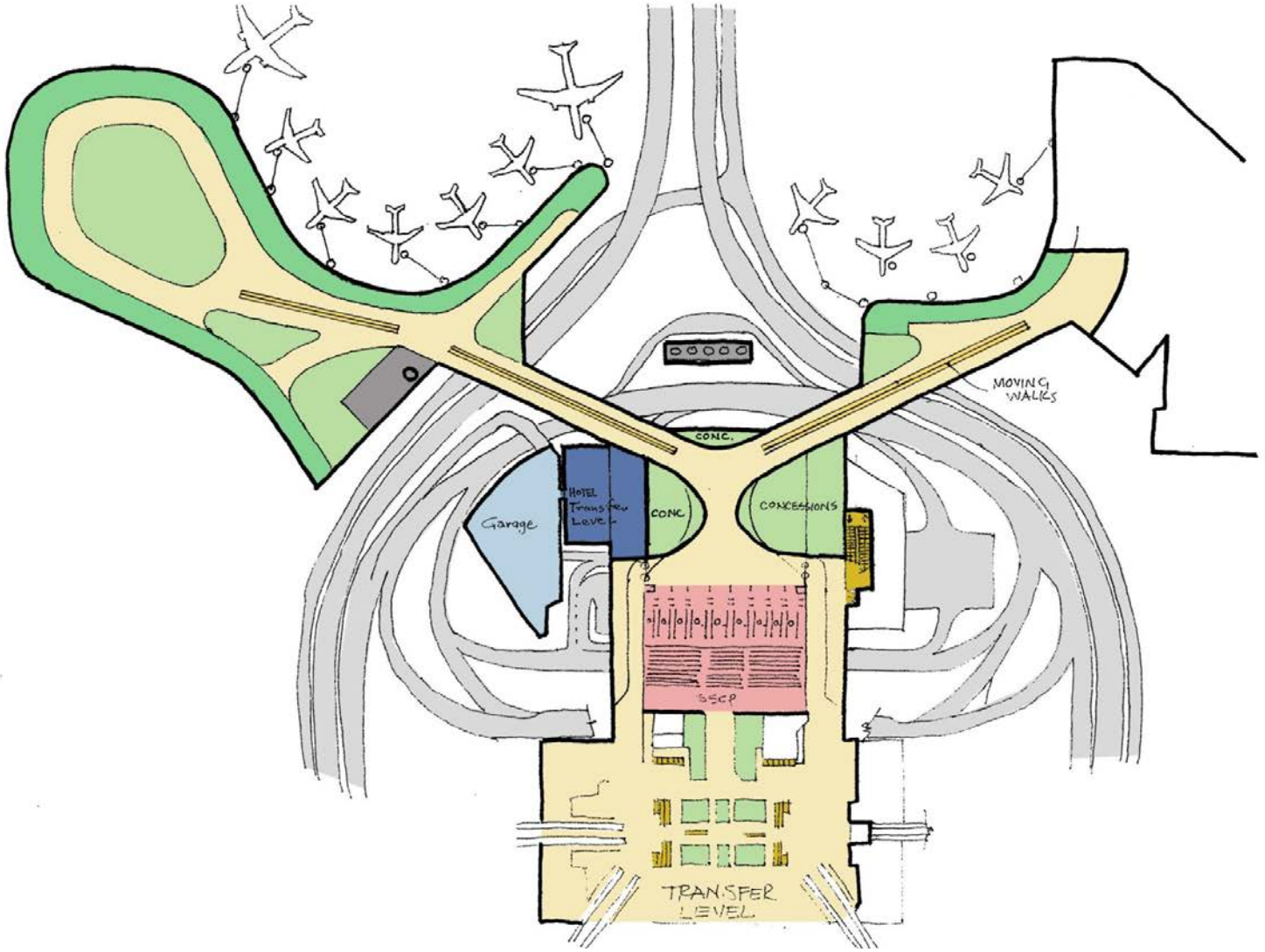


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**Figure 5.59**
**CBP OPTION 6: INTEGRATED HOTEL - TRANSFER LEVEL**

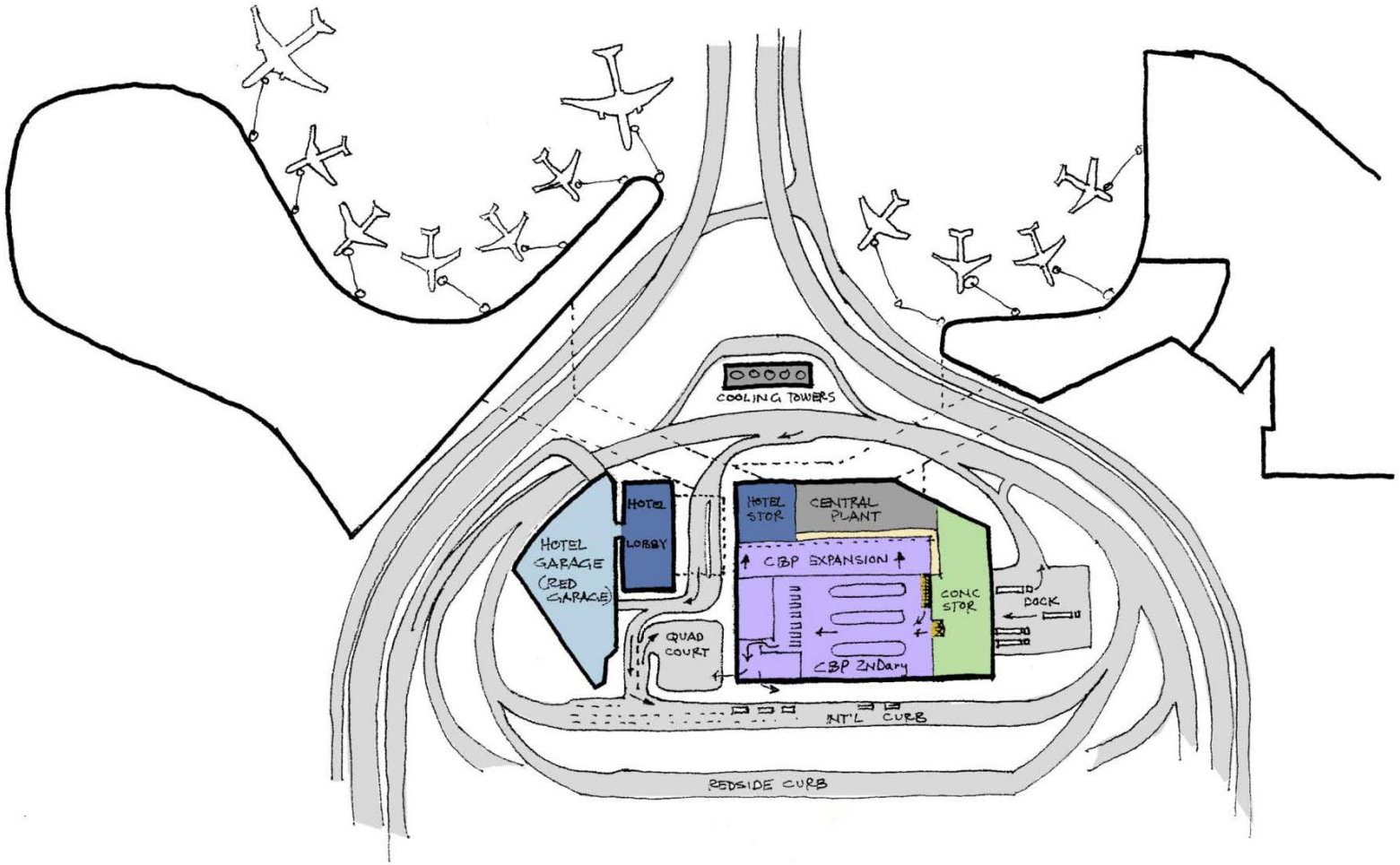


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**Figure 5.60**
**CBP OPTION 6: INTEGRATED HOTEL - CBP BAGGAGE CLAIM/ HOTEL LOBBY LEVEL**

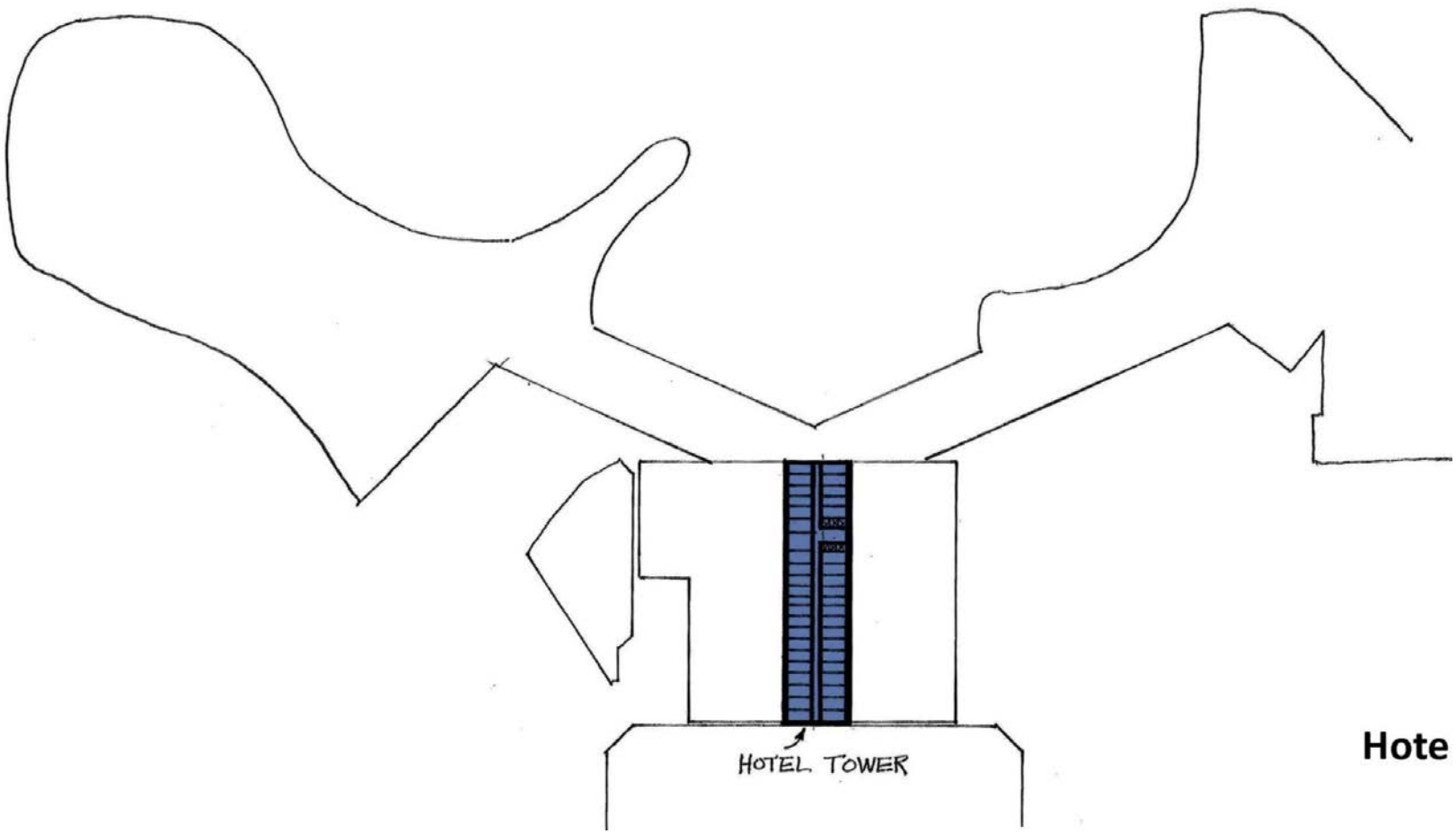


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**Figure 5.61**
**CBP OPTION 6: INTEGRATED HOTEL - TYPICAL HOTEL TOWER LEVEL**

#### 5.7.7.7 CBP Option 7: Centralized FIS Facility + New Hotel

Option 7, shown in **Figures 5.62, 5.63, 5.64** and **5.65**, is an alternative version that evolves and improves several favorable characteristics of CBP Option 5. This concept retains the Red Side Rental Car Garage by routing the shuttle tracks around it. The international arrivals roadway is configured to split just prior to the Red Side Baggage Claim Curb rather than providing dedicated access from George J. Beam Outbound Parkway as shown in Option 5.

The CBP facility meets the anticipated international demand while providing the flexibility of serving multiple airsides with a single facility. As international traffic grows, this facility has flexibility to expand the baggage claim area and CBP offices to the north. A dedicated international arrivals lobby provides concessions and restrooms for meter/greeters. A new international arrivals curb is located just south of the arrivals lobby for privately owned vehicles and a dedicated commercial vehicle lot is located to the west. This international arrivals curb can also provide overflow curb frontage for Red Side domestic arrivals.

A concessions storage area and a loading dock are connected to the CBP, supporting the terminal concessions program.

This concept integrates a FAA ATCT and TRACON facility into Airside D, similar to the preceding concepts. CBP and FAA employee parking is accommodated in the Red Side Parking Garage.

*Advantages*

- Dedicated international arrivals curb
- Equal travel distance for international arrivals from Airsides C & D
- Consolidated SSCP allows additional concessions to be added at airsides
- Passengers may transfer between Airsides C and D without being rescreened at a SSCP
- Improved concessions exposure for passengers going from ticketing to SSCP
- Once enabling projects are completed, large site available for construction
- Maintains Red Side Rental Car Garage for CBP, FAA and HCAA employees
- Constructs new shuttle stations and guideways
- CBP has expansion capability

*Disadvantages*

- Requires demolition of Marriott Hotel, existing FAA ATCT and HCAA Service Building

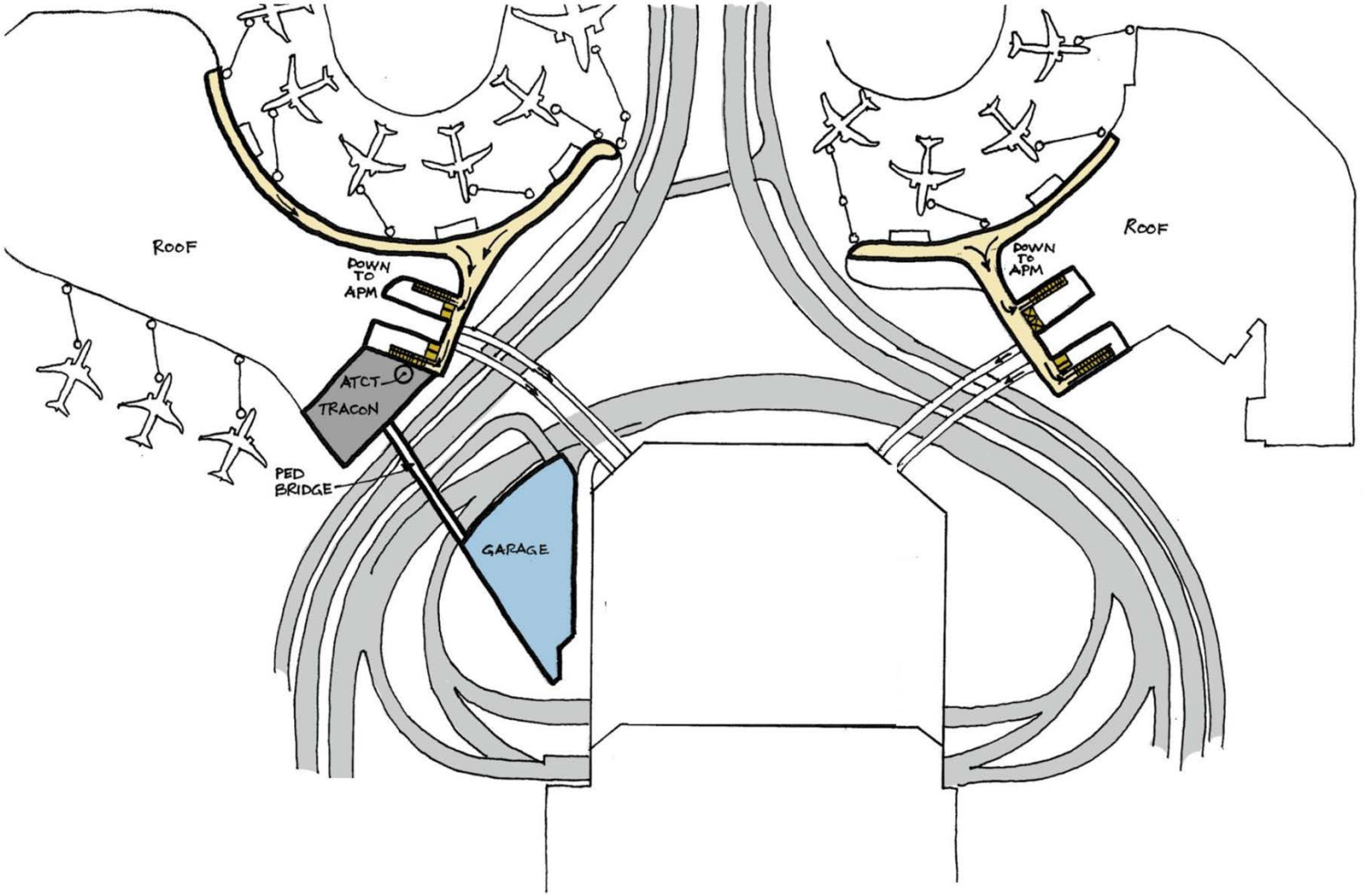


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**Figure 5.62**
**CBP OPTION 7: KEEP RED SIDE GARAGE - STERILE CORRIDOR LEVEL**

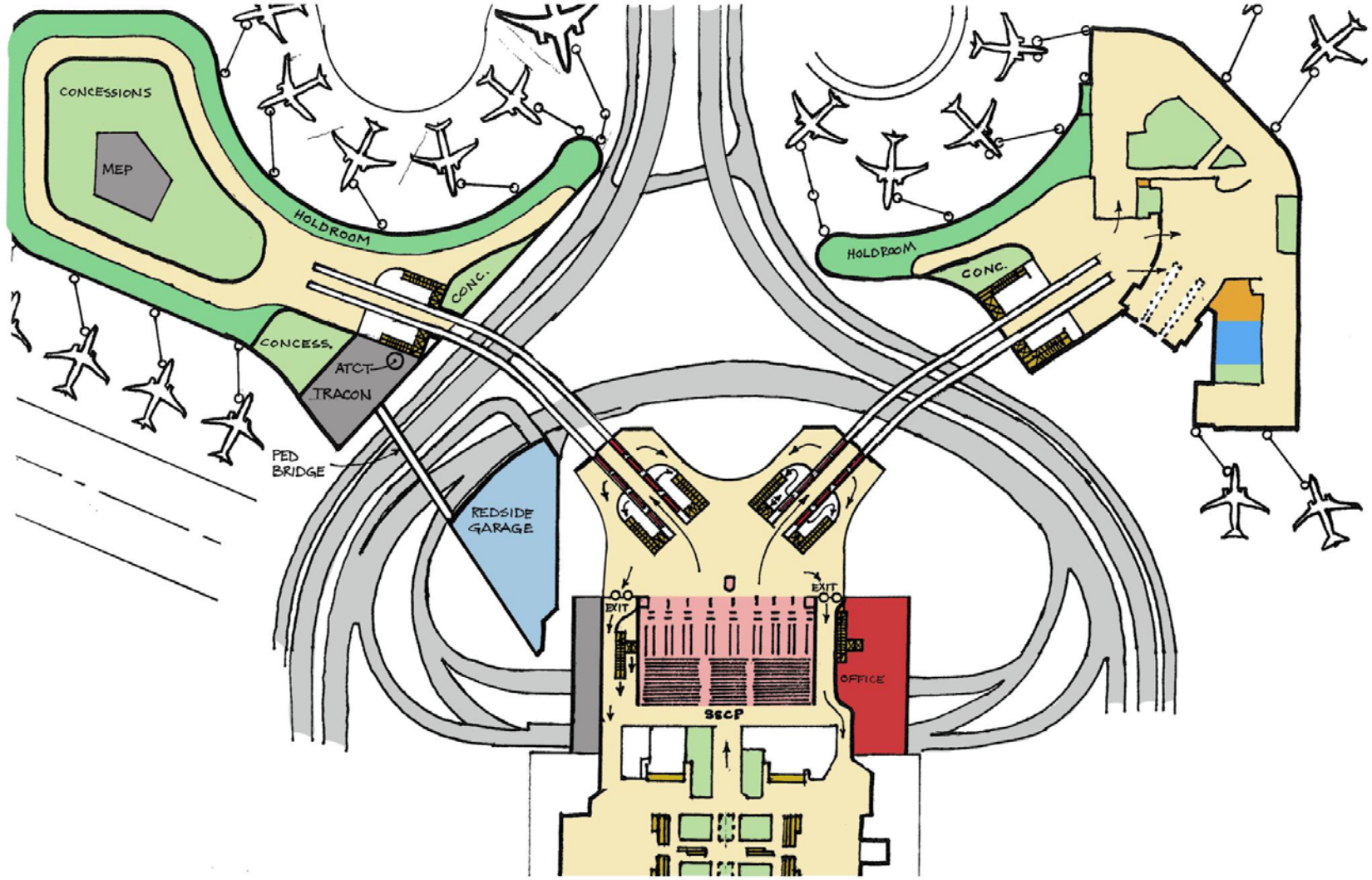


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**Figure 5.63**
**CBP OPTION 7: KEEP RED SIDE GARAGE - TRANSFER/BOARDING LEVEL**

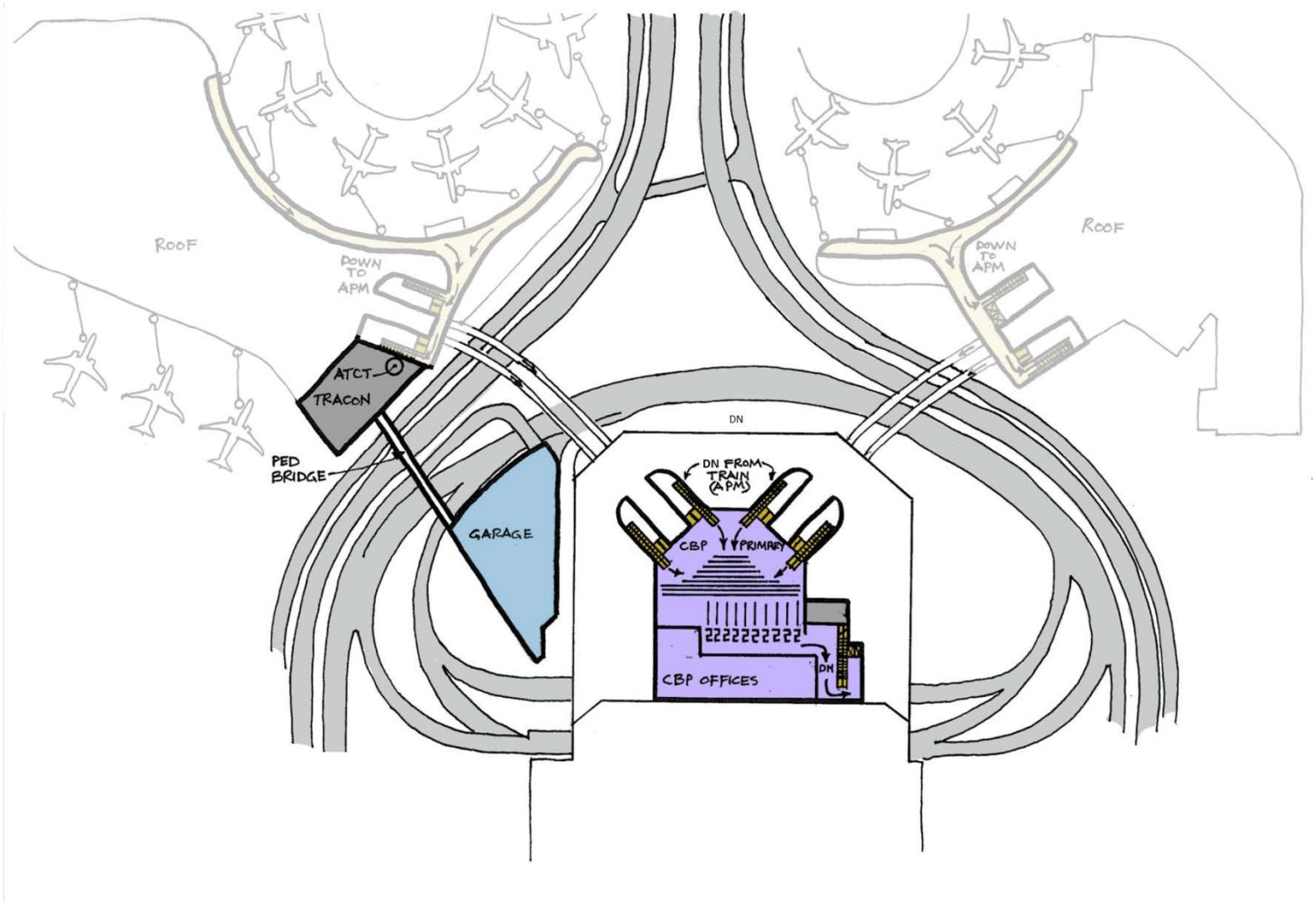


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**Figure 5.64**
**CBP OPTION 7: KEEP RED SIDE GARAGE - CBP PRIMARY LEVEL**

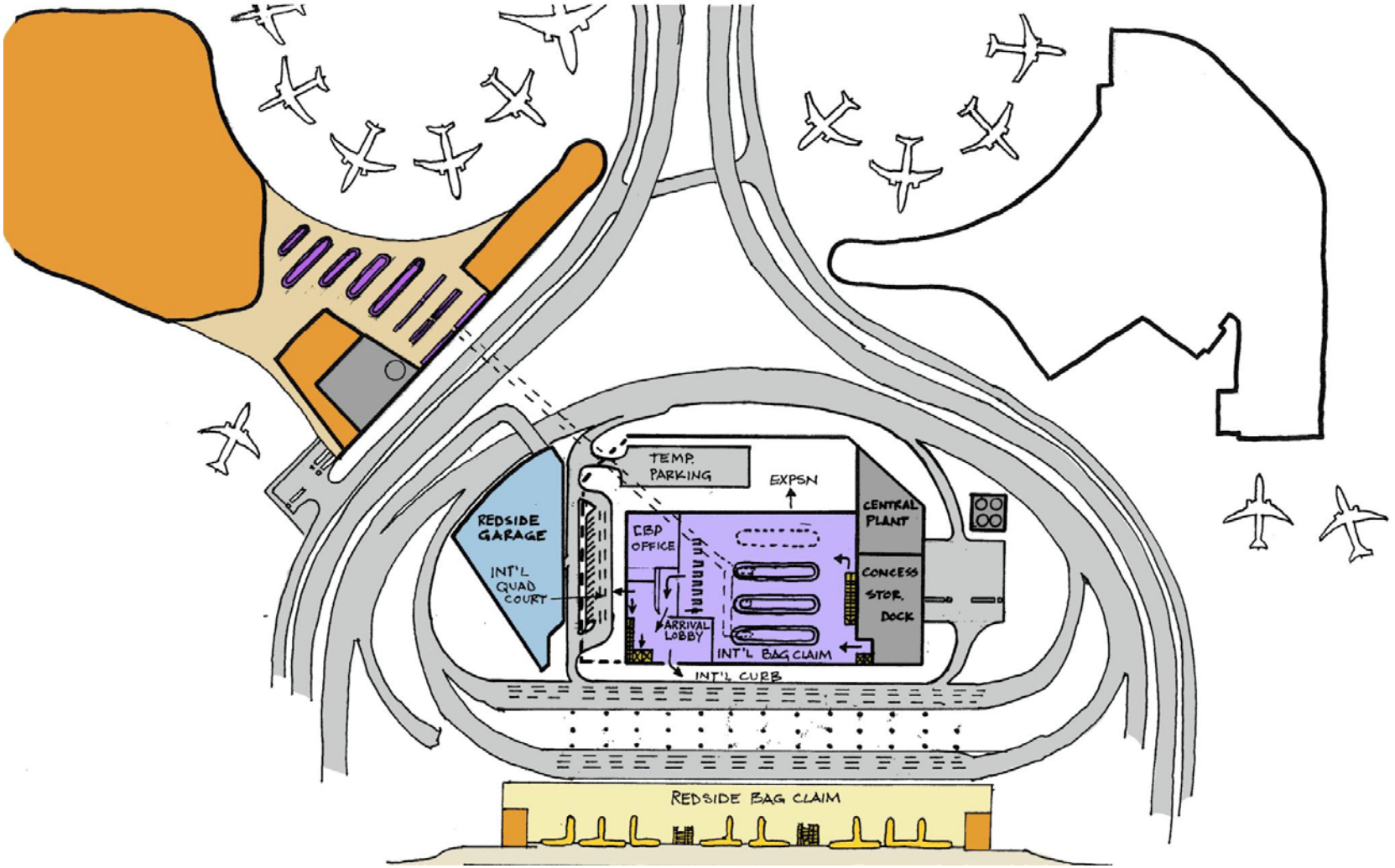


**Figure 5.65**
**CBP OPTION 7: KEEP RED SIDE GARAGE - CBP BAGGAGE CLAIM LEVEL**

### 5.7.7.8 Customs and Border Protection Facility Concept Refinement

The concepts above were developed, presented and refined over a series of three day-long planning charrettes held monthly in HNTB's Tampa office with the airport director and senior HCAA leadership members. At the end of the second charrette, group consensus determined that the best components of Concept 5 and its similar alternative, Concept 7, should be carried forward for further study and refinement.

At the third charrette, three refined variations of Concept 5/7 were presented. **Figure 5.66** shows a refined Transfer Level plan with the new consolidated SSCP shifted slightly to the north to provide an east-west circulation corridor between the concessions and the queuing area. The shuttle stations are similar to Concept 7, but instead of merging with the existing shuttle guideway at Airside C a new guideway and new airside shuttle station are constructed next to the existing guideway. This will allow the new shuttle to be constructed faster and will not require extensive construction phases with only one shuttle train in operation. This concept requires demolition of the Marriott Hotel, FAA ATCT, HCAA Service Building and the Red Side Rental Car Garage. A new FAA ATCT and TRACON facility is integrated into the southeast end of the new Airside D. Employee surface parking for the new FAA ATCT and TRACON facility is located on the former site of the Red Side Rental Car Garage. A new vertical circulation tower provides employees access up to the former Airside D shuttle guideway where they can safely cross the terminal roadway system to access the ATCT and its offices. Surface parking for CBP employees is provided on the north side of the CBP facility.

**Figure 5.67** is similar to Figure 5.45, except the new shuttle to Airside D is oriented such that the Red Side Garage site can serve as the new location for the replacement ATCT ,TRACON, and FAA parking facility. In this configuration the Red Side Garage would be demolished.

A third variation, shown in **Figure 5.68**, utilizes moving sidewalks on a pedestrian bridge instead of a shuttle train to access Airside D. Deplaning international passengers use a dedicated sterile corridor with moving sidewalks running parallel with the non-sterile corridor on the pedestrian bridge to access the new CBP built below the consolidated checkpoint. Like the variation in Figure 5.45, the pedestrian bridge is configured around the Red Side Garage allowing the parking structure to remain in service. Another alternative, not shown, could have the pedestrian bridge oriented directly between the terminal and the airside requiring the Red Side Garage to be demolished and the site converted to surface parking.

### 5.7.7.9 Recommended CBP Alternative

The recommended alternative, shown in **Figure 5.69**, solves multiple issues within the existing terminal complex while deferring the need to construct a new North Terminal Complex. This concept extends the life of the existing terminal complex through the end of the planning period by maximizing the use of space in and around the existing terminal and airsides. **Figure 5.70** shows the northward expansion of the terminal, which provides space for a consolidated security screening checkpoint and a new Customs and Border Protection facility below, both serving Airsides C and D. The new checkpoint optimizes TSA operations, increases non-aeronautical revenue opportunities by exposing passengers to more non-secure concessions, allows passengers the flexibility to transfer between flights on Airsides C and D without rescreening, and frees up space at each airside for an enhanced concessions experience that

meets the facility program. This new SSCP space meets the combined Airside C and D requirement for 16 lanes, but has expansion capability to grow to 18 lanes if needed. There are no restrictions above it, which allows it to be constructed with a light and airy clear-span structure.

**Figure 5.71** depicts the CBP Primary Processing Level, also known as CBP Immigration. Passengers descend escalators and elevators from the sterile shuttle train platform above and flow to CBP Primary. Adequate queuing space is provided to serve the 16 primary inspection booths. CBP offices are located adjacent to the processing area. Once processed, passengers descend another set of escalators or elevators to the International Baggage Claim Level, shown in **Figure 5.72**. The baggage claim area is sized for forecasted 28.7 MAP demand, but is arranged such that additional baggage claim devices may be added to the north. Passengers claim their bags and proceed through exit control or CBP Secondary Processing, where Customs and Agriculture inspections occur. The CBP facility exits into the International Arrivals Lobby, where passengers are greeted by their meeter/greeters or find ground transportation. An international arrivals curb, serving privately owned vehicles, is located just south of the lobby. To the west is a commercial vehicle pick-up lot. The east end of the lobby has concessions, restrooms and an escalator and elevator leading up to the Transfer Level where passengers have access to the short and long-term parking garages via elevator and the East APM train that serves the South Terminal Support Development Area (rental cars, economy parking, hotel, etc.).

The new East APM Station Level is shown in **Figure 5.73**. This station will initially serve two-car trains, but is designed with the capability to serve four-car trains as passenger loads increase over time. There are two elevators at each end of the station serving the Baggage Claim Level, shown in **Figure 5.74**, the Transfer Level and station platform. Two up and two down escalators with a stair in between connect the station to the Transfer Level below. Just beyond the elevators are up escalators from baggage claim, egress stairs leading down to the Ticketing/Quad Deck Level below (**Figure 5.75**), and mechanical rooms.

**Figures 5.76 – 5.78** illustrate passenger flows through the recommended CBP alternative and the expanded Transfer Level.

Other ground level functions include a loading dock and concessions storage area that serves the terminal by way of a large service elevator with access to the expanded Transfer Level. A new mechanical plant and new cooling towers are also located on this level.

This expansion requires the demolition of the Red Side Rental Car Garage, the Marriott Hotel, HCAA Administration/Service building, existing shuttle guideways, and the FAA air traffic control tower.

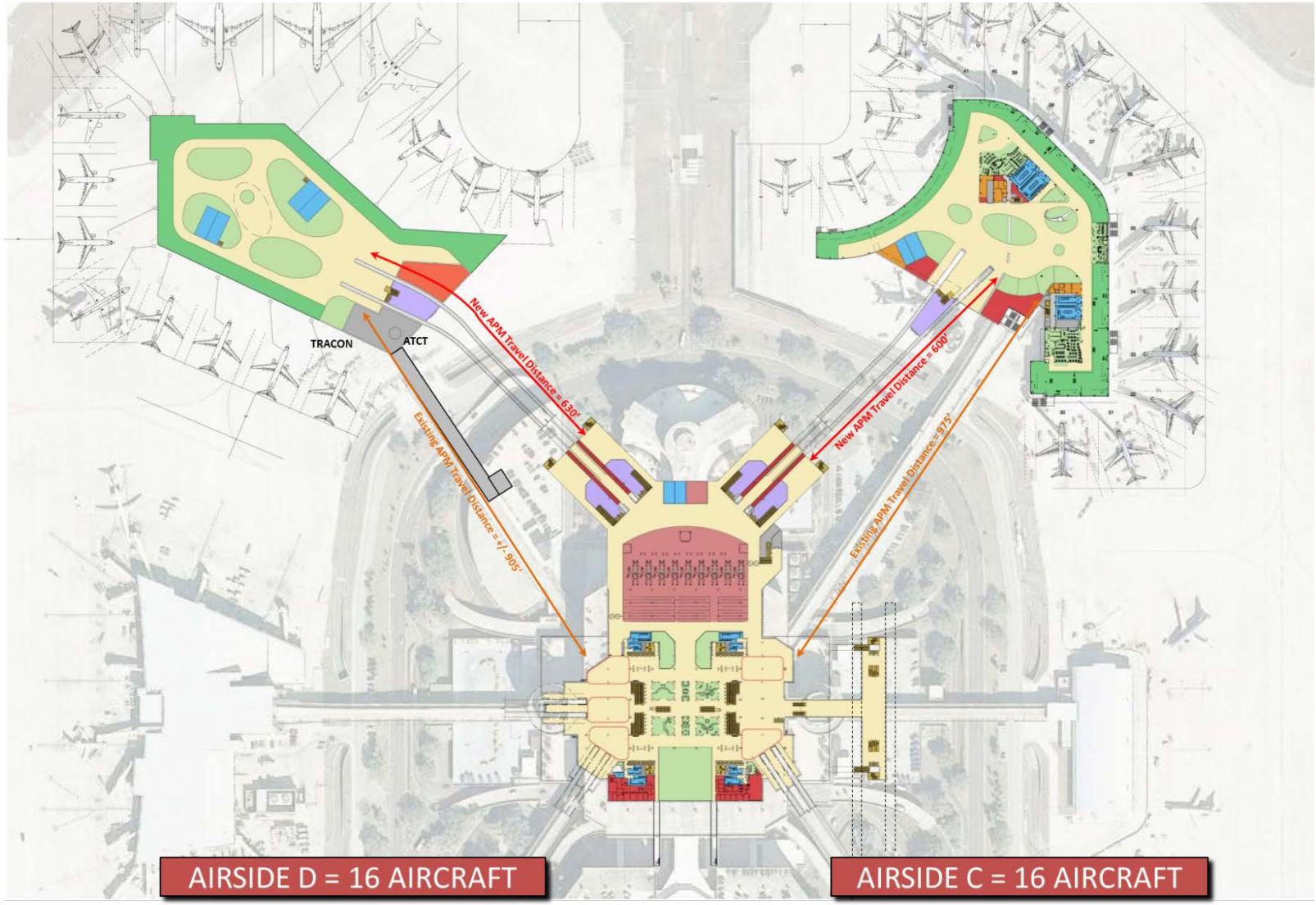


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**Figure 5.66**
**CONCEPT REFINEMENT OPTION 1: SHUTTLE WITH NO RED SIDE GARAGE**

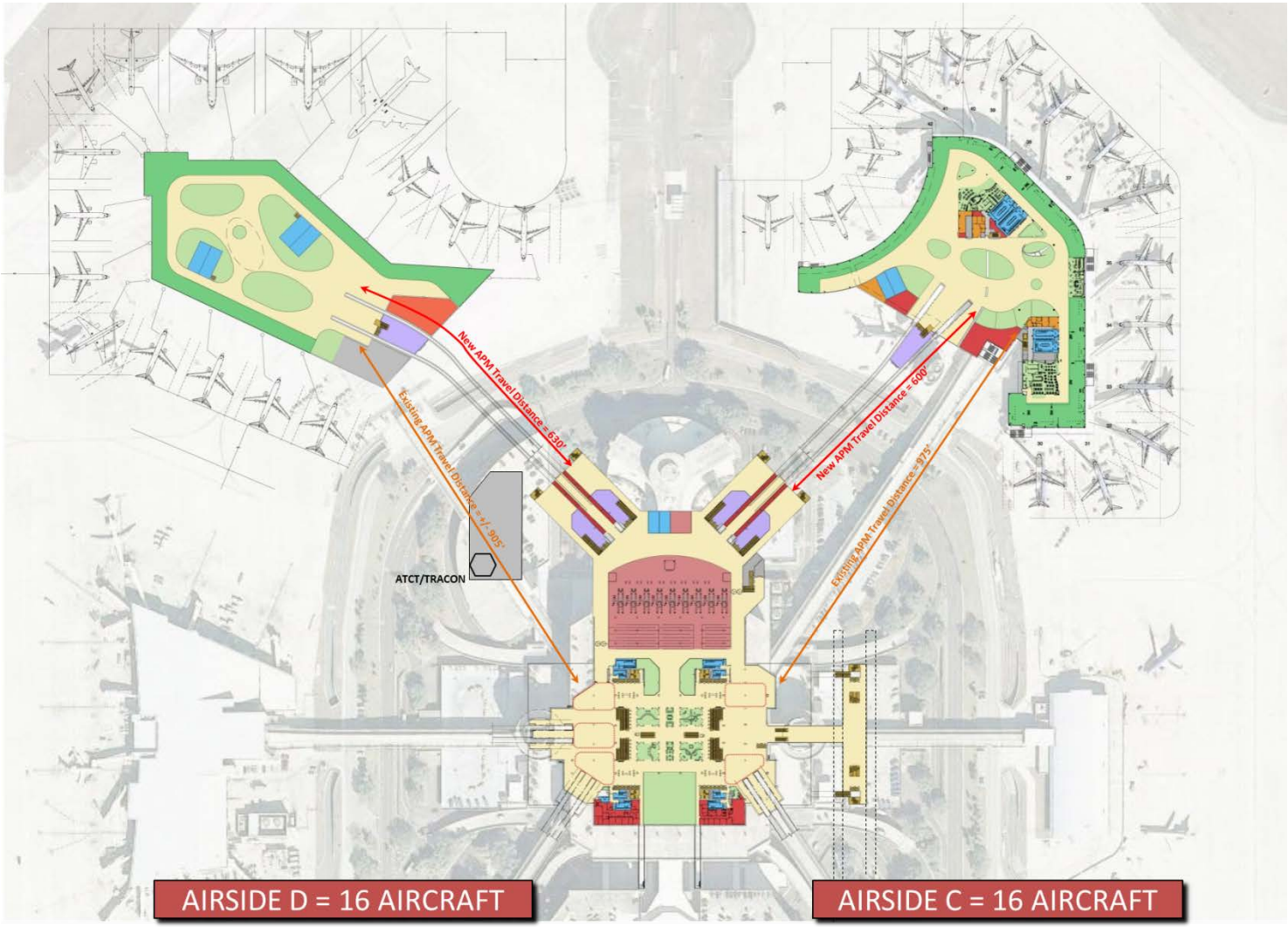


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**Figure 5.67**
**CONCEPT REFINEMENT OPTION 2: SHUTTLE WITH RED SIDE GARAGE**

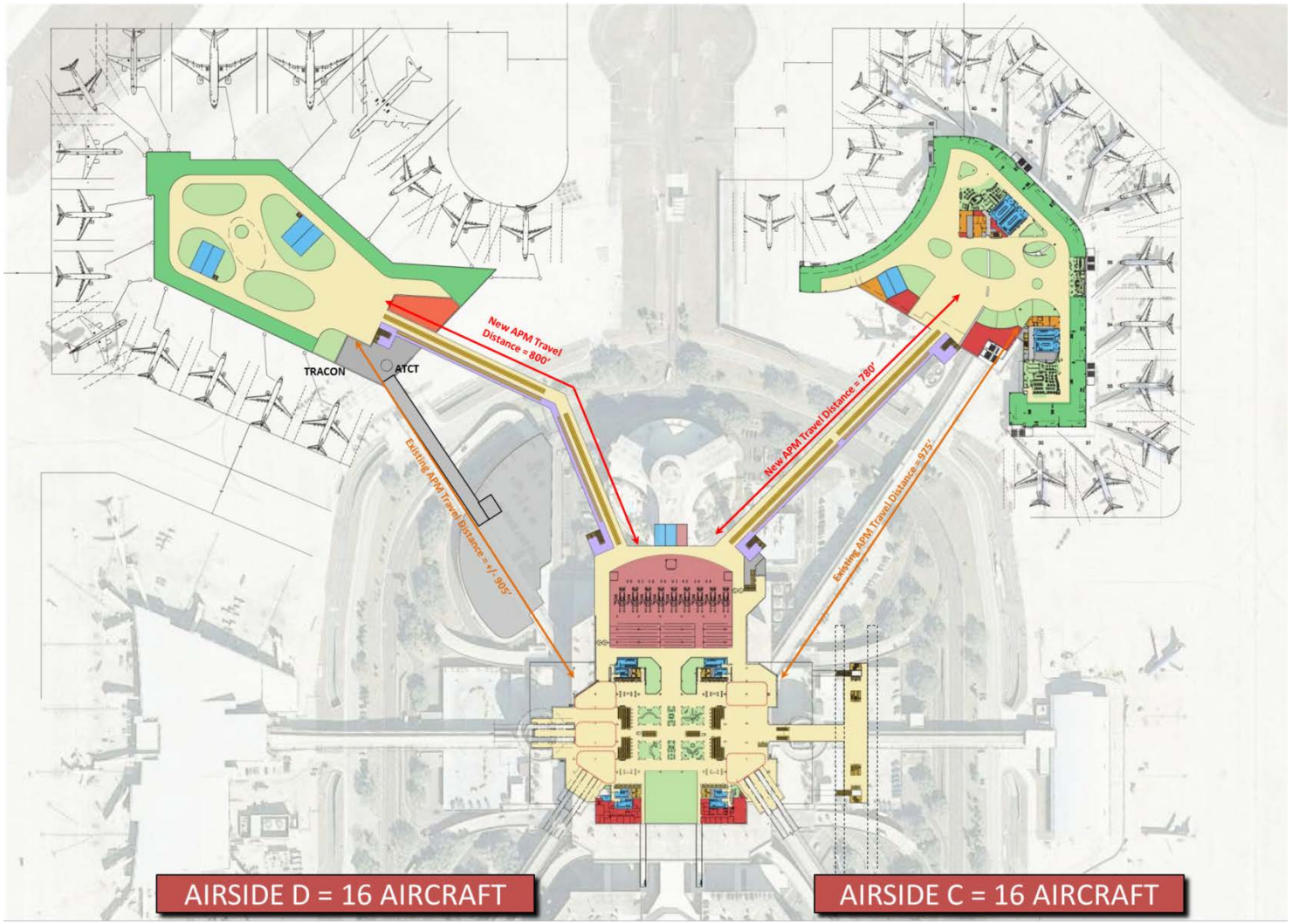


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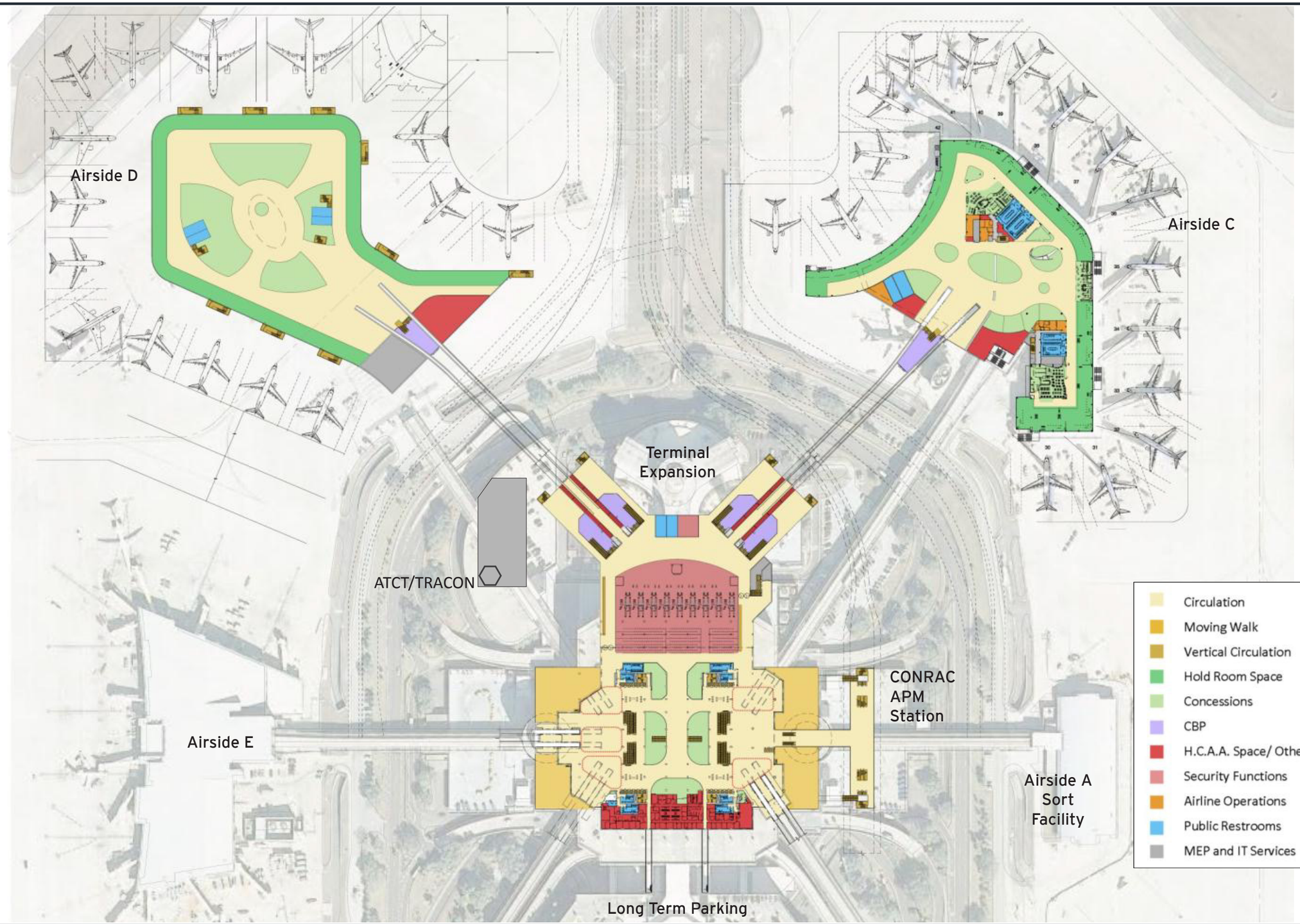
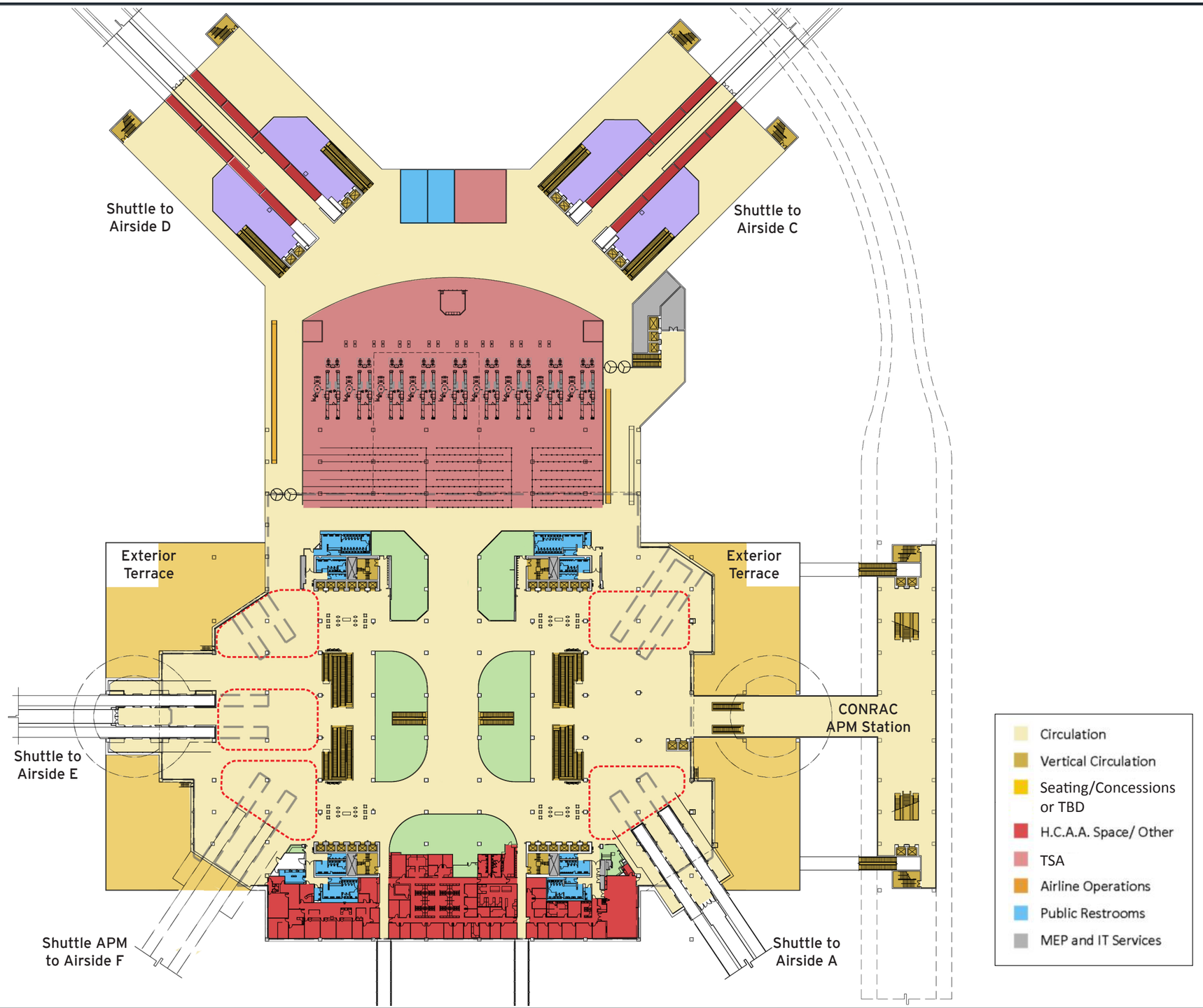
**Figure 5.68**
**CONCEPT REFINEMENT OPTION 3: PEDESTRIAN BRIDGE WITH RED SIDE GARAGE**




| | | | | | |
|---|---|---|---|---|---|
| | | HNTB | 2900 SOUTH QUINCY STREET, SUITE 200<br>ARLINGTON, VIRGINIA 22206<br>PH (703) 824-5100<br>FAX (703) 671-6210 | RECOMMENDED ALTERNATIVE | DATE:<br>May 2013 |
| | | | | TAMPA INTERNATIONAL AIRPORT<br>TAMPA, FLORIDA | FIGURE 5.69 |

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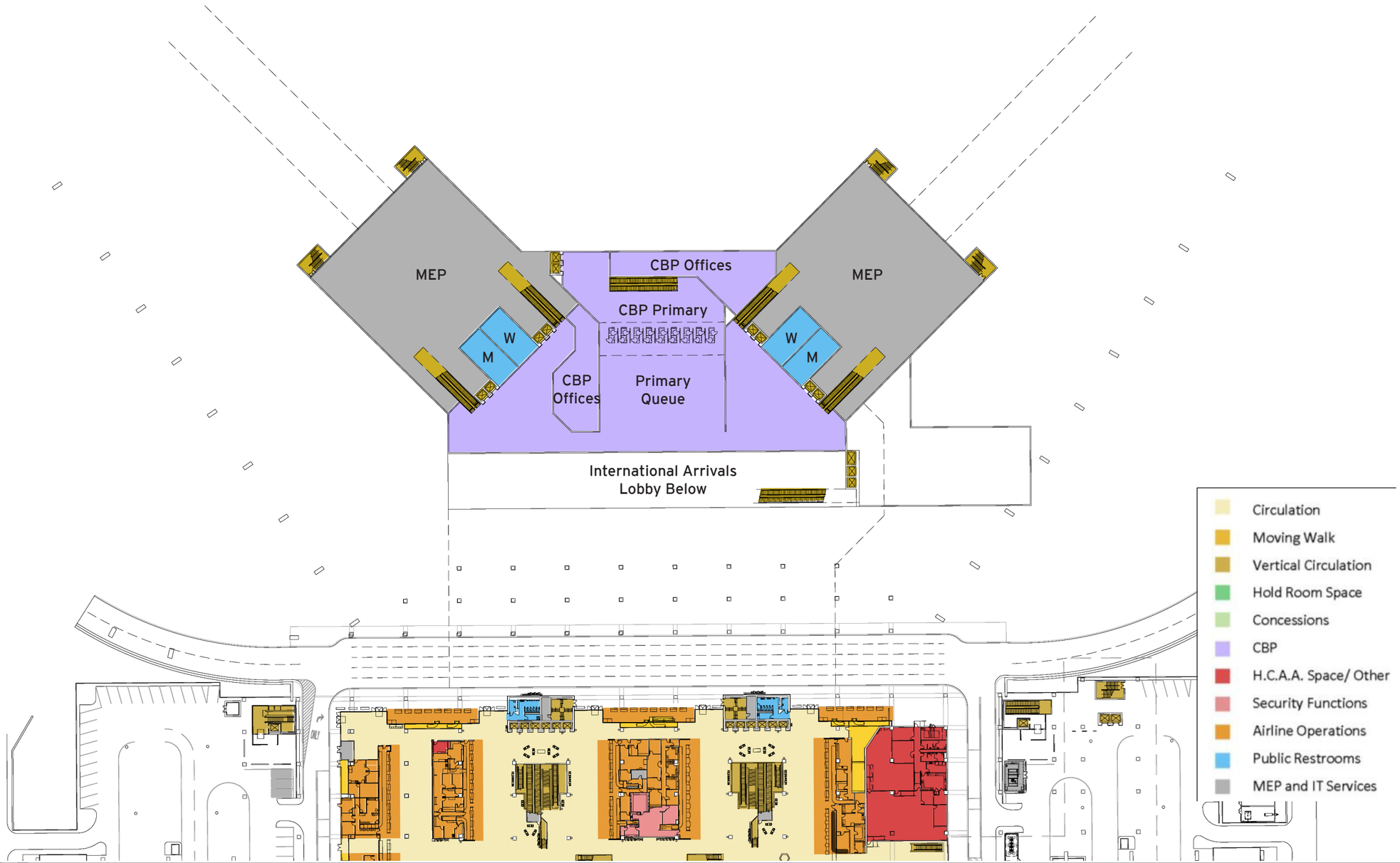
FAX (703) 671-6210

TRANSFER LEVEL- RECOMMENDED PLAN

TAMPA INTERNATIONAL AIRPORT
TAMPA, FLORIDA

DATE:
May 2013

FIGURE 5.70

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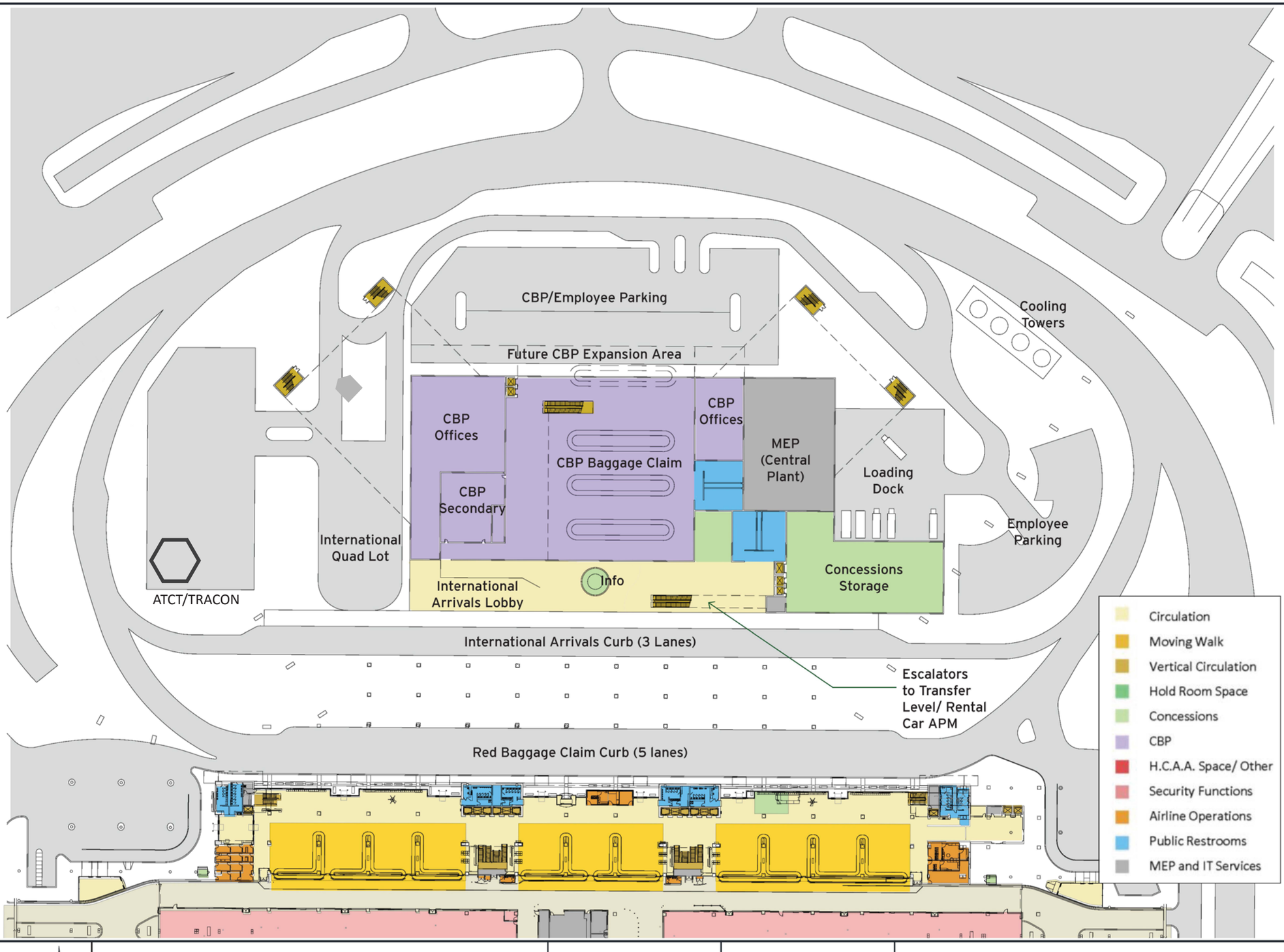
TICKETING/IMMIGRATION LEVEL- RECOMMENDED PLAN

TAMPA INTERNATIONAL AIRPORT
TAMPA, FLORIDA

DATE:
May 2013

FIGURE 5.71

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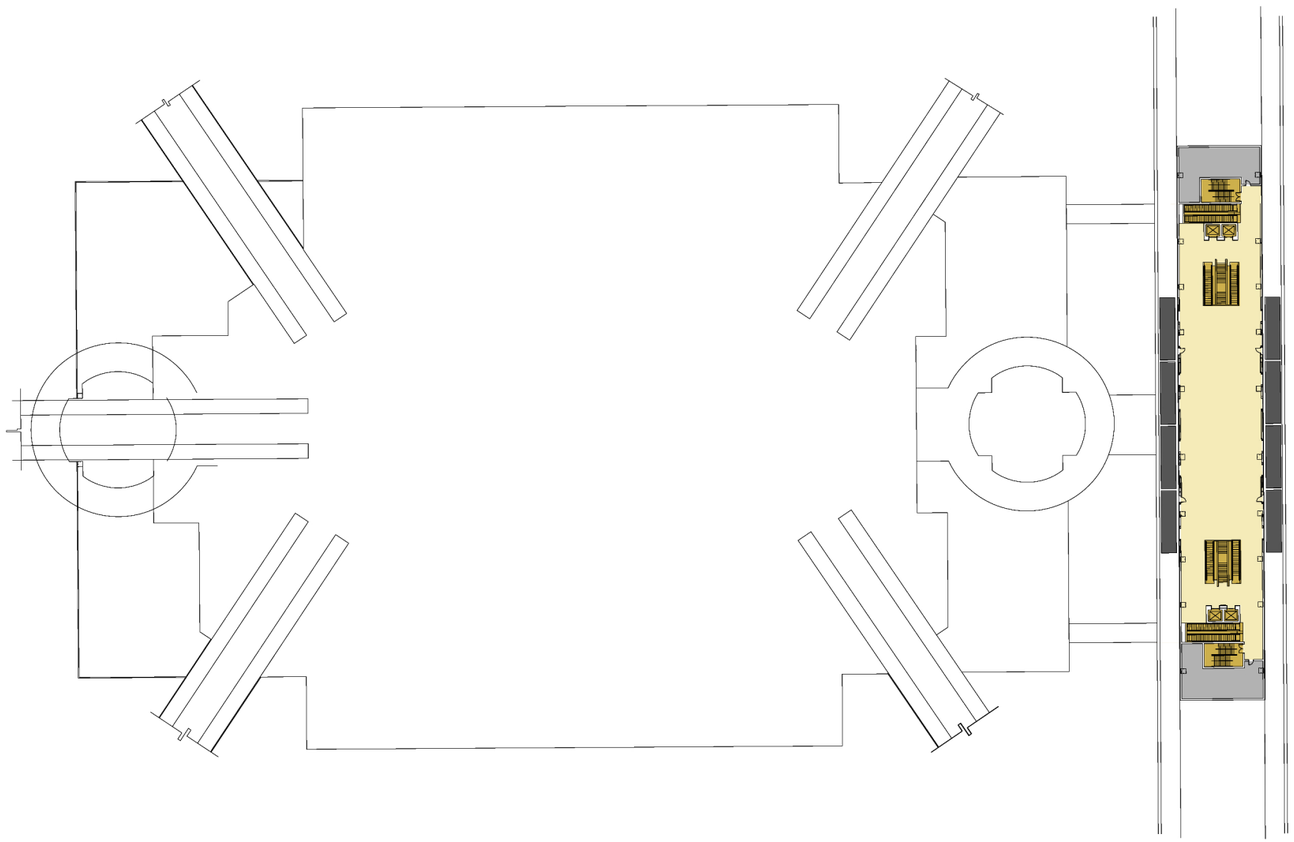
FAX (703) 671-6210

BAGGAGE CLAIM/CUSTOMS LEVEL- RECOMMENDED PLAN

TAMPA INTERNATIONAL AIRPORT
TAMPA, FLORIDA

DATE:
May 2013

FIGURE 5.72



Circulation
Vertical Circulation
MEP and IT Services

0 100' 200'

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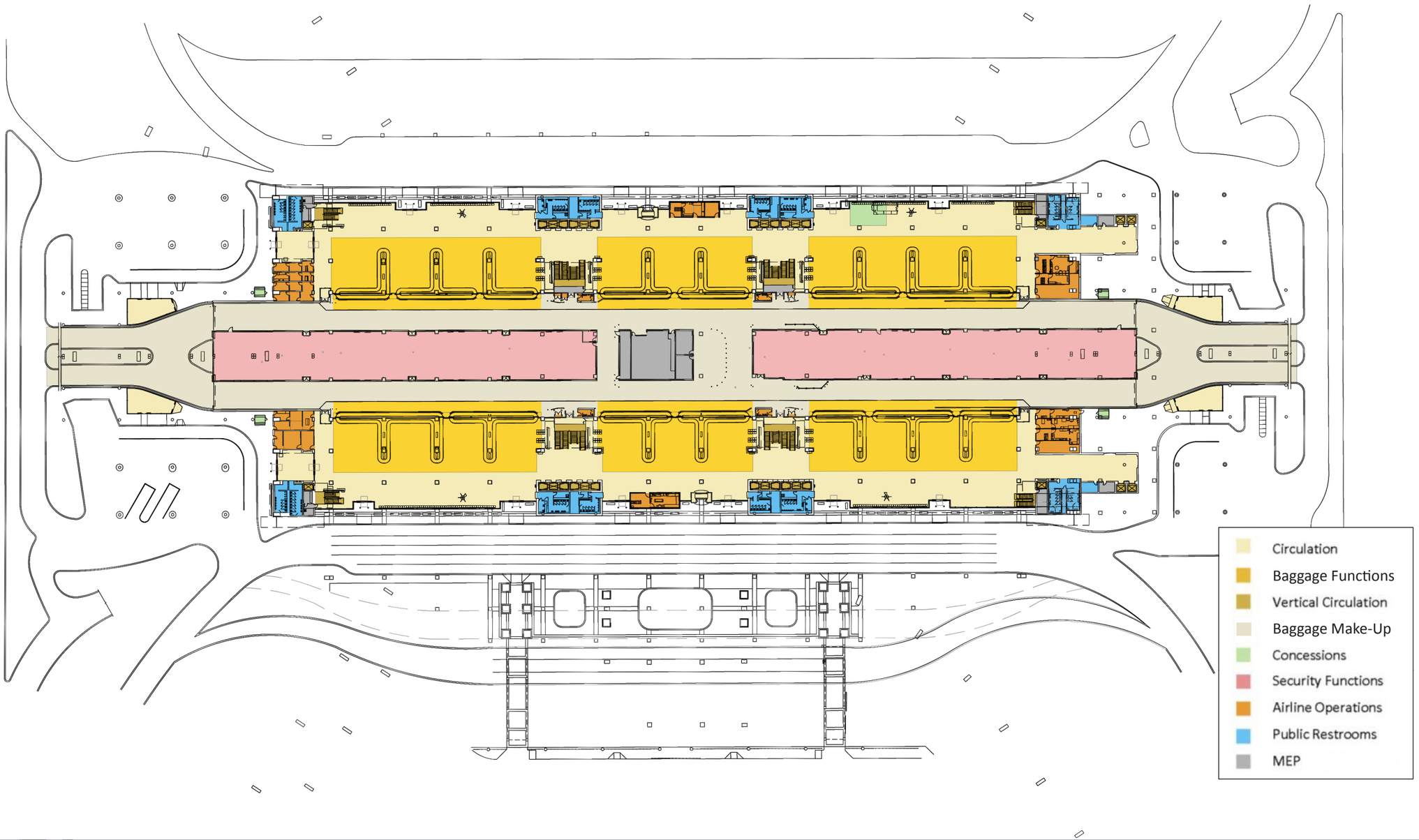
APM STATION LEVEL- RECOMMENDED PLAN

TAMPA INTERNATIONAL AIRPORT
TAMPA, FLORIDA

DATE:
May 2013

FIGURE 5.73

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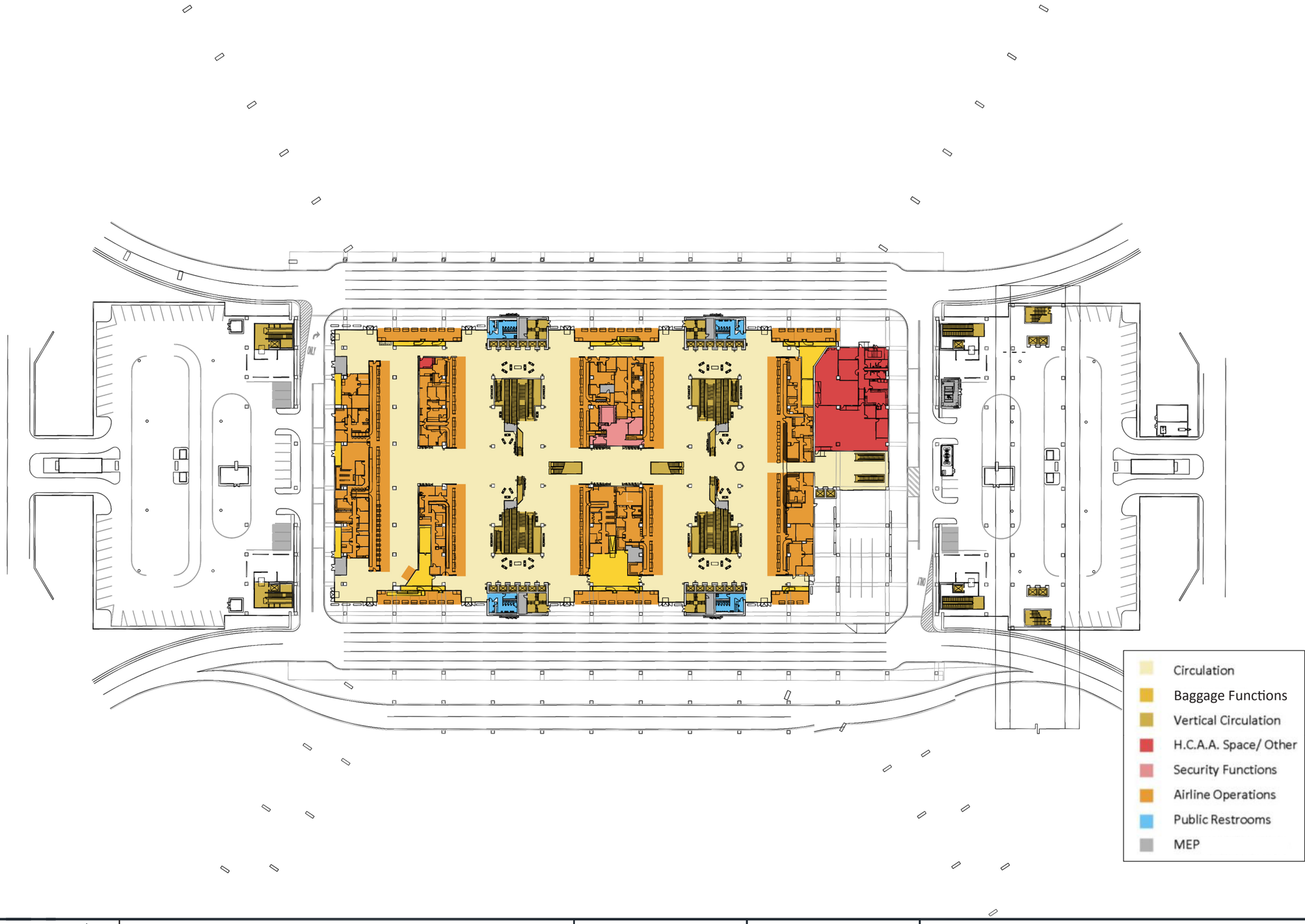
BAGGAGE CLAIM LEVEL- RECOMMENDED PLAN

TAMPA INTERNATIONAL AIRPORT
TAMPA, FLORIDA

DATE:
May 2013

FIGURE 5.74

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TICKETING LEVEL- RECOMMENDED PLAN

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TAMPA, FLORIDA

DATE:
May 2013

FIGURE 5.75

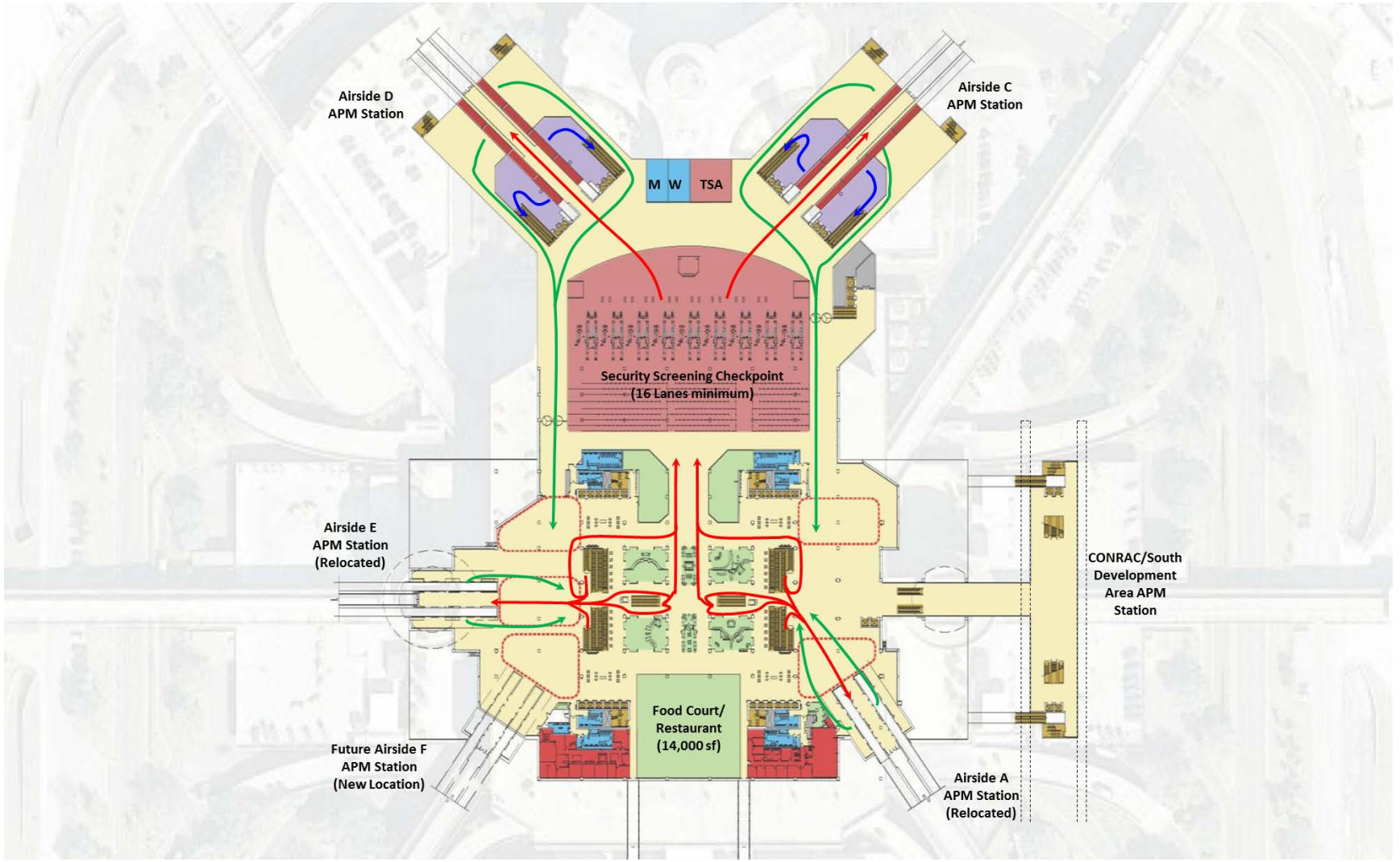


**Figure 5.76**
**OPTION 7: CBP BAGGAGE CLAIM LEVEL**

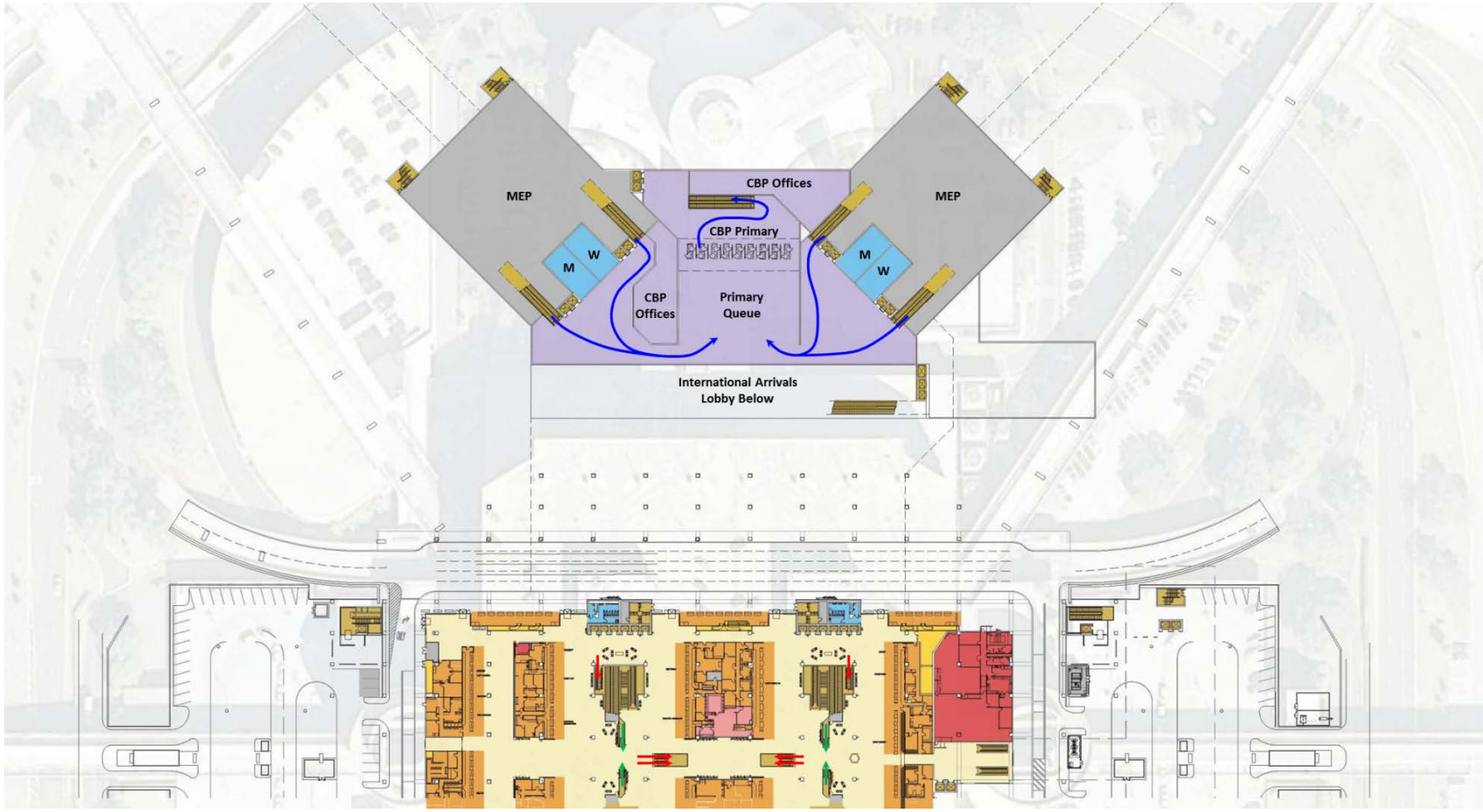


**Figure 5.77**
**OPTION 7: CBP BAGGAGE CLAIM LEVEL**

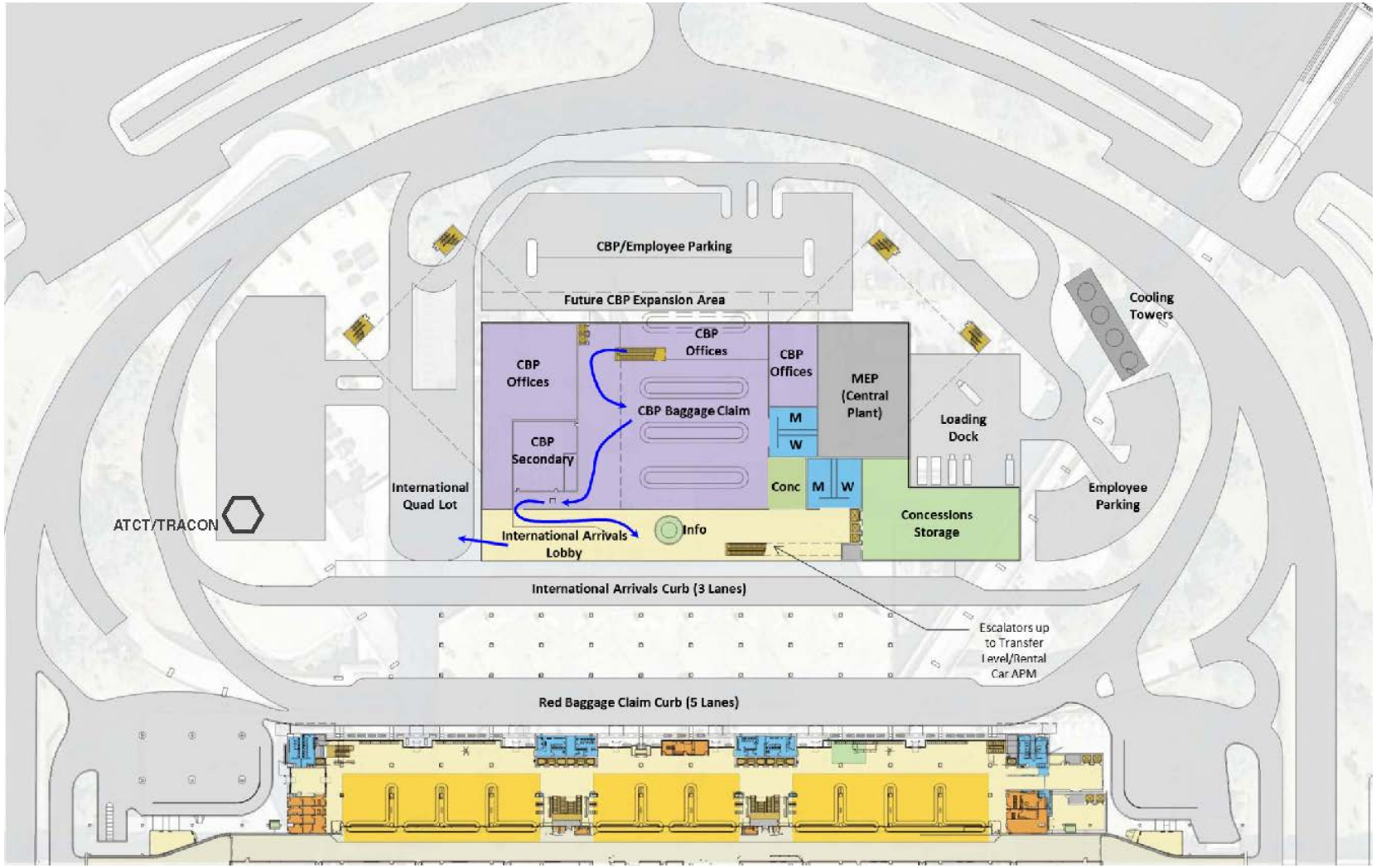


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**Figure 5.78**
**OPTION 7: CBP BAGGAGE CLAIM LEVEL**

## 5.7.8 South Expansion of Transfer Level

The north expansion of the Transfer Level creates a new security screening checkpoint for Airsides C and D that provides a number of advantages, including better passenger exposure to non-secure concessions and freeing SSCP space on the airsides that can be converted to badly needed airside concessions space, thereby meeting the facility requirements outlined in Section 4.2.8.4. Recognizing these advantages, the Master Plan Team studied ways to accomplish the same for Airsides A, E and F by expanding the Transfer Level southward and constructing a second consolidated SSCP, essentially mirroring the north expansion to the south. Unfortunately, there is insufficient space between the terminal and the long-term parking garage to construct a consolidated SSCP area sized to serve multiple airsides. The ramps leading to and from the short term parking garage limit headroom and create inefficient circulation corridors back to the shuttle stations. The garage's vehicular ramps, shown in **Figure 5.79**, also prevent the shuttle stations from being relocated between the terminal and long-term garage.

**Figure 5.80** shows a concept generated that constructs a new SSCP for Airside A in space that is currently used for concessions and HCAA administrative offices. The shuttle station for Airside A is relocated approximately 200 feet to the southeast to align with the corridor coming from the new SSCP. A new Airside E SSCP is constructed over the West Quad Deck. Passengers use a new pedestrian bridge with moving sidewalks to access Airside E. This concept creates longer walking distances for passengers and reduces exposure to a large number of concessions in the east shuttle lobby and was dismissed from further consideration.

## 5.7.9 Alternate Air Traffic Control Tower and TRACON Facility Location

An alternative site was studied by HCAA for locating the FAA ATCT and TRACON facility on the former location of the Red Side Parking Garage. This alternative site was found to be the preferred site of the Airport over the ATCT and TRACON integrated in the Airside D facility. This site will be further evaluated per the tower siting criteria and taken through the Airport Facilities Terminal Integration Laboratory (AFTIL) process for FAA approval. The latitude/longitude coordinates for this secondary ATCT site are: Latitude: 27-58-51.8234, Longitude: 82-32-09.5473 as shown in **Figure 5.81**. This alternative co-locates the FAA ATCT and TRACON with its secure parking lot.

**Figure 5.79**
**TERMINAL IMAGES – SOUTH FAÇADE**

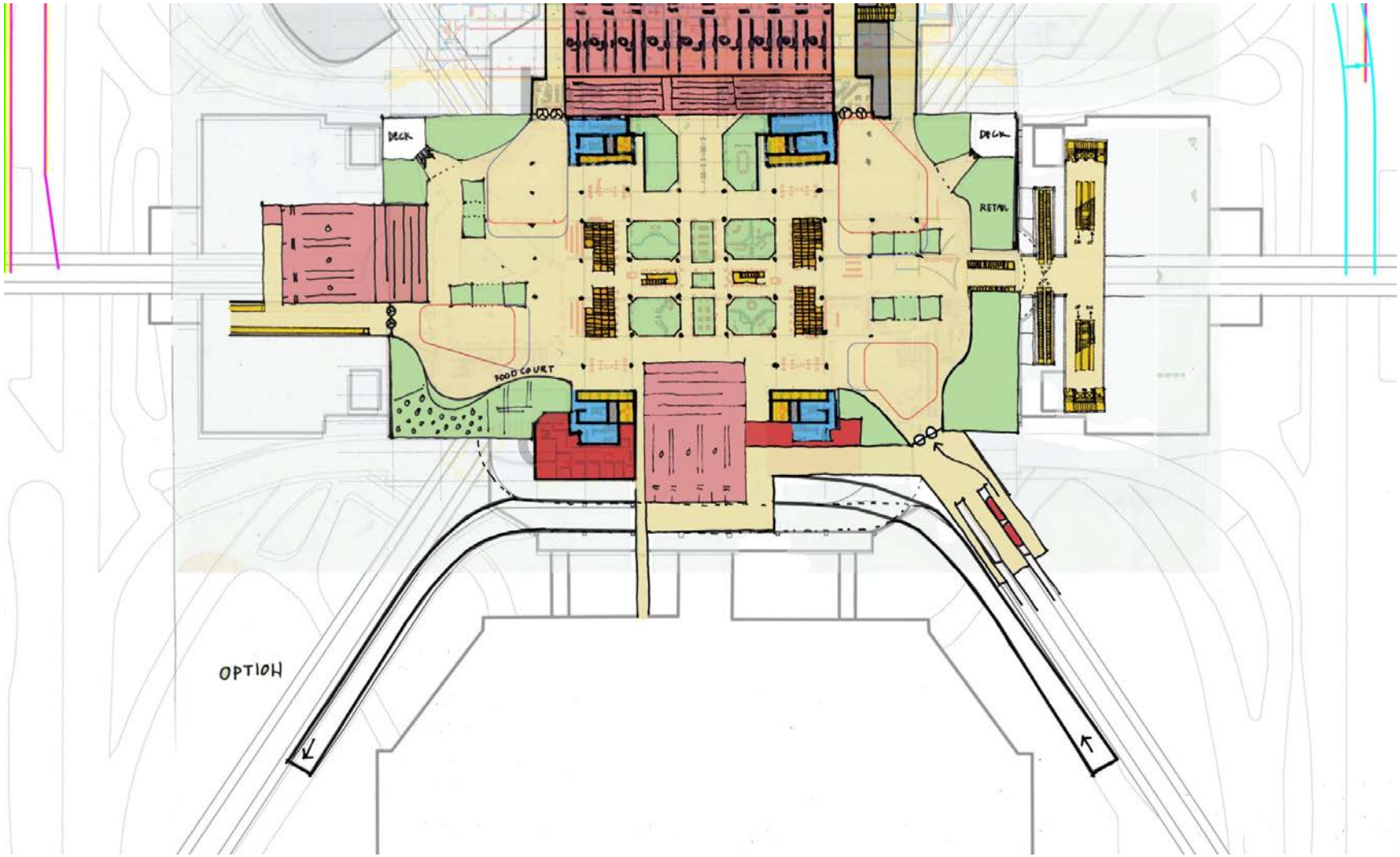


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**Figure 5.80**
**TERMINAL SSCP CONCEPT – TRANSFER LEVEL**

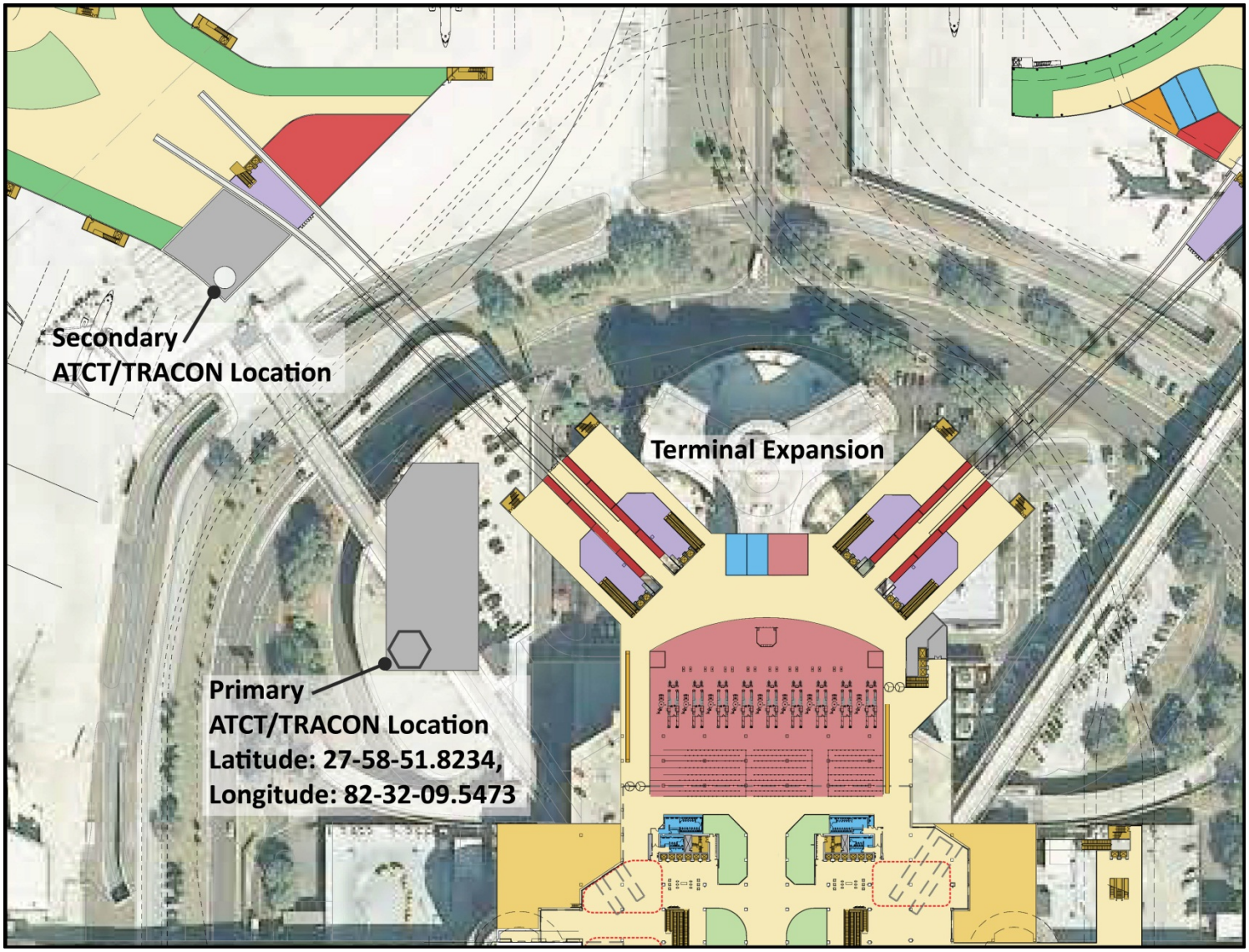


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**Figure 5.81**
**ALTERNATE FAA AIRPORT TRAFFIC CONTROL TOWER AND TRACON LOCATION**

## 5.7.10 Airside Improvements

### 5.7.10.1 Airside Concessions

The facility requirements for concessions reveal large deficiencies at each airside, particularly in the areas of retail, duty free and specialty services. The Master Plan Team studied ways to add concessions through two methods:

1) Relocating the SSCP at each airside to the Transfer Level in the terminal to free space on the airside for additional concessions, and

2) Working closely with the Authority's concession consultant, Unison, to identify areas where concessions may be added within each airside without impacting airline or airport operations.

The airsides were reviewed to determine if it is practical to expand the boarding level to add new concessions space. Each airside is well surrounded with aircraft apron, shuttle guideways, loading docks, mechanical cooling towers and service vehicle parking. Airside E was the only airside that had potential expansion space (on its east side), but internally, access to this space is impractical due to existing restrooms, mechanical rooms and shafts.

When concepts for the Transfer Level began to incorporate security screening checkpoints, the Master Plan Team quickly came to the realization that significant area can be recovered for concessions when the SSCP at each airside is relocated. **Figures 5.82 – 5.85** illustrate concepts for replacing the SSCP with new concessions. **Figure 5.86** shows a concept for Airside E that was developed to complement the idea of replacing the Airside E shuttle guideway with a pedestrian bridge and moving sidewalks. The existing SSCP is situated on a sloped floor, creating a less than optimal working environment for TSA staff. By eliminating the shuttle between Airside E and the Terminal, the SSCP can be relocated to the former shuttle station, which is flat. Approximately 5,040 sf of new, tiered concessions can be constructed along the ramp that runs between the new SSCP and the concourse circulation corridor.

In October 2012, the HCAA Concessions staff, Unison Consulting and the Master Plan Team toured the terminal and all four airsides reviewing potential locations to add concessions without adversely impacting airline or airport operations. The Master Plan Team performed holdroom calculations to identify if and where excess holdroom space exists. Various "back of house" spaces were identified as potential spaces that may be converted to concessions and some circulation spaces were considered as well. The results of this joint analysis are shown in **Figures 5.87 -5.91**.

### 5.7.10.2 Airside C Expansion

Relocating the SSCP to the terminal and constructing a new Airside C shuttle system allows a central entry in between the existing Airside C and the expansion, with ample space to fulfill the concessions program requirements. **Figure 5.92** shows the expanded Boarding Level with its 37,600 SF increase in concession space, creating a total concession area of 58,400 SF. The expansion also allows for an additional baggage make-up carousel and space for airline operations at the Ramp Level, shown in **Figure 5.93**.

The Airside C expansion accommodates the same number of gates as today. If and when international traffic is served at Airside C, three to five of the gates may be configured with vertical circulation cores to access a sterile corridor system on the mezzanine, or third level, as shown in **Figure 5.94**. The sterile corridor leads to a shuttle station where passengers board a sterile train to take them to the CBP facility in the terminal.

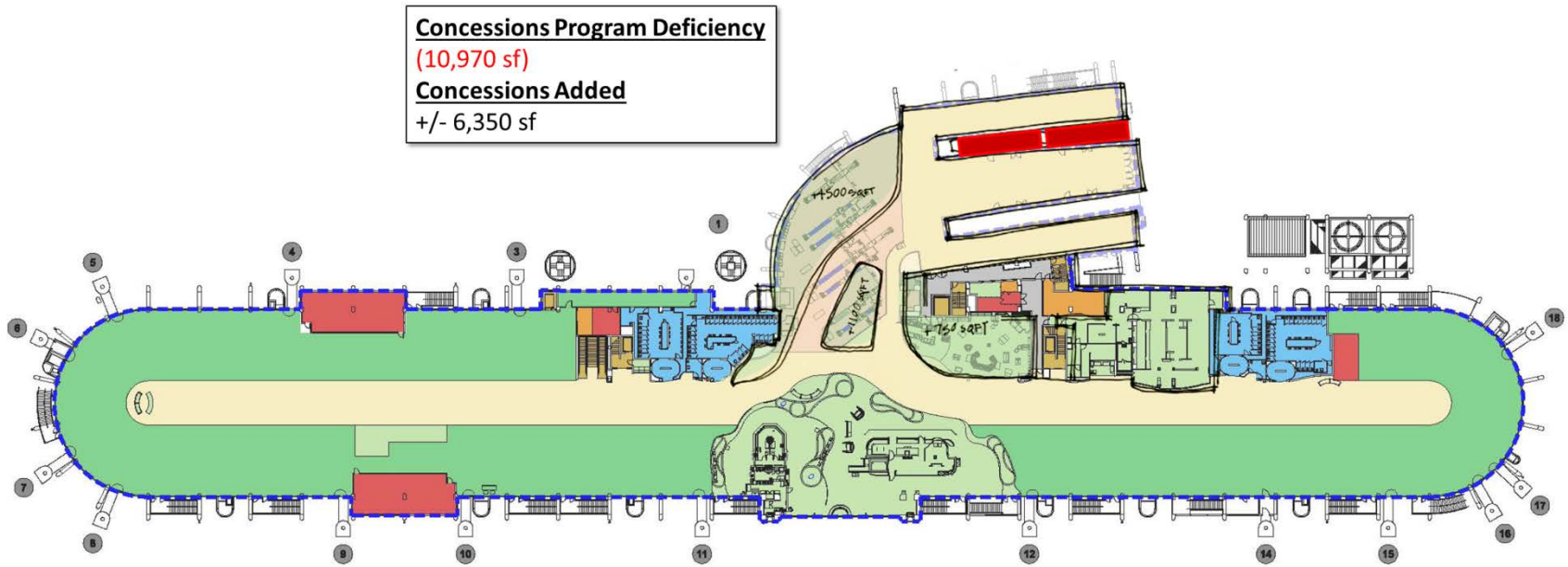
A walking distance analysis was conducted to compare the time it takes for a passenger to travel from the curb, go to ticketing, board the shuttle, travel to Airside C and process through the SSCP versus the time it takes to follow a similar route in the recommended alternative. Some components of this analysis are constant, such as the escalator ride (20 seconds) and the checkpoint processing time (10 minutes). As a worst case scenario, the calculations assume the passenger arrives at the shuttle station just as the train doors are closing and he or she must wait for the next train cycle.

The results of the walking distance analysis for a passenger going to Airside C in the proposed concept are shown in **Figure 5.95**. The overall unassisted walking distance is 165 feet longer. However, largely because of the shorter train cycle, the travel time for a passenger in the new concept is about 20 seconds shorter than for a passenger traveling to Airside C today. The overall unassisted travel distance meets the goal of being less than 700 feet, total.

#### 5.7.10.3 Future Airside D

The recommended concept for Airside D maximizes the number of gates that can be developed in the Main Terminal area. Airside D will replace Airside F with 16 domestic/international swing gates. Ten gates have access to vertical circulation cores connecting international arriving passengers to a mezzanine level sterile corridor system, shown in **Figure 5.96**. These ten gates are split between the north and the south sides of the Airside in order to provide greater flexibility for airline assignment. Airside D accommodates two airline clubs on its mezzanine level and meets the concessions requirements of 39,400 SF (a 25,000 SF increase over existing Airside F concessions) on the Boarding Level (see **Figure 5.97**). A new Air Traffic Control Tower and TRACON are integrated into Airside D at the southeast end. **Figure 5.98** shows the ramp level, which contains baggage make-up devices, inbound baggage drop-off belts, airline operations areas, loading dock, shuttle maintenance facility, ATCT offices and the FAA TRACON.

**Figure 5.99** shows a walking distance analysis conducted for Airside D. The analysis follows a typical British Airways passenger from curbside to airside. The assumptions are the same as the Airside C walking distance analysis above. A passenger walks about 110 feet further in the new concept. However, the travel time is about nine seconds less in the recommended plan. The total unassisted travel distance meets the goal of being less than 700 feet.




0 100' 200'

HNTB

**Figure 5.82**
**AIRSIDE A – CONCESSIONS OPPORTUNITIES AFTER SSCP RELOCATION**

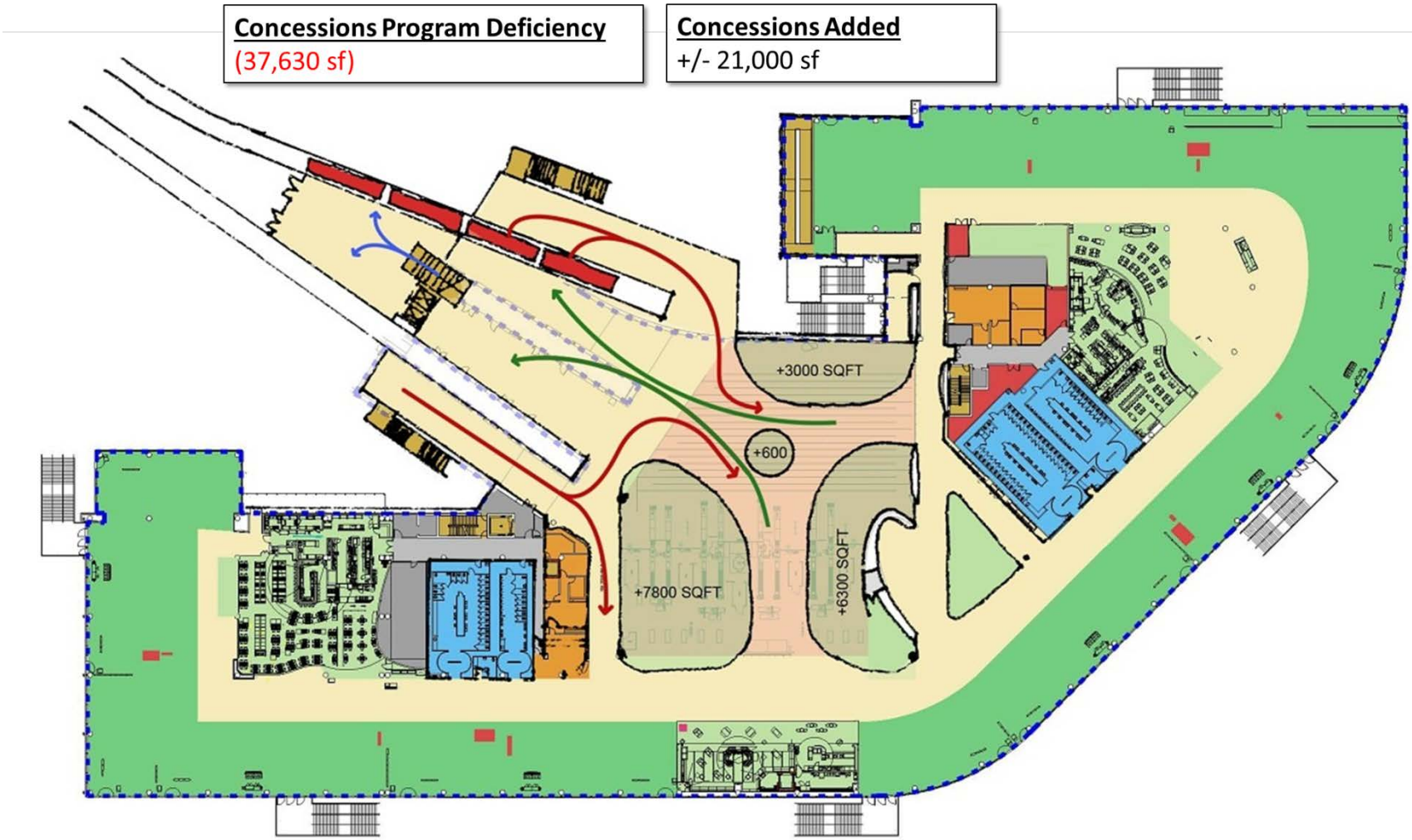



**Figure 5.83**
**AIRSIDE C – CONCESSIONS OPPORTUNITIES AFTER SSCP RELOCATION**

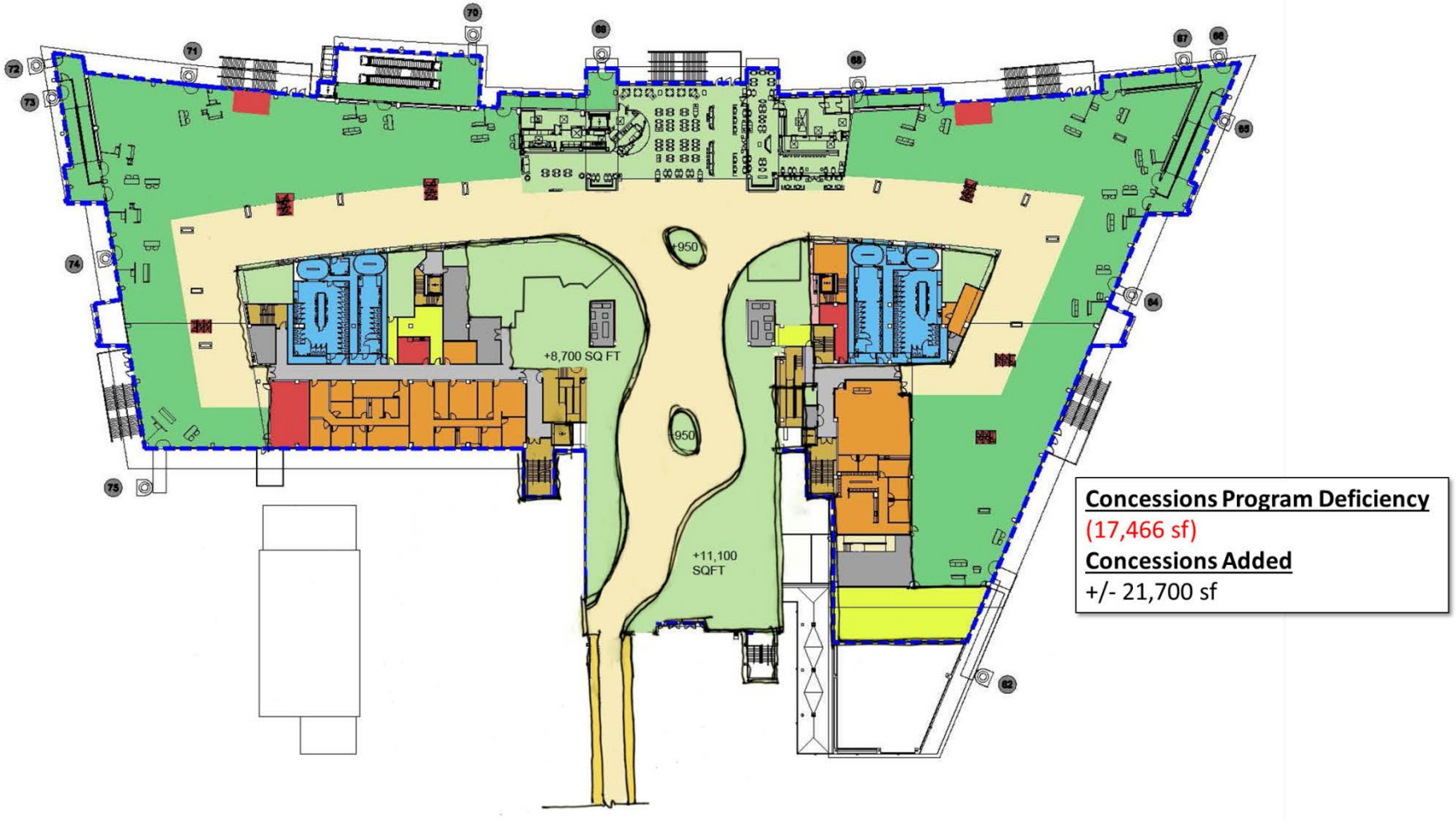



**Figure 5.84**
**AIRSIDE E – CONCESSIONS OPPORTUNITIES AFTER SSCP RELOCATION**

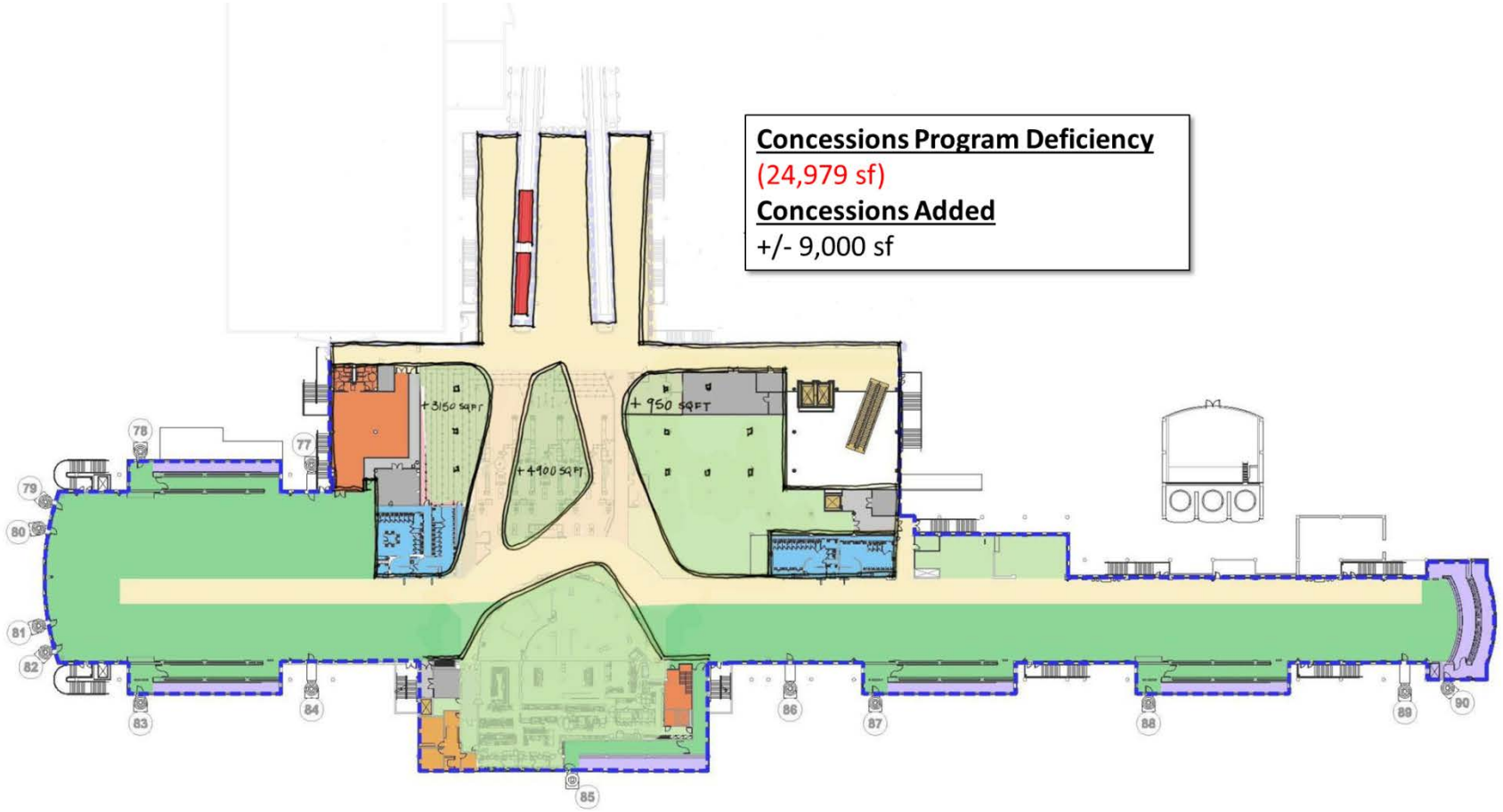



**Figure 5.85**
**AIRSIDE F – CONCESSIONS OPPORTUNITIES AFTER SSCP RELOCATION**

0 100' 200'

HNTB

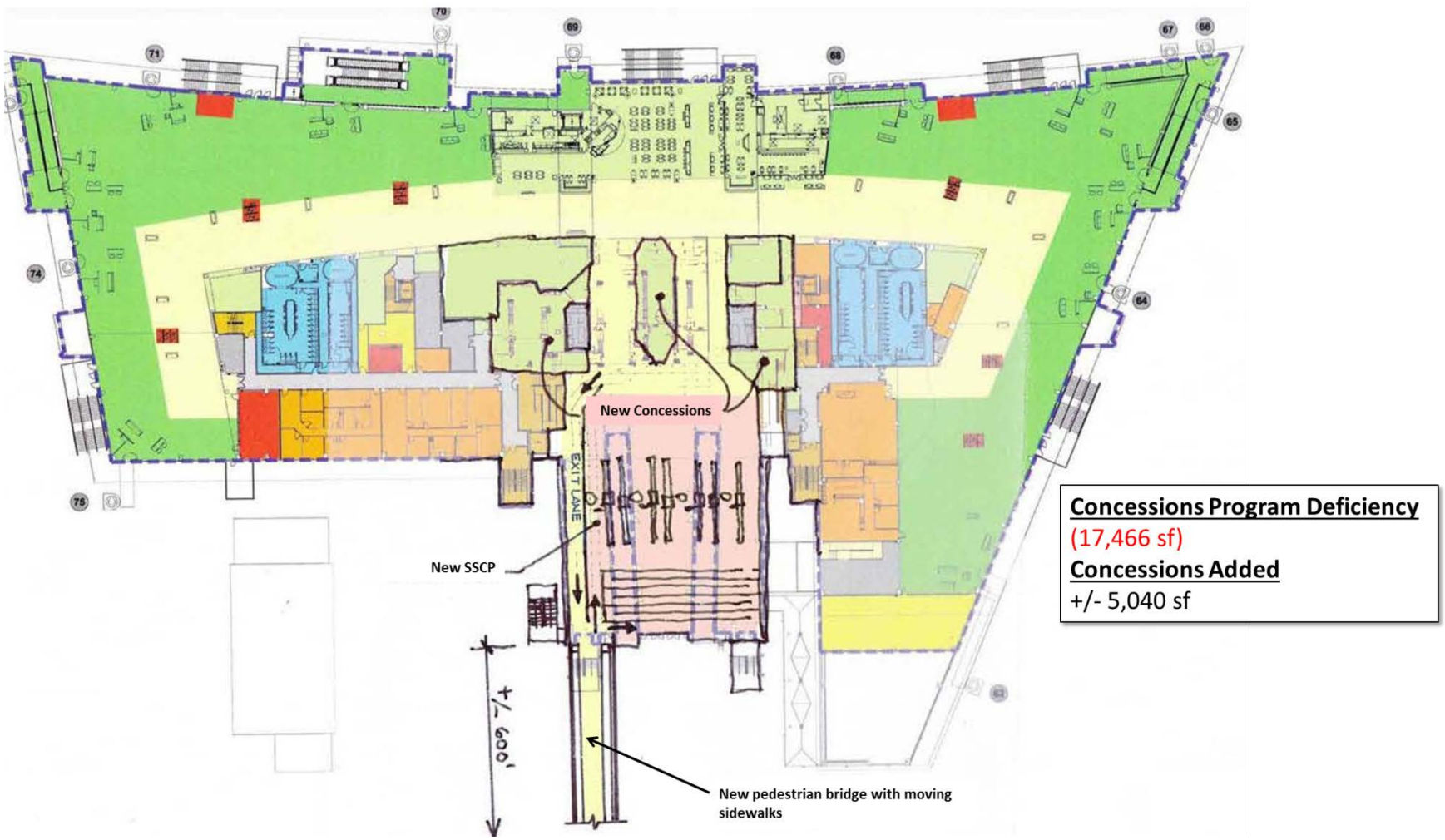
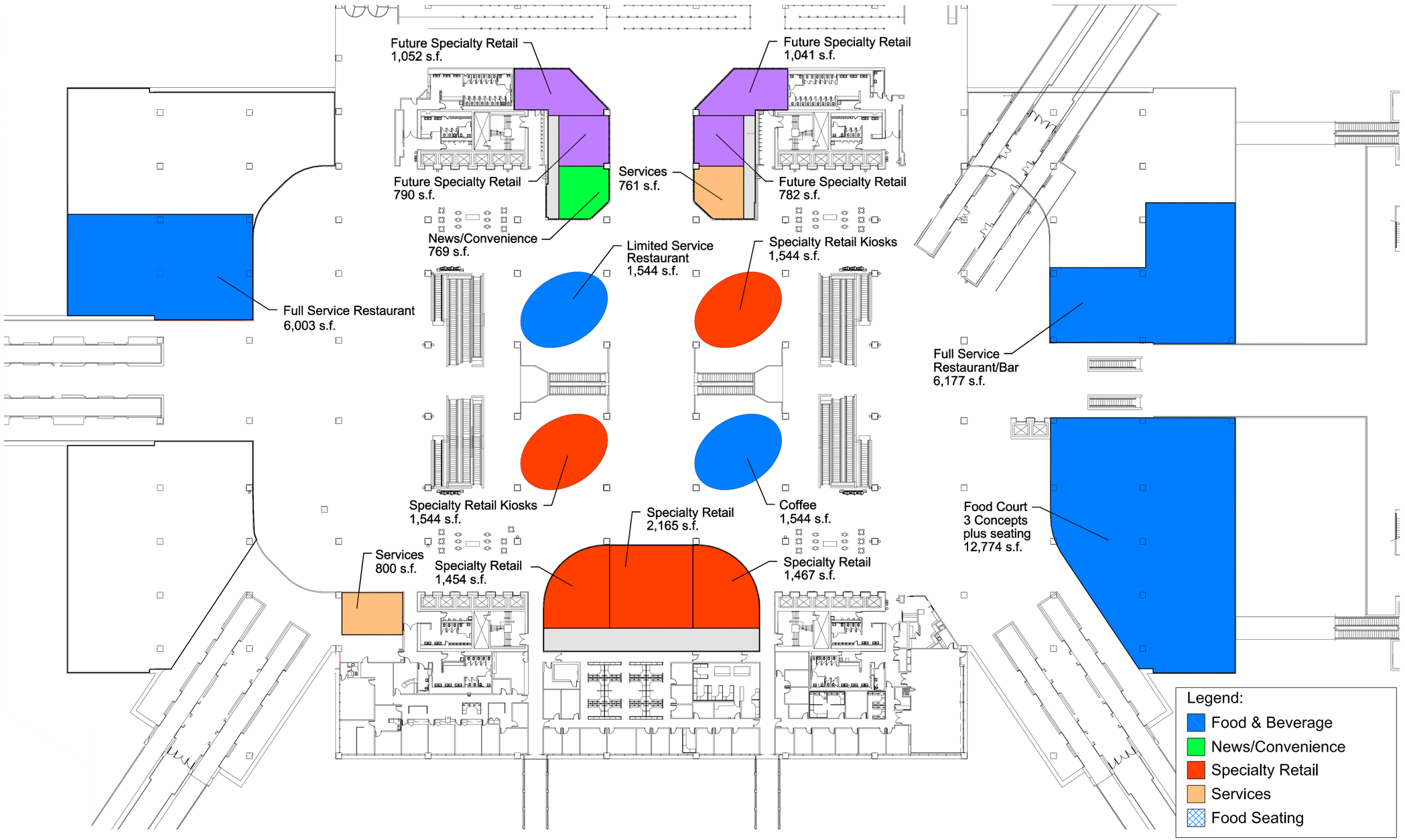



**Figure 5.86**
**AIRSIDE E: SSCP AT FORMER SHUTTLE STATION**




0 10' 25' 50' 75' 100'

Source: Unison Consulting, March 2013

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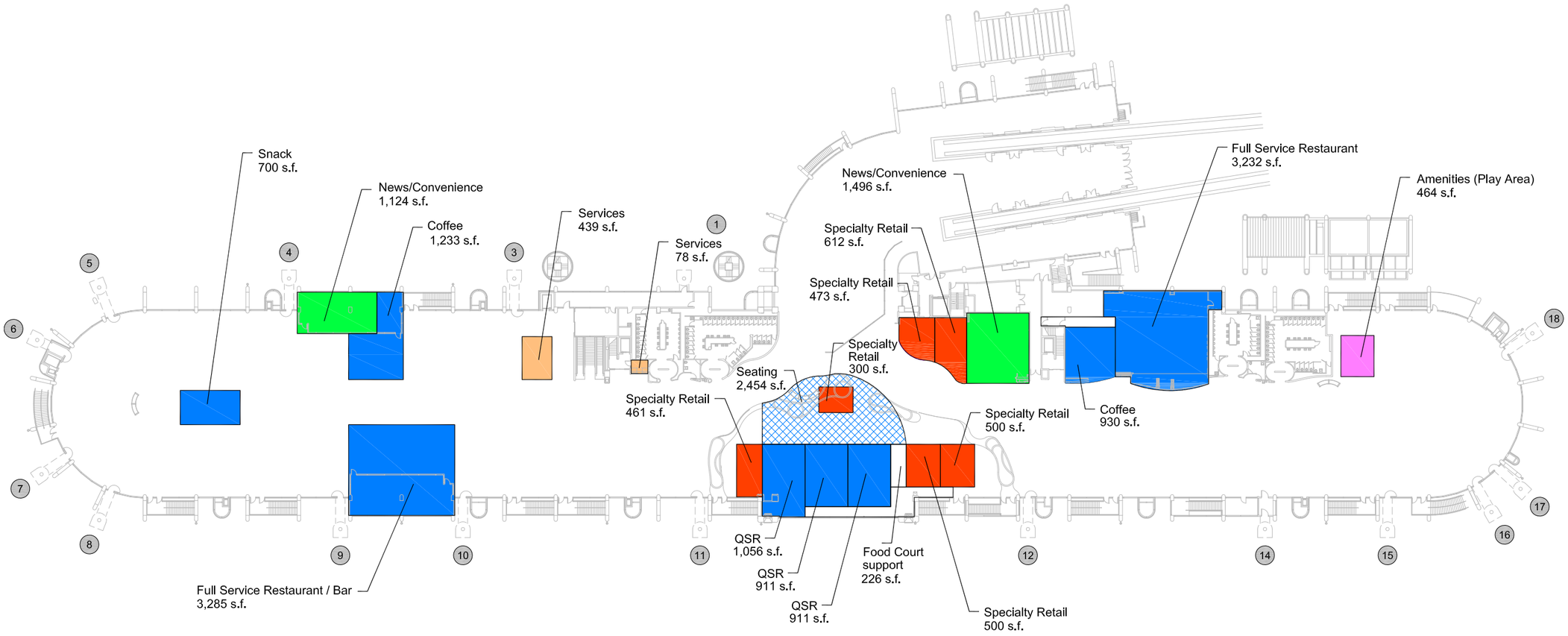
TRANSFER LEVEL- CONCESSIONS PLAN

TAMPA INTERNATIONAL AIRPORT
TAMPA, FLORIDA

DATE:
May 2013

FIGURE 5.87




Legend:
- Food & Beverage
- News/Convenience
- Specialty Retail
- Services
- Food Seating

0 10' 25' 50' 75' 100'

Source: Unison Consulting, March 2013

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# AIRSIDE A BOARDING LEVEL- CONCESSIONS PLAN

TAMPA INTERNATIONAL AIRPORT
TAMPA, FLORIDA

DATE:
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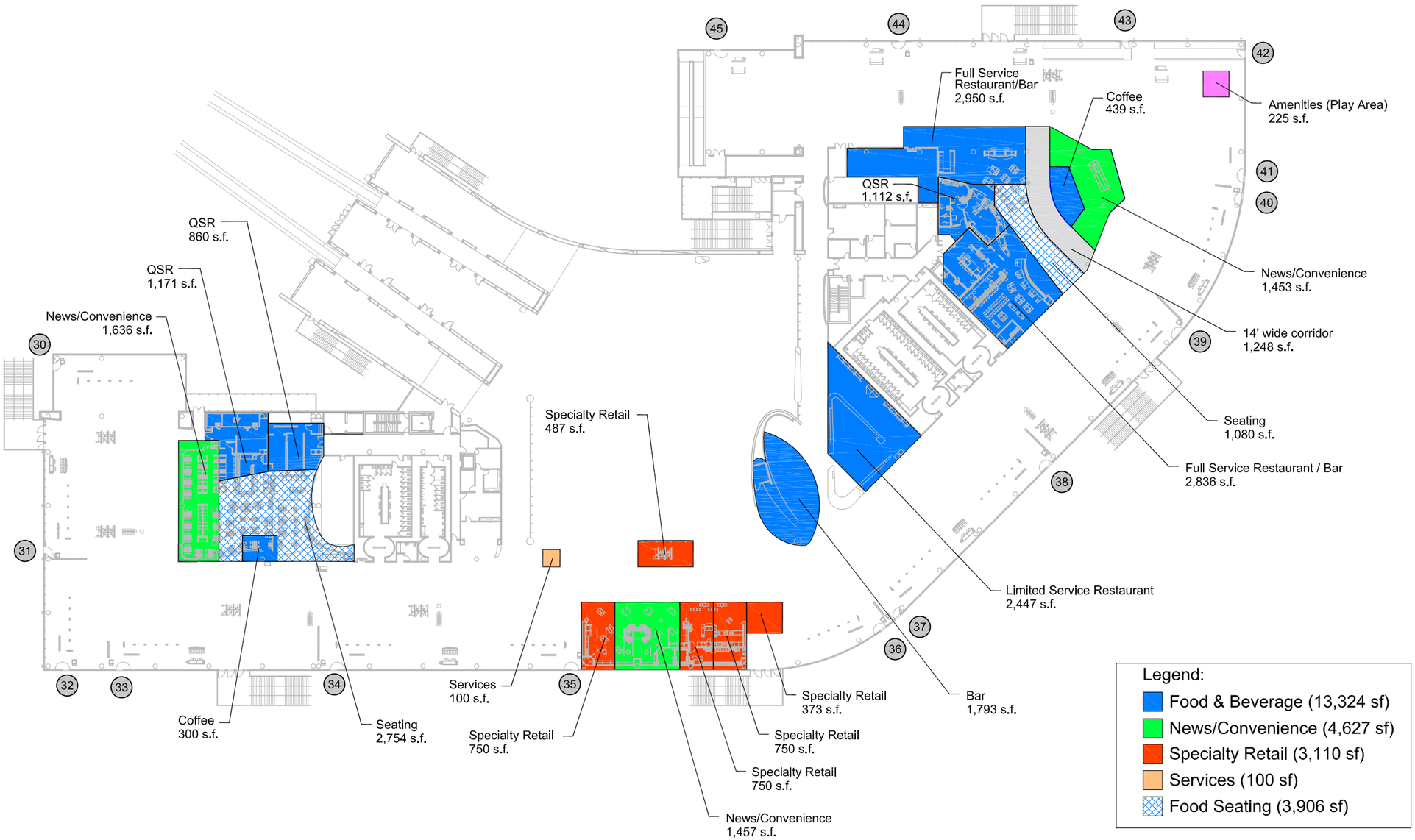
FIGURE 5.88




0 10' 25' 50' 75' 100'

Source: Unison Consulting, March 2013

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AIRSIDE C BOARDING LEVEL- CONCESSIONS PLAN

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DATE:
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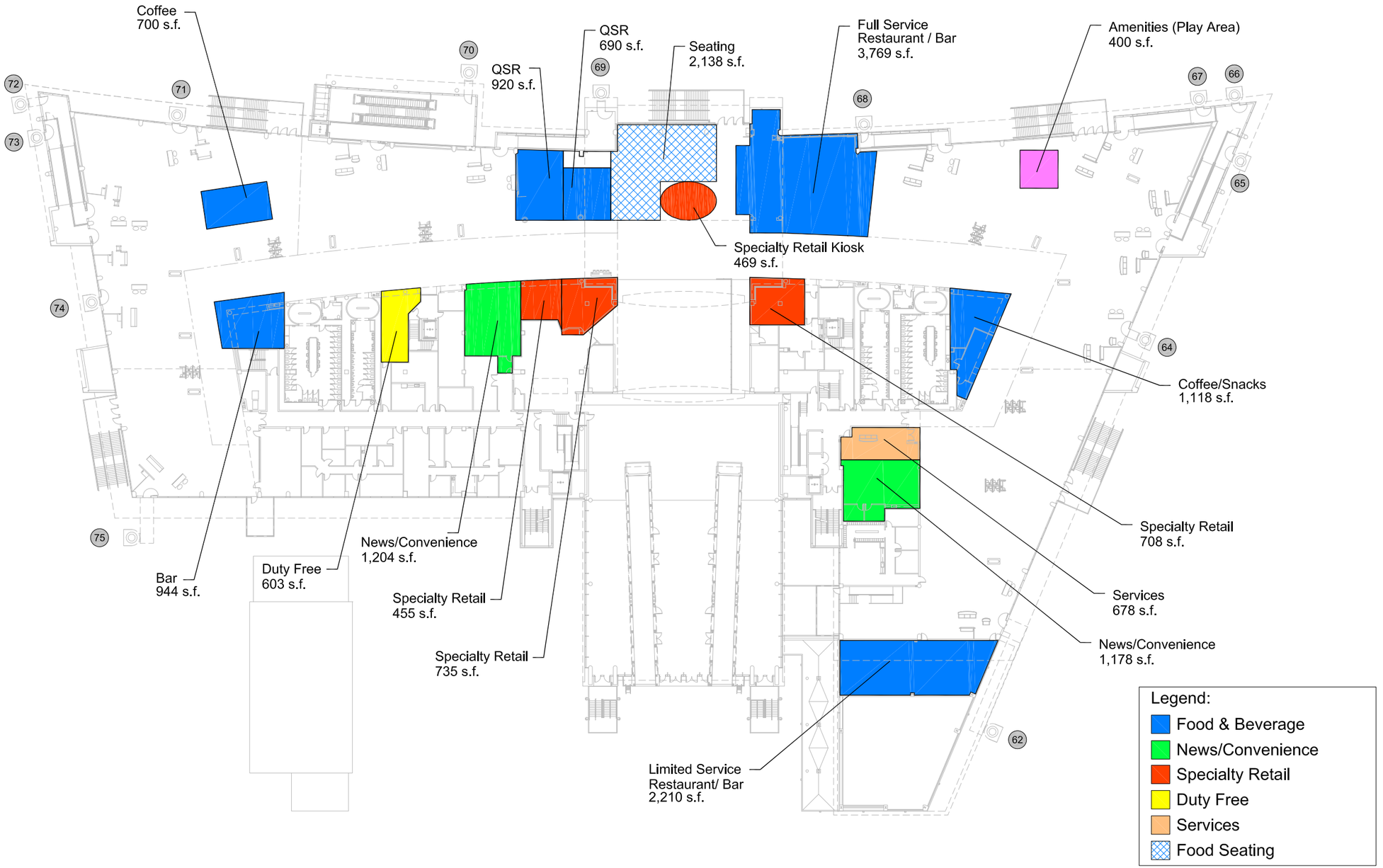
FIGURE 5.89




0 10' 25' 50' 75' 100'

Source: Unison Consulting, March 2013

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AIRSIDE E BOARDING LEVEL- CONCESSIONS PLAN

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DATE:
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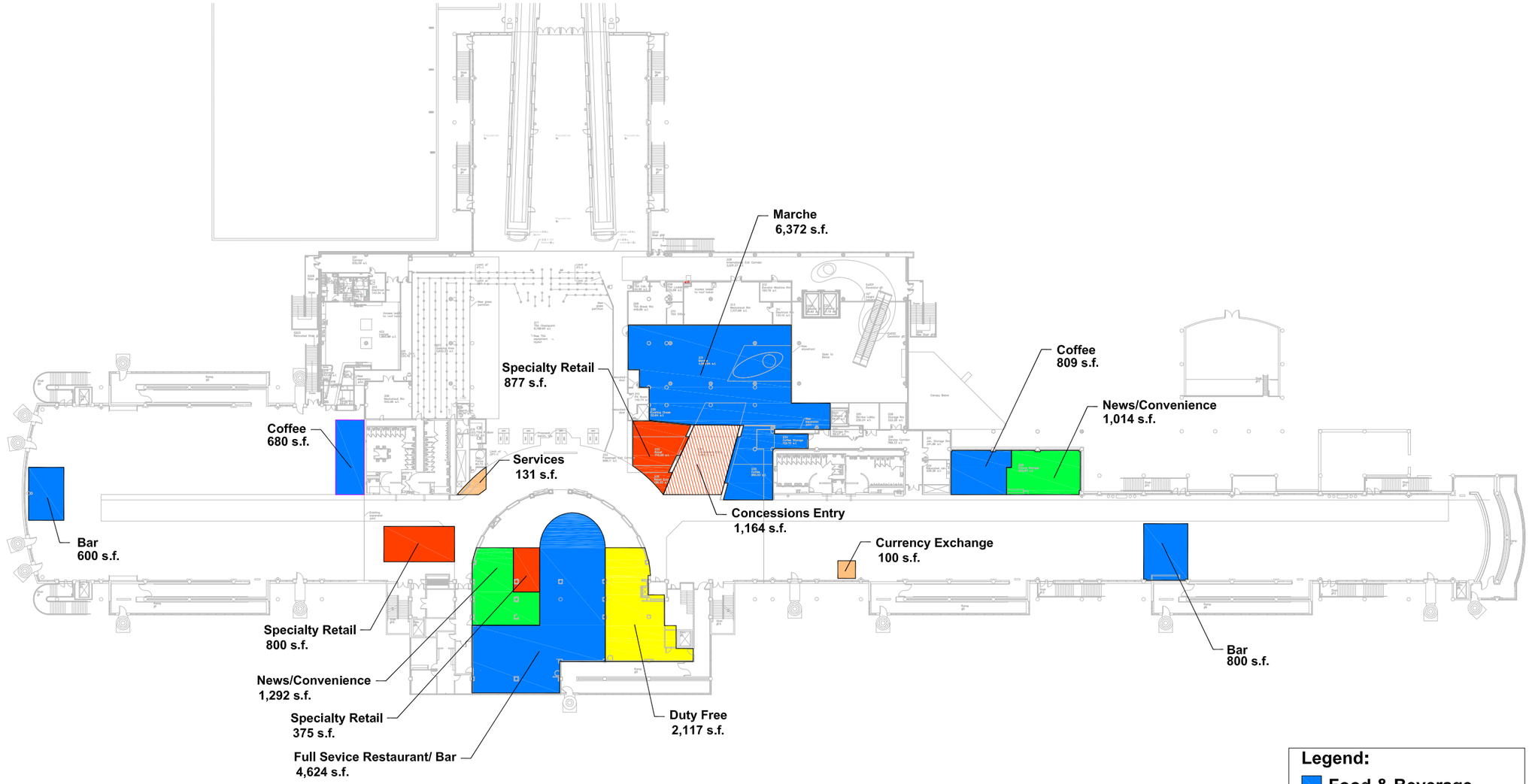
FIGURE 5.90




0 10' 25' 50' 75' 100'

Source: Unison Consulting, March 2013

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AIRSIDE F BOARDING LEVEL- CONCESSIONS PLAN

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FIGURE 5.91


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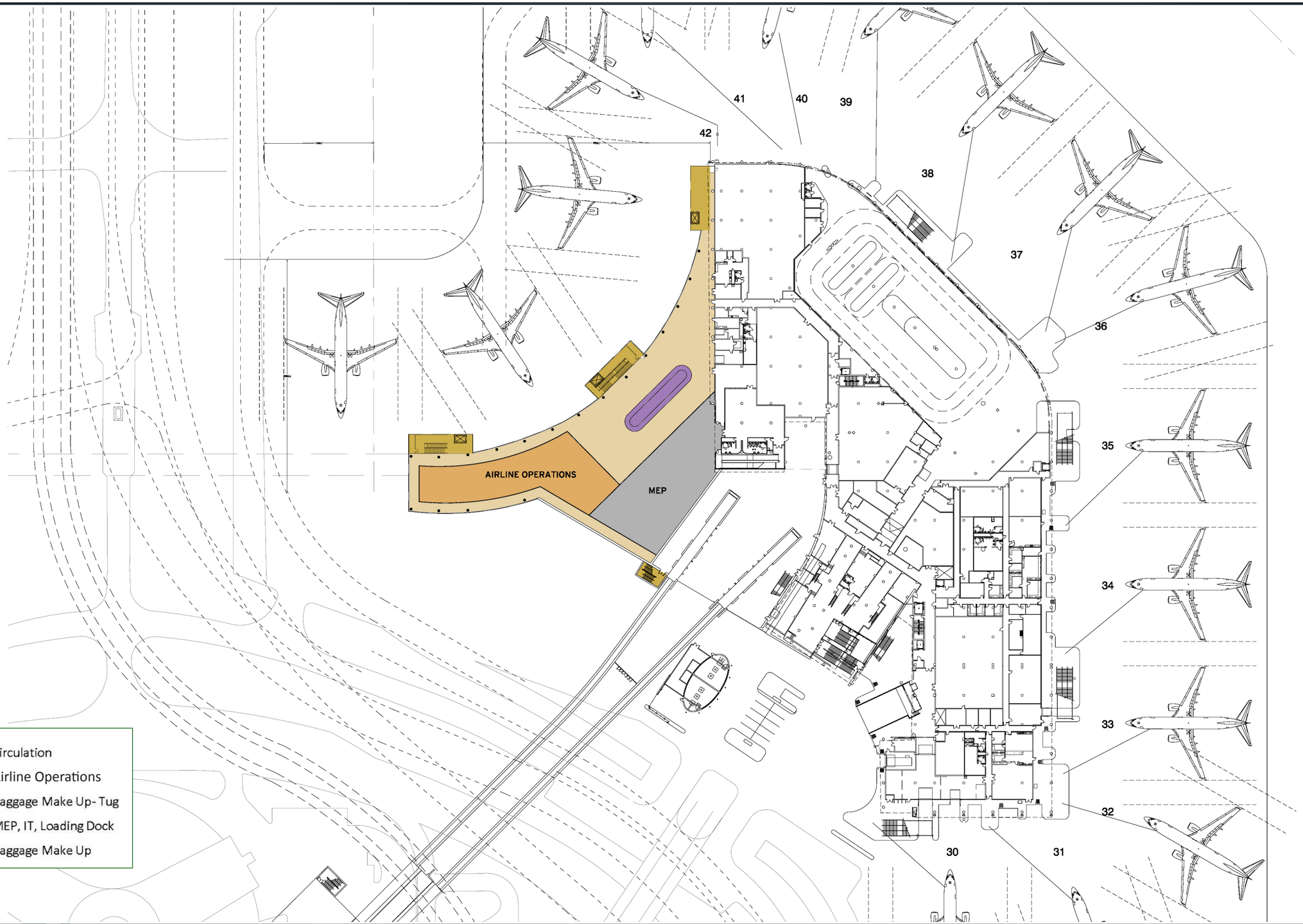
AIRSIDE C BOARDING LEVEL- RECOMMENDED PLAN

TAMPA INTERNATIONAL AIRPORT
TAMPA, FLORIDA

DATE:
May 2013

FIGURE 5.92




0 100' 200'

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AIRSIDE C RAMP LEVEL- RECOMMENDED PLAN

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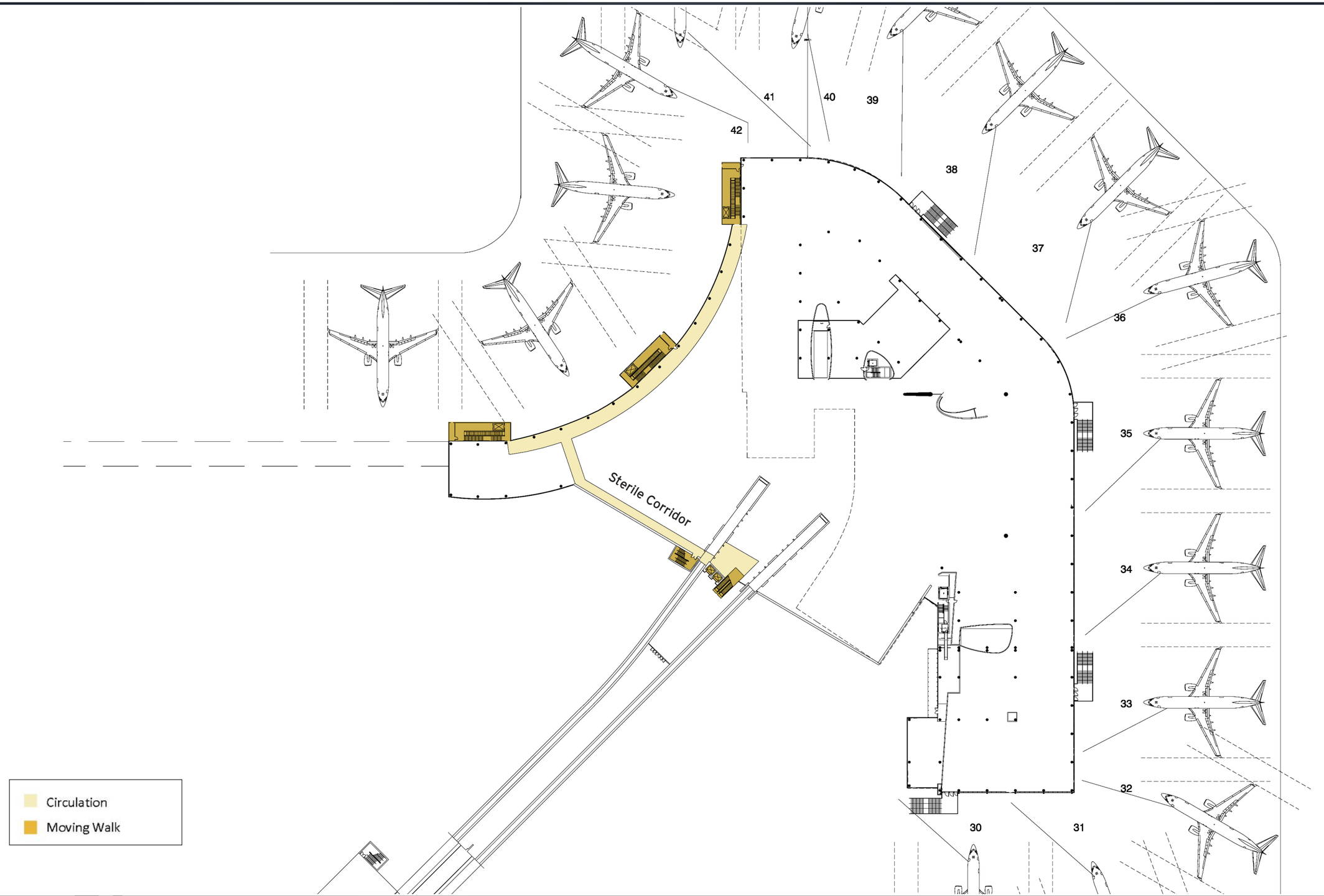
FIGURE 5.93




0 100' 200'

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AIRSIDE C STERILE LEVEL- RECOMMENDED PLAN

TAMPA INTERNATIONAL AIRPORT
TAMPA, FLORIDA

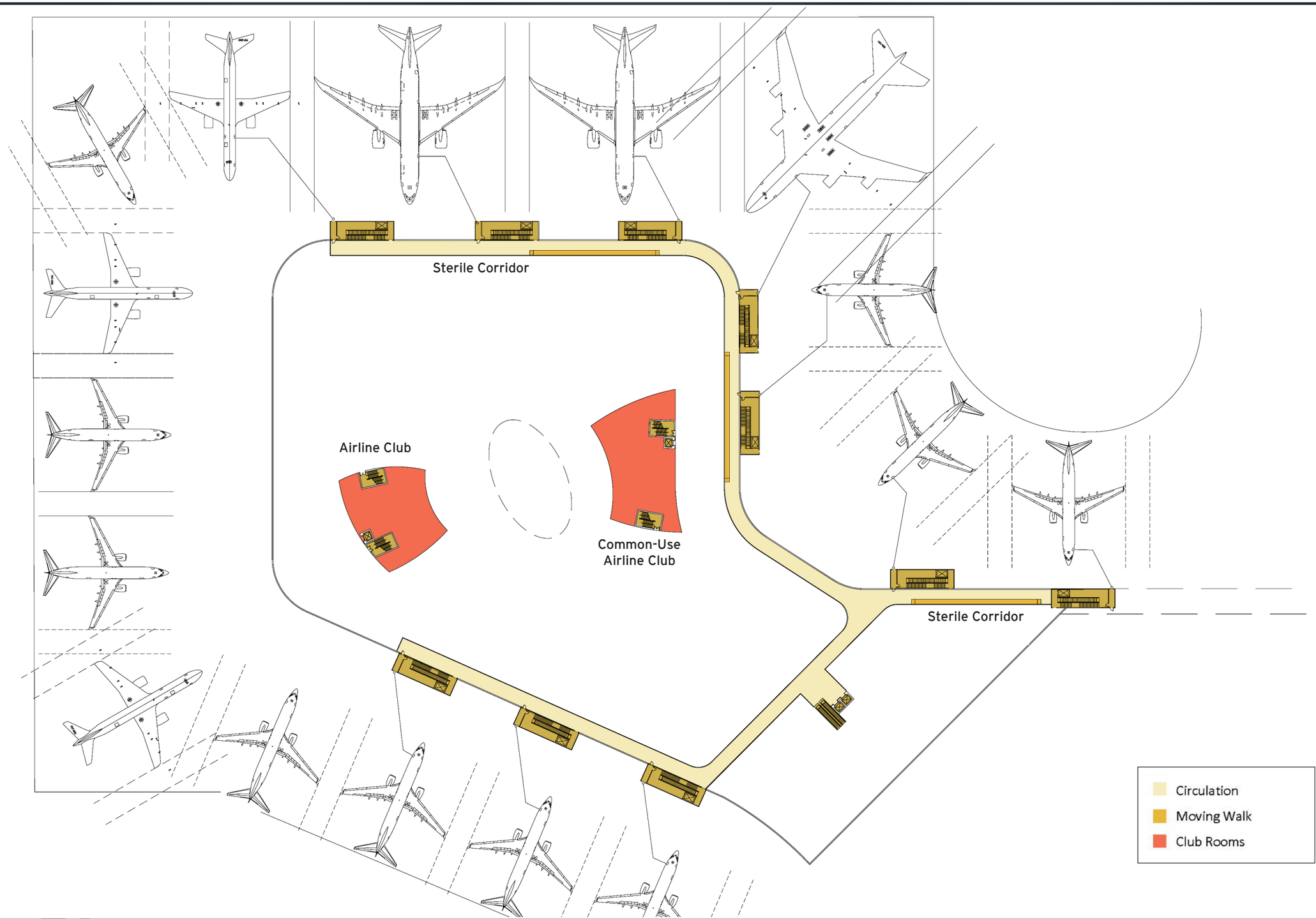
DATE:
May 2013

FIGURE 5.94

| | Southwest Airlines | Existing Terminal to Airside C Distance (ft) | Time (min) |
|---|---|---|---|
| 1 | Curb to Ticket Counter | 130 | 0.54 |
| 2 | Ticket Counter to Escalator | 95 | 0.40 |
| 3 | Escalator Ride | | 0.33 |
| 4 | Escalator to APM | 140 | 0.58 |
| 5 | Waiting for APM | | 1.68 |
| 6 | APM ride to Airside C | | 1.06 |
| 7 | Airside C to Checkpoint | 120 | 0.50 |
| 8 | Checkpoint Processing Time | | 10 |
| | **Totals** | **485** | **15.09** |
| | No wait at APM Station | | 13.41 |

| | Southwest Airlines | Proposed Terminal to Airside C Distance (ft) | Time (min) |
|---|---|---|---|
| 1 | Curb to Ticket Counter | 130 | 0.54 |
| 2 | Ticket Counter to Escalator | 140 | 0.58 |
| 3 | Escalator Ride | | 0.33 |
| 4 | Escalator to SSCP | 200 | 0.83 |
| 5 | Checkpoint Processing Time | | 10 |
| 6 | SSCP to APM | 150 | 0.63 |
| 7 | Waiting for APM | | 1.05 |
| 8 | APM ride to Airside C | | 0.67 |
| 9 | APM to edge of APM station | 30 | 0.13 |
| | **Totals** | **650** | **14.76** |
| | No wait at APM Station | | 13.71 |
| | Average Walking Speed = 240 | Feet per minute, or | 4 feet per second |

**Figure 5.95**
**AIRSIDE C WALKING DISTANCE ANALYSIS**




0 100' 200'

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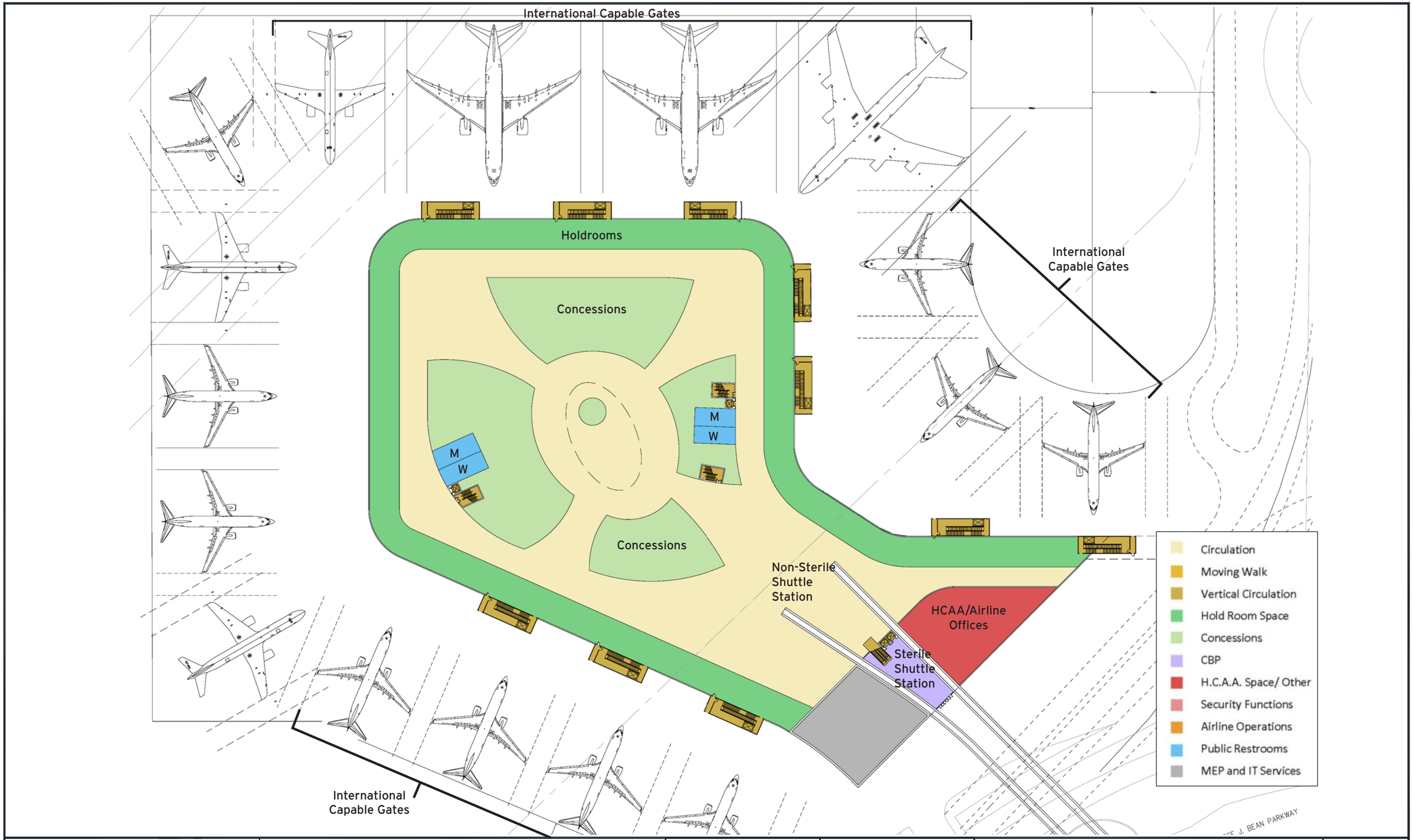
AIRSIDE D STERILE LEVEL- RECOMMENDED PLAN

TAMPA INTERNATIONAL AIRPORT
TAMPA, FLORIDA

DATE:
May 2013

FIGURE 5.96




0 100' 200'

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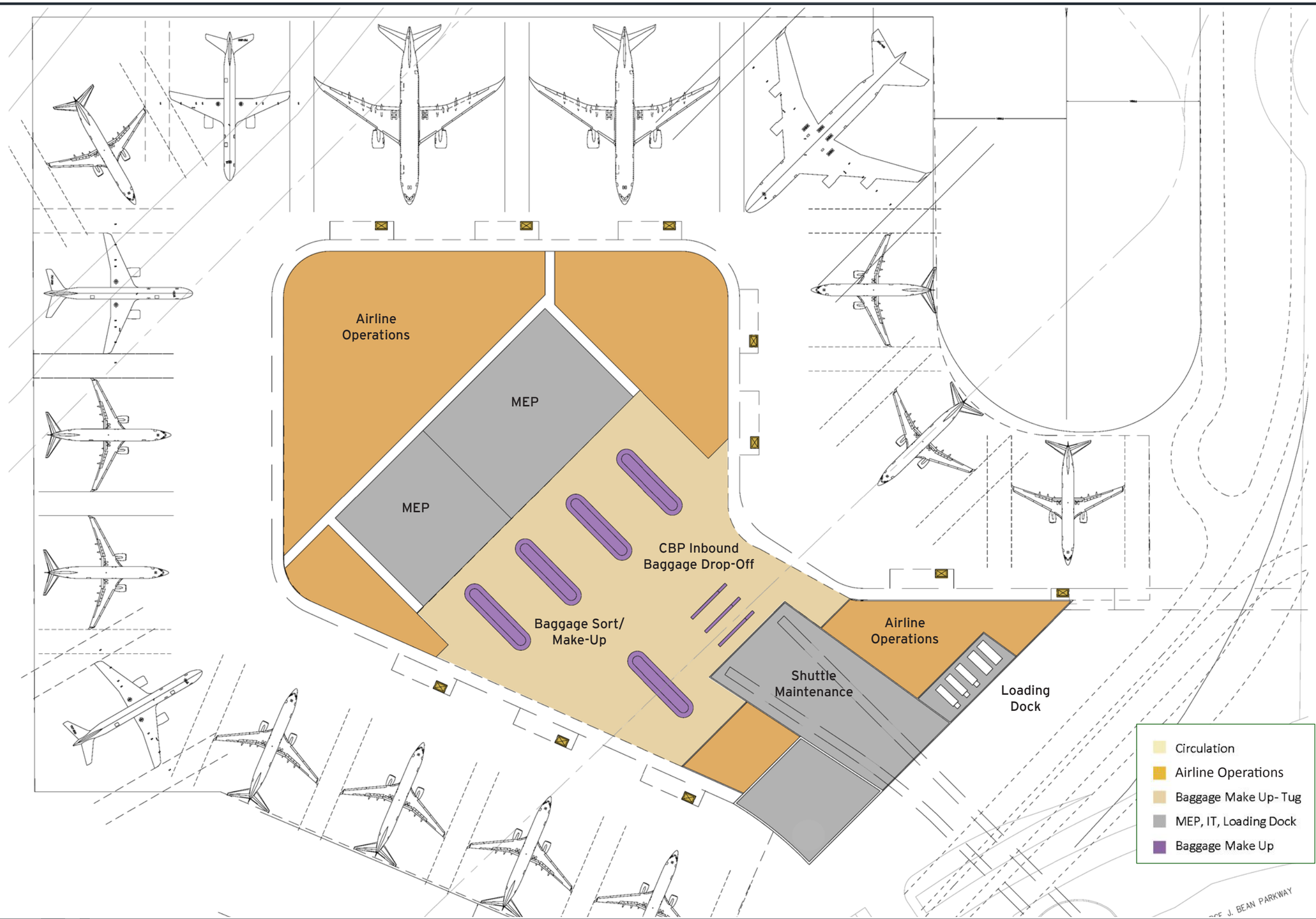
AIRSIDE D BOARDING LEVEL- RECOMMENDED PLAN

TAMPA INTERNATIONAL AIRPORT
TAMPA, FLORIDA

DATE:
May 2013

FIGURE 5.97

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AIRSIDE D RAMP LEVEL- RECOMMENDED PLAN

TAMPA INTERNATIONAL AIRPORT
TAMPA, FLORIDA

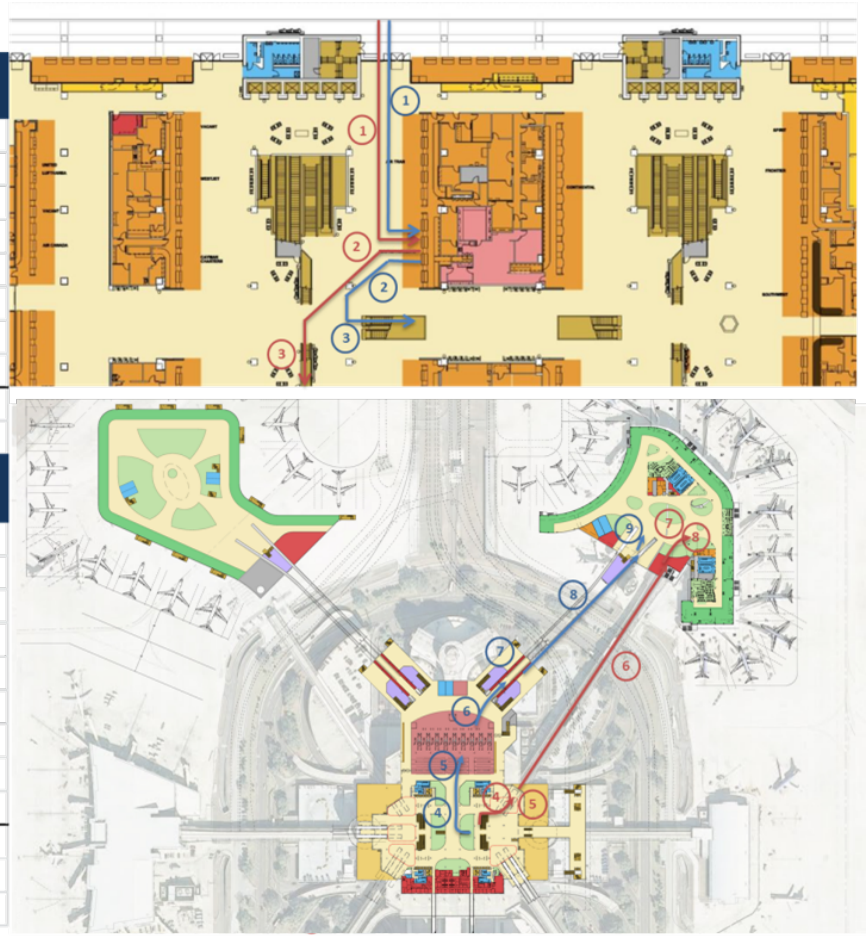
DATE:
May 2013

FIGURE 5.98

| | British Airways | Existing Terminal to Airside F Distance (ft) | Time (min) |
|---|---|---|---|
| 1 | Curb to Ticket Counter | 120 | 0.50 |
| 2 | Ticket Counter to Escalator | 90 | 0.38 |
| 3 | Escalator Ride | | 0.33 |
| 4 | Escalator to APM | 160 | 0.67 |
| 5 | Waiting for APM | | 1.54 |
| 6 | APM ride to Airside F | | 0.93 |
| 7 | Airside F to Checkpoint | 90 | 0.38 |
| 8 | Checkpoint Processing Time | | 10 |
| | **Totals** | **460** | **14.72** |
| | No wait at APM Station | | 13.18 |

| | British Airways | Proposed Terminal to Proposed Airside D Distance (ft) | Time (min) |
|---|---|---|---|
| 1 | Curb to Ticket Counter | 120 | 0.50 |
| 2 | Ticket Counter to Escalator | 70 | 0.29 |
| 3 | Escalator Ride | | 0.33 |
| 4 | Escalator to SSCP | 200 | 0.83 |
| 5 | Checkpoint Processing Time | | 10 |
| 6 | SSCP to APM | 150 | 0.63 |
| 7 | Waiting for APM | | 1.14 |
| 8 | APM ride to Airside C | | 0.73 |
| 9 | APM to edge of APM station | 30 | 0.13 |
| | **Totals** | **570** | **14.57** |
| | No wait at APM Station | | 13.43 |

Average Walking Speed = 240 Feet per minute, or 4 feet per second



0 100' 200'

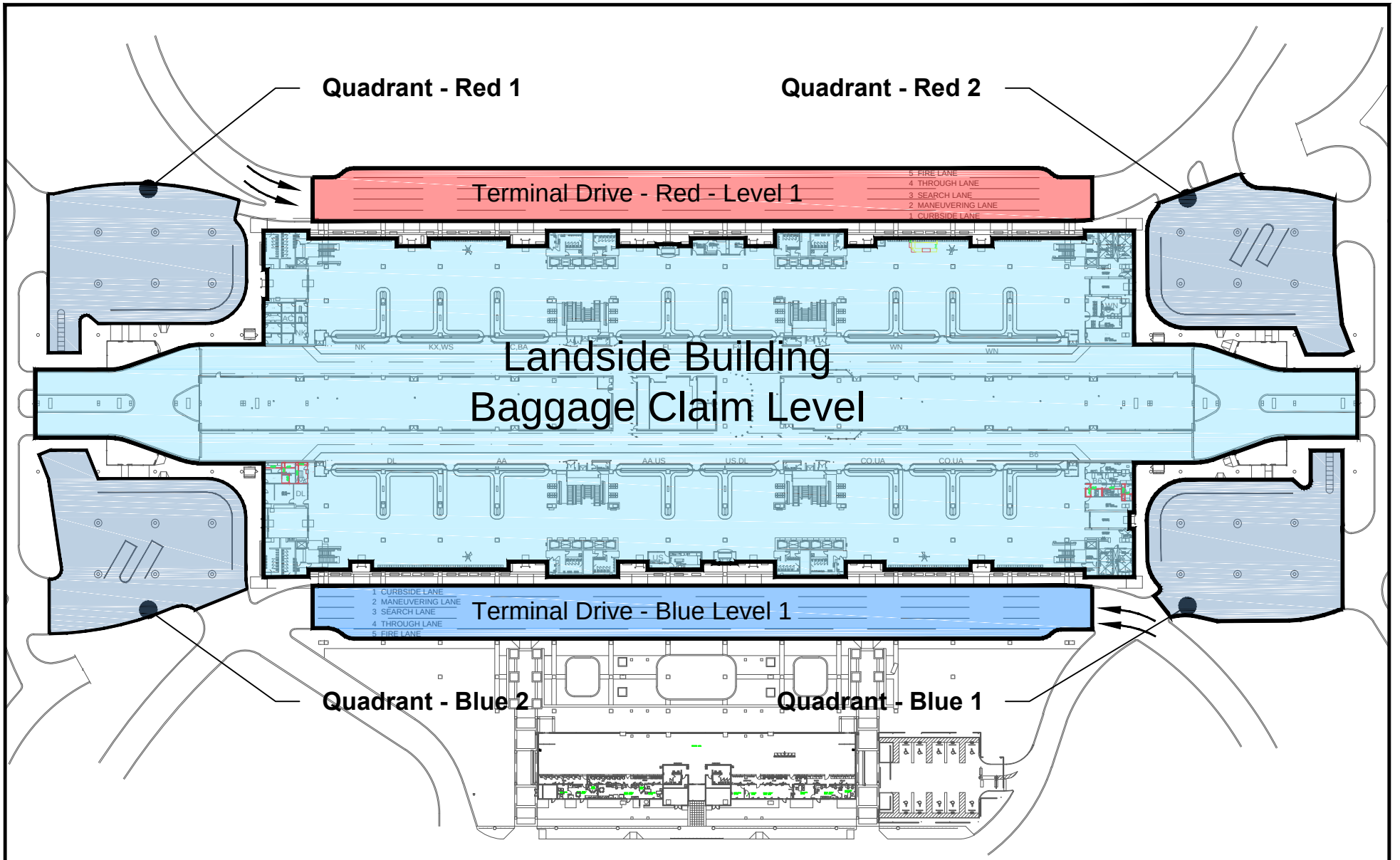
HNTB

**Figure 5.99**
**AIRSIDE D WALKING DISTANCE ANALYSIS**

## 5.7.11 Terminal Curb Roadway Requirements Overview

The landside terminal at Tampa operates with certain airlines assigned to the north, or Red side of the terminal, and other airlines assigned to the south, or Blue side. Passenger processing functions on both sides include ticketing and check-in at the Departures level (Level 2) and baggage claim at the Arrivals level (Level 1).

The vehicular interface to the departures and arrivals levels on both sides is provided by the terminal curb roadways, or terminal curbs. In addition, certain commercial vehicles use the four quad courts located at the corners of the terminal building on the arrivals level to pick-up passengers. As well, on the departures level, there are two one-way cross-over (recirculation) drives which connect the Blue and Red sides along the west and east faces of the terminal building. All of these drives and roadways, as shown in **Figures 5.100 and 5.101** were analyzed for the capacity and the requirements to meet the needs of the traveling public through the horizon years of this Master Plan Update (through 2031).




C:\Temp\AcPublish_416\Terminal Curbs and Quad Decks.dwg Lower Level Curb (2) Apr 29, 2013 - 4:47pm

Scale: 1" = 120'

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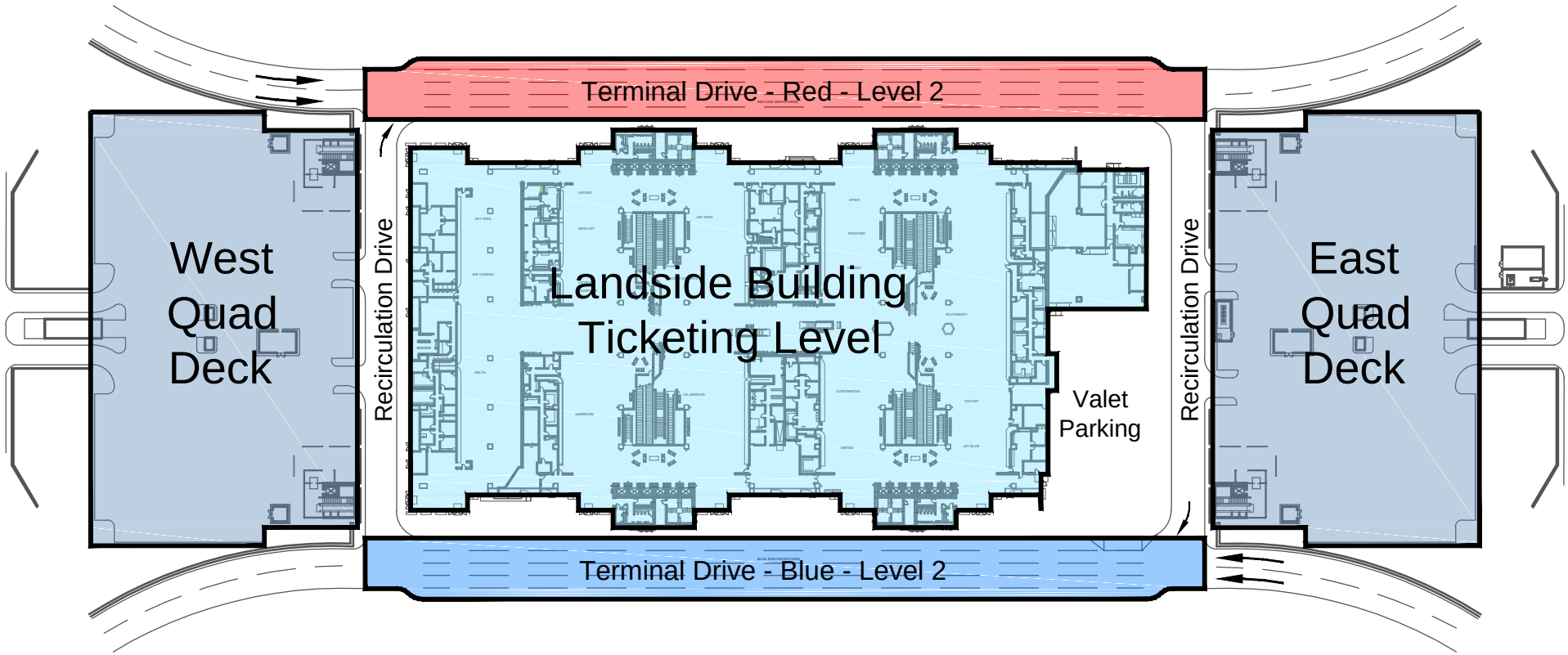
# Existing Lower Level Curbsides and Quad Decks

TAMPA INTERNATIONAL AIRPORT
TAMPA, FLORIDA

DATE:
Apr 29, 2013

FIGURE:
5.100




P:_Projects\57785 - Tampa MP\00-CADD\HNTB_Team_Dwg_files\Terminal Curbs and Quad Decks.dwg Upper Level Curb (2) Apr 30, 2013 - 4:41pm

Scale: 1" = 120'

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# Existing Upper Level Curbsides and Quad Decks

TAMPA INTERNATIONAL AIRPORT
TAMPA, FLORIDA

DATE:
Apr 30, 2013

FIGURE:
5.101

## 5.7.12 Analysis of Curb Roadways

The terminal curbs were analyzed using a spreadsheet-based technique which has been broadly applied to estimate the capacity and level of service for the curb roadways at Tampa International Airport and most of the other large hub airports in the United States. The analysis determines the capacity based on inputs of curb roadway physical facilities (number of lanes, length of the loading and unloading areas, number and width of crosswalks, etc.), the demand on the curb (number and type of vehicles by mode, vehicle length, and dwell time), and operational parameters (allocation of curb areas for different modes, nature of crosswalk and curb management). From the capacity, which reflects both the capacity of the curb roadway to serve passengers (pick up or discharge them while the vehicle is stopped) and the capacity of the roadway to bring vehicles to these areas and take them away, the analysis also determines the ratio of volume to capacity (V/C). For curb roadway as well as for many other transportation systems, delay and congestion grow rapidly when V/C is greater than 0.70. Thus, V/C = 0.70 was set as the target for the desired level of service on the Tampa curbs.

The analysis hour was the peak hour of the average day of the peak month (PHADPM). Data from the inventory (collected in December) were analyzed and then adjusted to the peak month (April) to capture the conditions of interest for the analysis. The analysis was geared towards understanding the requirements for the curbs, where "requirement" was defined as the physical facilities which meet customer needs at the targeted level of service under typical peaking conditions. The busiest hour of the average day of April is not the peak of the peak conditions; that would more than likely be in the holiday time around Thanksgiving or Christmas. Nonetheless, the pragmatic approach for facility investment is to not plan and build for the very busiest hours of the year, as that is not a cost-effective approach. The PHADPM conditions are frequently found on the busier days of the year, and there are relatively few hours of the year busier than these, so by providing facilities to meet these needs at the targeted level of service, customer satisfaction is achieved without over-building.

Due to the nature of air service schedules, the peaks of the different curb roadways occur at different times of the day and/or different days of the week. Each curb facility was analyzed for its own peak hour, not for a common peak hour.

### 5.7.12.1 Forecasts and Assumptions

The traffic counts from the inventory in 2011 were factored to future levels in five-year increments, out to 2031.[2] The factoring was primarily based on the growth of passenger activity, and adjusted to reflect airline assignments to the Red and Blue sides of the terminal. Modes for which ridership grows *pro rata* with passenger activity including privately-owned vehicles (POVs), taxis, limousines, rental cars, and shared ride vans. Shuttles (such as hotel and parking) and transit do not grow proportionally with passenger levels, as those vehicles tend to have larger capacities than current loads, such that seats are readily available to handle increased demand over time.

[2] Later, the analysis was extended out to 2041.

All the vehicular demand forecasts assumed the future presence of a new rental car facility in the South Development Area, which would be served by an automated people mover. Traffic was adjusted accordingly, including the elimination of the rental car shuttles and the bulk of the rental car traffic in the terminal vicinity. To account for the pattern of use in which a rental car does go to the curb for passenger drop off or pick up, it was assumed that five percent of future rental cars would indeed be found on the departures or arrivals curbs.

The forecast and analysis of curb activity and requirements assumed that basic airport access and on-airport traveler behaviors would, for the most part, remain constant over the planning period. The exception to this assumption was the recognition that the presence of the new rental car facility in the South Development Area would impact on-airport traveler behavior patterns, though not the overall mode choice for rental car.

One of the patterns of curb usage which was noted during the inventory phase was the relative long dwell times on the arrivals curbs. This was a result of airport policy oriented towards a high level of customer service and satisfaction. Unless and until congestion occurred on the arrivals curbs, the policy was to permit drivers to wait at the curb in their vehicles even if they were not engaged in active loading. As a result, the average dwell time on the Blue arrivals curb was observed to be roughly twice national norms, while the Red side average dwell time was nearly three times national norms. Despite the best efforts to manage congestion once it had occurred by asking the waiting drivers to move, queuing in the peak hours was common, and at times, extreme. Thus the analysis of the arrivals curb roadways was conducted with a sensitivity test of the dwell time effect. The arrivals curbs were analyzed both for a continuation of the tolerance for long dwell times, and also for a change in policy and management that would reduce dwell times to national norms.

#### 5.7.12.2 Curb Analysis Results and Implications

The results of the analysis of the existing curbs for current and future passenger activity levels are shown in **Tables 5.10** and **5.11**. **Table 5.10** provides the current or future traffic volumes, the capacities, and the V/C ratios. **Table 5.11** shows the length requirements for each curb, assuming the continuation of the four-lane cross-section.

The key findings of this analysis are:

- The arrivals curbs experience extremely high dwell times, which lead to significant delay and congestion.
- If dwell times were to be managed to national norms, the current physical plant would provide a very good level of service.
- The demand is greatly imbalanced between the busy Blue and not-so-busy Red sides. This is a result of airline allocations and their air service schedules.

Two sets of implications were drawn, one for a continuation of the status quo (the current airline allocations and curb operational policies), and the other related to potential changes in curb management policies. **If** there were to be no re-allocation of demand between the Red and Blue sides, and if dwell times remained the same:

- The Blue Departures curb would need additional capacity by 2016

- The Red Departures curb would need additional capacity after 2026
- The Blue Arrivals curb, already well over capacity, would need immediate relief
- The Red Arrivals curb, also over capacity, would also need immediate relief.

**If,** on the other hand, the airlines remained where they are **but** the curb policy was changed to reduce dwell times to national norms:

- The Blue Departures curb would need additional capacity by 2016
- The Red Departures curb would need additional capacity after 2026
- The Blue Arrivals curb would not need additional capacity until after 2016
- The Red Arrivals curb would never need more capacity.

**Table 5.10**
**Curb Analysis Results**

| Curb | 2011 | | | 2016 | | | 2021 | | | 2026 | | | 2031 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Vol | Cap | V/C | Vol | Cap | V/C | Vol | Cap | V/C | Vol | Cap | V/C | Vol | Cap | V/C |
| **Current Dwell Times** | | | | | | | | | | | | | | | |
| Blue Dep | 692 | 1086 | 0.64 | 769 | 1082 | 0.71 | 881 | 1083 | 0.81 | 982 | 1084 | 0.91 | 1083 | 1084 | 1.00 |
| Red Dep | 587 | 1242 | 0.47 | 653 | 1257 | 0.52 | 746 | 1259 | 0.59 | 830 | 1260 | 0.66 | 914 | 1261 | 0.72 |
| Blue Arr | 595 | 660 | 0.90 | 565 | 594 | 0.95 | 650 | 594 | 1.09 | 727 | 594 | 1.22 | 804 | 594 | 1.35 |
| Red Arr | 380 | 464 | 0.82 | 395 | 432 | 0.91 | 454 | 432 | 1.05 | 508 | 432 | 1.18 | 561 | 432 | 1.30 |
| **Adjusted Dwell Times** | | | | | | | | | | | | | | | |
| Blue Arr | 595 | 997 | 0.60 | 565 | 917 | 0.62 | 650 | 917 | 0.71 | 727 | 917 | 0.79 | 804 | 917 | 0.88 |
| Red Arr | 380 | 966 | 0.39 | 395 | 916 | 0.43 | 454 | 917 | 0.50 | 508 | 917 | 0.55 | 561 | 917 | 0.61 |

Levels of service color code:
Green = acceptable level of service
Yellow = moderate congestion
Orange = significant congestion
Red = massive congestion

**Table 5.11**
**Curb Requirements (feet)**
**(assuming a four-lane cross-section)**

| Curb | Eff. Length | 2011 | 2016 | 2021 | 2026 | 2031 |
|---|---|---|---|---|---|---|
| **Current Dwell Times** | | | | | | |
| Blue Dep | 500 | 420 | 520 | 670 | 860 | 1150 |
| Red Dep | 560 | 280 | 320 | 400 | 490 | 600 |
| Blue Arr | 590 | 860 | 920 | 1140 | 1380 | 1670 |
| Red Arr | 590 | 720 | 830 | 1000 | 1180 | 1350 |
| **Adjusted Dwell Times** | | | | | | |
| Blue Arr | 590 | 450 | 480 | 600 | 730 | 880 |
| Red Arr | 590 | 255 | 290 | 350 | 410 | 480 |

### 5.7.12.3 Quad Courts Analysis

The four quad courts, used by taxis and shuttle buses to pick up passengers on the arrivals level, were analyzed using the same spreadsheet-based technique. The key to the quad court analysis was the recognition that, due to the nature of shuttle demand and to the proposed changes in airport facilities, the quad court traffic volumes are forecast to drop considerably over the planning period:

- The remote rental car facility in the South Development Area, connected to the terminal complex by an APM, would eliminate all rental car shuttle buses, both for those companies located in the facility, and also for the companies who retain their off-airport facilities. This is due to the standard industry approach that assigns non-participating companies to a transfer location at the consolidated rental car facility, in order to provide a common location for passengers to find their rental car options, and also to avoid a competitive advantage (real or perceived) to having the off-airport shuttle available at the terminal curb.
- Other shuttle volumes, as noted previously, do not grow with passenger activity levels, as they have reserve capacity even during the peak hours due to current load factors well less than van or bus capacity.

Thus, only taxi volumes in the quad courts would grow over time.

The results of the analysis of the quad courts are shown in **Table 5.12**. With adequate levels of service for V/C ratios less than 0.70, it is clear that not only today, but for the foreseeable future; there are no level of service issues in the quad courts. Consequently, there is no need for future physical improvements or operational changes. Rather, the quad courts are a potential location for an additional passenger/ground transportation interface which may provide some opportunities to off-load busier portions of the terminal complex.

**Table 5.12**
**Quad Court Analysis Results**

| Location | Volume / Capacity Ratio | | | | |
|---|---|---|---|---|---|
| | 2011 | 2016 | 2021 | 2026 | 2031 |
| Blue SE Quad | 0.26 | 0.20 | 0.22 | 0.24 | 0.25 |
| Blue SW Quad | 0.23 | 0.16 | 0.17 | 0.19 | 0.20 |
| Red NE Quad | 0.36 | 0.32 | 0.34 | 0.37 | 0.39 |
| Red NW Quad | 0.29 | 0.23 | 0.26 | 0.27 | 0.29 |

## 5.7.13 Terminal Curb Roadway Alternatives Analysis

There are two basic ways to add capacity to terminal curbs: operational efficiencies, and physical improvements. Operational changes are advantageous both because of their low cost relative to physical plant expansion, and because they tend also to be more effective. As with other elements of the roadway system, how a curb roadway is operated has a stronger influence on capacity and level of service than the physical plant does.

The Master Plan Team considered a number of potential capacity enhancements:

- Operational
    - Change in dwell time policy (the enforcement of the posted "no waiting" signs)
    - Achieving better balance of peak demands between Red and Blue side through relocation of airline assignments (or simply signing)
    - Elimination, in whole or in part, or pedestrian crossings of the curbs
    - The advent of the APM to the South Development area, and changes to certain vehicle types (modes) which would be assigned to interface there rather than at the landside terminal
    - Reallocation of certain vehicle modes to the cross-over drives (on the Departures level) or quad courts (on the Arrivals level)
- Physical
    - Adding a fifth lane by reallocation of the current roadway width
    - Adding a fifth (and potentially sixth) lane on a separate roadway with a parallel curb.

This section describes the anticipated benefits, impacts, and costs of these alternatives.

### 5.7.13.1 Change in Dwell Time Policy

In the aviation industry post-9/11, TSA mandated a "no waiting, active loading/unloading only" policy, which also required drivers to remain with their vehicles. At the other large hub airports in the United States, many of which had dwell times comparable to the 2011 observed values at Tampa prior to this policy, the range of average dwell times was reduced to 1.6 – 2.5 minutes for privately-owned vehicles. The HCAA initially implemented this policy along with other security measures, but over time, as TSA's ideas of threats and their regulations evolved, a number of airports, Tampa included, kept the signing but lowered their enforcement of it as unnecessary and counter to high levels of customer service.

The Master Plan Team's observations and analyses concluded that the well-intentioned policy at Tampa was the chief cause of loss of capacity and the presence of substantial queues to get onto the arrivals curbs, the Blue side especially. When queues formed, curb staff would always respond by asking waiting drivers to move on (and inform them of the parking grace period of 60 minutes free, plus the availability of the cell phone waiting lot). This, however, was a reactive and not proactive policy. In roadway congestion analyses, for every minute of a blockage or presence of a queue, it takes typically five minutes for the queue to dissipate once the blockage

is relieved. As well, while the permissive dwell policy was meant to please customers, it was clear that once demand and the resultant queue built up, most customers could not find a place to sit and wait. Indeed, the curb lanes where long waits were permitted served, at best, 15 percent of the peak-hour traffic. The other 85 percent would be caught in the queue and have to wait just to get on the curb. There they would find most of the two loading lanes busy and congested, with spaces to stop hard to find. And if their party was not there, they would need to recirculate, go to parking, or to the cell lot. Thus the policy also led to increased recirculating traffic, especially on the Red side where the path was short, and the parking and cell lot options relatively harder to find and further away.

The change in dwell time policy, to the enforcement of the "no waiting, active loading only" policy as signed, was determined to provide a 50 percent increase in current capacity of the Blue side arrivals curb, and a 100 percent increase in the capacity of the Red side arrivals curb. The change in policy was determined to lead to the elimination of all queuing during normal peaks, and to the virtual elimination of queues during holiday peaks. Additional benefits were:

- Reduced volumes of vehicles recirculating around the terminal
- Happier customers due to the reduced time and effort to meet and pick up their passengers
- A prolonging of the life of the current arrivals curb physical plant of 20 or more years with acceptable customer service.

Based upon these findings, HCAA staff brought to management a recommendation to revise the policy, which recommendation was approved and implemented with positive results and feedback from the public.

The change in curb operational policy is a one-time major improvement, but it alone is not enough to meet the arrivals curb requirements through the end of the planning period. Thus, other additional measures were analyzed and are recommended as described below.

#### 5.7.13.2 Balancing Demand between the Red and Blue Sides

All curbs will operate well with only the change in dwell time policy through 2016. By then, the Blue Departures Curb will be in need of modest improvement to meet the targeted level of service indicator (V/C $\leq$ 0.70). The logical choice for this next step is another operational change, which is to sign the curbs to achieve a better balance in peak hour demands between the Red and Blue sides.

It is neither logical nor likely that the two sides would achieve a 50/50 split of demand in their different peak hours. The Blue departures peak hour is only 18 percent busier than the Red departures peak hour. As well, airline allocation, while managed by the HCAA, is a change that has ramifications beyond just where vehicles are signed to drop off passengers on a curb. Reallocation of demand between Red and Blue side must consider air service schedules, gate/airside terminal assignments, and ticketing and baggage claim capacity and level of service as well. Lastly, changes made to peak hour demand balancing would need to look at other busy (shoulder) hours in order to ensure that unintended demand unbalancing did not occur.

All that said, as shown in **Table 5.13**, a reduction of the peak hour demand on the Blue side to approximately seven percent greater that the demand on the Red side arrivals would achieve approximately a three percent improvement of capacity without the cost of any significant capital costs. Indeed, the only direct cost from a landside perspective would be the cost to change out the signing on George Bean Parkway and in the terminal vicinity.

It is recommended that HCAA achieve a better balance of the peak hour demands by 2016.

**Table 5.13**
**Benefits of Curb Improvements**

| Curb | Baseline | | | 2016 | | | 2021 | | | 2026 | | | 2031 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Vol | Cap | V/C | Vol | Cap | V/C | Vol | Cap | V/C | Vol | Cap | V/C | Vol | Cap | V/C |
| Blue Dep | 692 | 1086 | 0.64 | 747 | 1116 | 0.67 | 802 | 1187 | 0.69 | 853 | 1188 | 0.72 | 953 | 1545 | 0.65 |
| Red Dep | 587 | 1242 | 0.47 | 701 | 1180 | 0.59 | 758 | 1184 | 0.64 | 807 | 1186 | 0.68 | 892 | 1543 | 0.58 |
| Blue Arr | 595 | 997 | 0.60 | 531 | 917 | 0.58 | 619 | 917 | 0.67 | 698 | 971 | 0.72 | 776 | 1131 | 0.69 |
| Red Arr | 380 | 966 | 0.39 | 460 | 916 | 0.50 | 535 | 916 | 0.58 | 602 | 917 | 0.66 | 671 | 1132 | 0.59 |
| **Changes Assumed** | Enforced "no waiting" on arrivals | | | Baseline plus Balance Blue / Red Demand | | | 2016 plus No Ped Crossings on Blue Departures & APM to SDA | | | 2021 plus Use of Crossover Lanes, No Ped Crossings of Blue Arrivals | | | 2026 plus Add 5th Lane to all curbs | | |

Levels of service color code:
Green = acceptable level of service
Yellow = moderate congestion
Orange = significant congestion
Red = massive congestion

### 5.7.13.3 Elimination of Pedestrian Crossings

Pedestrian crossings degrade the operation of curbs in two ways:

- They reduce linear curb length, as vehicles are not supposed to stop on crosswalks to serve (load or unload) passengers. This reduces service capacity of the curb.
- They reduce the time available for moving traffic to proceed along the curb when the crosswalk (or, minimally, the lane in front of the driver) is occupied by one or more pedestrians. This reduces the through capacity of the curb.

The results of the curb analyses showed that the typical benefit of elimination of the pedestrian crossings was on the order of a ten percent improvement of the capacity of the curb from which they were eliminated. Of course, pedestrians still would need to get to the destinations across the curb which led to the creation of the crosswalks in the first place. But some of these destinations will disappear, thus reducing the need for the crosswalks and creating potential inconvenience to fewer (if any) customers:

- When the new consolidated rental car center is opened, there will be no need for pedestrians to cross the curbs between the terminal and the existing Red and Blue side rental car facilities.
- With the elimination of the Red side administrative offices, there will be no pedestrian traffic across the Red arrivals curb for this function.

On the Blue side, there already are convenient alternative pedestrian routes between the Long-term Parking Garage and the landside terminal, both at the ticketing and transfer levels. Thus the only passengers affected by the elimination of the Blue arrivals level crosswalk would be terminating long-term parking customers on that side.

The costs of this change are minor. They include an improvement to the internal signing at the Blue side bag claim and appropriate public relations/education to inform the public of the need for the change and how to deal with it, the creation of physical barriers to prevent crossing of the curb roadways (chiefly at Blue arrivals), and the removal of the crosswalks and their signing and markings are the only costs to making this change.

It is recommended that HCAA proceed with pedestrian crossing removals on the Blue Departures curb by 2021, and Blue Arrivals by 2026.

### 5.7.13.4 The Benefits of the Advent of the APM on Curb Operations

The APM was assumed to be operational by 2021. The costs are documented elsewhere in this report. The specific benefits relative to curb operations include:

- the elimination of all rental car shuttles from the departures curbs and the quad courts
- a reduction in the percentage of rental and return cars which visit the terminal curb after being rented (this benefit accrues to the arrivals curb), or prior to return (this benefit accrues to the departures curb). The effect relates chiefly to the remote location of the rental car facility, which is likely to drive a change in traveler behavior

given the perceived uncertainty and increase in time for the APM connection to the remote location.

#### 5.7.13.5 Potential Utilization of the Cross-over Drives

The crossover drives at the departures level offer the potential to reassign certain modes (other than valet parking) to perform their passenger drop off there rather than on the Blue and/or Red departures curbs. The real beneficiary of this approach would be the Blue side, as the Red departures curb only needs capacity enhancement by the out year of analysis (2031). The previous recommendations (rebalancing demand, elimination of pedestrian crossings) would collectively achieve roughly half the necessary Blue departures capacity increase. Thus the utilization of the crossover drives was considered.

The logical choice of commercial modes to assign to these locations would be hotel shuttles and shared-ride vans. This is because the advent of the APM would have already eliminated the off-airport rental car shuttles and all parking shuttles, as even the off-airport parking shuttles (some of which are operated jointly as off-airport rental car shuttles) would also interface with the APM in the South Development area. With the hotel shuttles and shared ride vans assigned to the crossovers, the capacity would be increased by roughly eight percent on the departures curbs.

The challenge to this proposal is that the passenger would be dropped off on the sides of the terminal ticketing level, with the entrances around the corner on the curb roadways. This is either an inconvenience, or the ticketing level would need to be reconfigured inside to provide the opportunity to penetrate the east and west walls with new entrances. That revision would certainly be disruptive and perhaps would be costly.

It is recommended that the HCAA implement this reassignment of hotel shuttles and shared ride vans to the crossover drives by 2026. The ticketing level improvements will require integration with the other proposed changes to that level described elsewhere in this report.

#### 5.7.13.6 Addition of a Fifth Lane to the Terminal Curbs

Beyond 2026, all four curbs would need some additional capacity, and all of the operational changes discussed above would have been implemented. There are two ways to add additional lanes to the curbs. The simplest and least expensive is to reconfigure the cross-section of the curbs to fit in five lanes. Today, in fact, except at the near and far ends of the curbs, there are five lanes, with the far (leftmost) lane signed solely as a parking area for police and other official vehicles. The distance from curb-face to curb-face of the four curbs today is nominally 46.5 feet, which is almost nine feet less than the typical width (55 feet) of a five-lane terminal curb. This constrains the lane widths to the minimum (roughly nine feet each) that would be acceptable. The implications are some degree of operational difficulty (some tight squeezes by careless drivers who stop overly close to a vehicle in another lane), some degradation in capacity (with an increase in vehicles stopping such that they block more than one lane), and a modest risk of increased vehicle/vehicle contact, chiefly through opening doors into an adjacent stopped vehicle. Nine feet, however, is as wide as the wider parking stalls in most parking facilities, and is minimally acceptable if the HCAA is looking for an inexpensive manner to add the necessary capacity.

The other option is to build a separate, parallel, outer roadway. This is significantly more expensive than the first option, especially at the departures level where the new roadways would be elevated structures. Considerations for parallel outer curbs include:

- The need for more capacity stems from POV demand and not commercial vehicle demand. At airports where POVs can use both sets of curb lanes, it is difficult to manage the curbs to get the necessary volume of drivers in the peak hour to use the outer lanes. There is a natural tendency to get as close to the terminal as possible. Thus a separate roadway at Tampa will also require a heavier curb management presence during peak times to proactively direct enough traffic to the outer curb. For departures this has little impact other than the extra walking distance, but for arrivals, it increases the challenge of the terminating air traveler to find and meet up with his driver and vehicle. The result would be some increase in dwell time, increase in recirculation, or both, each of which tends to reduce some of the capacity gains.
- The outer roadway would likely need to be three lanes wide, as POV drivers cannot be relied upon to not stop in the left lane of a two lane curb (thus blocking all movement along the curb roadway). The column spacing (26.67 feet), between which three lanes would need to be fit, implies that the lanes would be no more than nine feet wide. Thus, in an attempt to achieve better lane width by choosing this option, the HCAA would, in part, end up with one set of lanes at the narrow width.

All things considered, it is recommended that the HCAA plan for the eventual creation of five lanes in the current sections of the existing curbs. The chief cost to this is the elimination of the bulbs on the far left curb which define the fifth lane's start and end. As well, the official parking being eliminated would need to be replaced, likely by a modest cost of construction of a few spaces between the columns, rather than a continuous parking lane as there is today.

## 5.8 Public Parking Alternatives Analysis

With its continued very high ranking as an airport that serves its customers well, Tampa International Airport's focus on customer service includes the provision of a variety of parking options for its customers. The parking products vary relative to price, location, and convenience, reflecting the reality that different customers have different sensitivities to the trade-offs among these attributes. The Master Plan Update's intent is to develop, evaluate, and recommend a future evolution of the parking services at Tampa International with a focus on maintaining customer satisfaction through availability at all times of the year. As well, the alternatives discussed in this section are intended to enable the HCAA staff and its parking operator to flexibly respond to the future demand as it evolves. Lastly, these parking proposals are specifically intended to be compatible with the other significant changes to facilities and services at TPA included in this update of the Master Plan.

From the requirements analysis, the good news for the HCAA is that the current parking supply is adequate to meet needs for all public parking through the planning horizon (2031). This includes the intent of attracting back those passengers who have migrated to any of the various off-airport parking providers. The demand of those who in 2011 parked off-airport has been included in the determination that the supply can meet the sum of the demands of the peak hour of the average weekday of the peak months in which each parking product peaks. While the current supply of 26,717 public parking spaces is enough to meet the forecast requirements in 2031 (the planning horizon), the supply will actually be increased once the rental car function is removed from the Long-Term Parking Garage (LTPG). The return of the bottom two levels of the LTPG will add an estimated 2,414 spaces to the supply of long-term parking, for a total of 9,268 spaces. The comparison of walkable parking supply with demand is shown in **Table 5.14**. It should be noted that the analysis does NOT include the Red Side rental car garage, as that area is subject to other plans (the international terminal).

**Table 5.14**
**Supply and Demand of Terminal Area Parking**

| Type | Year | | | | |
|---|---|---|---|---|---|
| | 2011 | 2016 | 2021 | 2026 | 2031 |
| **Demand** | | | | | |
| Short-term | 2335 | 2593 | 2943 | 3258 | 3581 |
| Valet | 139 | 157 | 182 | 204 | 226 |
| Long-term | 6386 | 7211 | 8333 | 9345 | 10372 |
| | | | | | |
| Total | 8861 | 9961 | 11458 | 12807 | 14179 |
| | | | | | |
| **Supply** | 12810 | 12810 | 12810 | 12810 | 12810 |
| | | | | | |
| **Surplus (Deficit)** | **3949** | **2849** | **1352** | **3** | **(1369)** |

With the rental car function relocated to the new CONRAC in the SDA, the enhanced parking supply at the terminal is adequate through 2026. Beyond that, a deficit of nearly 1,400 spaces would occur. There are several ways to meet this deficit as described below.

The public parking requirements challenges this Master Plan to address two key issues:

- While the Short-Term Parking Garage can meet its peak demands (for true hourly parking plus valet plus handicapped spaces), and while the Economy parking facilities can meet their peak demands for that portion of the customer base which prefers economy parking, the Long-Term Parking Garage does not have adequate room to meet its demand in the out years. The requirements analysis shows the need for approximately 1,400 terminal-proximate (walkable) long-term (1 – 5 day duration, typically) spaces. If these spaces are not constructed, the HCAA will still be able to provide parking for its customers, but there will be times when passengers preferring to park in the long-term facility would need to be directed to either the STPG or the Economy garage and lot. The former is not a customer service concern, as the STPG is more convenient than the LTPG. But long-term customers diverted to the Economy facility may not like the idea of using a shuttle (current practice) or the APM (future practice) to connect to/from the terminal.

- As noted in the seasonality analysis, there will be some hours of the year (estimated as one or two hours a day for 25 - 45 days per year) when all parking would be full. To overcome this, and to ensure that no person desiring to park at TIA would ever be turned away, 1,000 additional spaces would be needed.

The two values are not additive. Rather, if the 1,400 additional spaces were built at the terminal complex, then the overall supply would be adequate to meet the peak of the overall peak demand. Conversely, if 1,000 spaces were built in the South Development area, then some long-term parking demand would be diverted there when the LTPG was full, but on the aggregate, all seeking to park at TPA would be accommodated.

The basic approaches to meeting public parking needs are:

- **Base case:** this assumes that
    - a true hourly product would be created in the STPG to maximize its efficiency in serving three types of customers: hourly, daily, and valet.
    - An investment would be made in a parking information system which includes information on where spaces are available (by facility, by level within facility, and by row in the STPG and perhaps the LTPG), including dynamic message signing on Bean Parkway to guide parking customers most efficiently to their choice of available parking.
    - HCAA and the parking operator would manage all parking in real time to minimize the number of customers diverted in the peak of the peaks from their preferred parking location.
    - HCAA would, over time, adjust its parking pricing to shift the demand from terminal-proximate to economy options in order to minimize parking diversions

- no additional parking would be constructed within the planning horizon.

- **Construct more parking at the terminal complex:** this alternative assumes that the first four aspects of the Base Case are also implemented, but that the HCAA would nonetheless need to construct some additional parking walkable to the landside terminal.
- **Construct more parking in the South Development Area:** this alternative assumes that the first four aspects of the Base Case are also implemented, and in addition, economy parking would be expanded by 1,000 spaces.

## 5.8.1 Evaluation of Public Parking Alternatives

The three basic alternatives were evaluated qualitatively based upon the following considerations:

- Ability to meet customers' needs
- Capital and operating cost, and net revenues
- Feasibility
- Compatibility with other aspects of the Master Plan Update
- Flexibility.

### 5.8.1.1 Base Case: Manage Parking, No New Construction

This alternative has the lowest capital costs, as there is no new construction; just the parking information system and its related dynamic signing. With no new bonds to pay off, the potential net revenues from this alternative are the highest of any alternative.

The base case also scores well on feasibility, as it does not compete for scarce space in the terminal complex nor in the South Development Area. It is also fully compatible with the other proposals of this master plan, including the new international terminal and Airside C – D connection, the consolidated rental car (CONRAC) facility, and the automated people mover serving the CONRAC and economy parking in the South Development Area. Lastly, it has the flexibility to evolve differently if air service, passenger activity, parking demand, or any other uncertain element changes differently than forecast or estimated in this plan. The Base Case could, for example, morph into one of the build alternatives if necessary or desirable at some future date. This is the lowest risk alternative

The sole liability of this operational approach to meeting parking requirements is the potential that it will not be well accepted by those travelers whose parking desires aren't met as they are today. This may not be much of an impact at TPA, however. The experience at airports across North America suggests that business travelers are price inelastic (i.e., their demand for convenient, walkable parking does not decrease much at all with increases in the price of such parking), and that leisure travelers are more price sensitive and less location- and time-sensitive. Thus suggests the potential for the HCAA to manage pricing so that the core business travelers can pay the future price increases of the Short- and Long-Term Parking Garages, while the larger portion of customers, the leisure travelers, can be induced to shift to economy parking which

would be readily available. In particular, with the investment in the APM, the idea that the APM can carry an increasing share of passengers with this shift is further justification for the construction of the APM.

#### 5.8.1.2 Manage Parking but Construct More Long-term Parking at the Terminal

The challenge of this alternative is where to build the additional spaces. While the requirements analysis suggests that 1,400 additional long-term spaces are needed to meet demand in 2031, the proactive parking management would tend to reduce this value to some degree by inducing greater demand for economy parking for leisure travelers. This alternative, nonetheless, was defined as the construction of 1,400 additional parking spaces, or approximately 475,000 SF of structured parking. In previous analyses and plans, additional parking was suggested to be built on the north (Red) side of the terminal complex, but that is not feasible given the international terminal which is proposed in this master plan update. Similarly, expanding structured parking over the east quad deck is no longer on the table given the presence of the APM station on that side. The only remaining options would therefore be:

- A structure over the west quad deck (four levels of approximately 119,000 SF each, or 350 spaces per level)
- A structure over the exit plaza (four levels of approximately 119,000 SF each, or 350 spaces per level)
- A vertical extension of the Long-term Parking Garage (add two levels of roughly 1,200 spaces each, with the second level compensating for the loss of spaces on each other level due to columns being sunk through approximately ten percent of existing spaces).

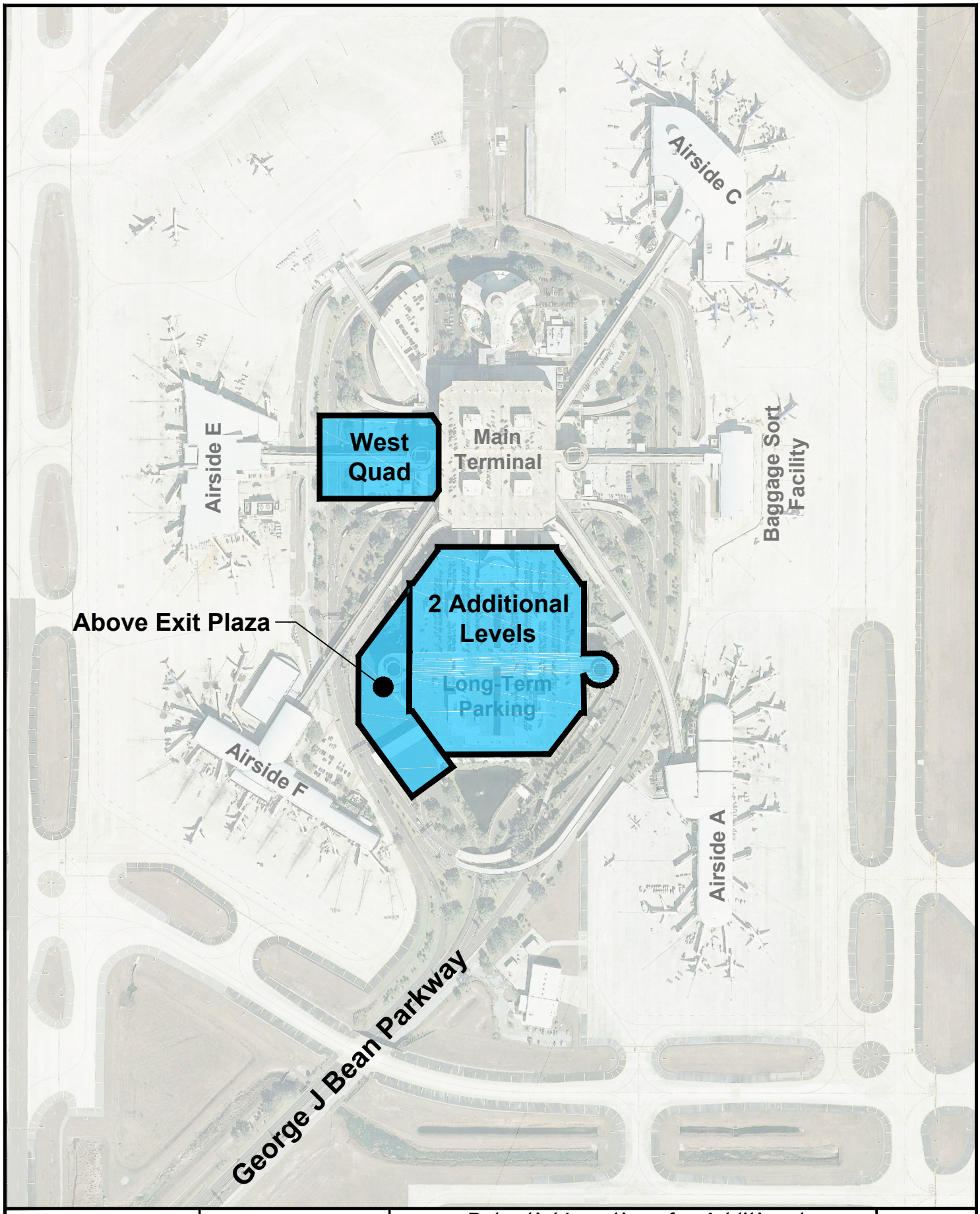
These locations are depicted in **Figure 5.102**. Of these, the West Quad deck location makes the most sense due to its proximity (compared to the inconvenient location over the exit plaza) and its lower cost (than the addition of new levels on the LTPG).

All of these are likely to prove to be feasible from an engineering perspective, but they would have extraordinarily high costs due to the need to construct them over active facilities while maintaining terminal and parking operations. Construction costs alone would likely range from $30 - 50 million. The impact and disruption of their construction is not desirable, and may not be a choice the HCAA would wish to make, given that there are other alternatives. With the high costs comes low net revenue, even considering that these new spaces would command premium prices compared to the construction of new economy spaces. The adverse effect of lower net revenues is compounded by the fact that these would be the marginal spaces, only needed in the very peak times, and that they would be used less and attract fewer parkers per space per year than the existing spaces.

Construction of new parking at the terminal complex in these three locations, while compatible with the other projects in this master plan, is not a flexible concept. Parking above the west quad deck precludes other terminal passenger processing options for the future. Once built, new parking needs to be utilized to pay off its bond indebtedness, and if demand changes, this may not come true.

The sole positive attribute is that this alternative provides the customer base more of what they now are demanding. Ostensibly, the customer satisfaction for this alternative should be higher

than the base case. However, the location over the exit plaza is further from the terminal than any other walkable parking, thus dampening some of its potentially favorable reception by the traveling public.




0' 250' 500'
SCALE: 1" = 500'

HNTB

Potential Locations for Additional Parking at the Terminal

TAMPA INTERNATIONAL AIRPORT
TAMPA, FLORIDA

DATE: Apr 30, 2013

Figure: 5.102

C:\Temp\AcPublish_3572\Parking Facility Alternatives.dwg Alternate Loc at Terminal Apr 30, 2013 - 4:47pm

#### 5.8.1.3 Manage Parking but Construct More Economy Parking

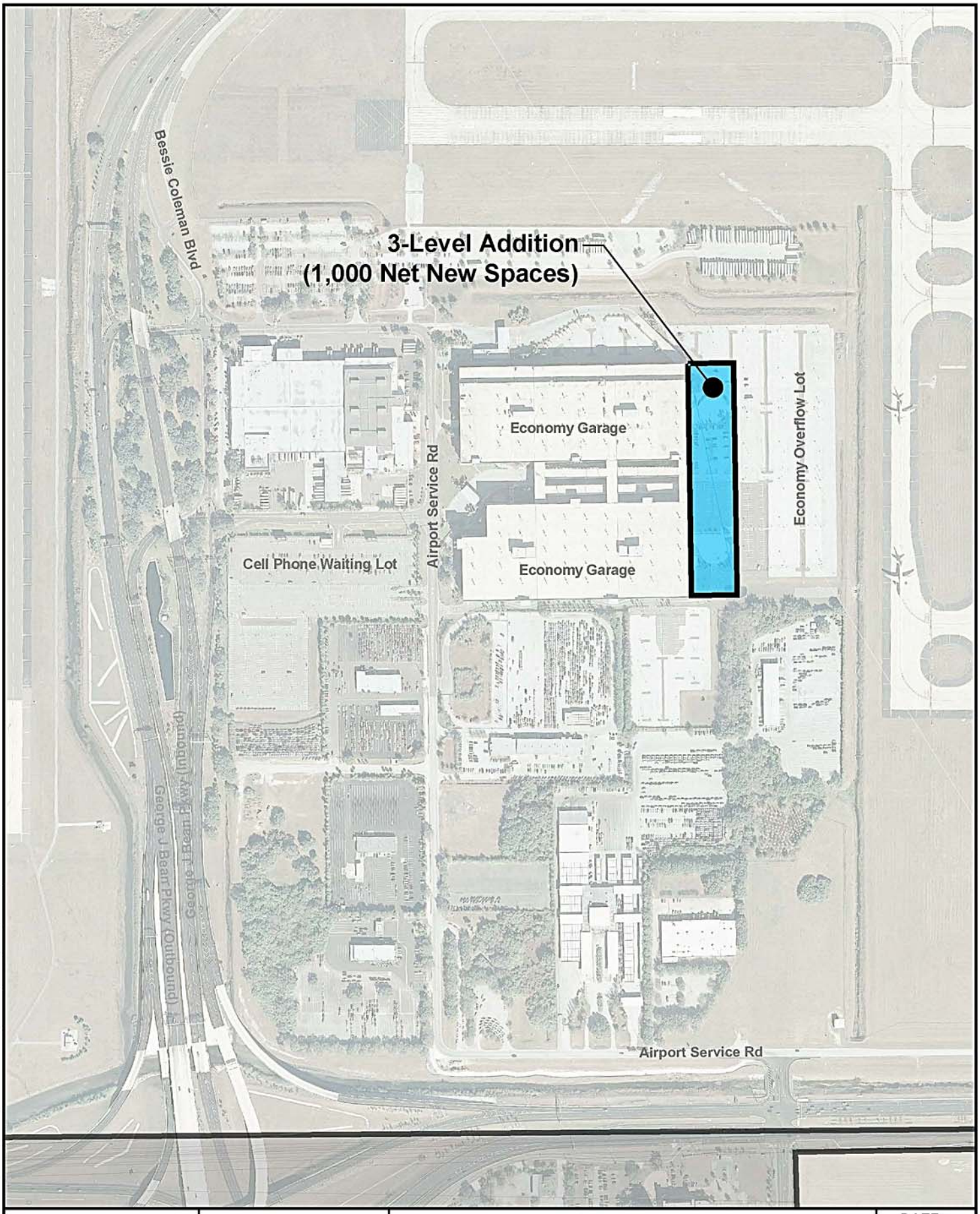
As with the previous build alternative, the construction of additional economy parking in the South Development Area is challenged by where to build it. The many elements of the plan for this area consume most of the available land area. The remaining footprint for new construction is small. The best location would be to the north and/or east of the existing Economy garages (above the overflow parking), but airspace restrictions from the adjacent airfield may constrain the heights to which structured parking may be built. The other option would be to build additional levels on the CONRAC garage. This has the more desirable feature of being a shorter walk to the APM station than the areas north and east of the economy garages. But it complicates the design and especially the business deal and funding of the CONRAC, and it would add considerably to its cost and height.

To construct 1,000 additional economy spaces would require the Economy Garages to be expanded by approximately 170,000 SF on each of three levels (to net the necessary increase in space count). This would be a 180 foot wide expansion to the east where overflow exists today (**Figure 5.103**). The cost of construction is estimated at $30 million. As noted for the previous build option, this option would not have the positive effect on net revenues as the Base Case, for the same reasons: the need to pay off the bonds and the fact that these new spaces would be the least utilized of the entire parking system. Moreover, with the expansion of economy parking comes the risk that the HCAA may not succeed in attracting back onto the Airport the demand which has migrated away. Thus these spaces are more risky than those which would be constructed at the terminal, as the risk of not having demand for walkable spaces is slim.

Built on the east (or north) side of the Economy garages, this concept is compatible with the balance of the Master Plan, and it does have the favorable aspect of further utilization of the APM system. But as with the other build option, this is not as flexible as the base case alone.

### 5.8.2 Recommended Public Parking Plan

The recommended plan is the base case of the operational changes described above (pricing, information, education, and demand management). It is low cost, maintains and grows net revenues from parking, is feasible and compatible with the rest of this master plan, and has the flexibility to add a parking construction element should that ever prove necessary. With effective demand management, customer satisfaction is expected to remain high, and there is low risk.

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HNTB

Potential Expansion of Economy Garages

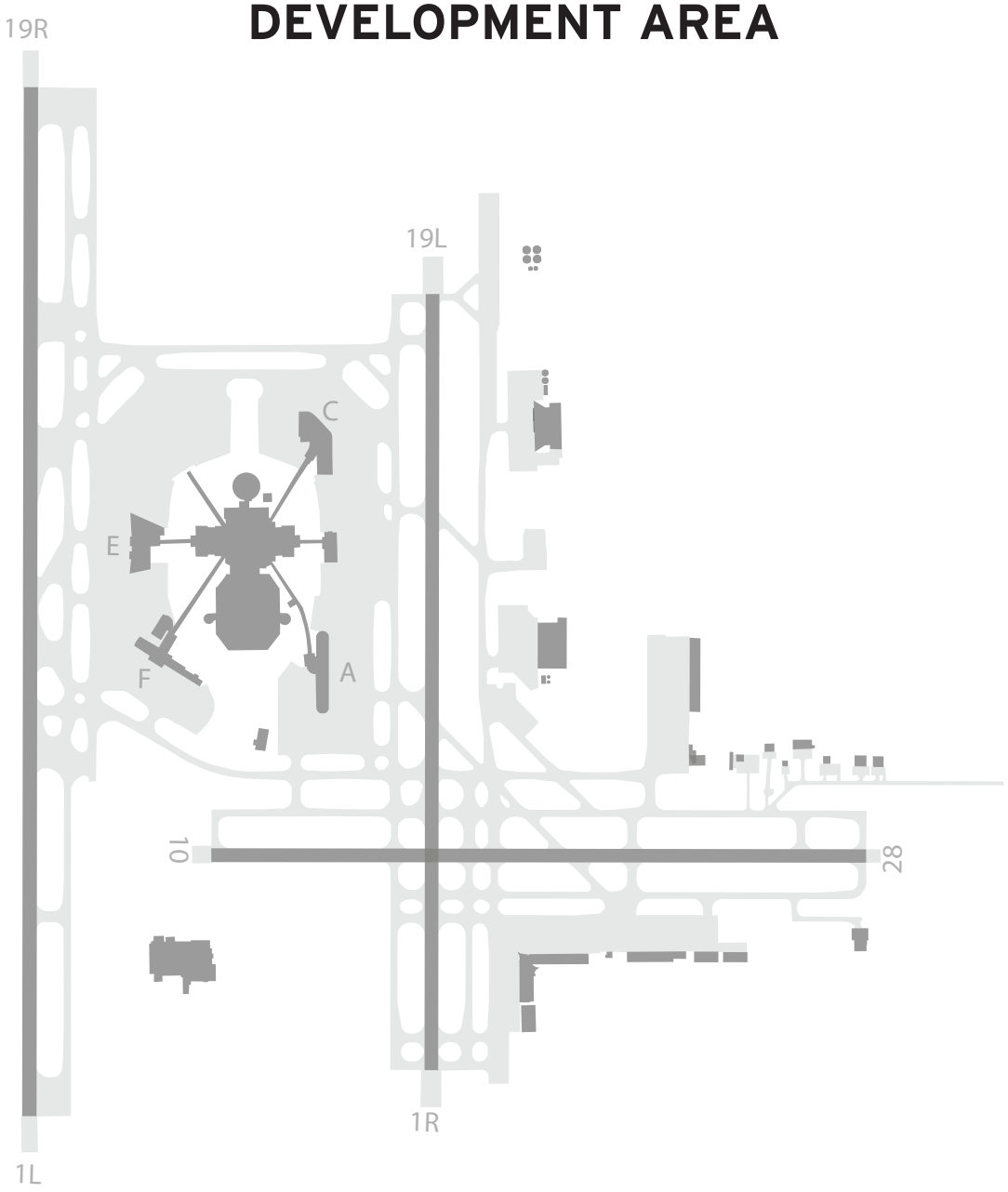
TAMPA INTERNATIONAL AIRPORT
TAMPA, FLORIDA

DATE:
Apr 29, 2013

Figure:
5.103

C:\Temp\AcPublish_2292\Parking Facility Alternatives.dwg Economy Garage Expansion Apr 29, 2013 - 11:09am

# SOUTH TERMINAL SUPPORT DEVELOPMENT AREA



# 5.9 South Terminal Support Development Area Planning Alternatives

The focus of this section is to provide an overview of the development alternatives considered for the South Terminal Support Development Area (STSDA or South Development Area) as part of the master planning process and to provide a recommended development alternative for the STSDA.

## 5.9.1 Introduction

Extending the capacity of the Main Terminal Complex is intrinsically linked to the ability to provide viable locations reasonably accessible to the terminal to meet the demand for key terminal area support facilities while maintaining the very high level of service that Tampa International Airport has become synonymous with. The analysis of the existing Main Terminal Complex quickly focused on the need to find alternative approaches to meet the growth in demand for parking, roadway capacity, rental cars and to address growth in demand for passenger related facilities. The available area within the main terminal area to meet all of this demand was simply inadequate. Thus, a decision was made that to ensure the life expectancy of the Main Terminal Complex to meet its primary role of efficiently processing enplaning and deplaning passengers at a high level of passenger experience and service would be the first priority to be met within the existing terminal area. Where necessary those services or facilities serving other roles could be considered for relocation as long as a high level of service could be achieved.

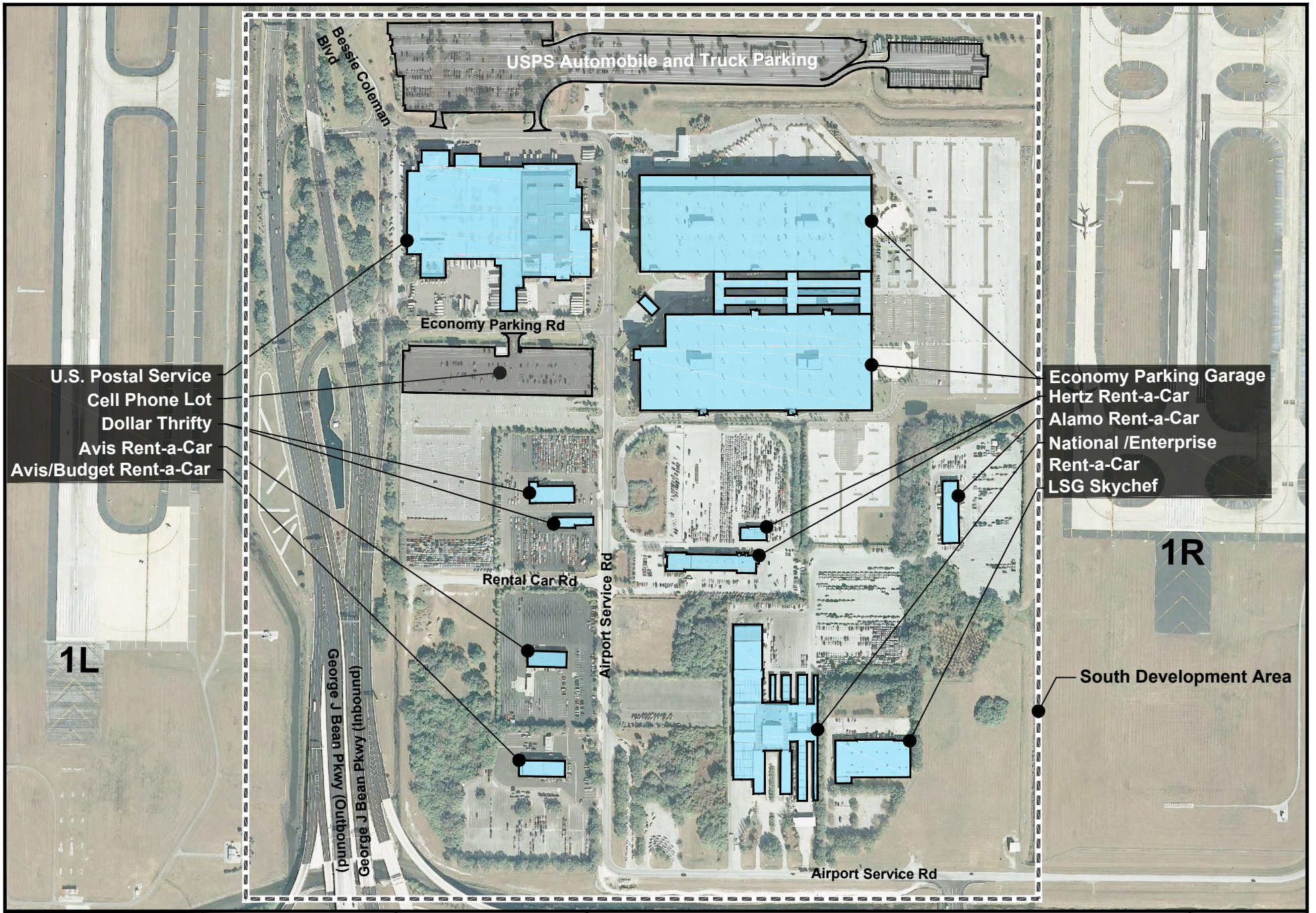
To accomplish this goal, and extend the life of the terminal roadway infrastructure and other support uses, a process of decongesting the terminal area envelope was identified and the focus of the planning turned to the definition of actions to address future demand. Early in the planning process it became very clear that there simply was not enough available space to accommodate the projected level of customer parking, rental car parking, processing and storage area, while also increasing the passenger handling capability of the Main Terminal to the level necessary. This would be done to delay the more extensive financial commitment and operationally more complex move associated with development of an entirely new North Terminal Complex. As a result, a focus of the master planning effort, consistent with the goal of extending the capacity and capability of the Main Terminal Complex as far as reasonably viable before committing to a North Terminal Development Program, has been to decongest the Main Terminal Complex to extend the capacity of existing terminal facilities and provide room to expand the main landside processor.

## 5.9.2 Definition of South Terminal Support Development Area boundaries

### 5.9.2.1 South Terminal Support Development Area boundary and acreage

The STSDA is defined by a boundary based on existing airfield and roadway features. For purposes of this planning effort the area is defined as being bordered by Spruce Street to the South, the George J. Bean Parkway on the west, and the alignment of Runway 10/28. Runway 1R/19L and its extended runway centerline south to Spruce Street establish the eastern boundary of the STSDA. The total site area equates approximately 200 acres of which an estimated 187 acres is currently developed but developable for alternate purposes. For a graphical depiction of the South Terminal Support Development Area and the existing facilities therein see **Figure 5.104.**

Within this area are several activities/facilities that are not deemed viable to either move or redevelop. Central among these are the two Economy Garages which were constructed within the last 12 years and have considerable life expectancy remaining, and the United States Postal Service sort facility, which the HCAA has indicated will have its lease extended through the end of the 20 year master planning horizon. Further, given the location of the USPS and the Economy garages coupled with the geometry of both Spruce Street and George Bean Parkway, the three points of ingress and egress into the STSDA were also considered in the planning effort as essentially fixed. These fixed facilities and points of ingress and egress are central to the planning of other facilities that are proposed for the STSDA. They establish the developable land within the area and in the case of the economy garages establish uses that have to be considered in the planning of access and interconnections with other facilities.

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HNTB

2900 SOUTH QUINCY STREET,
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FAX (703) 671-6210

# South Development Area

TAMPA INTERNATIONAL AIRPORT
TAMPA, FLORIDA

DATE:
Apr 29, 2013

FIGURE:
5.104

#### 5.9.2.2 Current Terminal Support Facilities in STSDA

Use of the STSDA to accommodate facilities to support the Main Terminal Complex is not a new concept, but rather has been employed for an extended period of time. Recommendations from the 1999 Master Plan resulted in the phased development of the Economy Garage complex that added 11,159 parking spaces in two garages and an additional 1,412 surface lot parking spaces. These spaces were provided to relieve the pressure on the short and long-term garages in the Main Terminal by providing an equivalent parking facility at a lower cost to the customer. More recently the HCAA has located their cell phone parking lot to the STSDA, providing a well-designed and highly accessible location for parties waiting for arriving passengers, thereby reducing demand on the terminal roadways and curbs from vehicles that would otherwise be circling the terminal access roadway network.

The area is also the site of extensive rental car storage and maintenance areas with facilities serving the Dollar Thrifty Automotive Group (DTAG), Hertz, Avis/Budget and Enterprise. Combined, a total of 55.36 acres of the South Terminal Support Development Area is devoted to rental car maintenance and storage use. Finally, two other support activities are currently located at the southern end of the site. These consist of a taxi staging area on a small tract of land approximately 2.75 acres in size and the SkyChef aircraft catering operation that is situated in a single 8,800 square foot building on a 3.8 acre site. These examples in association with the extensive rental car maintenance and vehicle storage areas that are also located in the south area have clearly established the location as a site for extensive terminal support facility development.

### 5.9.3 2005 Master Plan STSDA Recommended Development

The 2005 Master Plan Update did not propose a significant development program within the South Terminal Support Development Area. This was in part due to the extensive focus on shifting facilities (including additional Terminal Rental Car facilities) to the proposed North Terminal Complex. No changes were proposed to any of the Rental Car Maintenance or Storage areas located in the STSDA as they were shown to remain in the present configuration.

#### 5.9.3.1 Overview of 2005 Master Plan Recommended Development

Recommendations from the 2005 Master Plan were focused on four primary actions, one of which was subsequently constructed. The recommended development consisted of two proposed expansions to the Economy parking. One expansion that would be to the east of the northern parking garage and the other would be a mirror image garage south of the then existing north garage. This mirror image garage was subsequently constructed adding an estimated 6,000 economy spaces to the previous 6,000 spaces provided in the northern garage. The easterly extension of the north economy garage has not been constructed.

The second major development item that was shown to be partially located within the STSDA was the alignment of a proposed regional Light Rail-Transit (LRT) system. This system was part of a larger regional rail transit initiative. The original alignment considered in the master plan and as depicted on the 2006 Airport Layout Plan (ALP) extended from a station above the eastern edge of the east side quad lot in the Main Terminal complex southward crossing the terminal roadway system immediately west of Airside A and then paralleling the alignment of the George J. Bean Parkway passing beneath the Taxiway J bridge and beneath a future Taxiway

N bridge. From this point the LRT continued south along the east side of the Bean Parkway until near the south end of the STSDA where it turned to the east following the curvature of the ramp from westbound Spruce Street to Bean Parkway. The LRT then proceeded eastward between Spruce Street and the airport access road continuing to parallel Spruce and Boy Scout Road until reaching North Dale Mabry Highway. As originally envisioned the LRT alignment did not extend to the north of the existing Main Terminal Complex.

Subsequent to the preparation of the 2006 ALP a change in the LRT alignment at TPA occurred. The revised alignment that was ultimately incorporated into the North Terminal Planning effort showed the proposed regional light rail transit alignment entering the Airport from the north via the Hillsborough Ave/Hoover, Blvd intersection extending south into the North Terminal Complex and around the east side of the proposed North Terminal with an affiliated airport station at this location. The alignment then proceeded south crossing beneath a system of dual crossfield taxiways between the north terminal and Main Terminal Complex and continuing around the east side of the Main Terminal Complex to the station located on the east end of the eastern quad deck, from this point the alignment continued along the original path contained in the 2005 master plan.

The third development recommendation affecting the STSDA involved the extension of Taxiway S from its current western terminus at Taxiway B to the west end of Runway 10/28. This extension would provide a full length parallel taxiway along the south side of the crosswind runway.

The final recommended action that was planned to occur on or near the STSDA involved the proposed extension of the alignment of parallel Taxiway A from its current terminus at Taxiway J to the south end of Runway 1R/19L. This improvement would provide a dual parallel taxiway capability from the terminal complex to the south end of the eastern parallel runway. Based on the assessment in the 2005 master plan this improvement was needed when the Airport reached the 370,000 annual operations level. The revised forecasts associated with the 2012 update of the 2005 Master Plan indicates that TPA will reach only 277,040 annual operations by 2031. As a result, the proposed need for the Taxiway A extension will not occur until well beyond the 20-year planning horizon of this update.

#### 5.9.3.2 Changes associated with Tampa Light Rail

Just prior to the commencement of the current master plan update in late 2010, the HCAA reconsidered the viability of the potential LRT alignment following the terminal roadway alignment and eventually elevating to reach the main terminal due to concerns over the ability to accommodate the LRT route while also enhancing intra-airport connectivity between the main terminal and the STSDA while minimizing the growth and impact of increased traffic on the existing terminal roadway system.

Understanding the impact of the economic recession of 2007/2008 and resultant changes in the airline industry had on the timing of major facilities expansion, notably the North Terminal, a focus emerged on maximizing the capacity and life span of the Main Terminal Complex. The HCAA recognized that the LRT was not a viable system to provide for intra-airport transportation needs and that at a minimum a parallel intra-airport customer movement capability would likely be required to serve existing and future facilities required to extend the main terminal viability and life expectancy.

This was confirmed when the capability to meet long-term rental car demand was independently evaluated in early 2010. The ability to meet future demand within the available facilities in the Main Terminal Complex was deemed challenging at best beyond 2016, and could not be accomplished without significant impacts to the availability of public parking in the existing terminal garages.

Further the HCAA clearly recognized that there was insufficient room to accommodate terminal roadways, a rail transit system and an enhanced mode of intra-airport transportation such as an Automated People Mover system with the available corridor envelope. While there was some benefit to the Airport of having the LRT alignment in the terminal core, this benefit was overshadowed by the complications that the system would present for providing a modern, convenient and efficient system of intra-airport transport from current terminal support uses and even more importantly from key support uses that would likely have to be relocated to the south. As a result the HCAA made the decision to ensure the long-term viability of the airport complex through enhanced intra-airport connectivity over the retention of the transit alignment that passed through the Airport to access the a regional intermodal facility in Westshore.

#### 5.9.3.3 Disposition of the USPS facility

The 2005 Master Plan Update and associated ALP developed from that process depicted the USPS sort facility located in the STSDA to remain in place. After the completion of the plan, the potential for the USPS to be moved from their current location to some other site on the Airport or to a site elsewhere in the Tampa area was considered. A number of planning analyses were prepared based on the assumed relocation of the postal service out of the STSDA and the recommended relocation of the facility was noted as a basis for subsequent planning in the STSDA. The assumed relocation of the USPS out of the STSDA was carried forward into the planning effort undertaken as a part of this master plan update. At the direction of the HCAA, this assumption guided a number of planning analyses that were prepared based on the premise that the USPS site would become available for development of other uses no later than the expiration of their current lease in 2020.

In late 2012 near the end of the planning process the HCAA conducted an internal reconsideration of the future status of the USPS facility in the STSDA. The reconsideration occurred in light of the significant economic recession in 2007/2008 and the slow recovery. Unemployment nationally, statewide and in Tampa remained stubbornly high and any action that might cost the Tampa area possible jobs was difficult to consider. Considering the tenuous financial condition of the USPS there was very real fear that a non-renewal of their lease could result in their shifting operations to another community, and cost the Tampa area the 600 to 700 jobs that the facility supports. Due in part to these concerns a decision was made in late 2012 to offer a lease extension to the USPS extending their occupancy of the site to the end of the 20 year master planning horizon.

Considerable effort in planning and assessing an array of site development options had occurred prior to the decision to retain the USPS facility in its present location. Multiple options incorporating various combinations of land uses and varied commitments of acreage to these uses at different locations within the South Terminal Support Development Area, along with alternative configurations of facilities were prepared based on discussions and input from senior managers with the HCAA based on the assumption that the USPS was to move. These concept variations are included in **Appendix K** to display the varied refinements of alternatives that occurred over the planning period based on input from the HCAA as well as to provide background on the basis for the recommended alternative and background should the status of the USPS change at some point in the future.

#### 5.9.3.4 Taxiway S Recommendation

The proposed extension of the Taxiway S alignment along the south side of Runway 10-28 to access the Runway 10 threshold, when coupled with its affiliated taxiway safety area and object free area, would impact and preclude the use of a large section of the existing parking area and tractor trailer storage area leased to the USPS and located north of the economy garages. While the primary employee parking lot directly north of the sort facility would not be affected, the easternmost 1,650 feet of this parking area would have to be removed. In reviewing the need for this proposed taxiway extension, it was found that the cost of the recommended action was generally not supported by the operational use it would incur given the limited operational activity on the runway by aircraft that would likely use the taxiway. Subsequent to the completion of the 2005 master plan, the decision was made by the HCAA to remove this proposed improvement from the ALP and to not carry it forward.

## 5.9.4 Existing Site Characteristics

### 5.9.4.1 Definition and Overview of Current Site Development and Infrastructure

*Site Characteristics*

The existing STSDA houses a mixture of terminal and airport support functions critical to the operation of the Airport. These include the following:

- United States Postal Service Sort Facility (existing)
    - USPS truck and employee parking (existing)
- Economy parking garages (existing)
- Flight kitchen - LSG Skychef (existing)
- Taxi Staging Area (existing)
- Cell Phone Lot (existing)
- Rental car maintenance and support facilities (existing)
- Existing STSDA Roadways
- Wetlands

The area is nested with the airport access roadway network between the 4,300 feet of separation of the two north south runways (1R/19L and 1L/19R) and is situated to the south of the crosswind runway 10/28. Since the area has direct access to the main terminal via Bessie Coleman Boulevard, it is uniquely positioned to provide integrated support to the main terminal facility. The area is expectedly flat in terms of topography and is clearly developed in a very utilitarian manner to serve the aforementioned support functions. As such, with the exception of the economy garage, the environment and roadway treatments do not resemble facilities that cater to the general public as an extension of the main terminal.

*United States Postal Service Sort Facility*

The existing U.S. Postal Service Facility in the South Development area is a large sort facility that occupies approximately 12.8 acres (or 560,000 square feet) with some 600 or 700 employees. The facility is located in the northwest portion of the South Development Area east of George J Bean Parkway, north of Economy Parking Road, West of Airport Service Road, and South of Airport Access Road.

The structure's footprint equates to approximately 300,000 SF. The Facility operates as a regional sort facility for the USPS that also houses a retail post office installation and passport office to serve the general public. The post office portion of the facility is located at the mid-point of the west side of the building along with approximately .92 acres (40,000 SF) of public parking. Access to the post office can be gained via Airport Access Road and Economy Parking Road. The passport office is on the northwest corner of the facility.

The remaining three sides of the facility are primarily occupied by shipping/receiving docks and trailer parking. In total the north and south sides of the facility provide 57 shipping/receiving docks. The east side of the facility has ten roll-up doors and associated truck parking positions.

Around the facility are clusters of trailer and truck parking spaces interspersed where space is available.

*USPS Truck and Employee Parking Facilities*

To the north of the USPS sort facility are two large main lots that can be accessed by Airport Access Road. The lots abut the airport boundary and are just south of Runway 10 end and north of Airport Access Road. The lots are utilized for employee vehicle parking and storage of tractor trailers. The lots total approximately 11.5 acres (500,000 SF) and contain approximately 880 marked passenger vehicle parking spots and 60 trailer parking spots.

*Economy Parking Garages*

Economy Parking is provided on-airport by two garages and an adjoining surface lot in the South Development area. The garages are located east of Airport Service Road and south of the Runway 10 end and the USPS employee and trailer parking lot. The garages occupy approximately 19.25 acres with an additional 16.4 acres of adjacent overflow surface parking on the north end east sides of the garages (total economy parking facility = 35.7 acres).

The garages provide 11,159 spaces spread out over six levels with 1,412 surface lot spaces. Vertical clearance in the garages is 8 feet. The main entrance to the facility is accessed via Economy Parking Road which leads directly to the entrance gates and vertical circulation ramps that run in between the two facilities. Airport shuttles run to/from the terminal 24 hours a day with typical service frequencies of every 7 to 10 minutes. The shuttles travel through the center of the two economy garages on the ground floor and pick up and drop off at two locations within each garage. At the terminal building they drop off at the departures curbs on both sides, and pick up at the quad lots on arrivals level of the Blue and Red sides.

Of the two garages, the northern facility is more heavily used, while the second garage to the south is primarily closed as it is not usually needed except during peak times, typically around holidays. At the time when the garage was constructed the northerly garage was heavily used and existing activity/forecasted demand justified the need for the second garage. Primary reasons for the light use of the south garage are the economic recession and the growth of the off-airport private parking industry over the last ten years. Off-airport parking vendors are able to offer cheaper parking options and additional services that pull some demand from the Airport owned garages.

Overall, the existing facilities are in excellent condition and are recommended to remain in their existing configuration through the duration of the master planning period.

Photo: Existing Economy Garages and Airport Service Road. Source: HNTB Corporation

*SkyChef*

The LSG Sky Chef facility serves an Airport Terminal Support role as a flight kitchen. The overall facility is approximately 4.0 acres, with a building footprint of approximately 44,000 SF. This facility will be impacted by the ultimate construction of the CONRAC, and rental car storage and maintenance areas as identified in the surrounding sections.

*Commercial Vehicle Staging Area*

The taxi staging area is located at the southern end of the South Development Area on the northeast side of Airport Service Road corner where the road takes 90 degree turn from the south to the east. The irregularly shaped area is generally in a north/south orientation and equates to an area of approximately 3.0 acres. There are two main areas, a linear queuing area and a staging lot. The area and orientation of the vehicle queues facilitate taxis to enter the site from the south and exit to the north. The main queuing area is approximately 460 feet long north to south with room for queuing on the left and right sides of the corridor, with a central lane kept open for flexibility. The staging area is approximately .6 acres and has striping for many shorter queues that run parallel to one another. There are two access points, an entrance to the east and an exit to the west. The queues stack starting in the south and run parallel to the north.

Feedback from users and the HCAA indicate that the layout of the area and management of this area results in an inefficient operation that could be better organized for the purpose at hand. Given that the lot is used as a pre-queue by taxis and also for charter bus and shared ride van staging, it needs to be both expanded and reconfigured to meet the differing needs of those modes.

*Cell Phone Lot*

The cell phone lot is currently located just south of Economy Parking Road. The lot has a single bidirectional access point to/from Economy Parking Road. The surface lot contains

approximately 330 parking spaces and is approximately 3.1 acres in size. The lot features two large south facing flight information display boards east and west of the main entrance/exit that provide critical flight information for meeter/greeters waiting in their automobiles. The facility provides free Wi-Fi access, a small restroom facility, and is also served by privately operated food trucks.

*Rental Car Maintenance and Storage Areas*

The South Development Area houses additional rental car support functions and vehicle storage areas for all the rental car companies. The rental car support areas are located south of the cell phone lot on the west side of Airport Service Road and south of the Economy parking garages on the east side of Airport Service Road. The facilities run south all the way to the east west alignment of Airport Access road and Spruce Street. All of the companies have maintenance bays, administrative space and storage space in the South Development Area. The amount of land they occupy and total quantity of building space for each operator is included in **Table 5.15** below with a breakout of the number of buildings and individual building square footage below:

**Table 5.15**

**South Development Area allocation**

| Rental Company | # Bldgs and SF of Each | Total Buildings (SF) | Land (acres) |
|---|---|---|---|
| Avis Budget | 2 – 9,000/11,000 | 20,000 | 14.8 |
| Dollar Thrifty | 2 – 12,000/5,500 | 17,500 | 6.4 |
| Enterprise Alamo National | 2 – 133,000/15,000 | 148,000 | 22.5 |
| Hertz | 2 – 23,000/5,500 | 28,500 | 11.7 |
| **Total** | | **214,000** | **55.4** |

Note: *Quantities represent existing leased facilities, and do not include additional land that the rental car companies lease during peak storage times.

All of the aforementioned rental car vehicle storage and maintenance facilities will be impacted by the ultimate construction of the CONRAC, APM, Employee Parking Garage, and Airport Support Commercial development as identified in the surrounding sections.

The solution is to consolidate these facilities in the QTA and just east of the CONRAC in a single consolidated area. Alternatives to accommodate these areas are discussed in detail in **Section 5.1.7**.

*Existing South Development Roadways*

The existing roadway network within the STSDA has four entry/exit points and consists of three primary roadways. See **Figure 5.104** for an overview of the STSDA and the roadways in discussion. These roadways are as follows:

- Airport Service Road
- Economy Parking Road
- Bessie Coleman Boulevard

In the STSDA the Airport Service Road in a north/south orientation and serves as the 'spine' road which connects to Bean Parkway on the north side of the STSDA. Inbound traffic returning from the terminal area enters at this point and outbound traffic headed south on the Bean Parkway can utilize this entry/exit point. From this point the Airport Service Road has an east-west alignment and curves to a north-south alignment at the Economy Parking Garage. From there it bisects the STSDA providing access to all land uses within the area. At the south side of the STSDA the alignment changes to an east-west orientation and an entry/exit point is provided to Spruce Street via O'Brien Street. The Airport Service Road is a two-lane undivided roadway and it currently operates at a level of service C. All intersections currently also operate at acceptable levels of service; however, the intersection of Spruce Street and O'Brien Street is over capacity and currently operates at a level of service F.

Economy Parking Road serves as the primary entry point into the STSDA. Traffic travelling from the south and entering the airport property accesses the STSDA from this point. The Economy Parking Road has an east-west alignment from the entry point and terminates at Airport Service Road. The terminus point also serves as the entrance driveway into the Economy Parking Garage. The Economy Parking Road provides access to the Cell Phone Lot and the south side of the Post Office facility. Economy Parking Road is a two-lane undivided roadway and it currently operates at a level of service C. All intersections currently also operate at acceptable levels of service.

Bessie Coleman Boulevard is a north-south roadway that operates northbound only on the west side of the Post Office facility. This roadway provides connectivity from the Economy Parking Road to the Airport Service Road. To the north it provides access onto the Bean Parkway to return to the terminal area and also provides access to the Service Road for the airside facilities.

*Wetlands*

The south terminal support development area has several relatively large areas that have been investigated and are jurisdictional wetlands by definition. These include an area adjacent to the northernmost service facility and parking area within the Enterprise leasehold and another former pond site located between the Avis/Budget leasehold and George J. Bean Parkway. All wetlands within the South Terminal Support Development Area have been previously assessed and addressed through a conceptual permit. As a result they require no further consideration and are approved for removal.

## 5.9.5 Terminal Support Facility Development Alternatives

### 5.9.5.1 Rental Car Development Alternatives

The planning process to address future rental car facility needs did not immediately focus on the location of facilities within the STSDA, but rather was initiated to determine viable alternatives for meeting demand within the existing rental car ready/return and QTA facilities within the Main Terminal Complex. The HCAA desired to retain the convenience for customers of having rental cars within the Main Terminal Complex immediately across the terminal arrivals curb from the main terminal facility. The convenience to customers provided by this proximity was perceived as a major contributor to the high level of customer satisfaction that the Airport enjoys. The desire to keep rental cars within the Main Terminal Complex was also echoed by the major rental car companies in meetings that were conducted during the planning process.

The current proximity of rental car facilities to the main passenger processor would appear to provide an apparent high level of convenience and customer service to the traveling public at TPA. However, it must be remembered that proximity is just one factor that needs to be considered when determining whether a high level of service can be provided in the future as well as whether that level of service is beginning to be challenged by factors other than proximity. The quality of service being provided to customers is also tied to the ability of the rental car facilities to operate efficiently and effectively, which can be challenging at TPA given the available space for rental car operations and configuration of the current facilities resulting from the site limitations within the existing terminal complex.

The HCAA had undertaken significant enhancements to extend the longevity of the rental car facilities to the extent possible and had previously investigated additional actions to try to meet demand while keeping rental cars in the Main Terminal. Unfortunately, the fundamental fact remains that demand for space for rental car needs, public parking needs, terminal facilities and other passenger service needs, within the physical limits of the Main Terminal Complex site, cannot all be accommodated due to the limited area available and require the establishment of priorities for what is to be accommodated within the site.

#### 5.9.5.2 Re-cap of Present In-Terminal Rental Car Operation

The On-Airport Rental Car companies presently operate out of two separate garages in the terminal area. Each company has counter space and ready/return facilities that operate from the Blue side garage while the companies only provide ready spaces out of the Red side garage. The Blue side garage accommodates 670 rental spaces and quick turnaround facilities with 140 fuel positions and 13 wash bays on the first level. All maintenance activities are conducted within the maintenance and storage areas that are located outside of the terminal area in the STSDA. The second level of the Blue side garage is devoted primarily for car return and limited storage of overflow vehicles. This level provides space for approximately 1900 vehicles in a mix of parking spaces and in-line storage.

The Red side garage accommodates 635 rental spaces and is not used for car return. All vehicles must be returned to the Blue side where they are processed and then moved to the Blue and Red garage rental spaces.

Though deemed generally sufficient for meeting demand in the short- term, the In-Terminal rental car facilities as currently configured will not have the capacity to adequately meet projected 2016 demand. Further, the current facility configuration will retain the numerous facility and operational issues and deficiencies that were discussed in the Facility Requirements Section that include:

- Red garage for rentals only providing no flexibility to cross utilize space.
- No space to accommodate new rental car company entrants limiting selection and price options for customers.
- Blue garage level 2 return area is oversized and inefficient.
- Inefficient QTA with limited queuing, stacking, storage and constrained access to fueling dispensers.

- No QTA or ready car expansion capability without further reducing the already deficient supply of Long Term Parking space.
- Labor intensive and inefficient vehicle service travel times from STSDA to Terminal Complex.
- Limited ready car inventory impacts customer service by not having inventory readily available during peak periods.
- Customers must cross often busy arrivals curb creating vehicle/pedestrian interaction and potential for incidents.
- Split operation for storage, maintenance and service facilities.
- Costly to operate:
    - Multiple management areas
    - Increased personnel and drivers required
    - Additional vehicles required

To address the post 2016 demand, conceptual options were investigated to accommodate the level of projected rental car industry growth within the Master Plan Timeframe of 2031. Consistent with the desires of the HCAA to make every attempt to accommodate rental cars within the current terminal area, the initial focus of the alternatives analysis was on defining alternatives that attempted to meet long-term demand (rental car ready/return/QTA) in the Main Terminal Complex area.

#### 5.9.5.3 In-Terminal Rental Car Options

Two alternatives were studied to keep the present RAC operation within the Terminal Area for Customer Service reasons and to increase RAC efficiency and reduce operational costs.

- Consolidation within the Blue Side garage
- Consolidation within the Blue Side and Short-Term garages

Rental car expansion options involving the potential development of facilities to the north of the existing landside facilities (in the vicinity of the airport hotel, red side garage and ATCT were not considered as this area was determined to be the only viable location available to accommodate the expansion of terminal facilities to extend the longevity of the Main Terminal Complex while also maintaining a high level of customer service. Committing this area to use for rental car expansion would negate the ability to extend the terminal and trigger the need to move to the north terminal development program with its attendant cost and operational complexities. Thus, given the choice of meeting passenger processing and terminal efficiency and capacity issues or providing for expanded rental car facilities, the choice was made to focus on the primary role of the terminal which is to efficiently and effectively meet passenger processing demands within the available area.

*Alternative One - Blue Side Garage Option*

The first in-terminal alternative that was considered involved the consolidation of the current split rental car operations between the red and blue sides of the terminal into a single location

that would be located in the Blue Side Garage. Consolidation of operations in the Blue Side Garage was logical for several reasons. First, the Red Side Garage is considerably smaller and could not meet the longer term vehicle demand that was projected and, secondly all vehicle return and QTA functions are presently located in the Blue side garage and space to replace these in the Red Side Garage is simply not available.

Under this option the Red Side garage would be eliminated from RAC use and all RAC operations and customers moved to the Blue Side. This would require the conversion of the third level in the garage from its current customer parking use to rental car use. Levels one, two and three of the Blue Side Garage would then be solely dedicated to rental car use, while the remaining floors of the garage would be retained as long-term terminal proximate general public parking. Associated with the consolidation of the ready/return/QTA functions on the Blue side would be the need to also consolidate customer service facilities. To this end, a new multi-level customer service building would be constructed providing customer access to the central terminal on both the ticketing and baggage claim levels as well as accessing the first, second and third level Rental and Return spaces.

As proposed, all customers would be directed to a single rental car processing area removing the potential confusion that can be associated with the current option of using either the red or blue side. Consolidating operations into a single customer lobby improves operational efficiency and also can reduce cost versus the current split operation between the Red and Blue sides. While having a single location for all customer service activities at TPA, the alternative does result in an increase in walking distances for those customers arriving on the Red Side of the terminal. It would also increase walking distances for passengers who are first picking up luggage from the baggage claim with the added requirement of having to go back up at least one level to be able to access the blue side. It should be noted that walking distances and passenger wayfinding are two very key issues for the HCAA with specific criteria to keep passenger walking distances to no more than 700 feet. Depending upon where arriving Red Side passengers were coming from, meeting these criteria could be challenging.

The existing QTA on the first level would be reconfigured to widen lanes and reduce the total number of fueling positions to increase process flow, vehicle staging and the overall operational efficiency and vehicle processing rate in the QTA. Consistent with industry trends an additional QTA capability would be constructed on level two to serve both the level two and level three RAC operators. While this does not provide a QTA capability on each floor as is being done at a other new consolidated facilities it would be a significant enhancement over the current situation and would allow for the decongestion of the current first floor facility and allow for significant improvement to the operational efficiency for the rental car companies over the conditions they face today.

Based on the proposed addition of Level Three to the Blue Side Rental car area along with the proposed reconfiguration of the level 1 QTA and addition of a second level QTA the consolidated Blue Side rental car alternative would provide approximately 1800 rental and return spaces and additional space for the storage of approximately 800 vehicles on level three. Even with the addition of Level 3 of the Blue Garage, the resulting increase in ready/return/on-site storage does not meet the level of demand for 2031. Meeting the 2031 demand level would require the conversion of Level 4 of the Blue Side Long term garage and potentially Level 5 when expanded QTA requirements are considered.

The addition of Level 3 alone, to the current two levels of the Blue Side Garage used for rental car activities would remove approximately 1,270 long-term parking spaces from the current 6,854 available spaces leaving 5,584 available spaces to meet long-term public parking demand. It should be noted that based on the projected parking demand and assuming Level 3 is not devoted to a rental car operation the projected long-term parking demand in 2016 would exceed the long-term garage capacity by 457 spaces. If the third level was shifted to rental cars, this 2016 deficiency would increase to an estimated 1,727 spaces and reach 2,749 spaces by 2021 and almost 4,800 spaces by 2031. If Level 4 were also required the deficiency in long-term parking would be increased by another 1,270 spaces reaching approximately 4,019 spaces in 2021 and 6,070 by 2031. The negative impact on the level of customer service for these users stemming from the loss of long-term parking would be significant and this impact would be most significantly felt by those who live and work in the Tampa Bay area and the Tampa International Airport market area. Given the loss of needed parking, additional parking would likely need to be provided elsewhere on the Airport and a connection this added parking to the terminal would be necessary.

This alternative would be more functionally efficient if structural reconfiguration of the garage levels was found to be viable and were undertaken, as the existing parking garage structure is not optimally configured in a manner consistent with a purpose built rental car facility. Differences in floor to ceiling heights, column spacing and other complexities would continue to adversely impact the capacity, configuration and operational efficiency of the alternative even with some level of retrofit. Even with the enhanced QTA processing capability, increase in ready/return space and the vehicle storage area, peak period vehicle movements to and from the South Area would still be required with the attendant labor, time and degradation in overall operational efficiency that is experienced under the current condition. Further, the need to continue to move vehicles from the South Terminal Support Development Area to the Main Terminal Area would continue to add traffic onto the sole terminal access roadway system contributing to the reduction in available roadway capacity to meet future demand. As was noted, under the current situation it is estimated that rental car movements contribute upwards of 8,500 daily trips to the traffic volume on George J. Bean Parkway and contribute to the erosion of available roadway capacity for customers transiting to and from the terminal area.

While providing some relief to the current deficiencies that significantly impact the existing rental car operations at TPA, this alternative was not deemed to be a reasonable or viable long-term solution. Massive impacts to the available terminal proximate public parking inventory, increased congestion on terminal roadways, and significant retrofitting of a parking structure not designed to serve the intended rental car function all combine to undermine the option. In short, these factors combined to eliminate this alternative from serious consideration.

*Alternative Two - Blue Garage Return/QTA with Short-Term Garage Ready Lots*

The second concept developed in an attempt to accommodate rental car ready/return and QTA operations within the existing Main Terminal Complex involved the combined utilization of a portion of the Blue Garage along with part of the Short-Term parking facilities that are located in the garage area on top of the Main Terminal landside building. As with the previous alternative the Red Side rental car garage would be eliminated from RAC customer use. This alternative consists of converting the entire first level of the Blue Side Garage to accommodate vehicle fueling and washing QTA facilities. With the added space on the first level obtained by eliminating rental spaces from this floor, additional room can be provided for reconfiguration of

the QTA operations and to construct additional QTA facilities. The commitment of the first level solely to QTA activities negates the need for a second floor QTA as was considered under the first in-terminal option. The commitment of the entire first floor of the Blue Side Garage to QTA activity would enhance and increase process flow, vehicle queuing, vehicle staging and operational efficiency. The second floor of the Blue garage would continue to be used for vehicle returns and to also provide for on-site storage of vehicles.

All customer rental car ready spaces would be relocated from the Blue Side Level Two and the Red Side rental car garage into the Short-Term Garage and would occupy levels four, five and six of the Terminal short term parking structure. A new Customer Service Rental Lobby served by the elevators in the Central Terminal would be constructed at the center of level four and would likely be enhanced with the installation of escalators to improve vertical circulation to levels five and six. From a rental car customer service perspective the direct vertical access from the baggage claim, ticketing and transfer levels of the terminal to the rental car service center and ready lot has several key advantages over the current operations including negating the current interaction of passengers and vehicles on the terminal arrival curbs and simplifying wayfinding to and from the rental car customer service lobby

Approximately 1500 rental ready spaces would be provided on the three levels of the short term garage in addition to the 1800 return/storage spaces in the Blue Garage second level thereby providing a total of approximately 3,300 total rental vehicles in the consolidated facility. Accommodating the movement of rental ready spaces into the terminal top short term garage would remove approximately 1,909[3] existing short term and valet parking spaces from the inventory of 3,542[4] available public short term and valet spaces parking leaving a total of 1,643 short-term/valet parking spaces at TPA. Based on projections the current inventory of available short term parking is sufficient to meet forecast demand through the 20-year planning period, however, if three levels of the current short term garage were devoted to rental car use, this would no longer be the case. Based on this concept the Airport would experience a 1,100 space deficiency in 2016 increasing to a 1,500 space deficiency in 2021 and reaching a 2,165 space deficiency in 2031. Further, the ability to offset this loss of short-term parking in the Main Terminal Complex is seriously constrained by height limitations, line of sight considerations and the lack of space for the expansion of parking in proximity to the terminal. A loss of short-term parking could have an immediate and highly adverse impact on the terminal roadway and terminal curb as drivers that might otherwise take advantage of the one hour free parking in the short-term garage would likely opt to orbit the terminal roadway system adding significant trips to the system.

The proposed option would provide for an in-terminal rental car alternative providing a two hour vehicle reserve, but would be approximately 1,100 vehicles deficient if a three hour reserve capacity in the facility were required as has been alluded to by the current on-airport rental car companies. Further, given the more limited size of the floor area of the short-term

[3] Count taken from as-built drawings of Level 4, 5 and 6 from HCAA drawing records

[4] Tampa International Airport Public Parking Space Counts 9/23/2011

garage versus that of the Blue Side Garage, it is likely that some of the major rental car companies would likely have to have rental cars on more than one floor with an attendant impact to customer wayfinding and walking distances. Further, the ability to meet the needs of new entrants could also be limited if not negated unless an additional level of the short term garage were allocated for rental car use, further reducing the inventory of the short term parking product.

In addition to the loss of Short-Term Parking this option, similar to the previous Blue Side option, would involve costly structural changes to the existing parking garages to better facilitate a rental car use. It is likely even with the structural reconfiguration elements of the former parking garage design would remain that would impact the operational efficiency of the concept, not to mention the complexity of the construction efforts that would be involved. This alternative shares several other adverse characteristics that were identified under the previous option. The split operation with the QTA and return car areas in the Blue Side Garage would still exist with elements of the negative attributes of the present inefficient operation. This system is labor intensive given the limited storage space within the terminal to meet demand peaks without having to rely on the remote vehicle storage in the South area. Further, as presently configured, the current operations contribute to added vehicle traffic on the terminal roadway stemming from having to move rental cars from the south area storage facilities to the main terminal. While the impact of this option on traffic volumes would be lower than the current estimated 8,500 trips there would still be significant traffic loaded onto the Bean Parkway associated with vehicle movements between the maintenance and storage areas in the STSDA and the Main Terminal Complex.

In the final analysis, the concept addresses some of the issues currently impacting the efficiency and quality of operations by the rental car companies, but does so with a facility that was not designed to serve as a rental car center. The facility can only be partially re-engineered to address the design related issues. While an increase in the level and quality of service for the rental car customer is achieved, it is accomplished at a significant degradation in customer service to other key airport users (local passengers who need to park). A viable, economical and efficient replacement for the lost short term parking could not be reasonably provided and as a result a cascading effect would occur with former short term customers either opting to orbit the terminal impacting roadways and curbs or to move to the long term garage which is already facing capacity issues. Based on these considerations, meeting long-term rental car facility requirements within the Main Terminal Complex were determined to be not viable. As such, other concepts to address future needs had to be considered. It should be noted that this conclusion was previously recognized in the 2005 Master Plan which identified the development of an additional rental car facility to serve the North Terminal development by the 2015 time frame.

*Alternative Three - North Terminal Area CONRAC Option*

As noted above, the preferred North Terminal Development Plan that was presented in the 2005 Master Plan included the development of two additional rental car ready/return/QTA facilities that would be constructed in two phases. One of these would be undertaken as a part of the initial phase of the north terminal program. The rental car facilities were shown as being incorporated into the required parking garages similar to the operations contained in the current Blue Side Garage in the Main Terminal. These facilities were only intended to meet an increment of the overall demand for rental cars and were not intended to provide for the

consolidation of rental cars in the North Terminal Area. As depicted, the first phase of the landside terminal facility would be developed to the north of the parking/rental car facilities. Subsequent expansion of the North Terminal was to result in the development of a second public parking garage/rental car facility to the north of the Landside Terminal area.

Essentially, the proposed 2005 Master Plan concept when completed would generally mirror the split rental car facility configuration (Red Side/Blue Side) in the current Main Terminal area. The net result of the proposed plan would be that rental car ready return facilities would be provided at four individual locations at TPA. These locations would provide three QTA areas, four individual fully-staffed customer service facilities located in two separate terminal complexes and would all served by the current maintenance and storage area located in the STSDA. These separate facilities would all use Bean Parkway and the extension of this road into the north terminal for the movement of vehicles to and from all four facilities. Development of a connection of Bean Parkway to Hillsborough Boulevard was noted as an option, but not necessarily a recommended action in the preferred concept plan. Subsequent discussions with the HCAA have indicated a desire to not have a connection to Hillsborough Avenue that might allow non-airport traffic a route to cut through the Airport.

The initial rental car facility per the plan for the proposed North Terminal was to come on-line on or around the year 2015 based on the forecast of activity developed at the time of the planning effort. This time frame has shifted considerably due to the economic crisis that occurred in 2007/2008 and the subsequent slow recovery. Assuming that absolutely no improvements were to occur to the Main Terminal Complex the revised demand forecasts show that the need for the initial phase of the North Terminal Complex would be shifted nine years further into the future with the facility not being required until 2025/2026 versus the original 2015 horizon.

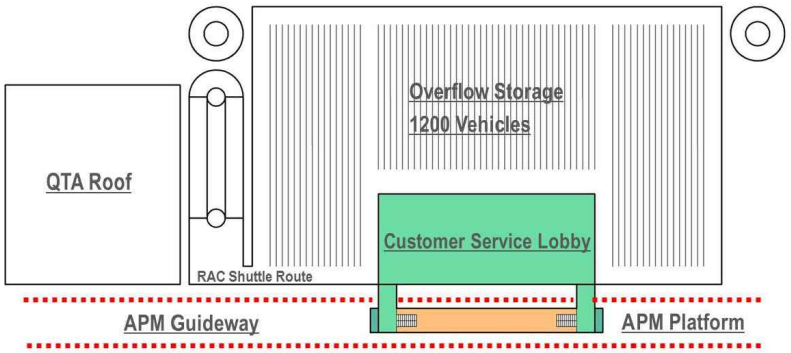
While the need for a north terminal facility shifted dramatically, projected rental car demand has not seen an equivalent change in demand characteristics and require significant capacity enhancement by the 2016 timeframe Thus, even if the HCAA determines to not undertake any expansion of the current terminal and move forward with a North Terminal by 2025, there would be a significant capacity issue for the rental cars that would compound annually from 2016 to 2025/2026 when the North Terminal might actually commence development, which would be an extended period of years. Thus, the 2005 Master Plan option for addressing future rental car demand is no longer a viable approach as the Airport does not have the ability to wait until 2025 to address the capacity constraints and operational issues adversely impacting rental car facilities.

With this in mind the current master plan has focused on the development of a Consolidated Rental Car Facility that would meet the future needs of the current on-airport companies and provide room to accommodate additional companies who have expressed an interest in moving their operations onto the Airport. For purposes of analysis a conceptual CONRAC facility was developed and has been used in the assessment of alternatives that would be outside of the Main Terminal Complex. The conceptual layout used for planning purposes is depicted in **Figure 5.105**. The facility would consist of a surface level and three additional levels under roof, with the ability to accommodate vehicle storage on the rooftop. Customer service facilities would be located on the rooftop if the facility were to be served by an APM or on the ground level if served by buses with appropriate vertical circulation to access each ready/return floor. In an

effort to minimize the footprint of the facility and its operations, QTA facilities would be located on each level with the exception of the rooftop storage level. A helix providing access to each level of the facility and another helix to accommodate egress would be constructed. Vehicle ramps for movements of vehicles onto floors without interfacing with customers would be provided as well. Overall each floor level is sized to provide 1,100 full rental spaces resulting in a facility that could likely handle 5,700 or more vehicles when rooftop storage, QTA capacity and return space configuration are also considered. A facility of this size is estimated to require a footprint of approximately 14 to 15 acres, excluding maintenance and long term storage areas.

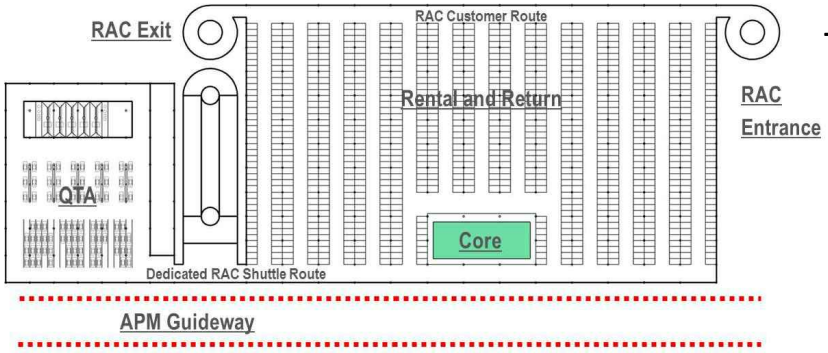
Development of rental car facilities in the North Terminal Complex is impacted by other considerations. To access the North Terminal Area from the current Maintenance and Storage areas would require the northerly extension of Bean Parkway at a location between current Airside C and future Airside D. This northerly extension would necessitate the closure of Taxilane A which is currently used as a quasi- parallel east/west taxi route to Taxiway B. Taxiway B has been elevated and a bridge over the potential Bean Parkway route has been constructed, the same is not the case for Taxilane A. Current plans call for the future development of a new crossfield taxiway north of Taxiway B, which is identified as Taxiway M. Taxiway M will provide dual crossfield taxiway capability and will allow for the closure of Taxilane A. The timing of this facility would need to be moved up and the estimated $50 to $60 million cost for the Taxiway would be incurred on top of other associated costs to provide roadway access to a North CONRAC Facility.

The north CONRAC option would also have to be connected to the Main Terminal Complex to facilitate access to the facility by passengers. Under the 2005 Master Plan this connection between the Main Terminal and the North Terminal Area was provided by way of an Automated People Mover System.




## 5th Floor Plan

- 5th Level: Customer Service Lobby + 1200 Storage Vehicles
- 4 Levels w/ 1,100 Rental Spaces / Level: 4400 Spaces = 5,800 Peak Rental Hour Vehicles
- Total PRH Facility Capacity: 7,000 Vehicles + 300 QTA Vehicles = 7,300 Vehicles




## Typical Floor Plan

- 4 Rental / Return Levels w/ 1,100 Rental Spaces per Level
- QTA Capacity: 75 Vehicles / Level


## Diagrammatic Profile

(Transposed)

- 5th Level Customer Service Lobby w/ Overflow Storage
- Rental / Return on Levels 4 + 3 + 2 and 1 w/ Individual QTA's



| | | | |
|---|---|---|---|
| Drawing Not to Scale | HNTB | CONRAC Layout | DATE: May 01, 2013 |
| | | TAMPA INTERNATIONAL AIRPORT TAMPA, FLORIDA | Figure: 5.105 |

Given the fact that the APM would only serve the CONRAC and no other airport facilities, the cost of the APM would likely have to be borne in large measure as a part of the CONRAC development costs. The APM alignment would be approximately 8/10ths of a mile to 1 mile in length and require two stations. Additionally, this APM alignment would likely not negate the need for enhanced connectivity to the South Terminal Support Development Area given the existence of the two economy garages and approximately 11,000 public parking spaces. Add to this the potential relocation of facilities from the Main Terminal that could include the Airport Hotel and Administrative/tenant office space and other support uses, it is likely that the only facility that could not be served in the STSDA by a single APM alignment would be a CONRAC sited on the other end of the Airport.

The analyses conducted under the Main Terminal Complex section of this report identified the fact that the Main Terminal Complex has the ability to be expanded and modified to extend the capacity and life expectancy of the terminal well beyond the original capacity threshold of 28.7 MAP to as much as approximately 35 MAP. This suggests that the North Terminal may not be required until a time considerably beyond the 2025/2026 implementation timeframe that would be triggered if the Main Terminal could not be expanded. Regardless of this, at some point in the future, because of either age, functionality, or capacity issues at the Main Terminal, it is entirely plausible that terminal development in the North Area will be necessary. To that end, the actions of the HCAA to relocate facilities from this area to other places on the Airport, notably air cargo, belly cargo, and GSE facilities, is entirely appropriate and reasonable. Developing a CONRAC in the North Terminal area would have a significant impact on the development plan that the HCAA is carrying forward to ensure that long-term needs are addressed and also to ensure that land area is available to do so. A CONRAC of the size required to meet projected demand would, at a minimum, require approximately 14 to 15 acres excluding the roadway and APM areas necessary to support the facility. At a minimum this would remove at least one full airside from the concept and likely require significant modifications to the detailed plan that was developed subsequent to the completion of the 2005 Master Plan. To ensure the greatest level of operational efficiency collocating the CONRAC adjacent to the rental car Maintenance and Storage areas is preferable. If both the CONRAC facility and affiliated maintenance and storage areas were to be moved to the North Terminal Area, the acreage requirement would increase to approximately 55 to 60 acres effectively negating the viability of future terminal development in this area.

As noted above, the HCAA has strongly questioned the desirability of accessing the North Terminal Development Area by way of Hillsborough Avenue and had depicted an option that would access the Main Terminal and the North Terminal via the George Bean Parkway with no connection to Hillsborough Ave. The issues associated with the extension of Bean Parkway were previously discussed and included the need to construct Taxiway M and incur those associated costs. Even with a connection to Hillsborough Avenue, Bean Parkway would have to be extended to facilitate the movement of cars from the STSDA to the North Terminal Development Area. Iif no connection to Hillsborough Ave. is provided all rental car traffic associated with rentals, returns and car staging from the maintenance/storage areas would be loaded onto Bean Parkway with attendant impacts to traffic volumes, roadway capacity and vehicle movements through the constrained Main Terminal Area. Further, given the fact that all returning vehicles would be passing the Main Terminal Complex, there would be the very real possibility that a significantly higher percentage of those returning vehicles would first stop at the curb prior to returning the vehicle creating an additional load on existing curbsides in the terminal complex. An affiliated goal of moving rental cars out of the Main Terminal Complex

has been to minimize traffic volumes on the terminal roadways. This would extend their long-term capacity and viability and defer the need to make complicated and expensive capital improvements. This alternative does not accomplish that objective.

Opening a connection to Hillsborough Avenue for the CONRAC could be considered and potentially configured to avoid the concern of "cut through" traffic. However, this would load even more traffic demand onto the already busy Hillsborough Ave. This would very likely require extensive intersection improvements at Hoover Road and roadway improvements on Hillsborough Avenue to address traffic volume impacts at a time when significant improvements to the roadway system on the south end of the Airport designed to meet airport demand have been completed. Finally, vehicle renters would be placed on the opposite end of the Airport from the primary points of connection to I-275 or to U.S. 60 necessitating significant enhancements to area wayfinding. Few visitors to Tampa would want to attempt to access I-275, I-75 or I-4 by going east on Hillsborough Ave given the array of signalized intersections, drive access-ways and extensive local traffic. This reality would generally funnel all traffic from the CONRAC onto the Veterans Expressway, which can be somewhat challenging to infrequent users as they proceed south to the U.S. 60 interchange.

Based on the above, the land area certainly exists to accommodate a consolidated rental car facility in the North Terminal Area, but only so long as the HCAA is willing to either negate or adversely impact the long-term capacity and viability of the area for future terminal needs. Once this area is committed to another use, particularly one as significant as a major rental car facility, the ability to recover this land for future needs is essentially gone; this can present challenges in an industry as dynamic as aviation.

While land area exists in the North Terminal Development Area, there are a number of significant factors that adversely impact this option. These include the need for a single purpose transportation system to serve the needs solely for rental cars and the associated costs. Additionally, the ability to interface the airport ground transportation system into a regional system would be considerably more challenging in the North Terminal development Area than elsewhere on the Airport. The option does not reduce the impacts on the main terminal roadway system and could increase the impact to the terminal curbs. Finally, unless the Maintenance and Storage areas are located to the North Terminal Development Area, the distance and time involved in transferring vehicles to and from the current maintenance area would increase. Based on these factors, the North Terminal Development Area is not recommended as a site for a future Consolidated Rental Car facility.

#### 5.9.5.4 South Terminal Support Development Area CONRAC Alternatives

As noted earlier the Main Terminal Complex would be unable to absorb the projected demand for rental car facilities beyond the 2016 timeframe without generating massive customer service issues to airport customers who routinely park in the terminal area. In addition, there would be design and operational issues with the In-terminal options, which were determined to be not reasonable or viable. The constraints, impacts to long-term capabilities, access issues and facility improvements required to support a North Terminal Area CONRAC combined to undermine the desirability of this alternative as well.

These factors led to the consideration of alternatives in the South Terminal Support Development area which is already serving as the location of all existing maintenance and

storage areas for on-airport rental car operations as well as several key existing terminal support uses. Alternatives involving the potential conversion of an existing parking facility to a CONRAC use along with three purpose-designed and constructed CONRAC alternatives were considered and are discussed below.

*Alternative Four - Conversion of South Economy Garage to CONRAC*

Located in the northeast quadrant of the STSDA the Economy Garages combined provide a total of **11,159** public parking spaces. The North Economy Garage accounting for a total of 5,531 spaces and the South Economy Garage providing 5,628 spaces. The north garage was constructed first, and by the time the previous master plan was started this facility was being heavily utilized. With the additional growth projected at the time, the need for the second garage was triggered and this facility was constructed. By the 2006/2007 timeframe parking demand was clearly sufficient to support the need for the entire range of parking choices at TPA including the two Economy Garages in the STSDA. With the economic recession in 2007/2008 and the drop in passenger activity at TPA, the demand for parking also decreased and utilization of the South Economy Garage declined.

At the commencement of the 2012 Master Plan Update the South Economy Garage was being used on an infrequent basis, and was closed for the majority of the year. Input from HCAA senior staff indicated that the garage was being used on an as needed basis and primarily during particular peak demand periods such as the Thanksgiving and Christmas holidays and during the peak of the year, the Spring Break Season. Given the limited use of the facility, the potential to retrofit the South Economy Garage for use as a Consolidated Rental Car Facility was identified as an option that should be considered. The south garage was selected due to its immediate proximity to existing rental car maintenance and storage areas located to the south of the garage and the ability to access this garage without having to potentially interfere with the continued operation of the other garage as a public parking facility.

The conceptual configuration of the retrofitted South Economy Garage is complicated by the existing six-level garage and by the east-west orientation of this garage. The garage's existing orientation triggers the need to align the APM connection parallel to the long side of the garage to minimize walking distances. Given the extensive access ramps on the between the north and south garages, the only realistic location for the APM is on the South Side of the garage. The location of the APM on this side would also require the location of the CONRAC lobby along the south side of the garage. The next issue that arises relates to which level to place the customer service lobby.

Placing the lobby at the top of the garage would be the typical choice; however this would trigger the need for the APM to be elevated an additional 30 feet to access the rooftop lobby placing the guideway approximately 70 +/- feet in the air. The lobby could be located on the ground level, however the APM would still need to be elevated so as to not block the south exit from the south garage facility. Thus customers would go down three levels only to be directed in the majority of transactions to go back up to pick up their vehicles. The final option would be to place the facility on the fifth level of the garage, one floor above the APM alignment, which could be accommodated with significant changes to existing water, sewer and electrical service in the garage. However, floor heights would result in a low ceiling and less than desirable overall feel for the lobby area.

To segregate rental car activity from the public parking use of the north economy garage two new access helixes would be required for customer ingress and egress to and from the facility. The central ramps that are presently used to access both the north and south garages would be devoted to provide access solely to the north garage. Additional access to each level of the garage would also be required to facilitate movement of cars by the rental car companies from their maintenance and storage areas or upper level storage onto their respective floors without mixing these movements with customers entering and exiting the facility.

It would be desirable, given the current state of the industry, to place a new multi-story QTA serving each floor adjacent to the east end of the garage. Typically, multi-level QTA facilities also involve an internal QTA traffic lane separated from pedestrian and customer vehicles, which in this case would need to be positioned along the north side of the facility. This option is challenging due to the need to preserve the access ramps on the north side of the garage for access to public parking in the North Garage, construction of ingress and egress helixes for customers, development of access for the rental car operators for vehicle movement into and out of the garage, and the placement of an APM along the entire south side of the structure. Further, the configuration of QTA operations on the east side of the garage would need to take into consideration the imaginary surfaces associated with Runway 1R/19L.

While it may be possible to design around a multi-story QTA, it would be a costly addition to the other facility retro-fits necessary to meet basic operational requirements If it was determined that the QTA facilities could not be incorporated into each ready return level, the other alternative would be to construct these as adjacent ground level facilities. To meet the needs of the current on-airport users and ensure the ability to accommodate off airport rental car companies desiring to locate on the Airport, would require between 8 to 10 acres of ground most likely in places to the immediate south of the garage. This would require the reconfiguration of the existing Hertz maintenance and storage area and could (depending upon configuration) impact a portion of the area leased by Enterprise.

This alternative initially arose because of the perception that the garage was not being used for vehicle parking and would likely not be required in the near future, and that reconfiguring the facility to serve as a CONRAC would be a relatively simple process. Both of these assumptions were found to not be the case.

First, as noted, the south garage is not totally unused and experiences significant use during re-occurring peaks over the course of a year even with the decline in demand that occurred in the wake of the deep economic recession. Thus, the garage is not sitting idle year round, and if converted to another year-round use, some means of meeting demand during peak travel events would be required as there is not enough on-airport or off-airport parking to fill the gap that would occur.

Further, a cursory review of the parking projections from the master plan would suggest that the Airport has sufficient parking to meet future demand through the year 2031 and that excess capacity exists in Economy parking. The problem with this perception is that there is a significant deficiency in the availability of terminal proximate long-term parking and the options to address this deficiency in the Main Terminal Complex are far from desirable if not outright impractical. Further, as time passes this deficiency would grow, and the one readily available option would be to shift this demand to the STSDA and the economy garages that are located in the area. Thus, if the South Garage was converted to a CONRAC, there would be a near-term

issue with peak travel period demand. In addition, the need to acommodate overall daily demand as the capacity of the terminal proximate garages is consistently exceeded in the longer term would necessitate the development of additional parking and most likely an additional garage.

Retrofitting the existing economy garage to serve as a CONRAC is not as simple as it might appear. There are significant differences in how facilities are designed to serve rental car operations, versus those designed to provide public parking spaces. Floor heights are different, lighting requirements vary, floor to floor security issues exist, and columns and beams lengths are configured differently to better facilitate vehicle movements and rental car operations. In short, a parking garage is not constructed to be readily used as a rental car facility, and even when retrofitted, there are facility issues that would continue to impact rental car operations. In addition to these considerations are the needs to incorporate QTA and lobby processing area, to enhance vertical circulation via escalators and elevators, to reconfigure water and wastewater systems in the building, and finally to provide the interface to an APM, which in the case of this option significantly and adversely impacts the development of other terminal support uses within the STSDA. For the above reasons Alternative Four was not recommended to be carried forward as an option to address future rental car needs.

*Alternative Five - CONRAC West of Economy Garage*

Up until the latter stages of the planning process the potential use of the USPS site for other development purposes had been identified as being a possibility that should be considered in the evaluation of alternatives. One alternative that was considered was to develop the CONRAC primarily on the USPS site. As originally conceived, due to the square configuration of the USPS sort facility site, the CONRAC would be oriented in a north/south alignment and situated along the eastern side of the USPS site. The facility consisted of a surface level floor and three additional levels under roof, with the ability to accommodate vehicle storage on the rooftop, however in this alternative the location of the primary entrance road from Bean Parkway into the STSDA and the economy garages impacted the first level of the proposed CONRAC. Relocating or re-aligning the entrance road was not viable, so the roadway was retained in its current location and the first level of the CONRAC was split by the alignment. This triggered a need to provide an enlarged facility footprint to recover the space that was occupied by the roadway.

This option presented some interesting opportunities including the potential to consolidate an APM station to serve both the CONRAC/Economy Garage on the assumption that an APM would be the preferred means of access to the terminal. The facility would have only a minimal impact on the current rental car maintenance and storage areas with virtually all of this impact affecting the Dollar Thrifty Automotive Group (DTAG) facilities. Given the placement of the facility towards the eastern side of the USPS site, land area would remaine available on the western side of the conceptual CONRAC facility that might be used to provide for an on-airport gas station to serve returning car renters. As the proposed facility would also impact the existing cell phone lot, the area to the west of the conceptual site could also be used to accommodate a relocated cell phone lot.

Alternative Five would be challenging because of the interface with the entrance road, the impacts this interface would have on operations on the CONRAC first level, and potential traffic interactions into and out of the CONRAC. Additional challenges would be related to the need

for vehicles moving from the Avis/Budget, Hertz, Enterprise and relocated DTAG maintenance and storage facilities to the CONRAC to use public roads, adding to the traffic in the STSDA public roadway system. Ultimately, the overriding issue was the decision that the USPS facilities would not be relocated and would remain through 2031 at their current location, negating the viability of Alternative Five.

*Alternative Six - South of USPS Facility*

Alternative Six was developed in response to the impact that the retention of the USPS facility had on the previous alternative. Under Alternative Six the proposed CONRAC facility would be situated along the west side of the north/south spine road in the STSDA and immediately south of the current location of the existing cell phone lot. This alternative would consolidate all Rental Car activities within a "Purpose Designed Facility" with customer access via an elevated APM system and CONRAC APM station with associated BRT interface that would be approximately 850 feet south of the Economy Garage APM station. A Customer Service Lobby would be located on the rooftop (fifth) level of the garage and this level would also provide space for approximately 1200+/- storage vehicles that would be used by companies to replenish their ready car inventory during peak periods without having to bring cars from other storage sites. Consistent with other options considered, Alternative Six was based on a facility providing approximately 4,400 full rental spaces and being capable of accommodating 7,300 peak rental hour vehicles given the distribution of space between ready space, return space, QTA and the rooftop storage lot. See **Figure 5.106** for a graphical depiction of the option considered.

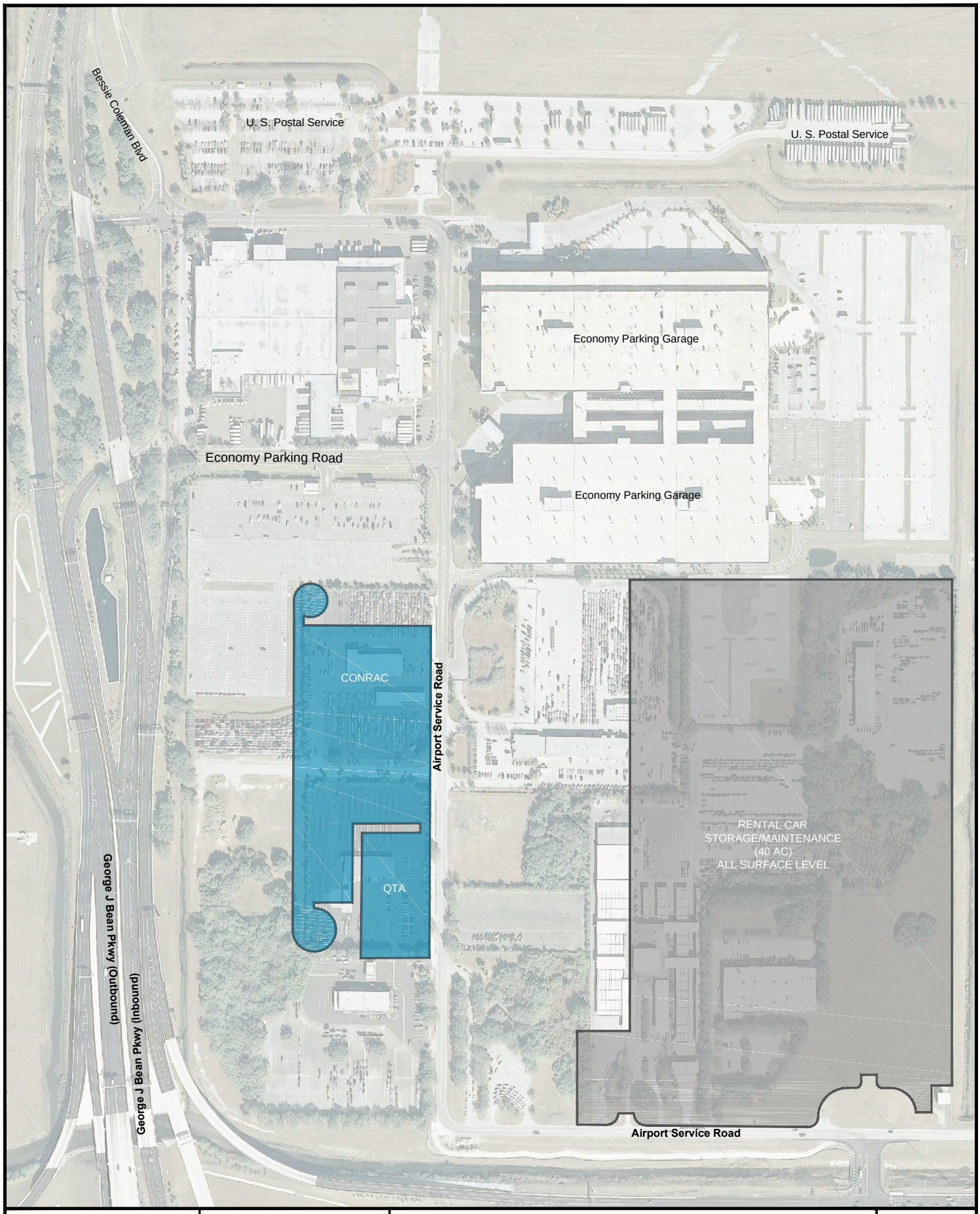
The Alternative Six CONRAC Facility would be located on what is the current site of the DTAG and Avis/Budget maintenance and storage areas and an overflow surface parking lot, triggering the need to relocate the existing facilities elsewhere on the site. Rental vehicles being returned would enter the STSDA by way of the Economy Parking Road, which is the primary entrance into the STSDA from Bean Parkway, and proceed to a new right turn only lane leading to the existing entrance to the current cell phone lot. This drive would continue to serve as access to a reconfigured cell lot and would be extended south to feed directly into the car return helix located on the north side of the CONRAC facility. A second exit helix would be located on the southern end of the CONRAC for egress from the facility onto the north/south spine roadway.

A four-story QTA attached to the southern end of the CONRAC would serve each rental floor and the individual company(-ies) on the floor within the facility. The use of a multi-level attached QTA provides for a more efficient operation than having ground level QTA facilities adjacent to the CONRAC. A fully segregated lane would be provided from the QTA area to the ready spaces to allow for vehicles to be returned to service without having to interact with pedestrians or with customers in vehicles. An internal ramp structure adjacent to the QTA would provide secure access between floors for the tenants.

The Alternative Six CONRAC concept would be aligned along a north/south orientation with the front of the facility facing on the north/south spine road in the center of the STSDA. With this placement of the facility the CONRAC would not require the full width of the land between the George Bean Parkway and the north south spine road. With that orientation the land between the rear (westside) of the CONRAC and Bean Parkway would be available for some other activity. This available area runs the entire length of the CONRAC from north to south and is

approximately 300 feet in width resulting in an approximate 8.3 acre tract of land immediately west of the conceptual CONRAC facility.

While placing the CONRAC in the manner described under Alternative Six is a workable and generally viable alternative, the question that has to be addressed is whether it is the optimum location for a fully consolidated rental car facility, particularly taking into account other

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# South Development Area Plan - West CONRAC

TAMPA INTERNATIONAL AIRPORT
TAMPA, FLORIDA

DATE:
May 06, 2013

Figure:
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potential terminal support functions that are likely to also be located in the STSDA. The location delineated under Alternative Six has several positive attributes. The site is efficiently situated for rental cars returning to the facility. Signage would be placed on Bean Parkway that would direct returning drivers to the right lane and would, upon entering the STSDA, direct them into a new dedicated right turn lane that would route returning vehicles directly to the vehicle return helix on the north end of the building. Vehicles exiting the garage would be efficiently directed to the north/south spine road. While the routing back to Bean Parkway would be less direct, it is not unduly long, and can be easily signed to provide ample weaving room and to direct drivers to exit via the existing northernmost access to Bean Parkway from the STSDA.

Alternative Six could be expanded on the available site should future conditions dictate a facility of greater than 4400 full rental spaces. This expansion would likely involve an extension of one or more levels in a westerly direction to add floor space. The facility does not impact the airport imaginary surfaces associated with Runway 1L/19R, and is located relatively proximate to existing service areas, although both Avis/Budget and DTAG maintenance and storage areas would have to be relocated elsewhere within the STSDA. In short, if another alternative was not available this option would be a viable option when compared against the previous alternatives that have been developed.

While certainly an improvement over any of the preceding alternatives, the option is not considered to be the preferred manner for addressing the future need for a fully consolidated and integrated rental car facility at TPA for several reasons. From an operational and efficiency perspective placement of the CONRAC in the STSDA is a significant improvement in that it places the facility immediately adjacent to the existing maintenance and storage areas facilitating the ability to move vehicles into and out of these areas to the CONRAC in a highly expeditious manner. As was noted placement of the CONRAC on the west side of the north/south spine road would impact Avis/Budget and DTAG facilities requiring these to be relocated either to the west of the proposed CONRAC, south of the CONRAC or more likely into the vicinity of Hertz and Enterprise on the east side of the road, to generate a fully consolidated maintenance and storage complex and reduce the inefficient allocation of property for these uses in the STSDA.

The consolidation of maintenance and storage uses on the east side of the Airport Service Road with the CONRAC on the west side of the airport service road, or a split of facilities between the east and west side of the Airport Service Road, would both result in significant traffic having to cross back and forth from east to west to access the CONRAC. Given the increased traffic volume on the roads in the STSDA associated with the CONRAC this crossing traffic could become problematic. When other airport support uses that may be situated in the STSDA are considered, including potential Employee Parking, airport/tenant office uses, and the possible development of a new hotel to replace the existing hotel in the terminal area, the crossing of traffic to and from the CONRAC becomes increasingly unsatisfactory. Thus, assuming that the goal of the planning effort should be to consolidate all rental car operations into a fully integrated operation, Alternative Six, while better than previous options still has limitations.

The STSDA will be the site for the development of a number of other airport support uses including those noted above. To that end, maximizing the efficiency of each facility and taking into consideration unique operational requirements of these various uses has to be a factor in the configuration of the CONRAC. Additionally, some facilities such as an airport hotel require relatively high visibility, and often present architectural statements that are part of their brand

and the brand of a development or an airport, and thus have unique siting requirements. When applied to the STSDA this clearly suggests that uses such as an airport hotel, particularly a higher end hotel, and airport related office facilities should, to the extent possible, be situated fronting along George Bean Parkway, replacing the current mix of rental car maintenance and storage facilities. To accommodate the needs of the various uses to be located in the STSDA a more efficient commitment of land area to support development purposes is necessary.

Further, factors associated with properly locating certain support uses from a customer access, visibility and access to intra-airport transportation standpoint,also must be considered to ensure proper siting and retention of adequate acreage to meet facility needs. These potential facility relocations drive the need to maximize the consolidation of CONRAC and CONRAC support uses to facilitate the efficient allocation and use of the available, yet limited, acreage in the STSDA. Thus, the CONRAC location delineated under Alternative Six is not recommended as the preferred option for meeting the projected demand for future rental cars and accommodating all potential terminal support needs being considered for the STSDA.

*Alternative Seven - CONRAC South of the Economy Garages*

The final alternative considered for accommodating future rental car facility needs involves placing a CONRAC facility on the east side of the Airport Service Road (north/south Spine Road) and south of the Economy Garages. The proposed location is currently used by Hertz and (to a lesser extent) Enterprise as part of their maintenance and storage areas, along with a surface lot occasionally leased by Avis. Alternative Seven proposes to consolidate all Rental Car ready/return/QTA and some vehicle storage within a "Purpose Designed Facility" connected to the terminal via an elevated APM system and CONRAC APM station with associated BRT interface. The combined APM/BRT station serving the CONRAC would be approximately 1,300 feet south of the Economy Garage APM station. A Customer Service Lobby would be located on the rooftop (fifth) level of the garage with vertical circulation elements providing access to the four rental car levels beneath the lobby. The rooftop of the facility would also be used to provide space for approximately 1200+/- storage vehicles that would be used by companies to replenish their ready car inventory during peak periods.

Alternative Seven is based on a CONRAC facility that would provide approximately 4,400 full rental spaces and would be capable of accommodating approximately 7,300 peak rental hour vehicles given the distribution of space between ready space, return space, QTA and rooftop storage. The projected capacity of the facility is sufficient to meet the projected peak demand at TPA while also supplying a level of vehicle storage not currently available.

Access into the CONRAC for returning vehicles, under this alternative, is afforded from a proposed signalized intersection on the Airport Service Road. This intersection would include dedicated turn lanes and would be located at the southern end of the CONRAC and north of the current taxi staging area. This car return route is slightly more circuitous than the access afforded by Alternative Six, but does provide ample space for guidance signage and vehicle weaving to enter the dedicated turn lane to the garage. Egress from the garage would be combined with the current egress from the South Economy garage situated on the south side of the economy garage. This exit driveway would be improved and widened and a signalized intersection with the Airport Service Road would facilitate left and right turning movements from dedicated lanes. Vehicles would be directed to exit via the main STSDA exit to Bean Parkway at the north end of the STSDA. With the proposed roadway improvements discussed

later in this section, ample queuing, weaving and distance for signage would be available for driver needs.

Alternative Seven, unlike previous options, would also entail the recommended consolidation of all current and future maintenance and storage facilities in the STSDA, in the area to the east and southeast of the proposed CONRAC site. This would result in the development of a true fully consolidated rental car complex. The area reserved for rental car maintenance and storage facilities, when coupled with the capacity of the CONRAC structure, would be sized to meet the projected needs of the current on-airport rental car companies, while providing additional capacity to accommodate several new entrants. Further, the current irregular and dispersed configuration of maintenance and storage areas in the STSDA, including those currently located east of the Airport Service Road, was driven by the existence of small wetland areas in the STSDA and the desire at the time to avoid mitigation requirements if these were impacted. Based on input from the HCAA these wetlands have been assessed and requisite approvals for their removal have been attained, negating the need to build around them. Removing and filling these areas will greatly facilitate the consolidation process and development of a far more efficient configuration of rental car maintenance and storage facilities.

The consolidation of rental car maintenance areas in the STSDA would be facilitated to a degree by the consolidation that has occurred in the rental car industry over the past few years. Maintenance and storage areas that were formerly Enterprise, Alamo and National are now all owned by Enterprise due to consolidation of brands. Avis now owns Budget and Hertz acquired the Dollar Thrifty Auto Group, owners of Dollar and Thrifty rental cars, in 2012. This consolidation of companies can facilitate the better consolidation and more efficient configuration of support facilities triggering increased efficiency of the acreage committed to maintenance and storage. The configuration of the affiliated acreage designated for maintenance and storage facilities is delineated in **Figure 5.107**. As can be seen from the figure, one key benefit of the location of the CONRAC immediately adjacent to affiliated maintenance and storage facilities is the ability to move vehicle between these facilities without entering or crossing a public roadway, and to do so at a high level of efficiency and cost effectiveness.

A benefit of consolidating maintenance and storage area and activities on the east side of the Airport Service Road would be the ability to provide truck access for car carriers via Spruce Street to O'Brien Street. A short northerly extension of O'Brien Street into the south end of the overall maintenance and storage area is proposed. Accessing the site in this manner limits if not eliminates the level of heavy truck traffic operating through the STSDA and interacting with vehicles from the CONRAC and other terminal support uses in the area. Additionally, as the maintenance and storage areas are not overly attractive, placing them behind the CONRAC structure, south of the economy garages and off of Bean Parkway, enhances the image of the main entrance into the Airport. Furthermore, consolidating all rental car facilities and function east of the Airport Service Road would render the property south of the USPS and west of the Airport Service Road available to accommodate other terminal support facilities anticipated to require space in the STSDA.

By opening up the land west of the Airport Service Road, Alternative Seven also significantly enhances the ability to link other terminal support uses (notably a potential relocated or new hotel, airport offices, employee parking) to the proposed CONRAC APM station. It would improve accessibility to and from the terminal, while also allowing for the generation of synergy between uses in the STSDA. Given the available land on the west side of the airport service

roadway, the other potential terminal support uses cited above could be connected to the APM CONRAC station via a climate controlled walkway, as these facilities would not have to be configured around rental car service areas and the area west of the service road could be properly site planned and configured. Visitors coming back to the Airport could return their car to the CONRAC, spend the night at the airport hotel, and the next morning check-in for their flight at the CONRAC APM station, and then go directly to the Transfer Level in the Terminal. Thus not only does the CONRAC and consolidated maintenance and storage area option on the east side of the airport service road address a key airport need relative to rental cars, this option also greatly facilitates the ability to satisfy other Terminal facility support needs by opening up the land along the west side of the airport service road.

As with Alternative Six, two existing maintenance and storage areas are impacted by the CONRAC facility. CONRAC construction would require the removal of all of the Hertz maintenance and storage area, while a portion of the largest rental car maintenance and storage area at TPA, which is owned by Enterprise, would also be impacted. Some reshuffling of activities within the existing Enterprise location could be possible allowing for continued operations on the site; however in the case of the Hertz facilities, these will either have to be permanently relocated and reconstructed elsewhere within the proposed maintenance and storage area, or potentially be relocated to temporary facilities elsewhere in the STSDA.

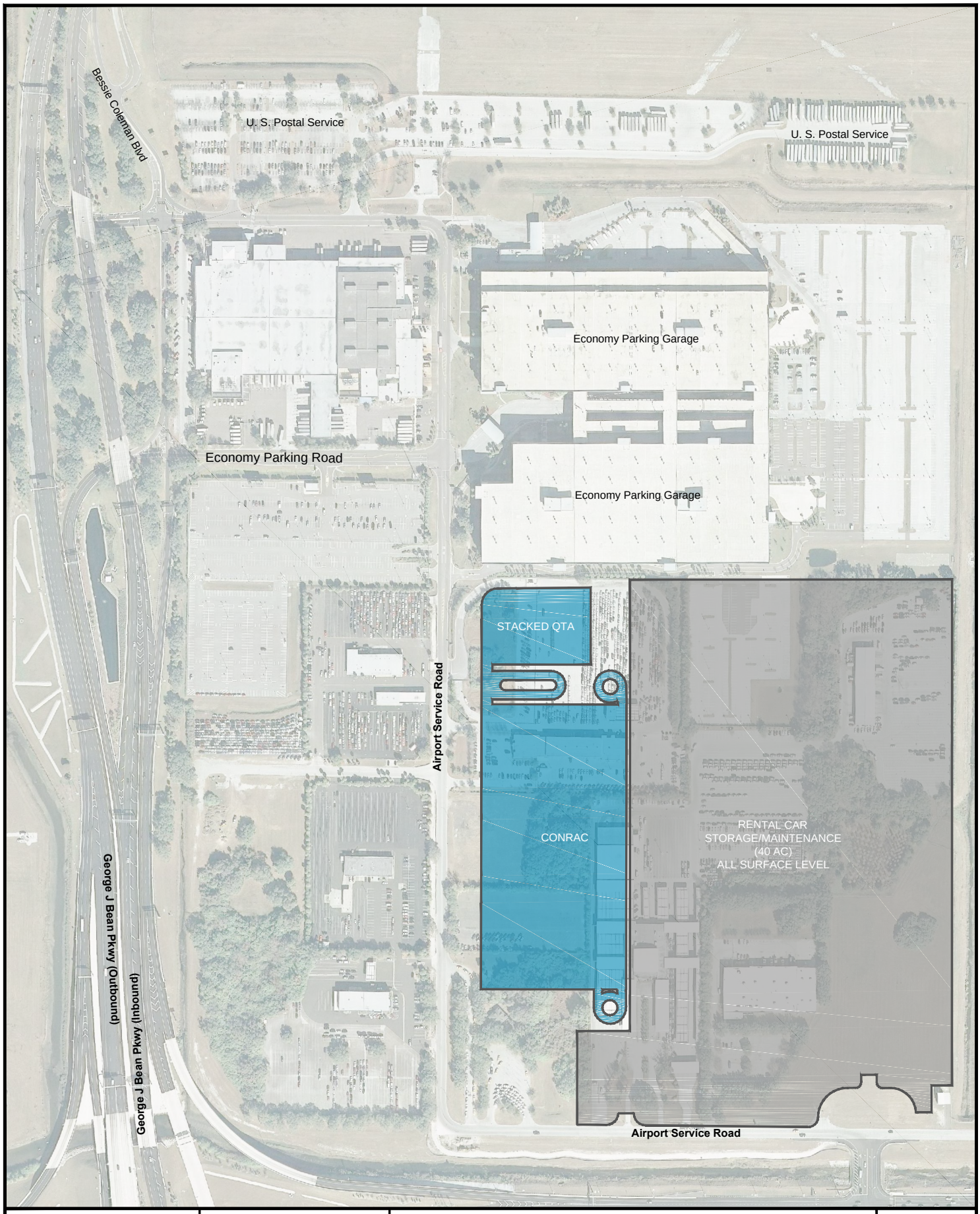
An additional possible option could entail defining the long term location for future Hertz facilities and moving forward with constructing the maintenance and service facilities, while using a portion of the South Economy Garage for vehicle storage during the CONRAC construction phase. This would require the HCAA to accept that during certain peak periods some parking demand might not be able to be satisfied, at least during the period of CONRAC construction. Given Hertz's recent acquisition of DTAG, there might also be some flexibility for some joint use of existing DTAG facilities coupled with some limited temporary expansions and commitment of currently unused land adjacent to the DTAG site. Mitigation of the impacts and development of the future configuration for Hertz and Enterprise would, at a minimum be required at the time of initiation of the CONRAC. The DTAG and Avis/Budget facilities could remain operational during the CONRAC construction process and be relocated at a later date to complete the consolidation of all rental car maintenance and storage facilities east of and immediately proximate to the proposed CONRAC.

In summary, Alternative Seven provides the best ability to consolidate rental car functions into an operationally efficient and integrated complex while fully accommodating the forecasted facility demand. CONRAC Alternative Seven is the recommended as the Preferred CONRAC Alternative for a number of reasons that include those listed below:

- The alternative fully meets the projected level of demand for the planning period and beyond;
- The CONRAC as configured under Alternative Seven can be expanded to meet demand beyond the activity levels forecast in the demand projections;
- The alternative facilitates the ability to consolidate all rental car activities including vehicle maintenance and storage in a single fully contained area;
- No movement of cars from storage or maintenance occurs on, or crosses a public roadway;

- Placing maintenance and storage immediately proximate to the CONRAC with direct unimpeded access significantly improves operational efficiency;
- The alternative can accommodate new entrants into the market both in the CONRAC and the maintenance and storage area;
- Maintenance and storage areas are surface level which is the most cost effective approach to providing these facilities;
- Having QTA facilities on each CONRAC level is the preferred configuration in the industry due to operational efficiencies;
- The alternative seven configuration routes semi-tractor trailer car carriers off of the primary STSDA circulation road through an access point via a short extension of O'Brien Street.
- The alternative places maintenance and storage sites away from the primary airport entrance improving the appearance of the Airport and entry to the City;
- The alternative better facilitates the ability to accommodate other Terminal Support Facilities including Employee Parking, airport office(s), and a hotel, at a location far more appropriate for their development.

For these reasons subsequent facilities will be planned based on the location of the CONRAC and affiliated rental car maintenance and storage facilities delineated in the discussion of Alternative Seven and depicted in **Figure 5.107.**

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# South Development Area Plan - Part 1

TAMPA INTERNATIONAL AIRPORT
TAMPA, FLORIDA

DATE:
May 06, 2013

Figure:
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## 5.9.6 Automated People Mover System Alignment

As discussed in the Main Terminal development alternatives meeting, the goal of extending the longevity and long-term capacity of the existing terminal area along with its supporting facilities required the "decongestion" of the terminal. To achieve this it is essential to accommodate terminal support functions outside of what has traditionally been considered the terminal area. This is not dissimilar to the option that was selected in the last master plan where the decision was made to develop an entirely new terminal processor and airside gates outside of what had to that point been the traditional terminal complex.

The current master plan update arrived at the same basic conclusion which was that the current terminal area could not meet future demand without shifting some elements of the overall complex to alternative locations. The HCAA recognized that the terminal roadway system would face serious long-term capacity and expansion constraints, the long-term parking garage could not meet forecast demand and the viability of expanding of the garage facility was a questionable option. It was clear that rental car facilities could not be viably accommodated within the available area in the main terminal area and would be facing serious capacity and operational issues in the early stages of the 20-year planning period.

Thus, whether in 2005 with the recommended $1 billion first phase of the north terminal or in 2012 with the maximization of the existing terminal, the issue associated with facility relocation revolved around how to provide a means of connecting these facilities and their customers to the Main Terminal Complex while minimizing the demand that such connections would place on terminal roadways and curbs, and also how to ensure that the means of connection would provide a high level of customer service and quality of experience to airport users. As the analysis progressed there also emerged a realization that whatever system was ultimately chosen to provide this access component, it needed to not only serve facilities that had to be relocated out of the existing terminal to facilitate expansion of the existing main terminal and meet future demand, but also to link to existing facilities that were already serving in a terminal support role for airport customers.

The master plan identified and evaluated a number of technologies to provide the intra-airport connectivity and quality of service and experience that the Airport deemed critical, while also being capable of meeting the future level of typical and peak demand. This evaluation considered a number of automated technologies along with legacy and new technology bus options. Given a variety of cost, operational and passenger service considerations the implementation of a busing option was determined by the HCAA not to be acceptable. As a result the evaluation moved on to the definition of an automated people mover system that would provide the frequency, capacity and passenger level of service that was deemed necessary. The specific background data associated with the evaluation of automated technologies is contained in **Appendix L**. Additional information on the APM can also be found under Appendix K – Alternative Refinement Process and Appendix M – Meeting Presentations.

### 5.9.6.1 Factors Affecting APM System Alignment in South Terminal Support Development Area

Section 5.7.3 in the Main Terminal Planning Alternatives analysis provided an overview of the issues and factors that were evaluated in relation to the alignment of the Automated People Mover Guideway from Taxiway J north, and also presented the alternatives and recommended location for development of a Main Terminal APM station. As with the previous assessment of

the LRT alignment, the most viable location for a main terminal interface with the APM was in the immediate vicinity of the East Quad Deck although the APM station being proposed is shifted westward to reduce the walking distance between the transfer level and the station itself.

The extension of the APM guideway from the point that it crosses beneath Taxiway J to serve uses in the South Terminal Support Development Area had to take into consideration a number of parameters that tended to define the future APM alignment from Taxiway J south. The major considerations that tended to drive the location of the APM guideway are listed below:

- Potential impacts to Runway 10-28 – Early in the planning process an evaluation of the required length of Runway 10-28 was conducted to determine whether a previously proposed 1,200 foot easterly extension of the runway was justifiable. During this assessment it was found that use of the runway by commercial aircraft and even by general aviation jet aircraft was limited. Consideration was given to the possibility of limiting the length of the runway to allow for the direct ground level extension of the APM along a line from Taxiway J to the vicinity of the northwest corner of the northern economy garage. The alignment(s) considered would require the reduction of the length of Runway 10-28 from its current 6,999 to approximately 6,000 feet of runway length under the assumption that no limitation would be required within the Runway Protection Zone (RPZ). While several direct alignment options were developed the HCAA decision was that the runway would not be shortened to accommodate a more direct APM alignment. A copy of a presentation addressing the various runway and APM alignment options across the west end of Runway 10-28 is contained in **Appendix M.**

- FAA approach and departure imaginary surfaces and FAR Part 77 standards associated with Runway 10-28 – Upon exiting to the south from beneath the Taxiway J bridge the APM alignment passes across the end of Runway 10-28 and is situated beneath the approach, departure and FAR Part 77 imaginary surfaces associated with the runway. These surfaces essentially define the maximum height that the guideway and any vehicles or catenary lines associated with the operation of the APM can be at specific points with each surface. These surfaces essentially set the location of the APM alignment based on the top elevation of equipment associated with the system not projecting through the various surfaces that extend beyond the end of the runway at differing angles including the 40:1 departure surface, 7:1 transitional surface and a 34:1 approach surface. Based on the analysis the most critical elements that impacted the alignment were the 40:1 departure surface off the west end of the Airport and the 7:1 transitional surface along the south side of the runway. These surfaces combined to identify where and at what elevation the alignment had to be in relation to the end of the runway and its position and elevation lateral to the south side of the runway.

- New FAA Airport Design Criteria concerning preclusion of roads and transit including APM's from Runway Protection Zones – This issue was discussed in meetings in March of 2012 with the HCAA as having the potential to impact the alignment of the APM. Discussions were conducted with the FAA in the Summer of 2012 concerning the issue and in September 2012 the new guidance formalizing the preclusion was issued by the FAA. Documentation was provided to the FAA for their review in response to a request relief from the requirements. Due to legal action against the FAA initiated by another

airport regarding the new requirements no response had been received by the HCAA from the FAA regarding the request by the time the master plan document was written. At the direction of the HCAA, the analysis of alignments was conducted on the basis of the requirement not impacting the viability of the APM. Correspondence and supporting documentation regarding the APM alignment and revised FAA criteria is contained in **Appendix N.**

- Providing connectivity to existing terminal support facilities in the area – As noted in an earlier section, a significant terminal support facility already exists in the South Terminal Support Development Area consisting of the two Economy Parking garages. The HCAA already provides bus services between the garages and the Main Terminal to serve those airport customers choosing to park in in the area. Given, the extent of public parking spaces and the past history of the extensive use of the garages by airport customers any future intra-airport system needs to be planned to serve these facilities, particularly as one goal of the system is to act to reduce the level of traffic on the existing main terminal roadway system and the terminal curbs. Thus, the location of the economy garages in the northeast corner of the development area acts to define the possible location of one stop for the APM and as a result an affiliated portion of the alignment of an APM serving the South Terminal Support Development Area.

- Ensure standard vertical clearance over retained access drives and streets while maintaining guideway grades within standard. – Finally, while the Taxiway J bridge and the airport imaginary surfaces act to establish a maximum top elevation height for the portions of the APM that pass beneath the taxiway bridge across the end and lateral to Runway 10-28, the need to cross over a series of access drives that serve both personal vehicles and tractor trailers dictate that the elevated guideway also meet certain minimum height requirements. These heights and the elevation of the APM station platforms when combined with guideway grade requirements define certain distance requirements necessary for the alignment to climb, for example, from the ground level to a 14’ elevation of the bottom of the guideway over a drive at a 3 degree slope, which would also have to occur at a location not penetrating an airport imaginary surface.

- Connectivity to current and future Regional Transportation Systems was another major consideration. The decision to not accommodate a Light Rail system along Bean Parkway through the center of the Airport was not a decision to not facilitate a connection to these future transit facilities. Providing a means of either accommodating rail to an alternative interface point or to provide a modern, efficient airport link to regional transit was an element of the planning for the APM and the STSDA in general. This process included accommodating those systems that were currently in operation or in the process of being deployed, notably traditional buses and Bus Rapid Transit in the STSDA.

While these major considerations were key in the definition of the APM alignment within the South Terminal Support Development area as well as the section of APM from Taxiway J to the terminal, there was an entire series of specific system planning criteria that were also critical to the planning process.

### 5.9.6.2 APM System Planning Criteria

In addition to the items noted above as influencing the definition of the APM alignment, additional planning criteria were employed in the refinement of the specific elements of the overall system. These are defined in **Table 5.16**. Table 5.16 provides general requirements for APM system planning that reflect the generic characteristics of the candidate technologies reviewed in previous sections. As noted, these data are preliminary, subject to revision/update after the selection of the APM System Contractor in the future. Also, the space planning guidelines provided herein for the fixed facilities should generally be adequate to accommodate the candidate technologies again with minor modifications anticipated after a Contractor is selected for the design and construction process.

**Table 5.16**

**General APM Requirements**

| | Item | Description | Comments |
|---|---|---|---|
| 1. | Operating Headway (Peak Period) | 90 seconds | Operating Headway of the Ultimate System may range between 90 and 180 seconds based on ridership demands. |
| 2. | Design Cruise Speed | 31 mph | A cruising speed of 31 mph is expected. An overspeed of at least 1.5 mph should be considered in the designs. |
| 3. | Maximum Train Length | 120 feet | An additional 50 feet beyond the normal train stopping location (nose of train) shall be provided at the end Stations to accommodate end-of-line overrun and buffers. |
| 4. | Vehicle Overall Length | 41-42.6 feet | Based on generic large APM technology. Smaller car lengths may be possible; however, the number of cars per train is increased. |
| 5. | Vehicle Overall Width | 9 – 9.8 feet | Based on generic large APM technology. |
| 6. | Vehicle Overall Height | 12 ft. -6 in | Height over running surface |
| 7. | Top of Running Surface to Top of Platform | Approx. 43 in | Varies between technologies |
| 8. | Top of Platform to Top of Guideway Structure Slab | | Maximum expected dimension. Can be reduced to approximately 4'-6"based on the selected technology to reduce the dead load from the depth of the running surface. |
| 9. | Centerline Guideway to Obstruction | 6.25 ft. Centerline of Guideway to edge of guideway + 5 f.t – 0 in from edge of guideway to obstruction | |
| 10. | Tangent length of guideway entering/leaving station | One Car Length | At end-of-line stations, train stopping location shall be such so that the tail end of the arriving train is as close to the end of the platform as possible yet inside the station. The tangent length of guideway beyond the end of platform to the beginning of the switch shall be minimized with due consideration of train vehicle chording into the switch/curves so that the headway of 90 seconds at the end stations can be supported. |
| 11. | Min. Tangent Between Curves | One Car Length | |
| 12. | Min. Curve Radius (Stations) | 250 ft | Note that Stations shall be on tangents. |
| 13. | Min. Curve Radius (Mainline) | 350 ft. (desirable)<br>150 ft. (absolute minimum) | A mainline radius has been established in the Alignment programming. No revisions shall be made without further evaluation to determine locations and impacts on train performance/speeds and the area-wide master plan |

## Table 5.16
## General APM Requirements

| | Item | Description | Comments |
|---|---|---|---|
| 14. | Max. Grade | 4% desirable<br>6% maximum | Switches shall be 0% grade. |
| 15. | Min. Distance of Platform to Vertical Curve | One Car Length | Note that horizontal and vertical curve combinations should be avoided. |
| 16. | Min. Vertical Curve Length | 150 ft. | Note that horizontal and vertical curve combinations should be avoided. |
| 17. | Min. Vertical Tangent Length | One Car Length | Note that horizontal and vertical curve combinations should be avoided. |
| 18. | Min. Vertical Clearance | 15 ft. – 6 in | 3ft. above vehicle. Note that lower clearances may be possible based on type of obstruction. Distance between guideway slab and train running surface is not included in this dimension. |
| 19. | Platform Configuration | Single Center Platform | |
| 20. | Platform Length | Varies | Station Platform Length to be determined by Terminal design teams, and must consider end of platform exit queuing/NFPA. Also, end of line buffer requirements (see Item 3 above) must be considered. |
| 21. | Platform Width | Varies | Station Platform width to be refined by A/E of terminal design team based on passenger circulation requirements, queuing requirements and Code requirements.<br>Switch locations can be impacted by platform circulation requirements/layouts. Headway can also be impacted by the train stopping location. |
| 22. | Centerline Guideway to edge of Platform | 5ft.-4in | Final dimension based on technology and clearance/gap requirements between vehicle floor and platform edge. Note that emergency walkway configuration must be considered. Emergency walkway access into the Station must be addressed and coordinated with the respective design team. |
| 23. | Train Configuration | Maximum length 4-car train configuration (in ultimate). | Assuming a maximum 4- car train with each car having 2 doorways per side. A width of 6ft. can be assumed for each doorway for preliminary planning purposes.<br>Exact door locations and sizes are technology dependent. |
| 24. | Switch Section of Guideway | Switch turnouts and in crossovers<br><br>Min. radius 131 ft. | Switches shall not be located on super-elevated sections or on vertical curves. Switches may be located only on flat section. Switches are desired to be located on tangent sections that are at 0% grade.<br>The use of "X" switches as double crossovers is technology dependent. Double crossovers or "X" switches are required at end-of-line stations for failure management purposes. The failure management switch shall be as close as possible to the normal switch to minimize line capacity degradation in the event of a normal platform side or normal switch failure. |
| 25. | Max sustained lateral acceleration/deceleration | 0.1 g | Superelevation shall be provided as required to maintain the line speed at the curves. Superelevation shall be assumed to occur within the spiral transitions. |
| 26. | Max. sustained vertical acceleration/deceleration | 0.05g with respect to 1 g datum | Transition length shall be provided such that the vertical jerk does not exceed 0.04 g/sec |

Source: Lea+Elliott, Inc., 2013

#### 5.9.6.3 Alignment Alternative Evaluation

The alignment of the APM surface section and elevated guideway section reflects the configuration of the system's guideways in both horizontal and vertical directions. The development of the alignment and location of the stations are based on an iterative process, where potential station locations have been defined based on efficiently linking the Main Terminal Complex with key existing and proposed airport/terminal support facilities in the STSDA while limiting the number of stations/stops required to accomplish this linkage. Facilities that have been considered in the definition of station locations and in defining the most appropriate guideway alignment include but are not limited to the existing Economy Garages, the proposed CONRAC, potential relocated employee parking facilities, possible future hotel and airport authority office development within the STSDA. Passengers' movements between the various airport/terminal support facilities to be served include facilities such as the Economy Parking garages or a future CONRAC.

The alignment typically is developed with the overall need to join the stations with tracks that are in compliance with the APM's proprietary criteria, key elements of which have been delineated in the preceding table. The alignment considers requirements such as; technology specific geometric constraints, maximization of radii, optimization of speed profile to meet system performance and passenger demands, vehicle body roll rates, and other factors, for applicable candidate APM technologies for the project.

Subsequent modifications to the proposed alignment are likely to be proposed by the APM System Contractor however, it is anticipated that the modifications will be minor in nature. The types of modifications may include minor adjustments to the grade/vertical profiles, curve/spiral geometry, guideway deck or running surface elevation, and super-elevation in curves to better meet the requirements of and to optimize the performance of the selected Operating System. The following reports and other information provided by TPA provided valuable input in establishing an alignment for the APM system:

- Conceptual Engineering Report for Existing Terminal Area Transportation Improvements, RS&H, October 14, 2011.
- Conceptual Planning for Station and Transit Access, PB Americas, Inc., November 1, 2007

#### 5.9.6.4 APM Alignment – Taxiway J to the STSDA

The APM alignment from Taxiway J to the Main Terminal APM station was discussed in the Main Terminal Alternatives Analysis. The segment of the APM that will tie the Main Terminal Complex into the South Terminal Support Development Area extends the APM from the Taxiway J Bridge south into the STSDA. As noted previously, a key consideration in defining the proposed APM alignment was to not only address future development that was projected to occur in the area, but to also provide for the efficient connection of major existing facilities, notably the Economy Garages, in the STSDA that presently serve the needs of a large number of airport customers.

Several alignment options were evaluated during initial planning to link with the STSDA and are shown in the presentation in **Appendix M**. As noted in Section 5.7.3 a number of critical

constraints influenced the alignment of the APM between the Taxiway J bridge and the exit roadway from the STSDA, associated with Runway 10-28 and with the runway's affiliated Runway Protection Zone (RPZ), 40:1 departure surface and Part 77 surfaces.

Further, while the former alignment of the proposed regional Light Rail System had extended south of the Taxiway J bridge, the LRT alignment had paralleled the western and southern boundaries of the STSDA and had not been intended to facilitate the movement of passengers from the terminal to existing or future support facilities in the area. The LRT system was designed to serve regional transportation needs consisting of the movement of people from communities north and northwest of the Airport to the Westshore area and downtown Tampa. As a result its alignment south of Taxiway J was not configured to serve the STSDA or to provide intra-airport movements of passengers

As noted under Section 5.7.3, the intra-airport transportation system not only needed to meet potential future needs, but also needed to serve major existing airport support facility requirements, notably the 11,159 parking spaces contained in the two Economy Garages. These factors essentially established what the alternatives analysis would need to consider for the definition of the alignment between the Taxiway J bridge and the Economy Garages. Over the course of the alignment analysis a number of issues were identified, analyzed, and resolved in coordination with the HCAA, that resulted in refinements to alternatives. These issues include but were not limited to those listed below:

- Ultimate Approach Category for Runway 10;
- Ultimate Runway length for Runway 10-28;
- Ultimate Runway 10 threshold location and Runway 10 end location;
- Issues affecting alignment depression or tunneling;
- Future need for Taxiway N extension over Bean Parkway;
- Grade requirements for extension of Taxiway J and new Taxiway N bridge structures;
- Potential impact of runway end changes on taxi movements on future Taxiway N;
- Impact of 40:1 departure surface and 7:1 transitional surfaces on the elevated portion of the APM alignment in the vicinity of Runway 10 end;
- Clearance of RSA and ROFA by the APM alignment;
- Clarification of new Runway Protection Zone Requirements;
- Alignment cost differential between alternative alignments off the end of Runway 10; and
- Impact of a potential roadway flyover from the north exit road in the South area to Bean Parkway on APM alignment.

Based on the preceding issues noted above, three alternatives were defined for the section of alignment that would extend from Taxiway J to serve the Economy Garages and the remainder of the site. Two of these options made use of varying lengths of the former recommended LRT alignment and one departed from the previously recommended LRT alignment immediately upon exit beneath the Taxiway J bridge. These are summarized below.

*APM Alignment Alternative One*

The first alternative evaluated utilized a more significant portion of the former LRT alignment as defined in the prior study for the regional LRT system and refined in the two previously noted studies. See **Appendix M** for a graphical depiction of the various alternatives considered. **Appendix K** - Alternative Refinement Process also contains working drawings of options considered during the process. Under this alternative the proposed APM guideway would exit beneath Taxiway J and parallel the east side of George Bean Parkway south, crossing over the exit roadway from the South Terminal Support Area and continuing south past, and to the west of the USPS sort facility. The alignment would cross over the top of the primary entrance road into the south development area, continue south approximately 400 feet, and then make a sharp turn to the east and extend approximately 1,450 feet crossing over the North/South spine road in the STSDA to a conceptual APM station located along the south side of the southernmost Economy Garage. The conceptual station location was placed on the south side of the Economy Garage to provide the ability to access the southernmost economy parking garage and immediately north of what would have to be an east west oriented CONRAC facility. This proposed station would be used to serve both the CONRAC and the existing economy garages. The guideway would also need to be be extended in the future to serve other development and the potential Westshore intermodal center in the vicinity of Trask Avenue and I-275.

One benefit of this concept was that the former proposed LRT alignment had been evaluated and found to not have any impact on Runway 10-28 in the segment that passed the west end of the runway. Further the alternative did provide access to the Economy Garage area, although it may not have been viable for those parking in the north garage. Additionally, it was also determined that the proposed alignment could be configured to provide the required vertical clearance over roadways and driveways in the south area. While having some positive features, this alternative was eliminated from further consideration for a number of key reasons, the most prominent of which are listed below:

- It significantly degrades the ability to effectively or even adequately serve the north economy parking garage.
- It increases the length of the required guideway adding to system cost.
- It requires the future CONRAC be oriented along an east west axis immediately south of the South Garage, adversely impacting the configuration and operation of the CONRAC. In short, this alternative effectively dictates the location and orientation of the CONRAC rather than having the optimum configuration of the future CONRAC and current placement of the economy garages define the optimum layout of the APM.
- It requires a new roadway extension from O'Brien Street north to the proposed APM station to accommodate a future Bus Rapid Transit interface at this location.
- Provision of a site for the APM maintenance facility is complicated by the alignment, location of the CONRAC that would be required to accommodate the APM alignment, and the need to extend the alignment to accommodate other uses and future transit interface.
- It significantly impacts the viability of connectivity of CONRAC to other important development in south area including such uses as airport hotel(s), airport offices and

other terminal and airport support uses due to what would have to be an extremely serpentine alignment.

- Extension of the alignment to connect to future regional transit in Westshore would impact existing rental car storage areas and would have to be sited so as to not penetrate FAR Part 77 Surfaces. Further the ability to have this extension serve other uses in the STSDA would be extremely challenging and likely undermine the efficiency of the overall connection due to a circuitous alignment.
- It significantly complicates ingress and egress from the CONRAC based on its required flows and orientation and interaction with traffic from the economy garage and future BRT.

*APM Alignment Alternative Two*

A second series of alignment alternatives were identified that shared the common feature of providing a more direct APM route from Taxiway J to the Economy Garage vicinity. See **Appendix M** for a graphical depiction of the various alternatives considered. **Appendix K** - Alternative Refinement Process also contains working drawings of options considered during the process. These options were analyzed in combination with various alternatives concerning the operational configuration of Runway 10-28 with the common goal of reducing the length of the guideway to create a corresponding reduction in the cost of APM construction. Given different runway length scenarios and their resulting shift in corresponding Runway Safety Areas, Runway Object Free Areas, Runway Protection Zones and the approach and departure surfaces, several alternative alignments were identified and their lengths and cost savings calculated. Below are examples of options that were considered:

- Implement a 994 foot displacement of the Runway 10 threshold and apply Declared Distances for Runway 10 Departures and Runway 28 Landings and departures, keeping the APM clear of the RSA and ROFA, but passing through the RPZ.
- Implement a 1,475 foot displacement of the Runway 10 threshold and apply Declared Distances for Runway 10 Departures and Runway 28 Landings and departures keeping the APM clear of the RSA, ROFA and RPZ.
- Implement a relocation of the Runway 10 end 870’ to the east and remove former runway pavement. Displace the landing threshold of Runway 10 1,000’ from the new runway end and apply declared distances for Runway 10 Arrivals and Departures and Runway 28 Landings and departures keeping APM clear of the RSA, ROFA and RPZ
- Implement a 1,905’ displacement of Runway 10 threshold and apply of Declared Distances for Runway 10 Departures and Runway 28 Landings and departures providing a more direct route than B and keeping the APM clear of the RSA, ROFA and RPZ.

Another factor considered for each alignment were adjustments that might be required if the extension of Taxiway N across the Bean Parkway were to occur which would shift the point where the APM alignment could turn towards the Economy Garages south by approximately 500 feet. As a result for each scenario listed above there was an alternative that also took into account the possible development of the Taxiway N alignment, to ensure that any option considered took this previously identified improvement from the 2005 master plan into account.

Based on the analyses that were conducted there was a definite benefit with a more direct route from the Taxiway J or future Taxiway N bridges to the vicinity of the economy garages versus a route that would follow more closely the alignment of Bean Parkway to the south area exit road north of the USPS sort facility and then east to the Economy Garage vicinity. Order of magnitude cost savings ranging between $21.5 and $24.6 million dollars were identified. There were other positive attributes associated with a more direct routing of the APM guideway including reduced transit time between the south area and the terminal and fewer sharp turns that tend to impact passenger comfort, particularly for those who are standing.

After passing across the end of Runway 10/28 and extending beyond the revised departure surface, the alignment would continue south paralleling the east side of the main north/south spine road to the first of two APM stations which would serve the Economy Garages. The top of guideway elevation at the Economy Garage station is estimated to be approximately 42 +/- feet Above Ground Level (AGL). The APM station for the Economy Garages would be situated over the entrance to the garages and configured to allow customers to exit at the north end of the station directly into the North Economy Garage and at the south station end directly into the South Economy Garage. This elevation would be retained from the Economy Garages south requiring no further increase in vertical elevation.

The APM alignment would continue south paralleling the east side of the North/South spine road to facilitate access to the CONRAC, Bus Rapid Transit, and other aviation support uses that develop in the STSDA. Vertical circulation elements would be provided in the CONRAC APM station to allow passengers to access a Bus Rapid Transit (BRT) system stop that would be at the surface level as well as a remote curb also to be developed in association with the APM station. Rental car customers accessing the CONRAC would exit the APM onto a platform between the dual APM guideways and take escalators or elevators up one level and cross above the guideway to access the CONRAC Lobby.

Under the series of alignments considered under Alternative Two, an easterly spur would run east to west to the south of the economy garages. This spur would be constructed on an elevated guideway and would extend approximately 550 feet to the east of the main north/south alignment. The spur line would provide access to the APM maintenance facility which would consist of an elevated structure to be used for vehicle maintenance, along with the storage of spare APM vehicles.

The overall alignment under Alternative Two would extend to, or slightly beyond the CONRAC APM station in its initial phase. As noted above, the CONRAC station and affiliated roadways (to be discussed in a subsequent section) were configured to accommodate a BRT system interface which would access the current mass transit system in the Tampa area. Buses operating to and from the Airport would have the option of entering the STSDA either via the O'Brien/Spruce Street intersection or by the primary access off of Bean Parkway. They would then travel to the entrance of the remote curb facility located south of the CONRAC APM station and enter onto a north only one-way drive that would access the lower level of the CONRAC APM station that would accommodate a bus, BRT, hotel shuttle and remote curb fully conditioned waiting area. Vehicles exiting the STSDA would have the option of either using the main exit on the north end of the STSDA or the O'Brien/Spruce Street intersection.

Accommodating an interface with regional rail proved to be a more challenging issue. Two options for bringing rail to the STSDA were considered and both presented significant issues and

challenges from a design and operational perspective for the likely rail alignments under consideration. If a rail line (likely LRT) were to be brought to the Airport, its horizontal and vertical design requirements would generally dictate that a connection to the airport APM system would have to be located at the south boundary of the STSDA, unless a dead end spur line was to be constructed. Use of a spur line that would dead end into the STSDA was discussed with representatives of the Federal Transit Administration (FTA) who noted that such an arrangement would not be recommended since it would pose significant challenges that would impact the overall transit alignment and should be avoided unless the Airport was to be the final stop along an entire transit alignment route. This is the case with various rail transit systems that serve Seattle-Tacoma International, Portland International, Baltimore Washington International, Lambert-St. Louis International, Philadelphia International, San Francisco International and Chicago O'Hare International Airports. These concerns were reviewed with representatives of the FTA and the issues were confirmed. Based on these considerations the idea of a one way in, one way out spur in the center of an overall transit alignment is not recommended as an a desirable or even viable option to provide airport connectivity.

The other alternative for bringing a rail connection to the Airport consisted of developing a loop alignment along the currently proposed conceptual regional rail alignment that is shown as running within the right of way of I-275. Current plans show regional rail crossing the Howard Frankland Bridge and following I -275 to a regional intermodal transportation center at I-275 and Trask Ave in WestShore. To bring regional rail to the STSDA, even to the southern end of the site, would require the rail alignment to leave I-275 either prior to or at U.S. 60 and proceed due north approximately one mile, passing through the multi-level U.S. 60/Veterans Expressway/Spruce Street interchange while turning a minimum of 90 degrees to the due east along an elevated alignment to meet an extended APM system. The rail connection would then be required to continue to the east penetrating and passing through the Runway Protection Zone for Runway 1R/19L. It would then cross over or through Spruce Street and N. Westshore Blvd to access Trask Ave where the system would execute another 90 degree turn to the south and enter the Westshore Intermodal station, and then turn 90 degrees once again to return to its original alignment along I-275.

This option was analyzed and discussed with FTA representatives as well as with planning team representatives having rail design expertise and was found to possess significant challenges and issues that rendered such an option highly questionable if not unacceptable to those developing the alignment. These challenges included the addition of roughly two miles of alignment to the system with multiple sharp (90 degree) turns. The added distance was generated by the detour off of I-275 to the Airport and the return to I-275 which would add significantly to the cost of the system. The configuration of the loop with a number of sharp turns in a very short distance would impact the flow along the alignment and potentially increase headway times and reduce level of service.

As noted earlier, the ability to penetrate the Runway 1R/19L RPZ remains an open question. However the FAA has already required two regional transit systems constructing lines off the ends of runways to either displace thresholds or place the alignment in a partially tunneled segment within portions of the RPZ. This would be a major challenge due to the need to drop over a short distance from an elevated interface with the airport APM to a surface and potentially a sub-surface alignment in the RPZ. It is possible that the vertical grade required to accomplish could exceed typical design standards for a transit system. Finally, the U.S.60/Veterans Expressway/Spruce Street interchange presents a complex and costly challenge

to allow a rail corridor to be accommodated from the south through the interchange into an elevated 90 degree turn to parallel Spruce Street, and then access an elevated station along the limited length of the south side of the STSDA.

After reviewing the challenges of accommodating rail at the STSDA, internally with rail system designers within the planning team and externally with FTA representatives and the HCAA, it was concluded that the options for bringing rail to the Airport were not in the best interests of the transit system or the Airport if doing so would adversely impact the operation of the system once in place. Upon reaching this conclusion, it was determined that while bringing LRT or other rail to the Airport was not recommended, an option that could be considered would be the future extension of the intra-airport APM system beyond the Airport to the Westshore Intermodal Center. Extending on-airport systems to interface with regional systems has been undertaken at other airports where bringing rail into the Airport was not deemed viable. Examples include the Air Trains at both John F. Kennedy International and Newark Liberty International Airports and the Sky Train that connects Phoenix International Airport to the 44th street Light Rail Station on the Valley Metro System.

In discussion with representatives of the FTA, it was determined that such an extension could be eligible for federal funding assistance from the FTA. Two potential extension alignments were conceptually identified, both extending south through the STSDA. One conceptual elevated alignment was defined generally along O'Brien Street south to Cypress and then east along Cypress Street to the Westshore Intermodal Center, while the second alignment would extend along Spruce Street to Trask Avenue and then to the Intermodal Center. APM Alignment Alternative Two with its North/South orientation is well suited to being extended and could accommodate either potential extended alignment.

Despite the positive aspects of a number of the alignment variants there were several significant issues that were associated with adverse effects on other facilities and activities that ultimately negated the viability of all of the noted alignment options. The primary factors that came into play to negate the viability of the Alternative Two Variants are noted below:

- Meeting the APM guideway vertical clearance over the northern economy garage exit and the realigned airport service road could only be achieved with the more extensive runway length reductions; however these created other impacts to existing uses and facilities that undermined their viability.
- Shifting the Runway 10 end east resulted in significant impacts to the USPS parking area
- The noted options potentially triggered the need to reroute the northern exit from the Economy Garages to the south side of the garages which, when combined with CONRAC traffic and south garage exit traffic would significantly overload the south exit.
- All options and their variants significantly impacted, and in all but one case, negated, the operational use of Runway 10-28 by air carriers. A reduction in length beyond a 500 displacement of the Runway 10 threshold as shown on the existing ALP was not acceptable to the HCAA nor desired by TPA ATCT representatives.
- The Federal Aviation Administration does not provided funding support for Runway 10-28. Thus, an easterly extension of Runway 10/28 to offset the loss of operational length

that would be required by the more direct routing of the APM would have to be funded by the HCAA.

- Retention of the existing runway length by adding runway to the east end of the 10-28 alignment is not deemed viable as it triggers the need for a new Air Traffic Control Tower which would likely have to be funded by the HCAA. A new ATCT is estimated to cost approximately $40 million dollars which significant exceeds the cost savings associated with the more direct APM routing.
- Representatives of the TPA Air Traffic Control Tower noted their concern relative to any reduction in length and the attendant impact that would occur to their range of alternatives in handling traffic into and out of TPA.
- Given the costs of the required elements noted above and the impacts to the operational capability of the runway, the HCAA noted their desire not to incur the listed impacts.

*APM Alignment Alternative Three*

A third alignment alternative was developed that built on elements of the first two options. This alternative recognizes the need for the APM to serve both economy garages, which dictates a north/south orientation of the APM guideway generally in line with the North/South spine road. At the same time the need to provide vertical clearance over a realigned airport service roadway and the north exit from the economy garages required an alignment that had enough horizontal distance to be able to transition from a surface level to a minimum of 14 feet of vertical clearance over these roads and drives. It was also necessary to have the APM located far enough away from Runway 10-28 both laterally and off the runway end so as to not penetrate airport imaginary surfaces while also not impacting the primary egress from the STSDA. The alignment that was developed as Alternative Three is depicted in **Figure 5.108**

The defined alignment follows the general route previously identified for the LRT system from Taxiway J to the vicinity of the northwest corner of the USPS vehicle parking lot. Most of this section of the APM would be at surface level due to imaginary surfaces associated with Runway 10-28. At the northwest end of the USPS parking area the alignment commences a turn to the east paralleling the north side of the primary exit roadway from the STSDA. This section of the alignment would begin a 3% upward slope on an elevated guideway to gain the 14 foot elevation from the road surface to the bottom of the guideway structure to clear the realigned service road and to provide clearance over the exit from the north economy garage. The placement of the alignment was evaluated to ensure that the APM vehicles and other affiliated facilities would not penetrate the most critical imaginary surfaces consisting of the 40:1 departure surface on Runway 28 or the 7:1 transitional surfaces lateral to Runway 10-28. Upon reaching the vicinity of the northwest corner of the economy garage, the APM alignment would turn south and continue to rise to a final guideway elevation of approximately 42 feet at a location between the east ends of the North and South Economy garages where the first STSDA APM station would be located.

The Economy Garages APM station would be situated over the entrance to the garages and configured to allow customers to exit at the north end of the station directly into the North Economy Garage and at the south station end directly into the South Economy Garage. It is recommended that some form of shuttle system be provided between the APM entrance into

the garage floor and the elevator core in the center of the garages. The APM station would be sized to also provide room for remote check-in kiosks to allow arriving customers to get their boarding passes at the station and thereby by-pass the ticketing level of the terminal as well as added kiosks on the transfer level.

The APM alignment would then continue south paralleling the east side of the North/South spine road to facilitate access to the CONRAC, Bus Rapid Transit, and other aviation support uses that develop in the STSDA. The guideway would retain its approximate 42 foot elevation at the CONRAC station. Vertical circulation elements would be provided in the CONRAC APM station to allow passengers to access a Bus Rapid Transit system stop that would be at the surface level as well as a remote curb to be developed in association with the APM station. Rental car customers accessing the CONRAC would exit the APM onto a platform between the dual APM guideways and take escalators or elevators up one level and cross above the guideway to access the CONRAC Lobby.

The CONRAC APM station would be sized to meet the needs of various activities that would be incorporated into the facility and lined directly to the CONRAC customer service lobby to provide space to meet the functional needs for rental car customer volumes, accommodate remote passenger check-in capability, provide for BRT and remote curb customer waiting areas and to incorporate a range of concessions that might include a coffee shop, news/magazines and select retail. These would be placed to serve those exiting the rental car lobby, to meet the needs of those who may access the BRT, as well as others being dropped off or picked up at the remote curb that is discussed in a later section.

As was the case with Alternative Two, the first phase of the APM alignment would extend to, or slightly beyond the CONRAC APM station. As noted above, the CONRAC station and STSDA roadways (discussed later) were configured to accommodate a BRT system interface which would access the current mass transit system in the Tampa area. Buses operating to and from the Airport would have the option of entering the STSDA either via the O'Brien/Spruce Street intersection or by the primary access off of Bean Parkway. They would then travel to the entrance to the remote curb facility located south of the CONRAC APM station and enter onto a north only one-way drive that would access the lower level of the CONRAC APM station that would accommodate a bus, BRT, hotel shuttle and remote curb fully conditioned waiting area. Vehicles exiting the STSDA would have the option of either using the main exit on the north end of the STSDA or the O'Brien/Spruce Street intersection.

The third alternative would retain the easterly spur that was noted in Alternative Two that is located to the south of the economy garages. As in the second alternative this spur would be constructed on an elevated guideway and would extend approximately 550 feet to the east of the main north/south alignment. The spur line provides access to the APM maintenance facility which consists of an elevated structure to be used for vehicle maintenance, along with the storage of spare APM vehicles.

It is presently anticipated that the initial phase of the APM alignment would end at, or just south of the CONRAC station in the initial phase of its development. When combined with the section of alignment from the east side of the Terminal to Taxiway J the total length of the TPA APM under this scenario would be approximately 1.3 miles. Consistent with the discussion of Alternative Two, this alternative provides for the desired interface and support facilities to accommodate the existing regional mass transit system through the incorporation of facilities

supporting bus and BRT systems. Further, as delineated in the Alternative Two discussion, the north/south orientation of the APM alignment in Alternative Three and the ability to easily extend the alignment in the future from its Phase One terminus just south of the CONRAC APM station, provides the ability to develop an extension of the APM from the Airport to connect to future regional rail transit at the Westshore Intermodal Center.

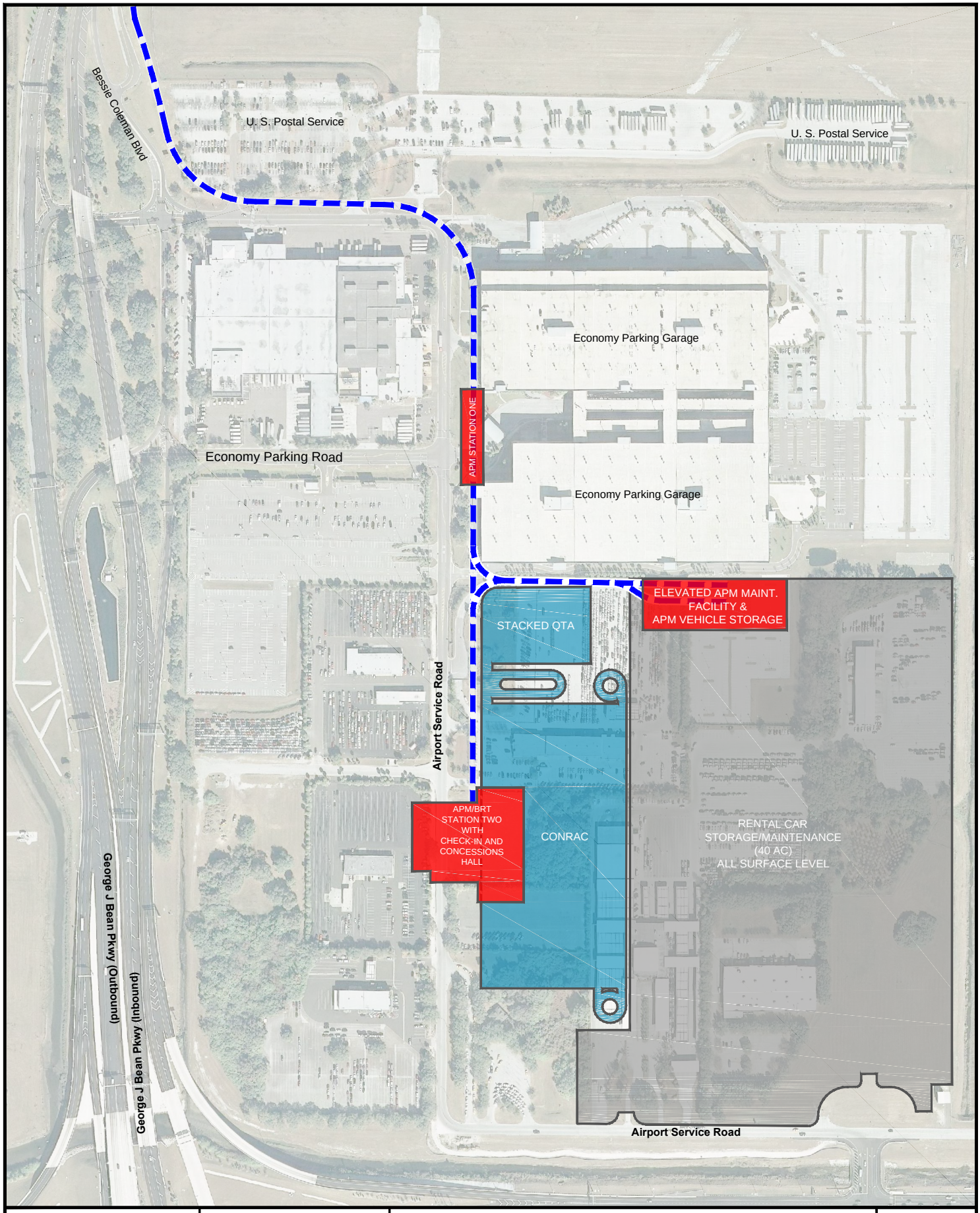
The key attributes and constraints associated with Alternative Three are outlined below:

- Two relative sharp turns would occur along the APM alignment, which are not ideal, but given geometry issues cannot be avoided. These could create some passenger discomfort, but are required to avoid the need to significantly shorten Runway 10-28.
- The Alternative Three alignment is slightly longer than that of Alternative Two but is of a lesser length than Alternative One.
- Alternative Three can be more easily extended from its first phase terminus to connect to potential future regional rail than Alternative One and with similar ease as Alternative Two.
- No reductions in runway length beyond that which was depicted on the previously approved Airport Layout Plan are triggered by this alternative, consistent with the wishes of the HCAA and representatives of the ATCT.
- The proposed alignment paralleling the North/South spine roadway provides the most direct and most effective orientation to provide access to the majority of land area and development within the STSDA.
- The Alternative Three alignment is far preferable to that of Alternative One for connecting to both Economy Garages and provides and equivalent connectivity as that of Alternative Two.
- Transit time from the terminal to the CONRAC station translates to a very high level of service estimated between 3 and 4 minutes
- The surface segment of the APM alignment around the end of Runway 10-28 does not penetrate the critical 40:1 departure surface nor does it impact the Runway Safety Area, Object Free Area or approach surfaces to Runway 10.
- Alternative Three can accommodate the realignment of Bessie Coleman Drive (Service Road) to lie between the APM and Bean Parkway, which would be far more complicated and would generates more adverse impacts to other uses north of Taxiway J under Alternative Two.

#### 5.9.6.5 Recommended APM Alignment

Based on the preceding discussion it was determined that the optimum APM configuration is the alignment/station configuration associated with Alternative Three for several reasons. These main drivers include, avoiding significant impacts to Runway 10-28, providing the best accessibility to both existing economy garages, being flexible and capable of serving the majority of the STSDA land from two initial station locations and possessing the ability to best accommodate current and future connectivity to regional transportation systems. For these reasons Alternative Three was carried forward in the planning of subsequent components of the

STSDA. For a graphical depiction of the southern portion of the preferred APM alignment in relation to the proposed CONRAC see **Figure 5.108**. For the entire alignment from the south development area to the terminal facility see **Figure 17** on page 43 of **Appendix M**.

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# South Development Area Plan - Part 2

TAMPA INTERNATIONAL AIRPORT
TAMPA, FLORIDA

DATE: May 06, 2013

Figure: 5.108

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## 5.9.7 South Terminal Support Development Area Roadway Improvements

This section describes the analysis that was completed for the roadway network within the STSDA. For this analysis an ultimate build-out was assumed including land uses such as hotels, office buildings, restaurants, and other land uses that generate higher traffic demands. All volumes were projected to 2031 and a level of service standard of C was maintained for all intersections and roadway segments that were analyzed for the South Terminal Support Development Area.

Roadway improvements within the STSDA were developed based on 2031 projected traffic levels and the ultimate build-out of the STSDA. To start this analysis, traffic volume data was collected at each of the key intersections throughout the STSDA to determine the background traffic levels. Turning movement counts were collected at the following locations during a typical weekday in May of 2012:

- Spruce Street at O'Brien Street
- Airport Service Road at O'Brien Street
- Airport Service Road at Economy Parking Road
- Economy Parking Road at Cell Phone Lot Driveway
- Airport Service Road at Bessie Coleman Boulevard

In addition, seven-day counts were collected along the north-south segment of Airport Service Road, along the east-west segment of Airport Service Road on the north end of the STSDA, and along Economy Parking Road.

The peak hour volumes were used as the background traffic and a growth was applied to determine 2031 traffic levels. This growth was applied based on the anticipated passenger level projection of 28.7 MAP. The traffic generated by the anticipated land uses for the ultimate build-out was then added to the background traffic. This assumes the following land uses for the build-out scenario:

- Hotels – 2 potential Locations with 300 Rooms Each
- Gas Station with Convenience Store – 10 Fueling Stations
- High Turnover Sit Down Restaurants – 3 Locations at 7,500 SF Each
- Offices – 2 Locations at 100,000 SF Each and 1 Location at 220,000 SF
- Relocation of the Rental Car Facilities
- Relocation of the Employee Parking Facilities
- Economy Parking Garages Remain
- Cell Phone Lot Remains

The ITE Trip Generation Handbook was utilized to determine the number of peak trips generated by each of the land uses as shown in **Table 5.17**. Additional data was collected at the existing employee parking lot and rental car facilities to determine the amount of traffic that would be moved to the STSDA.

**Table 5.17**
**Trip Generation**

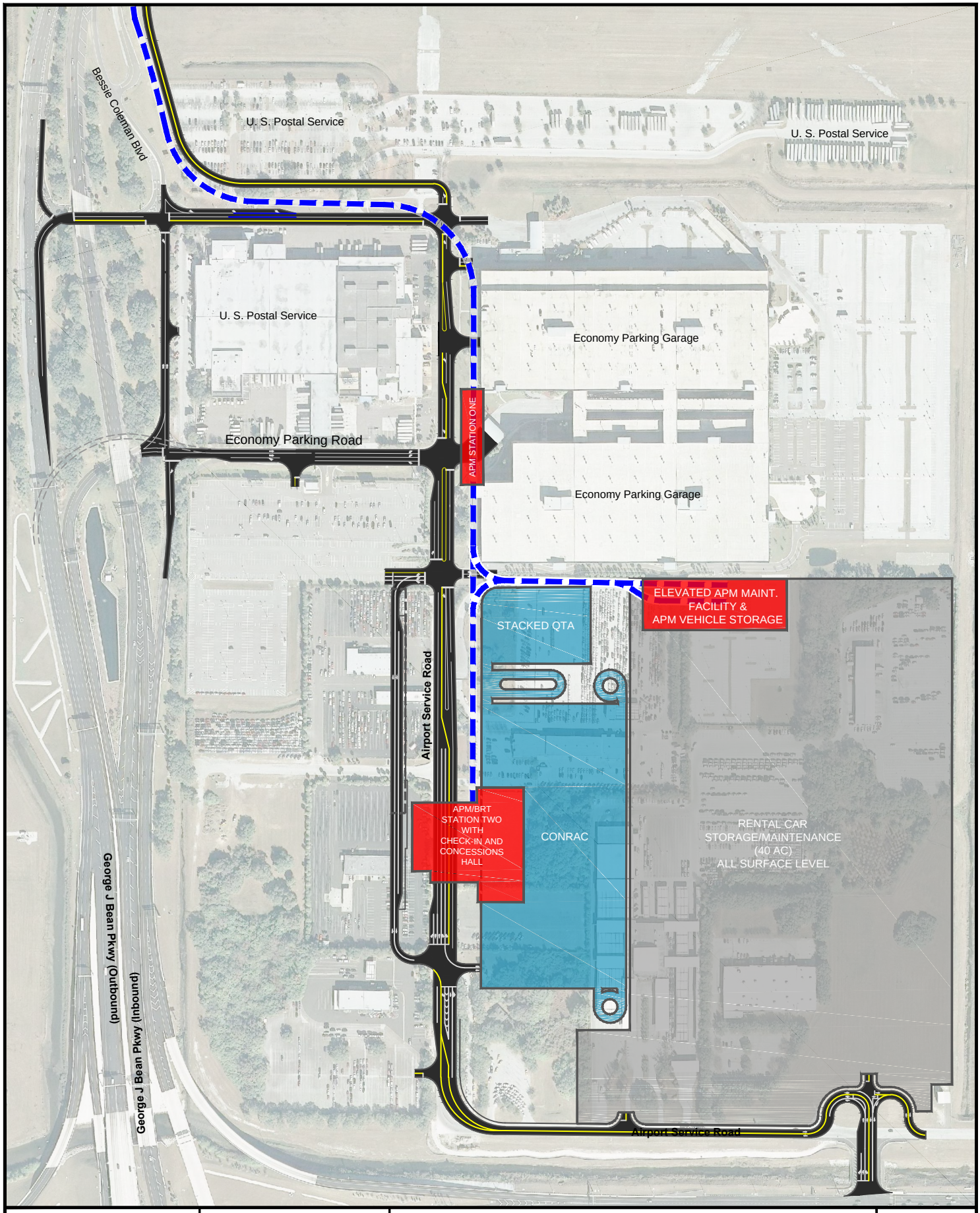
| Land Use | Size | AM Peak Trips | | PM Peak Trips | |
|---|---|---|---|---|---|
| | | In | Out | In | Out |
| Hotel #1 | 300 Rooms | 98 | 62 | 94 | 83 |
| Hotel #2 | 300 Rooms | 98 | 62 | 94 | 83 |
| Gas Station/ Convenience Store | 10 Fueling Stations | 62 | 60 | 69 | 69 |
| High Turnover Sit Down Restaurant | 3 @ 7,500 SF | 129 | 119 | 147 | 102 |
| Office #1 | 100,000 SF | 165 | 23 | 32 | 159 |
| Office #2 | 100,000 SF | 165 | 23 | 32 | 159 |
| Office #3 | 220,000 SF | 310 | 42 | 55 | 270 |
| Office #4 | 220,000 SF | 310 | 42 | 55 | 270 |
| | | | | | |
| **Total** | | 1337 | 433 | 578 | 1195 |
| **Pass-By** | | 156 | 108 | 130 | 106 |
| **Net Trips** | | **1181** | **325** | **448** | **1089** |

Source: ITE Trip Generation Handbook

All traffic volumes were added for the AM Peak and PM Peak and analyzed using the Highway Capacity Manual methodology for determining level of service at intersections and arterial segments. **Figure 5.109** shows the lane requirements along the roadway network that are required to maintain a level of service standard of C.

Overall, the roadway alignments are not anticipated to change dramatically with the exception of the addition of a parallel drive alignment along the west side of the north/south spine road. Additionally, the existing alignment will require widening and other selected enhancements including the addition and improvement to signalization. See **Figure 5.109** for a graphical depiction of the proposed roadways. The Economy Parking Road will serve as the primary in-bound route into the STSDA off of the Bean Parkway. The Airport Service Road will be the outbound route towards the north side of the STSDA. Three new signalized intersections are anticipated at the Service Road connection with Airport Service Road and at the driveways into the employee parking garage and the rental car parking garage. The O'Brien Street entry point could be used primarily for rental car maintenance activity and the intersection of Airport Service Road and O'Brien Street would also provide direct access into the rental car maintenance facilities. The driveways and associated auxiliary lanes that are shown in **Figure 5.109** are subject to change based on the exact building dimensions and layouts.

A curb roadway for pick-up and drop-off of customers is also proposed within the STSDA. This curb road is proposed to extend from the employee parking garage entry/exit point to the rental car facility entry/exit point. This will allow for approximately 800 feet of curb length with three lanes of capacity. This curb roadway could have direct access to the proposed APM station which would provide access to the rental car facilities and the employee/tenant parking garage. It is anticipated that this curb would be used primarily by commercial and transit providers. Bus rapid transit, private bus, limo, and shuttle services are just some of the users that would be accommodated along this curb roadway.

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# South Development Area Plan - Part 3

TAMPA INTERNATIONAL AIRPORT
TAMPA, FLORIDA

DATE: May 06, 2013

Figure: 5.109

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## 5.9.8 Other Terminal Support Facilities

### 5.9.8.1 Relocated Employee Parking

The existing airport employee parking area is located on a 26 acre tract of land in the northeast section of the North Terminal Development Area. The HCAA currently operates a bus shuttle between the employee parking area and the Main Terminal Complex on a continuous basis through much of the day. To access the main terminal, busses currently must enter the SIDA through a manned checkpoint located beneath the Taxiway B bridge. Vehicles then wait to cross the alignment of Taxilane A which operates in conjunction with Taxiway B as part of a dual crossfield taxiway/taxilane system on the north end of the terminal complex. Taxilane A is a busy movement area with a considerable number of aircraft transiting the northern end of the Main Terminal Complex. A large amount of traffic that includes a significant number of employee shuttles crosses Taxilane A daily. Fortunately there have been no serious incidents as of yet; however with the amount of roadway traffic coupled with the extensive use of Taxilane A by air carriers, the potential for an incident does exist. To minimize this potential, mitigate the cost of on-airport shuttling of employees, and also to continue the ongoing process of shifting facilities out of the North Terminal Development Area, options for relocating the current employee facilities to another site on the Airport were considered.

With the integrated development of a CONRAC facility, the associated roadway and APM improvements, and the designation of the south area as a focal point for terminal support facilities, attention was focused on the STSDA as a potential site to accommodate an employee parking facility. With the addition of the APM system to serve the CONRAC and Economy Garages there would be clear advantages associated with the collocation of employee parking in the STSDA. With Bus Rapid Transit being incorporated into the area, there could also be some synergies that might actually foster some to move to alternative modes of transportation from their homes to their jobs.

As noted in the discussion of the preferred CONRAC Alternative, the area along the east side of the Airport Service Road (north/south spine road) is identified for commitment to rental car facility needs, however in doing so, the area on the west side of the road is opened for other airport support uses. No other area of the Airport would afford the accessibility to the Airport or the available land area required to meet the requirement. Further, no other land area on the Airport provides the opportunity for the development of employee parking to also be potentially viable for addressing the parking requirements for other key support facilities as exists in the STSDA. Proper placement and layout of the a parking facility, while factoring in requirements for employees and other potential users could allow a facility initially intended for employees to be able to also accommodate some, if not all, of the needs of an airport hotel and potential airport office. In short, the area could be developed to serve an array of compatible functions that would benefit the Airport.

Initially, alternatives for the employee parking facility were considered in several places within the STSDA, however with the decision to extend the lease of the USPS and the recommended concentration of rental car facilities on the east side of the airport service area, the focus of the analysis quickly centered on the land west of the service road. The two central questions that had to be addressed were whether the parking facility would be a surface lot or structure and where within the area west of the airport service road and south of the USPS site the parking area should be placed.

As to whether the employee facility would be a surface lot of a parking structure, it was clear given the available area and the demands for land to accommodate other terminal support facilities that the facility would ultimately be a parking structure. At an early stage the parking demand might be able to be accommodated via a surface lot. However, once another support use needed to be moved to or developed in the STSDA, meeting employee parking needs would have be accomplished by way of a parking deck or structure. A garage as opposed to a surface lot would also be spatially compatible with other proposed adjacent uses and would maintain a high level of service measured by walking distance to/from the proposed APM stations.

In defining the placement of an employee garage on the west side of the airport service road in the STSDA several objectives came into play that included the following:

- Place the facility to be accessible to both STSDA APM stations to minimize walking distances for garage users.
- Place the facility on the site to maximize the remaining available acreage for other support uses on the west side of the airport service road
- Place the facility on the site in a manner that does not adversely impact accessibility from the CONRAC APM station to key proposed terminal support uses. These uses will likely include the airport hotel and airport offices.
- Conform to airport imaginary surfaces associated with Runway 1L/19R and mitigate potential impacts to airport equipment.

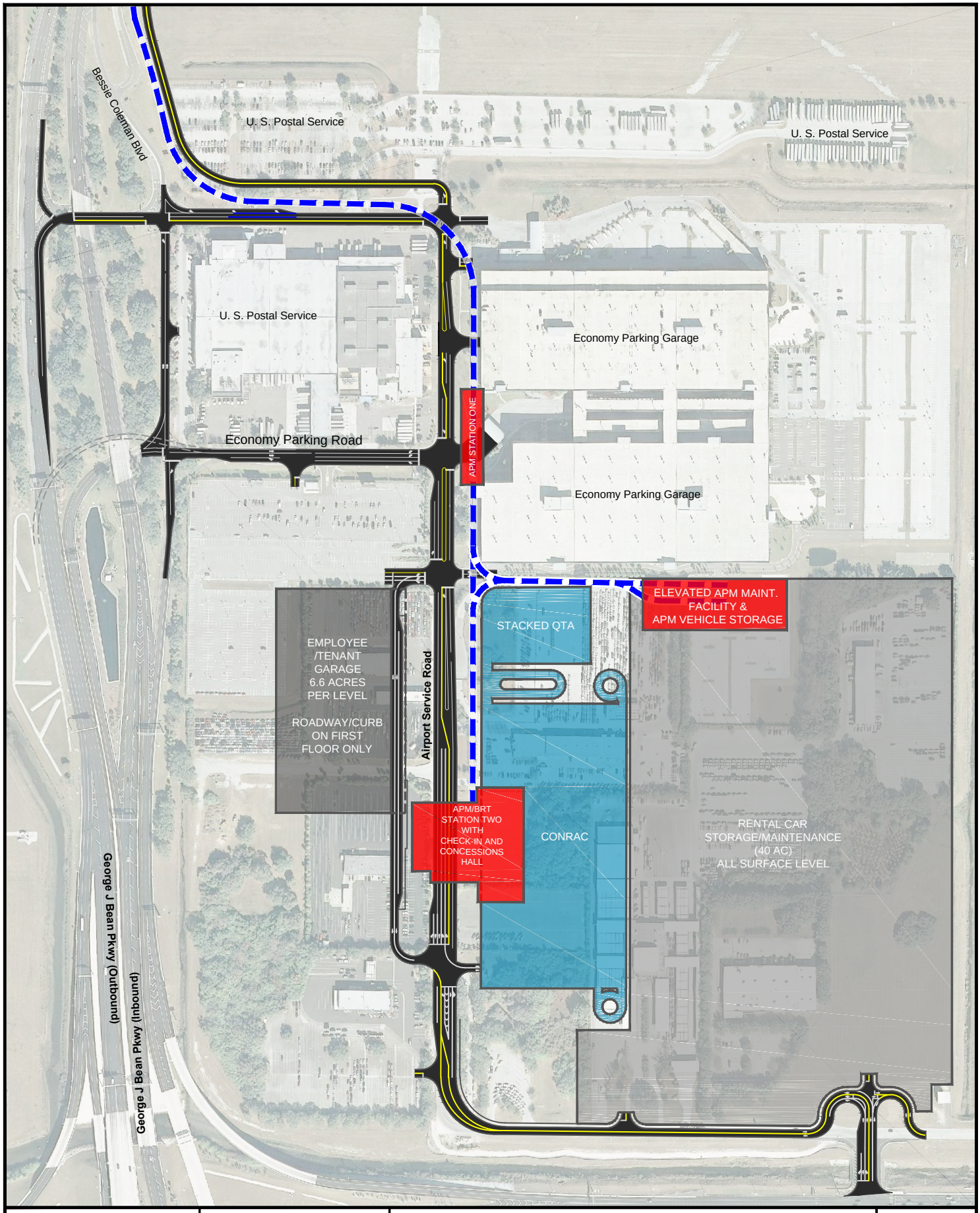
Applying these general criteria resulted in locating the employee garage along the west side of the airport service road, in proximity to and generally between the north and south APM stations. The Economy Garage APM station would be located approximately 700 feet from the northeast side of the garage due to the desire of the HCAA to retain the current cell phone lot in its present location over the course of the planning period. The south APM station would be located approximately 200 feet from the southeast side of the garage. Walking distances inside the structure would obviously vary depending on where an employee parks in the garage and on which level. The location of the Employee Parking Garage within the STSDA is depicted in **Figure 5.110**.

The facility would be accessed via the proposed two-lane south to north (one way) access drive that was identified in the STSDA roadway section which is aligned west of but parallel to the Airport Service Road. The access drive is depicted as intersecting Airport Service Road at the northern and southern terminus of the access road and will have 90 degree signalized intersections. The second, third and fourth floors of the proposed employee structure would be partially cantilevered over the alignment of the service drive and provide cover over an extended curb that is proposed along the eastern side of the service drive to accommodate hotel, off-airport rental car and other shuttles, BRT, and remote passenger drop off and pick up.

The garage would have a footprint of approximately 6.6 acres with four or five levels total depending upon the extent of parking for other support uses that might be accommodated in the structure. This would provide approximately 4,100 spaces, which intentionally exceeds the approximate 3,100 space requirement identified for 2031 in Section 4, Existing Conditions and Facility Requirements. The additional spaces provided are intended to serve adjacent uses such as a hotel, airport offices, etc. At a minimum, a climate controlled enclosed walkway from the

CONRAC APM station along the south side of the parking structure, with the ability to be extended to nearby airport office space and/or airport hotel/meeting space, is envisioned. A similar connection could be provided from the south end of the Economy Garage APM station to the northeast corner of the proposed garage.

The placement of the facility was undertaken so as to not interfere with ASR related equipment that requires a line of site electronic signal between the ASR and the vicinity of the approach light system on Runway 1L. In general the proposed employee garage was configured and sited so that the facility would be shadowed by the location and height of the existing economy garages as relates to the ASR signal. During the design phase a review of construction materials should be undertaken to ensure that the external materials do not result in any impacts to the Runway 19R localizer antennae. Further, the architectural treatment of the facility should be considered to ensure the image of the facility is consistent with the image the HCAA wishes to portray as it will be visible from Bean Parkway.

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# South Development Area Plan - Part 4

TAMPA INTERNATIONAL AIRPORT
TAMPA, FLORIDA

DATE: May 06, 2013

Figure: 5.110

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#### 5.9.8.2 Airport/Tenant Offices

The terminal expansion program will also impact existing airport administrative offices and in particular the HCAA offices located along the red side arrivals curb across from the red side baggage claim area. Given the impact to offices used by key HCAA departments and the benefit of keeping airport line departments together and in proximity to one another, there would emerge a need to either rent space from an off-airport location or consolidate HCAA management and staff functions into an administrative building accommodating current and future professional staff needs.

Other airport users occupy space within the terminal that could be relocated which might include entities such as the TSA, U.S. Customs and Border Patrol, along with some airport terminal tenants. In developing an airport office use facility, the HCAA would likely consider the development of a structure that could meet all of its needs, the needs of airport tenants, and potentially include additional square footage that could be available for rent to help offset the cost of the building. Based on the market analysis, even with the build out of available area within Westshore, there remains an unmet office demand within the area. The Market Analysis indicated that office need would not exist in the area until after 2016, other than replacement space for the existing HCAA administrative space. Between 2017 and 2021 demand for 240,000 sq. ft. of space would exist and between 2022 and 2031 an addition demand for 520,000 sq. ft. could arise.

It is clear that while demand may exist, not all of that demand will end up at TPA. For this reason the focus of this discussion will be on the placement of the HCAA facility, which would likely consist of a building that includes space for other users and tenants. In evaluating potential sites the following factors were considered:

- Proximate pedestrian access to the APM System.
- Placement adjacent to Bean Parkway to enhance the Airport entrance image.
- Sight lines encompassing the terminal to the north, Runway 1L/19R and airport entrance road.
- Potential to utilize the enhanced Employee Garage to accommodate vehicle parking.

As with the luxury hotel, placing the HCAA flagship building near the Spruce Street/U.S. 60 and Bean Parkway interchange would have distinct benefits in establishing an architectural statement for the airport entrance, however this site is far removed for the nearest APM station and given anticipated tenants having walkable access to the APM is an important consideration. It would certainly be possible to extend the APM southward towards the southern end of the STSDA and add a third station. This was actually considered prior to determining the ability to extend rail to this location. The rail extension option was determined to be highly complex and operationally challenging and as a result was not a recommended action. To do so to support either an office or even the luxury hotel, when other alternatives exist is questionable particularly given the added cost of APM elevated guideway and station construction. Addressing the establishment of an architectural statement at the entrance to the Airport can be achieved, but done so later in the planning period and as a part of meeting the long-term office demand in the 2022 to 2031 horizon.

An office facility with an appropriately impressive architectural presentation, but also easily accessible to the APM and supported by the meeting and guest rooms in the proposed hotel should be considered at a location near the southwest corner of the proposed Employee Garage. This location can be connected to the enclosed climate controlled pedestrian corridor to the CONRAC APM station, can incorporate visitor and employee parking into the configuration of the Employee Garage, and could accommodate a structure designed to minimize frontage looking directly out to the garage while maximizing views to the south, southwest, west, northwest and north. This could be achieved by orienting the long side of the building along an east/west axis. Even along an east/west axis a building of 9 to 10 floors, with a 25,000 to 30,000 SF footprint similar to the class A offices immediately east of International Plaza, could be constructed while not penetrating the airport transitional surfaces associated with Runway 1L/19R.

Future office development that might occur later in the planning period could be accommodated, along with a mix of supporting concessions type space and uses, to the south of the luxury hotel. The offices would anchor a high quality entry image for the Airport and region and the supporting concessions type of uses (restaurant(s), specialty retail catering to passenger, tenant and employee needs) would provide key support services to airport tenants, tenants of the STSDA, airport users and the large number of airport employees.

#### 5.9.8.3 Airport Gas and Convenience Mart

At present TPA does not have an on-airport gas station or convenience store and the nearest location for employees, rental car customers and others to obtain vehicle fuel is a considerable distance away. As such providing such a facility provides a key support function to other activities, tenants and customers who are using the Airport. When determining terminal and airport support uses and their potential locations within the STSDA, the first priority involved assessing critical Terminal Support functions being impacted by development actions that were viable to be located in the STSDA. The second step in the assessment involved reviewing other compatible land uses that would be of additional benefit to the Airport. The third step was to augment and mutually benefit the other uses being relocated to the STSDA, and the final step was to provide additional revenue sources.

One such potential support facility identified in discussions with the HCAA was an on-airport gas station and convenience store to provide much needed on-airport refueling capability for customers returning rental cars, convenience retail and fuel for employees and airport users needing to make a quick stop, and to support meeter-greeters waiting in the cell-phone lot. Questions were noted relative to the viability of on-airport gas stations where such facilities have been developed. A canvassing of on-airport gas stations revealed a number of findings that support the notion of locating a gas station on an airport:

- They have the ability to be extremely successful with that success being tied to their location relative to potential demand.
- Cumulatively the ability to provide for multiple potential markets is important to facilitate the level of revenue to sustain a successful business. (for example, more than just serving returning rental cars)
- The primary customer base is interestingly not necessarily airport passengers, but airport employees and airport service providers including Taxi drivers/limo

drivers/shuttle drivers, hotel shuttle drivers, TSA, USPS employees, Airport employees etc.

- These employees represent a large and consistent customer base that requires/desires close convenient services at market prices.
- Aside from the convenient location, the main attraction of such a facility for employees is the fact that it would be the closest retail establishment to the Airport and would sell products at or close to "market pricing" as opposed to in-terminal options which are typically sold at significantly higher prices.
- A key revenue generator at other similar facilities in the U.S. is a convenience mart associated with the gas station.
- With the adjacent location of the CONRAC, a stream of rental car customers wishing to refuel prior to returning their vehicles will provide an important customer base and revenue stream on top of that provided by other noted users.
- Locating a gas station and convenience mart on-airport is an added improvement in the level of service provided at TPA, particularly for employees and rental car customers.

With the potential customers in mind two locations were considered at major entrance/exit points to the STSDA.

The first location was considered in the northwest quadrant of the intersection of O'Brien Street/Airport Service Road near the southeast corner of the STSDA. This site would be most advantageous due to the fact that it could easily be accessed by traffic entering and exiting the STSDA and would also have the added benefit of being highly visible to the large base of potential customers driving by on Spruce Street. While not immediately proximate to the CONRAC, USPS or Employee garage, the location is far superior in proximity to any off airport facility that might compete, and airport/USPS employees would quickly become aware of its location. For rental car customers the identification of its location would likely require the installation of signage along entrance road into the STSDA from Bean Parkway and along the Airport Service Road. This affiliated convenience store would not be located to viably serve individuals waiting in the cell phone lot, which is a primary disadvantage.

While this location has a significant benefit stemming from the ability to capture both airport and non-airport customers, the primary factor impacting it's viability is that based on input from rental car representatives all property south of the economy garages and east of the Airport Service Road is anticipated to be required for the CONRAC and vehicle maintenance and storage areas, with the sole exception of the taxi staging area. This consideration effectively negates the viability of the site. It should be noted that, if through the detailed CONRAC planning process and negotiations with the rental car companies, a reduction in required acreage is determined, or should the taxi staging area be reconfigured and the acreage become available, the viability of a combined Gas Station/Convenience store at this location might be reexamined.

A second site was considered just south of Economy Parking Road, on the west end of the current Cell Phone Parking Lot. The site would be approximately 1.0 to 1.5 acres in size and would be the highly visible from Bean Parkway. At this location the facility would be immediately adjacent to the primary access to the USPS, Economy Garages, CONRAC, Employee Garage and the Cell Phone Lot. As such this location would be advantageous for customers

wishing to refuel vehicles prior to returning them to the CONRAC; and convenient for rental car customers, airport users, hotel patrons, cell-phone lot meeter greeters, taxi drivers/limo drivers/shuttle drivers, hotel shuttle drivers, TSA, USPS employees, and Airport employees. The facility would be accessible from the Economy Parking Road for inbound vehicles and for persons in the Employee Garage via a separate drive separating the Cell Phone Lot from the north side of the Employee Garage. This site is readily accessible from the Cell Phone Lot and the primary entrance to the facility would share the current entrance to the Cell Phone Lot off of the Economy Parking Road. This site is the most convenient for employees most familiar with the geography of the Airport as well as customers using the CONRAC and Economy Garages. The one negative of the site is that it would not be anticipated to capture non-airport traffic as was the case with the first site.

#### 5.9.8.4 Replacement Airport Hotel

The development of additional support land uses beyond the CONRAC and Employee Parking and retention of the Economy Garages and USPS facilities have been alluded to in the previous sections. At least two of these potential facilities stem directly from the process of decongesting the existing Main Terminal Complex to allow for terminal related expansion necessary to extend the capacity and longevity of the Main Terminal Complex beyond the 28.7 MAP capacity threshold that was first identified in the 2005 Airport Master Plan.

Additionally, at the commencement of the master planning process a market analysis was conducted to determine the additional demand within the airport market area for potential airport supporting revenue producing uses that would remain assuming the complete build-out of the Westshore area. The goal of the analysis was not to attempt to compete with Westshore, but rather to address the increment of demand that would remain in the area beyond that which Westshore could accommodate given available sites. The combination of facilities/uses needing to be shifted out of the current terminal complex to facilitate passenger processing coupled with the uses identified in the market review were used to define additional potential terminal support facilities that were deemed appropriate and desirable within the STSDA in the future. One final factor aided in defining the additional airport/terminal support uses. The expansion of activities and corresponding increase in the number of persons in and passing through the STSDA stemming from the CONRAC, the BRT interface, continued USPS functions, cell phone facility and Employee Garage would generate an affiliated need to provide services for these facilities and their customers and users.

One use driven by both the findings of the market analysis and the process of decongesting the terminal is an airport hotel. As noted in the Main Terminal Section of the report, as demand increases and the need for the northerly extension of the Main Terminal is triggered, it will become necessary to remove the current airport hotel to provide the requisite space for the terminal expansion. The current hotel provides 238 rooms, some relatively limited meeting facilities and two restaurants. This facility has been in the terminal since 1982 and hotels are often found either incorporated into terminals (Miami, Orlando, Chicago) or near the terminal on airport property (Boston, Washington Dulles, Dallas, Baltimore, Cleveland, and Cincinnati). While keeping the hotel in the terminal while at the same time significantly extending the capacity of the terminal cannot be achieved, the option of keeping a hotel providing meeting facilities, supported by restaurant(s) and providing 300+ rooms on the Airport with state of the art connectivity to the terminal via the proposed APM is deemed a highly appropriate terminal support function. The market analysis actually identified the fact that even with the build-out

of Westshore a market could still support both an upper end/luxury hotel of 300+ rooms and an upscale hotel similar to the Hyatt Place, Hilton Garden Inn or Courtyard by Marriott product.

A number of potential concepts were developed and discussed with the HCAA that included a wide variety of locations for both the higher end hotel products and an upscale hotel product. Prior to the decision to retain the USPS within the STSDA, several of the hotel alternatives considered the placement of these facilities on the site of the USPS due to the proximity to the Economy Garage, APM station and the fact that the area could accommodate both a high-end hotel and an upscale facility while accommodating all affiliated activity areas, uses and requisite amenities. Once it was determined that the USPS would not be relocating, these concepts were removed from consideration.

The portion of the STSDA that is available for the development of the varied terminal support uses including an airport hotel consists of an estimate 21 acres located to the west and south of the proposed location of the Employee Garage. The general area identified for the aforementioned land uses is delineated in **Figure 5.111**. It should be noted that given the flexibility of development and variability of future conditions, specific layouts of future buildings have not been included. With the completion of the CONRAC and consolidated maintenance and storage areas this tract of land could be committed to other land uses to support both the terminal expansion and functions currently located in the terminal area.

As it relates to a luxury or upper end hotel with affiliated on-site meeting facilities it would typically be preferred to locate this facility along major roadways or the primary entrance to the Airport. This suggests that the ideal site would beat the southwest corner of the STSDA. However, the siting of other facilities in the STSDA, notably the APM stations and to a lesser extent the possible employee garage as enhanced to accommodate parking needs of other uses in the STSDA, suggest that placing an upper end hotel south of the employee garage and in close proximity to the CONRAC APM station presents a number of advantages. While not proximate to Spruce Street the site would still having significant visibility from Bean Parkway along with the advantage of being connected to the terminal by the APM. The addition of a fully enclosed and climate controlled walkway from the CONRAC APM station that could also provide access to and from hotel parking incorporated into the Employee Garage would negate the need for passengers from the terminal ever having to be exposed to the elements on their transit to and from the terminal.

Access to the hotel site would be provided off of the access drive that parallels the west side of the Airport Service Road and a connection to the APM would be provided by a climate controlled walkway as described in the Employee Garage Section. The Airport Service Road facilitates access to both Spruce and Bean Parkway which could be further identified by appropriate guidance signage. Using templates derived from a selected number of luxury hotels in the Tampa Area it was determined that ample land area is available in the general location noted to meet the requirements of a 300-400 room facility with affiliated pool area and exterior amenities, restaurant(s) and meeting/banquet facilities far exceeding the current available square footage in the existing airport hotel. Incorporating all or a share of the parking required for the hotel into the design of the employee garage could reduce the total acreage devoted to parking required on the hotel site.

Placing the hotel near the parking garage presents some aesthetic issues, but configuring the development site to orient room views away from the garage and placing meeting rooms

between guest wings and the garage could minimize the impact of the parking garage to lines of view from a large majority of the hotel rooms. Finally, placement of the hotel in this area would also act to mask the bulk of the garages that are located on the site and could be used to make a design statement adjacent to the entrance to the Airport and the City.

In addition to the luxury hotel, the market assessment suggested the potential future viability of an upscale hotel product consistent with the examples cited earlier in this section. Hotels in this market range do not require a significant amount of acreage and can often be accommodated on tracts of land that are relatively narrow as the parking facilities typically surround the hotel, the amenities are more limited and they typically have limited restaurant facilities or rely on stand-alone major chain restaurants located nearby. Accommodating this type of hotel could be done either at the southern end of the 20 acre tract depicted in Figure 5.109, or potentially in the area immediately, west of the proposed Employee Garage. Access to the hotel in this area could be provided either by an extension of the Cell Phone Lot entrance drive or by the drive at the north end of the proposed Employee Garage. While an upscale hotel may not fully meet the architectural statement that might be desired along Bean Parkway, it would tend to soften the lines of the proposed Employee Garage and is also preferable to the view of the Avis and DTAG rental car maintenance and storage sites.

#### 5.9.8.5 Cell Phone Parking Area

Two Alternate locations/configurations were considered for the cellphone lot aside from the ultimate recommendation of maintaining its existing location. Option 1 considered the possibility of relocating the cell phone lot to the north side of Economy Parking Road as far west as possible. The lot in this location would be reduced from the existing 3.1 acres to approximately 2.2 acres. Initial consideration for this location was under the premise that the USPS sort facility would be relocated, thus freeing up this space for alternate development. During the planning process it was decided that the USPS facility, with a renewed leasehold, would remain in place throughout the planning period. With that consideration this alternate location for the Cell Phone lot was not considered any further.

Option 2 considered reconfiguring the existing cell phone lot to be in a north/south orientation to the east and adjacent to Airport Service Road. The lot in this location would be marginally reduced in size from the existing 3.1 acres to approximately 2.9 acres. While this was considered to be a potentially viable option, an employee parking garage proximate to the APM and APM stations proved to be a higher and better use for the land. Maintaining proximity to the APM was critical in that walking distances needed to be kept to a minimum. A cell phone lot in this location would have little to no relation to the function of the APM. As such, this option was not considered any further.

Ultimately the decision was made to maintain the existing location of the cell phone lot. This was based on the outcomes of siting other major facilities and assigning future uses where the highest and best use of available land would be maximized. As such, the cell phone lot is to remain where it is today with a minor reconfiguration to accommodate an adjacent commercial use, a gas station and convenience store. The cell phone lot will be expanded in size from approximately 3.1 acres with 330 parking spaces to 3.6 acres and 395 parking spaces.

#### 5.9.8.6 Commercial Vehicle Staging Area

As noted earlier in the STSDA planning discussion an area on the far south end of the site is currently used for the remote staging of taxicabs, shared ride vans, and charter buses. The area is located on the east side of the Airport Service Road immediately northeast of the point the road turns to the east along the south boundary of the STSDA. During the planning of the South Development Area, alternate locations and configurations were considered focusing on relocating this function to the northwest corner of the South Development Area on the north side of the USPS Sort facility and Airport Service Road just east of existing Bessie Coleman Boulevard. This was done in part to accommodate other terminal support land uses and also due to the improved access and response that a location in the area would provide. Unfortunately, this location was later identified as being infeasible when it was determined that the USPS Sort Facility was going to remain in its existing location.

A second location was identified in subsequent analysis to potentially shift a commercial vehicle staging area onto land that would be available between the future employee garage and the southern boundary of the Cell Phone Lot. This area consists of a little over two acres which would be expanded if necessary and would have signalized access onto the Airport Service Road. In discussions with the HCAA some concern about the appearance of the area and its proximity to the Bean Parkway entrance corridor were noted and a decision to not relocate to this area was made.

Based on these factors it was ultimately decided to leave the CV staging area in its current location. The total area required by 2031 is minimally 76,000 SF (1.75 acres), which includes 10,000 SF for a support building (restrooms, break area, dispatch and operations, and shelter). The site of the current facility provides nearly 3.5 acres of space, which permits the reconfiguration of the facility to an efficient layout including appropriate buffering and landscaping. Access should be from the east-west segment of the Airport Service Road, with egress to the northbound segment of that roadway.

## 5.9.9 Recommended South Terminal Support Development Area Plan

The master plan recommends bolstering, consolidating, and relocating a consortium of functions to the STSDA to achieve the goal of accommodating relocated functions from the terminal facility and to accommodate additional terminal and airport support facilities in the area. The main functional elements recommended in the STSDA are summarized below. **Table 5.18** provides a general summary of the land area allocations for the main categories of existing and proposed development in the STSDA.

**Table 5.18**

**Summary of Land Area Requirements**

| Proposed Areas | SF | Acres |
|---|---|---|
| CONRAC & QTA & Access | 642,000 | 14.7 |
| Rental Car Storage and Maintenance (Surface Lot) | 1,755,700 | 40.3 |
| Employee/Tenant Garage | 287,496 | 6.6 |
| Taxi & Bus Staging Area | 105,000 | 2.4 |
| Convenience Store & Gas Station | 44,000 | 1.0 |
| Reconfigured Cell Phone Lot | 158,000 | 3.6 |
| Hotel/HCAA/Office/Airport Support Commercial | 846,000 | 19.4 |
| | | **88.1** |

| Existing Areas | SF | Acres |
|---|---|---|
| Circulation/Buffer/ROW (Appx.) | | 25.2 |
| USPS Sort Facility and Parking | 1,447,366 | 33.2 |
| Economy Parking Garages and Surface Lots | 1,893,339 | 43.5 |
| **Total South Terminal Support Development Area (Appx.)** | | **190** |

Source: HNTB Analysis

**Existing Functions**

- Maintain the location of United States Postal Service Sort Facility and Parking Area.
- Maintain the Economy Parking garages.
- Relocate the Flight kitchen - LSG Skychef.
- Maintain but reorganize the taxi and bus staging area to be a smoother more effective operation.
- Reconfigure the cell phone parking area to be compatible with adjacent development and enlarge the facility slightly to flexibly accommodate long-term facility requirements.
- Consolidate the existing rental car support facilities.

**Proposed Elements**

- **CONRAC**
    - Construct and consolidate rental car facilities in a five-level 640,000 SF/level (14.7 AC footprint) CONRAC facility with QTA facilities. The facility will be located on the east side of Airport Service Road and will provide an estimated

7,300 ready/return/storage and QTA spaces. The rental car storage and maintenance surface lot and support buildings will be relocated and reconstructed to the east of the CONRAC as adjacent facilities, which will result in a significant improvement in efficiency for the rental car operators.

- **Automated People Mover**
  - Construct an APM system running from the east side of the main terminal facility south to the proposed CONRAC facility. The system will be comprised of approximately 8,300 feet of guideway, three stations (Terminal, Economy Garages, CONRAC) a maintenance facility, a vehicle storage facility and central control facility. The CONRAC station will be located so as to provide access to a remote curb and Bus Rapid Transit station on the ground level of the facility across the Airport Service Road from the CONRAC.

- **Relocated Employee Parking**
  - Construct a 4,100+/- space four to five level parking garage in the South Development Area. The garage would accommodate employee parking in a much more convenient location served by the APM. Additional space may be considered as a means of accommodating a portion of the parking demand for the airport hotel(s).

- **Airport/Tenant Offices**
  - Space has been reserved where replacement HCAA offices can be constructed to the west/southwest/south of the proposed employee parking garage. These offices will accommodate HCAA offices that are to be relocated out of the terminal area. Additionally other office tenants could be accommodated in this location. A final location and building size have yet to be determined, but adequate space has been reserved for a range of facility sizes. The market analysis also identified additional unmet demand, beyond what WestShore can accommodate, that could be placed in the STSDA after other key support facilities are accommodated. Room for these uses is available in the southwest quadrant of the area.

- **Replacement Airport Luxury Hotel and Upscale Hotel**
  - Space has been reserved where a replacement hotel can be constructed in the south development area southwest/south of the proposed employee parking garage. The existing Marriott will ultimately be demolished and replaced with expanded terminal facilities. This replacement facility, although removed from the main terminal will provide a high level of service as a higher end facility conveniently connected to the proposed APM. A final site plan and building design would be determined at a later day, however adequate space has been reserved for a range of facility sizes.
  - In addition to the Luxury Hotel a second upscale facility (Marriott Courtyard, Hilton Garden Inn concept) was identified in the market analysis as being viable. This facility requires a much smaller footprint and could be placed to the west of

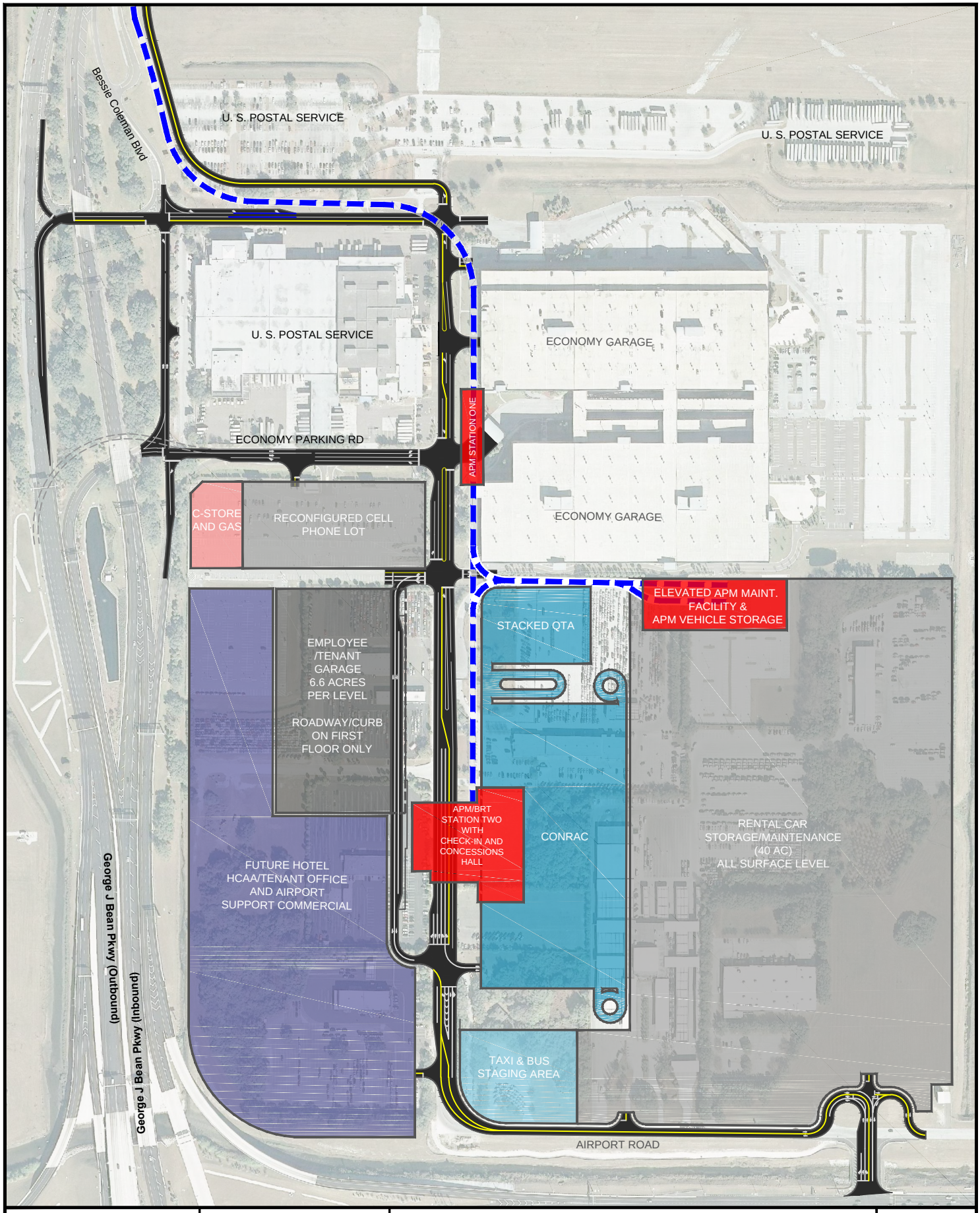
the Employee Garage and be connected to the APM by a walkway through the garage.

- **Roadway Improvements**
  - Airport Service Road, the "spine" road, running north-south through the South Development Area will be widened to a four-lane undivided section with auxiliary lanes for access into the different land uses. At the south end the access road curves to the east and ties into Spruce Street as a two-lane undivided section. In addition, a three-lane curb roadway will be constructed at APM Station 2 for loading and unloading of customers.
  - The Service Road will be realigned from the northeast corner of the South Development Area to just north of the ARFF facilities, a distance of approximately 4,000 feet. This is undertaken to facilitate access to the ARFF station while accommodating the APM guideway interface from surface to elevation.
  - The north access roadway running east-west will be converted to a three-lane section with two westbound lanes and one eastbound lane.
  - The south access entry roadway running east-west will be a two-lane section with all traffic travelling eastbound. At a point in time beyond the planning horizon an exit lane may be added along with a flyover across Bean Parkway to facilitate traffic bound for Clearwater via U.S. 60.
  - Overall the STSDA improvements will result in the construction of 10,650 linear feet of roadways, and the installation of associated new signals and lighting.

- **Airport Gas and Convenience Mart**
  - Space has been reserved (approximately one acre) for the construction of a gas station and convenience mart. The intent of this facility is to provide much needed on-airport refueling capability for customers returning rental cars and convenience retail for employees/airport users/meeter greeters waiting in the cell-phone lot etc.

- **Commercial Development**
  - The primary commercial activity that is currently delineated is the Airport Gas and Convenience Mart noted previously. However, the activities that are programmed to occur in the STSDA will concentrate a large number of persons including airport employees, hotel guests, airport tenants and their employees including the 600 to 700 USPS workers, and passengers and persons coming to the Airport to meet visitors either in the cell phone lot or at the remote curb. With this concentration of persons in the immediate area, demand for other potential uses to support the needs of one or all of these groups is certainly a very likely possibility. Examples of activities that have arisen around other airports include stand-alone restaurants in support of moderate to upscale hotels, pet boarding facilities, bank branches etc.

**Figure 5.111** provides a graphical depiction of the recommended development plan for the STSDA.




0' 300' 600'
SCALE: 1" = 600'

HNTB

# South Development Area Plan

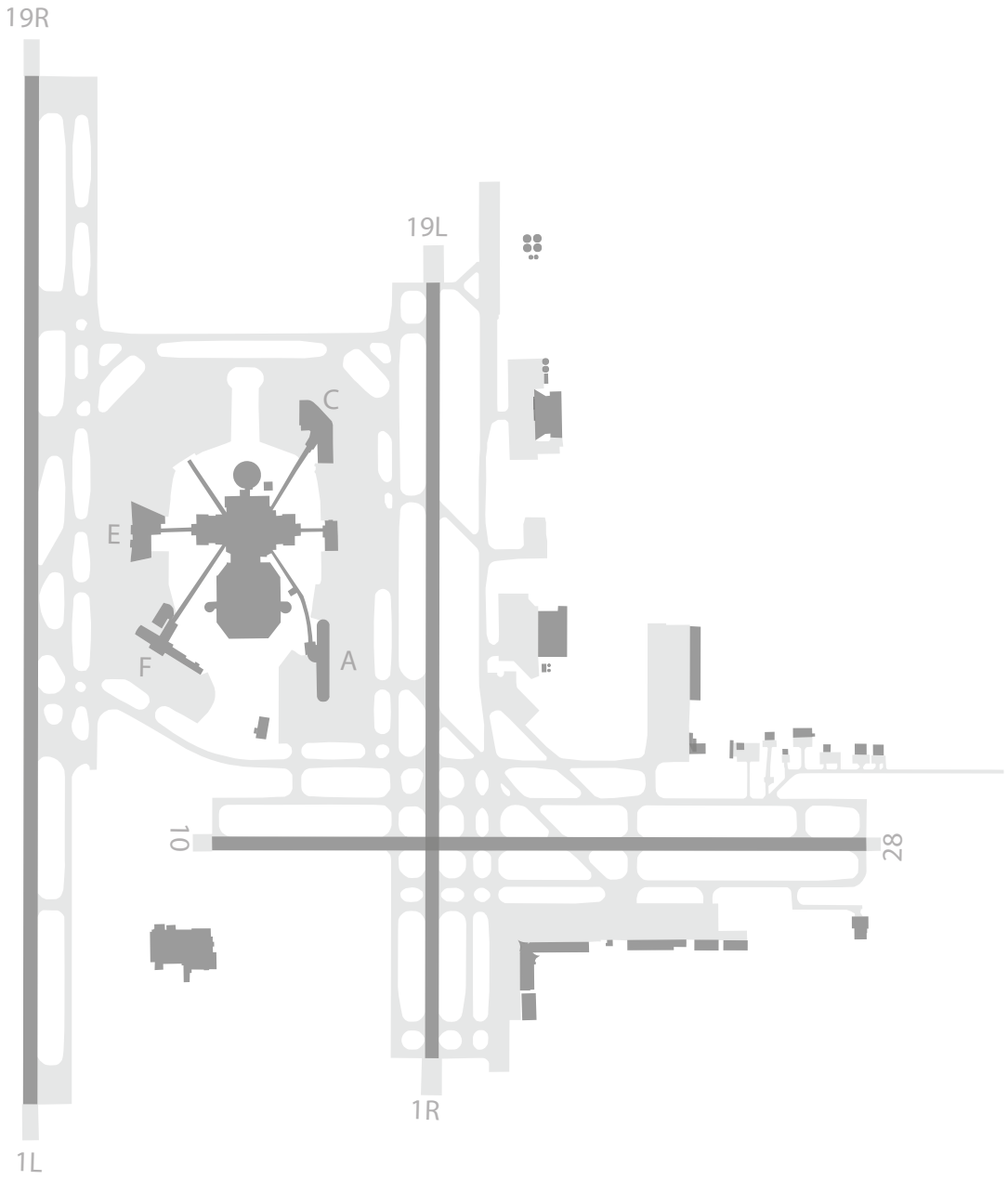
TAMPA INTERNATIONAL AIRPORT
TAMPA, FLORIDA

DATE: May 06, 2013

Figure: 5.111

P:_Projects\57785 - Tampa MP\00-CADD\HNTB_Team_Dwg_files\S_Development Document Figures\Part 5_South Development Area_Plan.dwg S Dev Area Portrait May 06, 2013 - 10:32am

# AIRPORT LAND USE



## 5.10 On-Airport Land Use Classification and Permitted Uses

The completion of the analysis of airport development alternatives and the definition of the recommended development actions has resulted in proposed actions that vary from those that were identified in the 2005 Airport Master Plan. The Federal Aviation Administration requires as a part of the development of the Airport Layout Plan (ALP) drawing set that the Airport develop an On-Airport Land use map that delineates general development categories that address the mix of land uses currently situated on an airport as well as those that are planned for the facility over the timeframe of the Master Plan. In the case of Tampa International Airport that would be a land use map delineating land use categories to accommodate the proposed development of facilities through the year 2031.

The 2005 Master Plan included a proposed Airport Land Use Map that delineated land use categories based on the proposed improvements recommended in the master plan, although the 2005 document did not include a description of the permitted uses associated with the various land use categories. The 2005 master plan carried forward the land use categories that were developed in an earlier study. To determine the specific permitted uses language it is necessary to go back to the 1999 Airport Master Plan which delineated the basic on-airport land use categories and also described in general terms the uses that are typically allowed within each category.

Based on a review of the 2005 Airport Land Use Map it was determined that there had been no substantive change in the land use classifications contained in the 2005 master plan versus those that were presented in the 1999 Master Plan. The land use classifications delineated in the 1999 and the subsequent 2005 Master Plans consisted of the following categories:

- Aircraft Operations Area
- Airline Passenger Terminal
- Commercial
- Airport Airline Support
- General Aviation Commercial
- General Aviation Non-Commercial Hangar
- Scenic Reserve

Within some of the classifications, the range of uses and activities identified as being allowed were broadly construed. For example, within the Airline Passenger Terminal Category the permitted uses included the operation of the Marriott Hotel, which might typically be considered a commercial activity, but due to its role in support of the terminal was encompassed in the terminal classification as a typical ancillary or accessory use. Given the number of hotels that are in or connected to terminals a very strong case can be made to support this assumption particularly given the fact that the current hotel is physically attached to the terminal. In other cases such as the Aircraft Operations Area category, General Aviation Commercial and General Aviation Non-Commercial Hangar the range of permitted activities is more closely construed.

The land use categories from the 2005 Master Plan Update (first delineated under the 1999 Master Plan) were reviewed as a part of the 2012 Master Plan Update to determine if they remained appropriate or to define changes in the classifications to reflect the recommendations and development patterns resulting from the analyses in the update. Additionally, it was also necessary to review the On-Airport land use map to define what if any alterations were necessary to reflect findings and recommendations of the 2012 Master Plan. Based on the review it was determined that there was a need to consider revisions to the land use classification to address the actions being recommended in the master plan and there was a need to revise the affiliated On-Airport Land Use Map as well.

The On-Airport Land Use Map identifies a total of eight (8) land use classifications or one more than that contained in the 2005 Master Plan Update. These categories consist of:

- Aircraft Operations Area
- Airline Passenger Terminal
- Airline Passenger Terminal Support (New Classification)
- Commercial
- Airport Airline Support
- General Aviation Commercial
- General Aviation Non-Commercial Hangar
- Scenic Reserve

The land use categories recommended as a part of the 2012 Master Plan update are identified below and major changes including the addition of the new classification are briefly described.

## 5.10.1 Aircraft Operations Area

This category was reviewed and the language was augmented to incorporate the runway protection zone and other specific airfield critical areas into the definition of the permitted uses. Recognizing that in some instances the RPZ overlies property that is not owned by the HCAA, notably several public roadway rights of way and the HCAA has no authority to regulate use on property they do not own, these areas have been specifically excluded from the district. Additionally, as the sole means of accessing the existing Main Terminal Complex extends through an RPZ and relocation of this access is not a viable option, this access and supporting access elements have also been excluded from classification.

### 5.10.1.1 Permitted Uses

Permitted uses include the landing, takeoff, and surface maneuvering of aircraft and movement of authorized service and emergency vehicles. This category includes the runway, taxiway and movement area portions of ramps and parking aprons. Additionally the Aircraft Operations Area includes on-airport navigational aid critical areas, runway/taxiway/taxilane safety areas and object free areas and Runway Protection Zones off runway ends excluding property not owned by the Airport or essential to the operation of the Airport such as major public roadways and the alignments of key on-airport terminal access routes and airport service roads as delineated in another Land Use Category.

## 5.10.2 Airline Passenger Terminal

The uses permitted under the Airline Passenger Terminal land use category remain essentially unchanged. This district addresses the existing main terminal and land area being reserved for the future North Terminal complex.

### 5.10.2.1 Permitted Uses

The airline passenger terminal category encompasses existing and proposed landside buildings, the airside buildings, the terminal/service roadway system within the terminal complex, the aircraft aprons, garage/at-grade parking in the terminal area, automated people-movers between the landside terminal and airsides along with terminal APM stations and alignments serving remote facilities and areas and existing and proposed Air Traffic Control Tower (ATCT) locations. The airline passenger terminal will be used for the processing, handling, loading, and unloading of commercial service aircraft, as well as to accommodate all approved facilities and passenger amenities related, ancillary or accessory to the primary function.

## 5.10.3 Airline Passenger Terminal Support

The Airline Passenger Terminal Support Land Use Category is a new designation that was specifically developed to be a category of land use for a number of uses and facilities that are the subject of potential relocation as a part of the terminal decongestion process and to allow for the development of land uses that are typically found in or supporting airline passenger terminal activities. A number of these uses are also allowed under the Airline Passenger Terminal category. The relocation of the rental car ready, return, QTA activities and airport hotel from the terminal area to locations outside of the main terminal and north terminal development areas, coupled with the role these facilities typically play in supporting the airport terminal necessitated the delineation of a new category. It was determined to be reasonable to address their role despite being outside of the traditional terminal area boundaries.

### 5.10.3.1 Permitted Uses

The Airline Passenger Terminal Support Land Use Category is intended to accommodate activities, uses and facilities that serve specific needs of airport users and can typically be found on an airport, in or near passenger terminal facilities and that are not addressed under another existing land use category. The forms of land use in this category include: major public access routes and service roads serving the terminal area including George J. Bean Parkway and future intra-airport transportation modes along with other routes so designated by the HCAA, rental car facilities including ready/return/QTA, maintenance, service and vehicle storage areas, hotels and meeting space, APM stations serving passenger terminal and airport/airline support uses along with interfaces with other modes of transportation or transportation centers, cell phone meeter and greeter lots, airport related office development, on airport fuel stations, food establishments, passenger amenity uses and other types of development consistent with the terminal support role as approved by the HCAA along with uses typically ancillary or accessory to the primary permitted use.

## 5.10.4 Commercial Development Land

This category remains unchanged from the original language first delineated in the 1999 Master Plan and carried forward in the 2005 Master Plan Update.

### 5.10.4.1 Permitted Uses

Revenue producing commercial development that is not designated for a direct aeronautical purpose but is used to support the Airport self-sufficiency requirement and is determined on a case-by-case basis.

## 5.10.5 Airport/Airline Support

This category was adjusted to incorporate language that is typically used in municipal land use controls to allow for other uses not specifically listed but that share the characteristics of other permitted uses and are fulfilling the intent of the district. For this reason the following language was added "*and other activities supporting the primary airport functions as reviewed and approved by the HCAA"*. An added change involved incorporating specific language relating to fulfillment or distribution centers with the caveat that these require either tug or vehicle access to the SIDA. As such these facilities are able operate to support the activities of other airport/airline tenants through the movement of goods into and out of the Airport contributing to the health of cargo carriers and passenger carriers from enhanced cargo volume.

### 5.10.5.1 Permitted Uses

This category includes but is not limited to the operation of a facility or facilities by the Authority or by others to provide services that support, protect or improve the overall effectiveness of the airport, including such uses as airport maintenance, aircraft rescue and fire-fighting, employee and public parking, overflow rental car storage, flight catering, airline reservation, radar and other navigational support facilities, airline fuel farm and the operation of a facility or facilities for the maintenance and overhaul of aircraft, airframes, engines, parts, accessories and equipment and other activities supporting the primary airport functions as reviewed and approved by the HCAA. This includes the operation of a facility for a foreign trade zone, fulfillment or distribution center requiring either aircraft or tug/vehicle access to the SIDA, the handling of all cargo aircraft and for the handling and storage of air cargo and freight, including express, small package, air courier, airmail, and air ambulance operations and ground service equipment storage and maintenance and the access systems both on the landside and airside that are required by these facilities.

## 5.10.6 General Aviation Commercial

No changes were made to this land use classification and it has been carried forward accordingly.

### 5.10.6.1 Permitted Uses

The operation of a hangar(s) and related facilities, including fuel storage, by a business involved in the sale to the general public of services related to the operation, maintenance, storage and servicing of general aviation aircraft, including aircraft engaged in air cargo, air

courier, air charter and air ambulance operations along with the ancillary parking and access-ways required to support the principal functions noted.

## 5.10.7 General Aviation Non-Commercial Hangar

No changes were made to this land use classification and it has been carried forward accordingly.

### 5.10.7.1 Permitted Uses

The operation of a hangar(s) and related facilities, including fuel storage, will be in accordance with the lease obligations and the Authority Rules and Regulations. The hangar facility must be used by a tenant to accommodate one or more aircraft it owns or leases and operates in connection with the internal conduct of tenant's non-commercial not for hire activity of transporting tenant's personnel, patrons, guests, invitees, materials, and products. The term tenant, as used in these standards, may include the parent entity if the tenant is a wholly owned subsidiary but may not be construed to allow third party development, a sublease or a co-tenancy of a hangar facility.

The tenant must own or lease the aircraft stored in the hangar. Aircraft ownership records must be provided at the initiation of a lease with the Authority to establish the tenant's ownership interest. Any changes to aircraft ownership, including the purchase and sale of aircraft to be stored on the leasehold, must be immediately provided to the Authority.

## 5.10.8 Scenic Reserve

The primary changes that have been made to this section is to expand the identification of the types of uses that are permitted within the category to reflect at least one use that is currently located within the category that was not previously identified. The other change involves incorporating language giving the HCAA the ability to review and approve other "low intensity" uses that may not be specifically listed.

### 5.10.8.1 Permitted Uses

Landscaping, rights of way, retention/detention ponds, drainage channels, environmental mitigation, buildings or structures necessary for the operation of the air operations area or the maintenance of the scenic reserve, open space forms of use that may include low intensity forms of recreational activities such as bicycle trails or nature trails, however, excluding activities such as athletic fields or other uses, facilities or activities that result in significant concentrations of population. Other low intensity uses similar to those noted may be developed subject to the review and approval of the HCAA.

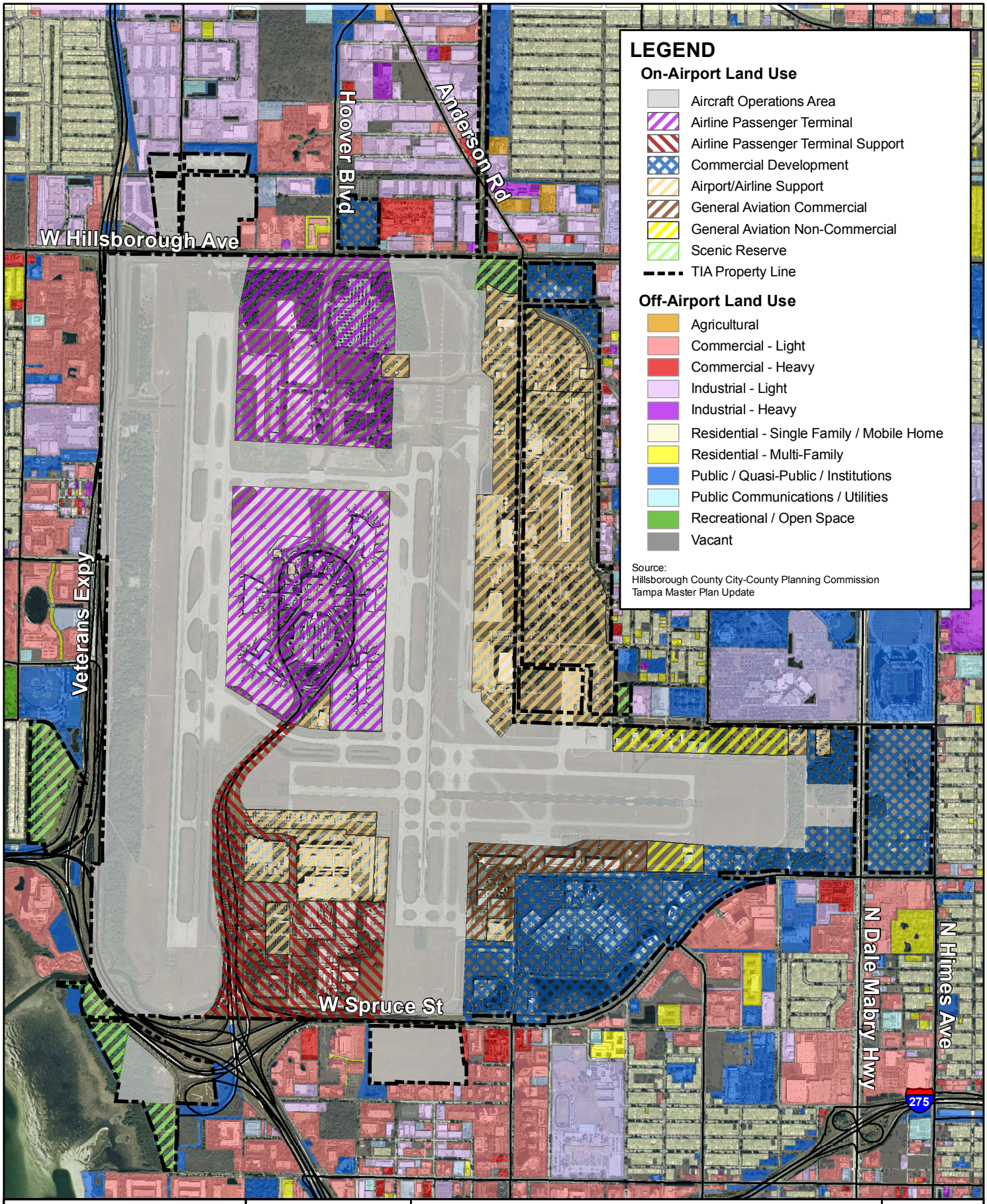
## 5.10.9 On-Airport Land Use Map

The 2012 Master Plan Update also evaluated the On-Airport Land Use Map that was developed as a part of the 2005 Master Plan to determine if recommendations of the current master plan update had an impact or required the change of land use designations on the Airport. Given the addition of a new land use category addressing terminal support facilities and their location outside of the main airline passenger terminal area along with some of the adjusted language

under other classifications it was quickly determined that some change in the map would be necessary. The review also identified that other recommendations of the 2012 Master Plan Update triggered the need to make adjustments in the land use map to reflect the updated airport development recommendations.

The following sections describe the most significant changes that were identified in the review of the 2005 land use map and these are depicted on the revised Planned Airport Land Use Map displayed as **Figure 5.112.** Generally, these changes are the result of the recommended alternatives that have been discussed in the preceding sections along with the rationale for these recommended actions.

One such change in use is at the far north end of the Airport along the north side of Hillsborough Avenue and essentially addresses a change that should have been made at, or shortly after the completion the 2005 master plan. A parcel at the northeast quadrant of Hoover Boulevard and Hillsborough Avenue was originally shown as being part of the Aircraft Operations Area based on the anticipated northerly relocation of the alignment of Hillsborough Avenue that was proposed during the 2005 Master Plan. This realignment of Hillsborough Avenue was subsequently dropped from consideration either near the end of the master plan or shortly after it's finalization, however the parcel continued to be shown on the land use map as aircraft operations area, despite being completely separated from the airport by the alignment of Hillsborough Avenue. Based on the Perimeter Parcels Analysis (See **Appendix J**) this tract was reviewed and recommended to be changed to a commercial designation.




0 650 1,300 2,600 Feet

HNTB

# Planned Airport Land Use

TAMPA INTERNATIONAL AIRPORT
TAMPA, FLORIDA

DATE:
April 9, 2013

Figure:
5.112

Another fairly significant change has been made in the East Aviation Support Development Area. The 2005 on-airport land use map depicted most of the Airport as airport/airline support with the exception of a large area of commercial development generally between N. WestShore Boulevard and Cargo Road north of West Osborne Street. An additional area of commercial use was depicted fronting along the west side of Cargo Road between West Osborne Street and West Cayuga Street. This area has been deleted on the 2012 Planned Land Use Map and re-designated as airport/airline support consistent with its intended use and the amended language for this category of activity discussed above. A second change has occurred on land owned by the Airport but separated from having airfield access by the Cargo Road alignment. This area east and north of Cargo Road, south of Hillsborough Avenue, west of North Hesperides Street was formerly shown as Scenic Reserve and Airport/Airline Support. Based on the review conducted in the Perimeter Parcels Analysis this area was changed to the commercial development category.

One of the more significant changes in land use designation occurred off the east end of Runway 10-28. The 2005 Master Plan originally depicted a 1,200 foot extension to Runway 10-28. A detailed analysis of operational runway use conducted as a part of the 2012 master plan update determined that justification to support this extension simply did not exist, in addition to the fact that the FAA has not provided any financial support for this runway. As a result, the proposed extension was not carried forward. This action coupled with the ample available area for planned airport support facilities elsewhere on the Airport negated the basis for the land use designations on three areas. These areas consist of property fronting the south side of West Tampa Bay Boulevard from the TECO substation to North Dale Mabry and to a depth of approximately 950 feet, a 64 +/- acre parcel bordered by West Tampa Bay Boulevard on the north, North Dale Mabry on the west, West Columbus on the south and Himes Avenue on the east. The third area consisted of property fronting onto West Boy Scout Road extending from North Dale Mabry to the Moffett Cancer Treatment Center and to a depth of approximately 730 feet.

The 64 acre parcel across Dale Mabry from the primary airport land area and the active airfield was not identified with a land use under the 2005 master plan, although a portion of the property was within a future runway protection zone associated with the extension of Runway 10-28. With the deletion of this extension and affiliated approach, the runway protection zone will no longer be shown extending onto this parcel; in fact the RPZ for Runway 28 will terminate approximately 900 feet west of Dale Mabry well short of the noted parcel. Based on the Perimeter Parcel Analysis and the fact that no use had been previously identified it was determined that the most appropriate designation for the area was commercial and this has been added.

The land along the south side of West Tampa Bay Boulevard was formerly delineated as a mix of scenic reserve, airport/airline support and aircraft operations area. It was clearly determined that this area is not required nor well located for airport support uses, with the exception of the two quasi-support uses currently in the area consisting of a City of Tampa Police substation and the TECO electric substation. With the removal of the extension to Runway 10-28, the aircraft operations area designation was also no longer appropriate. This area has been reclassified to commercial. The Perimeter Parcels Analysis contained in **Appendix J** provides a more detailed discussion of the basis for these determinations.

The tract of land along the north side of Boy Scout Road was also formerly delineated as a mix of scenic reserve, airport/airline support and aircraft operations area. As with the area along West Tampa Bay Boulevard, it was determined that this area is not required nor well located for airport support uses and the removal of the extension to Runway 10-28 negated the basis for the aircraft operations area designation, so this area was also considered for the extension of the current commercial designation that exists on its western end.

Perhaps the most significant change occurring to the 2005 On-Airport Land Use Map is within the South Terminal Support Development Area and is reflective of the use of this area as a location for major facilities formerly located in the Main Terminal Complex to this this area to facilitate meeting projected demand and facilitating the longevity of the existing terminal complex. The most significant change stems from the development of a new land use category consisting of the airline passenger terminal support classification to specifically reflect on the focus of the area to accommodate facilities supporting terminal passenger needs.

The South Terminal Support Development Area (formerly the South Development Area) was previously identified as an airport airline support area, and with amendments to that category, it could have been possible to retain this designation for the entire site. However, it was felt that it was important to more definitively establish the role of the area as a site for facilities that focused on functions that had previously been provided in the terminal, but were to be potentially shifted to the STSDA as a part of an overall terminal development strategy. Providing a category specifically for airport facilities that would support the accommodation of passenger needs such as the future CONRAC, access elements including the APM, administrative offices, hotel/meeting areas and other uses outside of the Main Terminal Complex as needed by the proposed main terminal improvement program would allow flexibility in providing these either in the terminal or in the support area. In so doing the STSDA is clearly affiliated and linked to the terminal processor but does not duplicate the airline passenger processing facilities in the category.

As can be seen in **Figure 5.112** three areas within the STSDA are retained in their former airport/airline support classification consisting of those areas associated with the USPS sort facility, the Economy Garages and the proposed Employee Parking Garage. The remainder of the STSDA including the existing cell phone parking lot, proposed Consolidated Rental Car Complex including maintenance and storage, land area associated but not limited to the potential airport hotel, office uses, C-store and gas station and area devoted to access between the STSDA and the Main Terminal Complex have all been incorporated into the new airline passenger terminal support category on the revised Planned Airport Land Use Map. As a result, the entire STSDA is either designated for airport/airline support activities or as airline passenger terminal support activities consistent with the focus of the 2012 master plan update effort.

While the preceding summarizes the more significant changes to the 2005 on-airport land use plan there were some smaller actions that should be noted. Consistent with the amended language in the Aircraft Operations Area category, the RPZ's that extend beyond the main airport tract of land, such as the portions of the RPZ off the south end of Runway 1R/19L south of Spruce Street, north across Hillsborough Avenue from the threshold of Runway 19R sections of the RPZ across U.S. 60 from the threshold of Runway 1L have been shown as Aircraft Operations Area. As can be seen public rights of way have been excluded from the designation on the map. Two areas off the southern end of Runway 1L/19R and south of U.S. 60 have been added to the Scenic Reserve category and the Scenic Reserve designation for property west of

the Veterans Expressway and east of Dana Shores has been carried forward. The final minor alteration to the map is the delineation of a small area of airport/airline support land use in the North Terminal Development Area at the site of the current ARFF training facility.

With the recommended changes to the Planned On-Airport Land Use Map consistency between the master plan development recommendations, the on-airport land use designations and the definitions of permitted activities as amended above is achieved and can form the basis for coordination with local agencies and officials.

## 5.11 Ancillary Parcel Land Use Summary

This section is a summary of the Ancillary Airport Parcels Land Use assessment, which has been conducted as part of the master plan process. A very succinct overview of this analysis is featured below, which feature the summary sections for each parcel from the full assessment contained in **Appendix J**. The assessment reviews seven existing tracts of property owned by the Hillsborough County Aviation Authority (HCAA). These area locations are depicted in **Figure 5.113** with land use designations shown in **Figure 5.114** (per the 2005 Master Plan Update). The tracts of property are referred to as follows:

- **Area One** – Property on the northeast quadrant of N. Hoover Blvd. and Hillsborough Ave.;
- **Area Two** – Property bordered by West Tampa Bay Blvd on the north, north Himes Avenue on the east, West Columbus Drive on the south and Dale Mabry Highway on the west.;
- **Area Three** – Property bordered by N. Tampa Bay Blvd. on the north and Dale Mabry Highway on the east;
- **Area Four** – Property bordered by North Dale Mabry Highway on the east and Spruce Street on the south.
- **Area Five** - Property west of the Veterans Expressway, South of Skyway Park and east of the Dana Shores residential area..
- **Area Six** – Property bordered on the west and north by the alignment of the Airport Access Road, on the east by North Westshore Blvd and on the south by an office development that fronts onto West Spruce Street.
- **Area Seven** – Property in the northeast corner of the Eastside Development Area located along the south side of Hillsborough Avenue to the north and east of Air Cargo Road.


0' 1,100' 2,200'

SCALE: 1" = 2,200'

HNTB

# Land Use Analysis Parcels

TAMPA INTERNATIONAL AIRPORT
TAMPA, FLORIDA

DATE: Dec 17, 2012

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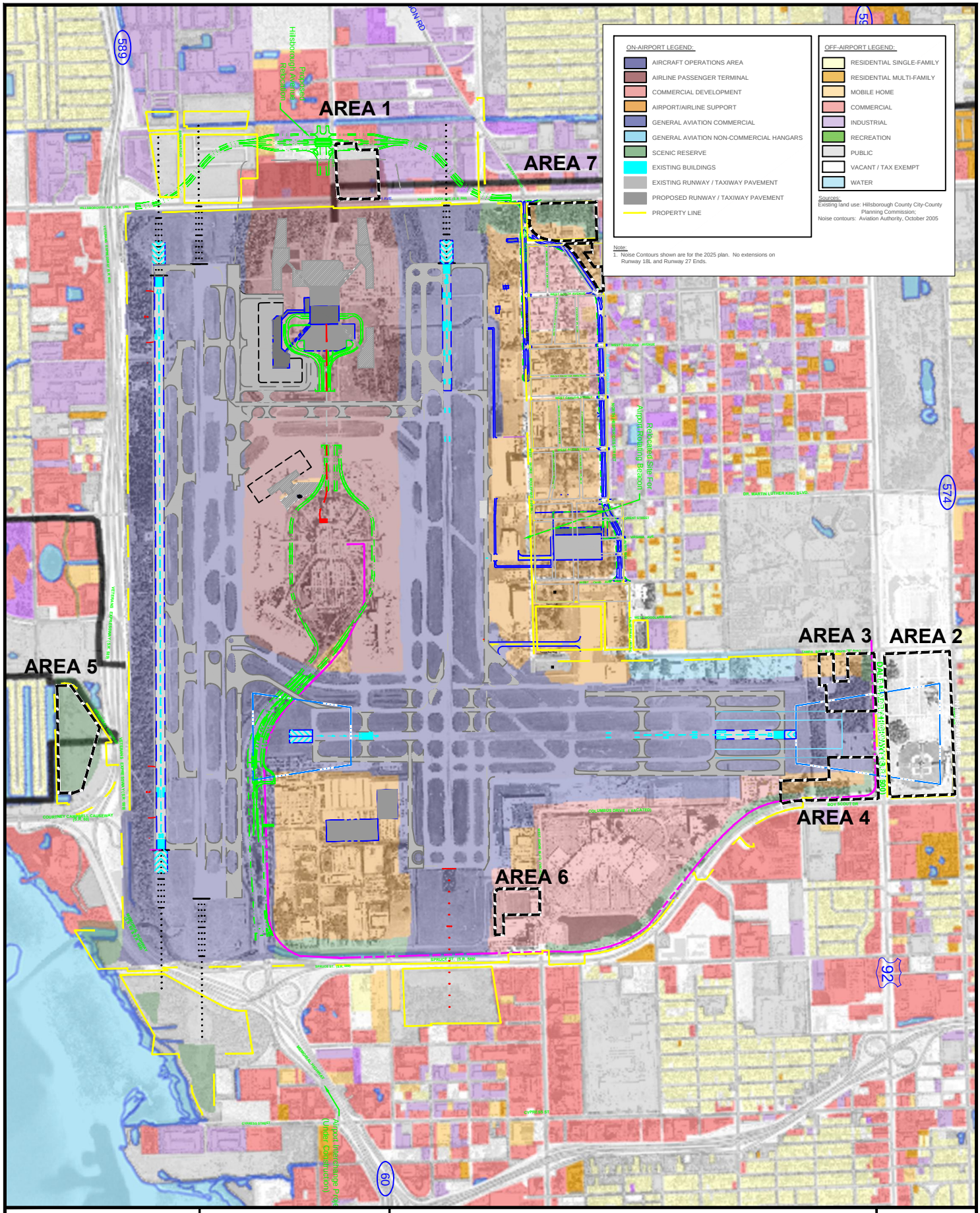


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HNTB

Land Use Designation from 2006 ALP Set

TAMPA INTERNATIONAL AIRPORT
TAMPA, FLORIDA

DATE:
Apr 26, 2013

Figure:
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## 5.11.1 Area 1 Summary

The land use designation (Airline Passenger Terminal) depicted on the Airport Land Use map for the northeast quadrant of Hillsborough Avenue and Hoover Boulevard no longer reflects a logical designation given the delay in building a North Terminal and the changes made to the North Terminal concepts. The recommended change to a commercial designation is reasonable because:

a. The land is not required for the North Terminal or related roadway realignment on which the previous designation was based;

b. The property should be retained to preserve the option of its future use for aviation support purposes, but in the interim the land can provide revenue to support current airport operations and capital programs;

c. It does not adversely impact the ability of Tampa International Airport to meet the long-term forecast of aviation demand, nor does it impact the ability to accommodate any segment of the aviation industry at TPA over the current 20-year master plan horizon.

d. Market analytics and local fieldwork conducted by the HCAA's land use and real estate advisors suggest potential commercial use of the property include but is not limited to single-story retail, low-rise industrial, flex, self-storage, or lower intensity office activities, all of which are compatible with airport operations and could provide space for businesses providing goods or services to airport tenants and users. From a land use perspective, the change from Passenger Terminal Use and Public Use to a general commercial designation is a logical and appropriate action.

Further detail on this parcel is available in **Appendix J**, where a thorough discussion and background are featured.

## 5.11.2 Area 2 Summary

The land use designation (Vacant) depicted on the Airport Land Use map for the parcel beneath the extended centerline of Runway 10/28 and east of North Dale Mabry Highway no longer reflects the best land use designation of the parcel due to the change in the need for a 1,200 foot extension of Runway 10-28 to the east of its current terminus. This removes the RPZ from extending over a large portion of the subject area and undermines the rationale behind the vacant land use designation for the entire site. A possible change of land use to a general commercial designation addresses this change in circumstances and is reasonable for the following reasons:

a. The site is not required to meet an aviation support facility need or terminal related facility needs over the 20-year planning horizon and is separated from the active airfield by a six lane arterial roadway;

b. The property is no longer needed to provide a RPZ for an extension to Runway 10-28;

c. A commercial designation for the property would bring the classification into conformity with the City of Tampa zoning for the area;

d. A Commercial designation would be a logical and compatible extension of the pattern of existing land uses along both Dale Mabry Highway and West Columbus Drive;

e. Identifying the parcel in the general commercial designation that is listed on the existing airport land use map would not preclude the continued use, in part or in whole, of the area by the New York Yankees as a spring training facility or for parking during events at Raymond James Stadium, but would allow flexibility for the HCAA and the lessor to capture potential revenue producing development opportunities in the future should the desire or opportunity arise that would facilitate the financial sustainability of the Airport.

f. Market analytics and local fieldwork conducted by the HCAA's land use and real estate advisors suggest appropriate forms of commercial use for Area 2 include but are not necessarily limited to single-story retail and services (including outparcel uses such as banks, drugstores, convenience/gas stations, etc.) and possible outparcel restaurants, that could be sited at the site's hard corners or along the western frontage. Any uses that might be considered would be required to be compatible with airport operations and within the parameters of airport Part 77 surfaces. A copy of the general market overview is contained in **Appendix I**.

### 5.11.3 Area 3 Summary

Based on revisions generated from the 2012 Master Plan process circumstances that were contributing factors to the development of the 2006 airport land use map in the ALP no longer exist and proposed developments that drove the land use designations are no longer being pursued. As a result a re-evaluation of the on-airport land use designations of property is appropriate. Based on the projected facility requirements, TPA has sufficient land area to meet the facility demands for airport support uses and other aviation needs for the 20-year planning horizon elsewhere on the Airport and has planned accordingly. Regardless the Airport would retain ownership of the property but should consider the development of possible commercial uses that could operate and generate revenue to support airport operational and development needs and, should the land be needed for airport use beyond the 20 year horizon provisions in airport leases ensure it would be possible to make it available. To this end, the potential re-designation of the land area comprising Area Three (see **Appendix J** and **Figure 9** in the Appendix) from its current mix of aircraft operational area, airport/airline support and scenic reserve to a general commercial designation could be considered by the Airport as an appropriate and viable action. A copy of a general market overview is contained in Appendix I.

### 5.11.4 Area 4 Summary

Based on the preceding review of the existing land use classifications and the basis for these, a change in land use from airport/airline support to a commercial designation provides significant value, while not adversely impacting the ability of the Airport to meet the future demand or to provide the requisite facilities to support demand over the 20-year planning horizon of the current Master Plan Update.

Market analytics and local fieldwork conducted by the HCAA's land use and real estate advisors suggest potential commercial use of Area Four might include but is not limited to lower intensity commercial office along the southern frontage and higher value commercial outparcel uses (such as banks, drugstores, etc.) at the site's southeast hard corner and eastern frontage. These uses are delineated to provide a general indication of a range of general commercial activities

that might be considered given the surrounding area and the existing land uses in this area. A copy of the market overview is contained in Appendix I to this report.

### 5.11.5 Area 5 Summary

The continued designation of the site as the low intensity land use category of Scenic Reserve is deemed a logical approach for the following reason:

- The land is currently serving its original purpose of preventing incompatible development and maintaining a noise buffer between Tampa International Airport and its neighbors in the Dana Shores neighborhood.

### 5.11.6 Area 6 Summary

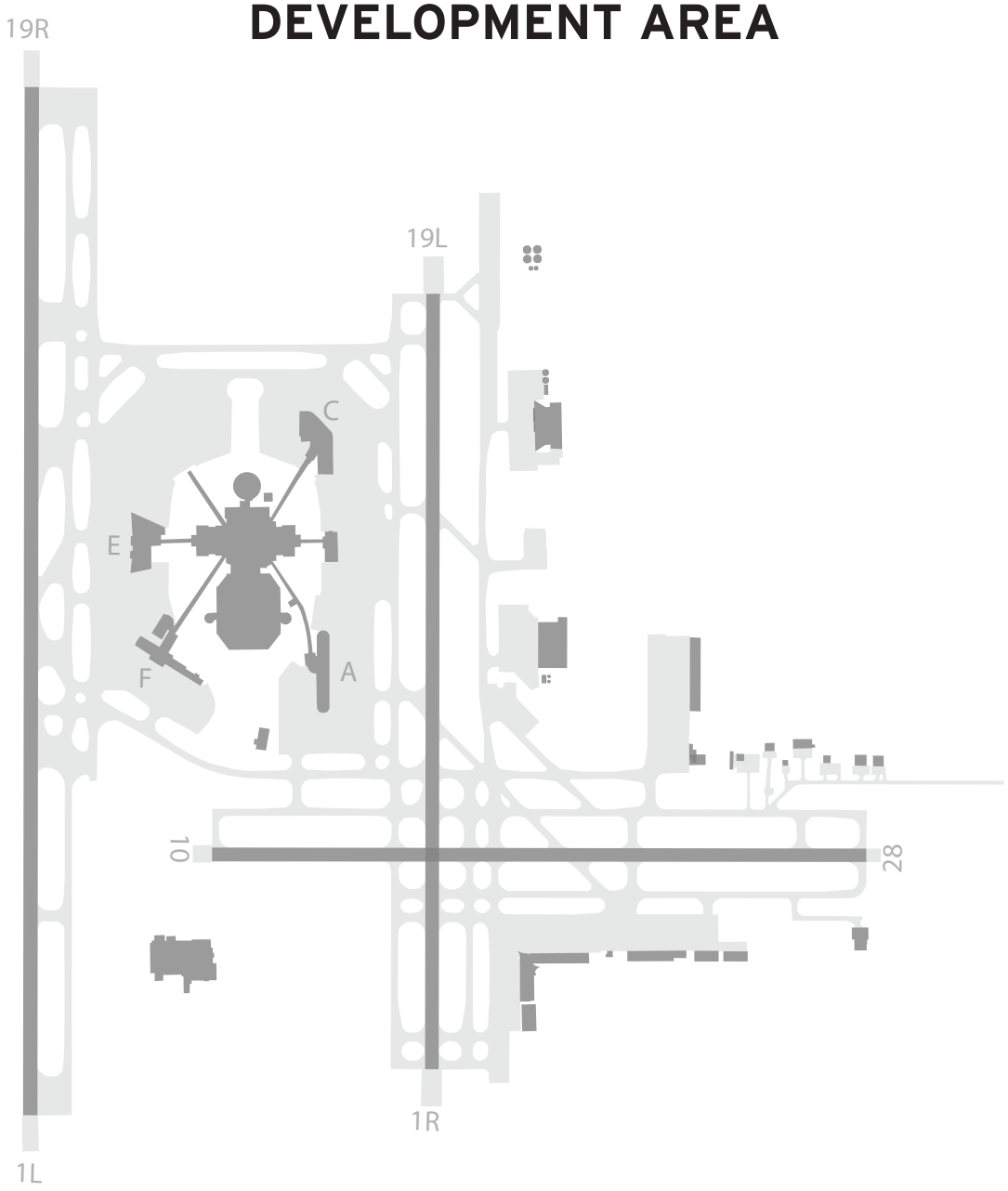
The existing commercial designation for the land area comprising Area Six as shown on the current on-airport land use map will be carried forward.

### 5.11.7 Area 7 Summary

Based on the preceding review of the existing land use classifications and the basis for these, a change in land use to a commercial designation provides significant value, while not adversely impacting the ability of the Airport to meet future demand or to provide the requisite facilities to support demand over the twenty year planning horizon of the current Master Plan Update.

Market review and local fieldwork conducted by the HCAA's land use and real estate advisors suggest appropriate forms of commercial use of the property might include, but are not limited to lower intensity commercial office warehouses, low-rise self-storage facilities and wholesale sales activities. Additionally, higher value commercial outparcel uses such as a convenience store, drugstore, fast food/restaurant and other similar forms of use that could support the employment base in the Eastside Development Area and also draw customers from the high volume of passing traffic on Hillsborough Ave. could be considered at the southeast hard corner of Air Cargo Road and Hillsborough and the western frontage of Air Cargo Road.

# FUTURE AIRFIELD DEVELOPMENT AREA



## 5.12 Future Airfield Development Area

The Future Airfield Development Area is the westernmost portion of the larger Central Core Planning Area. The Future Airfield Development Area can be defined as the north south oriented swath of land that is west of the existing alignment of Runway 1L/19R. The area is approximately 12,000 feet long and 1,100 feet wide, which totals an approximate 300 acres of undeveloped land.

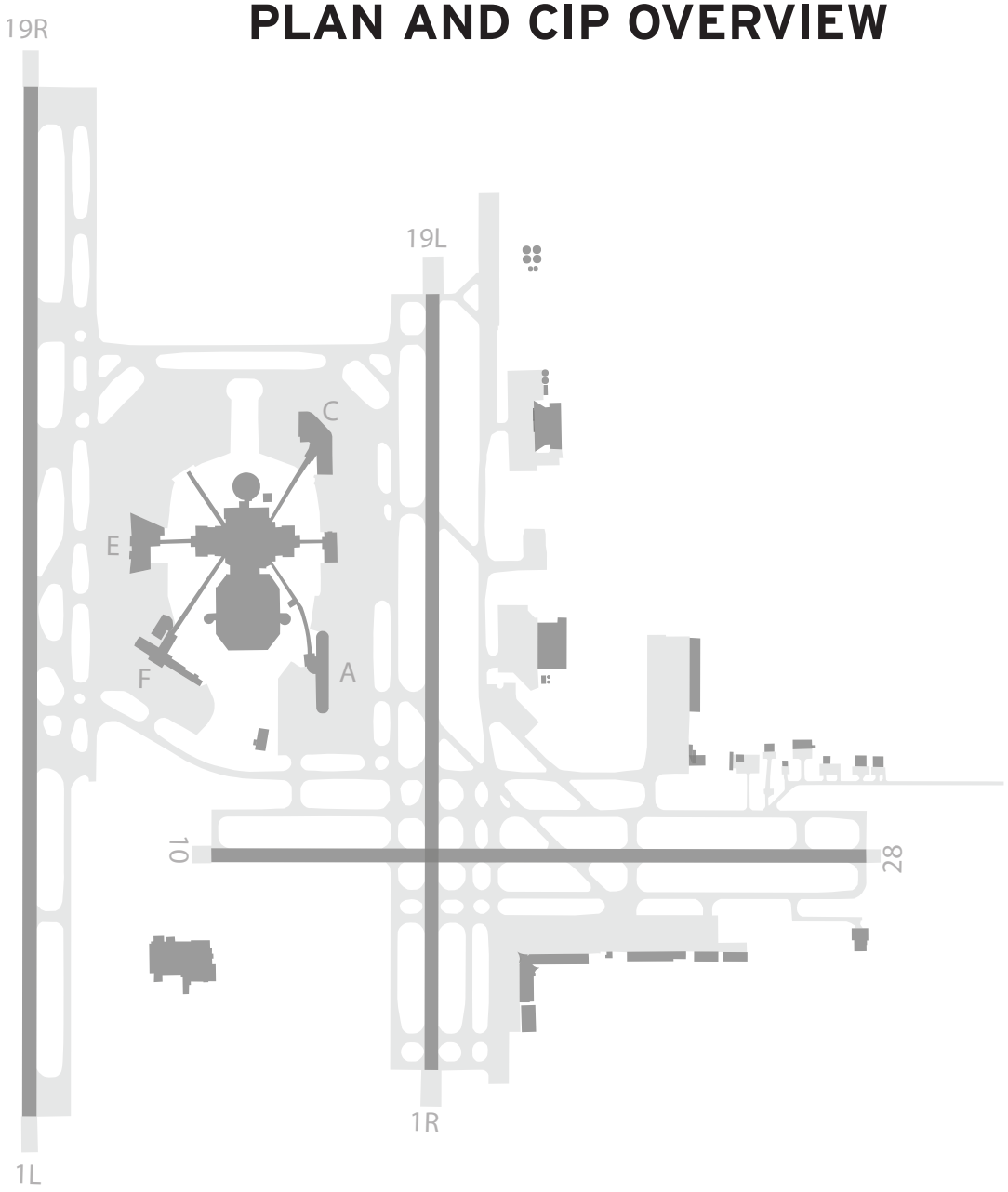
This section only provides a brief overview of the Future Airfield Development Area west of the existing alignment of Runway 1L/19R. For a more thorough discussion of the entire airfield and the proposed improvements, see Section 3 in Volume I, Airfield Facilities and Demand/Capacity Analysis.

The assessment of airfield capacity in Section 3 has clearly indicated that the forecast of demand does not result in the need for significant airfield capacity enhancements. However, to ensure the continued protection of land area from alternative uses, to ensure airspace is protected and to ensure land area for the runway/taxiway system is preserved, it was determined that the proposed area needed to construct a future parallel runway west of 1L /19R should be preserved. This preservation of land would be to maintain the flexibility to accommodate the Future 150' X 9,962' Parallel Runway 17-35 and associated Parallel Taxiway Z as recommended in the previous Master Plan.

While the runway may not be needed during the 20-year planning horizon, it is imperative that the capability to provide added capacity not be lost or reduced. Unforeseen events can impact the timing of facility needs dramatically both in a negative and positive manner. For this reason, a master plan must be capable of responding to events that may not be able to be viably factored into a forecast or a demand capacity analysis. Therefore, preserving the site of the proposed runway and the airspace affiliated with the proposed alignment is a critical long term consideration. Extensive evaluations of this runway were conducted for the 2005 Master Plan. These evaluations can form the foundation of a revalidation of concept attributes and constraints once the need to re-engage airfield capacity planning is needed.

Recent changes to FAA design criteria contained in AC 150/5300-13a relating to Runway Protection Zone requirements could impact the configuration of the proposed parallel runway. The proposed runway layout includes public roadways transiting the RPZ, which have recently been identified by the FAA as no longer being a permitted use in an RPZ. While it is understood that revised planning for the proposed parallel runway may be necessary, this planning effort is best done closer to the actual time when the runway improvements are needed. Thus, the proposed parallel runway is being carried forward with the caveat that the future runway configuration and affiliated taxiway system will require additional planning in order to conform with guidance that may exist at a time closer to when the project is actually required.

# SECTION 6 - RECOMMENDED PLAN AND CIP OVERVIEW



# 6 RECOMMENDED CAPITAL IMPROVEMENT PROGRAM

The purpose of this section is to describe the final recommended projects that emerged from the analysis of alternatives in Section 5 and to present these projects in the AMPU Capital Improvement Program (CIP). This CIP is distinct from the HCAA's CIP which also includes renovation and replacement projects, and projects related to other airports under its authority. Included in this section are descriptions of the AMPU recommended projects along with estimated costs and phasing.

The approach and assumptions used to estimate project costs are described first. This is followed by a schematic overview, **Figure 6.1** of the major projects (not all detailed projects are shown due to scale), descriptions of each of the CIP elements, including the APM, the Consolidated Rental Car (CONRAC), the terminal expansion projects, and the remaining master plan projects. The section concludes with a summary of AMPU CIP costs by phase.

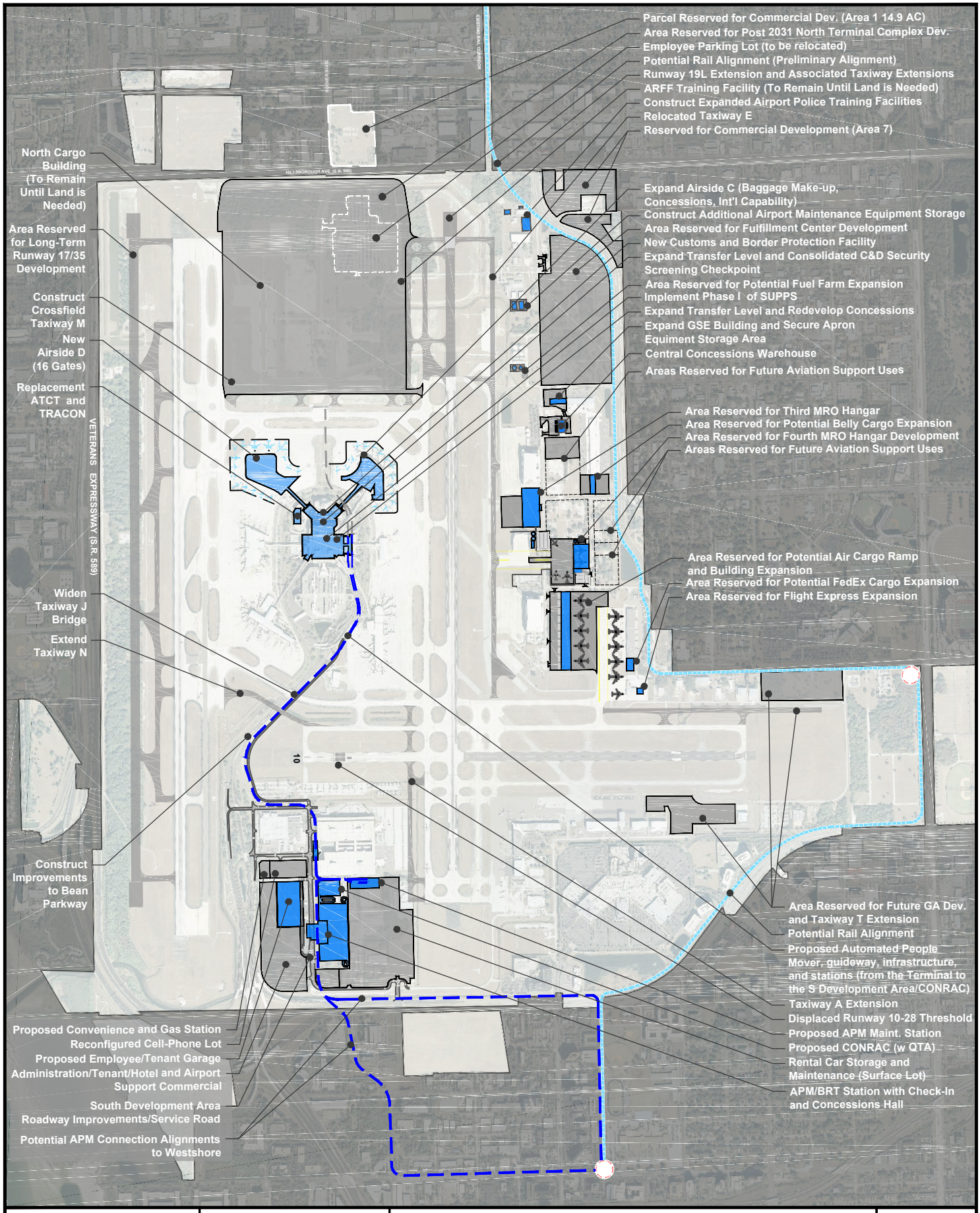
## 6.1 Approach to Cost Estimates

There are two sources for the capital cost estimates in the AMPU CIP, costs provided by the HCAA and costs prepared by the AMPU team. The HCAA costs pertain mostly to major near term projects such as the CONRAC, the APM, and the Transfer Level expansion and concession redevelopment at the terminal building. The project cost estimates prepared by the AMPU team include three main elements, construction costs, soft costs, and cost escalation.

All construction costs are presented in 2013 dollars and represent a planning level estimate. The construction costs include contractor mark-ups such as detail and pricing allowance, general conditions, overhead and fee, and bond costs. As projects are better defined cost estimates may be further refined.

Soft costs include design costs, contract administration, owner administration, construction management, program management, material testing, and owner contingency. Because of economies of scale, soft costs, as a percentage of construction costs, tend to be less for large projects than for small projects. HCAA prepared an estimate of average soft costs by construction cost range as presented in **Table 6.1**. The appropriate soft cost factors from the table were applied to the construction cost estimates to arrive at a total loaded cost in 2013 prices for each AMPU project.

The cost estimates were initially prepared using 2013 price factors. The phasing of the AMPU projects will be spread over the next twenty years, during which nominal costs will escalate because of inflation. Consistent with current HCAA practice, and consistent with recent experience, an escalation factor of 2.70 percent per year was applied to the AMPU projects. The escalation factor was applied to the mid-point of the construction period for those projects with multi-year phasing.

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SCALE: 1" = 2,000'

HNTB

# AMPU Recommended Projects

TAMPA INTERNATIONAL AIRPORT
TAMPA, FLORIDA

DATE: Aug 15, 2013

Figure: 6.1

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## Table 6.1
## Estimated Project Soft Costs

| Construction Cost Range | Design %[1] | Constr. Admin. (CA) % | Total - Design/CA % | Owner Admin % | Construction Mgmt. % | Program Mgmt. % [2] | Material Testing % | Owner Contingency % [3] | Soft Cost % |
|---|---|---|---|---|---|---|---|---|---|
| $1 - $2M | 21.0% | 4.0% | 25.0% | 6.0% | 5.0% | N/A | 2.0% | 5.0% | 43.0% |
| $2M - $5M | 17.0% | 4.0% | 21.0% | 6.0% | 5.0% | N/A | 2.0% | 5.0% | 39.0% |
| $5M - $25M | 14.0% | 3.0% | 17.0% | 6.0% | 4.0% | N/A | 2.0% | 5.0% | 34.0% |
| $25M - $50M | 10.0% | 2.0% | 12.0% | 5.0% | 4.0% | 5.0% | 2.0% | 4.0% | 32.0% |
| $50M - $100M | 8.0% | 2.0% | 10.0% | 4.0% | 4.0% | 5.0% | 1.0% | 4.0% | 28.0% |
| $100M - $300M | 6.0% | 1.0% | 7.0% | 3.0% | 3.0% | 5.0% | 1.0% | 3.0% | 22.0% |
| $300M > | 4.0% | 1.0% | 5.0% | 2.0% | 3.0% | 5.0% | 1.0% | 3.0% | 19.0% |

Notes: [1] No delineation between vertical (i.e., buildings) or horizontal (i.e., civil) projects or between Design-Bid-Build and Design-Build has been made for Design and CA % purposes of this initial level of soft cost estimating.
[2] Program Management % should be analyzed for the total program and not necessarily on a project specific basis. For purposes of this analysis a constant percentage was applied to each Construction Cost Range in excess of $25M. Program Management is assumed to not be required for all projects less than $25M.
[3] Owner Contingency % is included to account for variances which may occur in soft cost estimates only.

Source: HCAA

## 6.2 Automated People Mover Projects

The proposed Automated People Mover (APM) System connects the Main Terminal with a Consolidated Rental Car Facility planned for the South Development. The Landside APM system transports passengers from the Main Terminal APM Station to Stations at the Economy Parking Garage and the CONRAC. The project also includes an off-line Maintenance and Storage Facility (MSF) located between the Economy Parking Garage and the CONRAC. The proposed APM system has the capability to expand to the north and connect to a future North Terminal or extend to the south and connect to a potential future transportation center off-airport.

The main CIP elements of the APM include terminal enhancements to accommodate the new APM, the Main Terminal APM Station, the APM Operating System and APM Infrastructure, including stations for the Economy Lot and the CONRAC, and access from the East Quad Deck into the Terminal. Construction is expected to be complete by 2016. **Table 6.2** summarizes the estimated capital costs associated with the recommended APM projects, estimated at about $415 million once soft costs and escalation are included.

**Table 6.2**
**Master Plan Capital Costs - APM Projects**

| Project | Year | Escalated Project Cost (Rounded[2]) |
|---|---|---|
| Automated People Mover, Guideway, Infrastructure and Stations | 2014 | $415,500,000 |
| Main Terminal APM Station | 2014 | - |
| APM Infrastructure (includes Economy Lot & CONRAC Stations Development) | 2014 | - |
| APM Operating System | 2014 | - |
| Construct access from East Quad Deck into Terminal | 2014 | - |
| **Subtotal** | **2014** | **$415,500,000** |

Notes:
1. Based on HCAA Project Management Program (PMP) costs. (in 2013 dollars)
2. Costs rounded to nearest ten thousand dollars

Sources: As noted and HNTB analysis.

### 6.2.1 Main Terminal APM Station

The main terminal APM station will be located on the east side of the Terminal Building. It will be sized to accommodate a maximum train length of 160 feet (4-car trains) and will have two levels, a platform level for boarding and disembarking and a mezzanine level for passenger circulation and connections to the main terminal building. The platform area is anticipated to be approximately 45 feet by 350 feet. Vertical circulation cores at each end of the platform include escalators, stairways, and elevators. Associated mechanical and electrical rooms, including a dedicated room for APM related equipment, are also included.

New terminal enhancements will be required to accommodate the new APM station on the east side of the terminal building (see Section 6.2.2). The enhancements will include modifications to the Ticketing Level, including using one structural bay of the valet parking area next to the Network Operations Center (NOC) for construction of a new escalator/elevator lobby. From this lobby, a corridor will be cut through the existing Southwest airline ticket offices and ticket

counters to provide a new east end access to the ticketing/check-in lobby. Construction of this entrance will require modification to the baggage conveyor running behind the Southwest Airlines ticket counter. The conveyor north of the new entrance will turn and descend through a new floor opening to the baggage claim level. A new conveyor with a new floor opening will be provided for the ticket counters to the south of the new entrance.

### 6.2.2 APM Infrastructure

APM infrastructure includes stations for the Economy Parking Lot and the CONRAC, along with a Maintenance and Storage Facility (MSF) and a power distribution substation.

One passenger station is located adjacent to the existing Remote Economy Parking Garage and is designed to accommodate a maximum train length of 160 feet. The platform measures about 40 feet by 200 feet. There are two levels, including a platform level for passenger boarding/disembarking and mezzanine level for passenger circulation and pedestrian connections to the Economy Parking Garage. Escalators, stairways, elevators, mechanical and electrical rooms, including a dedicated room for APM related equipment are also incorporated on the platform level.

Another passenger station is located adjacent to the planned CONRAC that serves both the CONRAC and a potential future Intermodal Transfer Facility. It is designed to accommodate a maximum train length of 160 feet and the platform measures about 40 feet by 200 feet. There are two levels including a platform level for passenger boarding/disembarking the APM and a mezzanine level for passenger circulation and pedestrian connections to the Economy Parking Garage. Escalators, stairways, elevators, mechanical and electrical rooms, including a dedicated room for APM related equipment are also incorporated on the platform level.

### 6.2.3 APM Operating System

The APM operating systems elements include:

- APM vehicles ( 3 3-car trains, and 1 spare train) ;
- Guideway surfaces, structures and foundations, and related facilities and equipment (approximately 8,300 feet);
- Station equipment;
- Maintenance facilities;
- A central control facility, including computers and display monitors;
- A power distribution system, including substations, power cables, and guideway power contact rails;
- A backup power system;
- Control systems, including automatic train control, station controls, communications, and public address systems;
- A 12-month supply of expendable and spare parts, and other consumables; and,
- Other system facilities and equipment.

### 6.2.4 Construct Access from East Quad Deck into Terminal

As part of the new APM station on the east side of the main terminal, direct access to terminal ticketing from the Quad Decks will be provided. The APM guideway will pass over the shuttle systems serving Airsides A and C. Elements of the project include demolition and reconstruction of the East Quad Deck, exterior closure and interior construction for 3,520 square feet of lobby and circulation space, along with mechanical and electrical systems.

## 6.3 Consolidated Rental Car Projects

**Table 6.3** summarizes the costs associated with the CONRAC projects. In addition to the main facility, the CONRAC project includes a maintenance and storage area and associated demolition and reconstruction. Key elements include design of the facility, site preparation and demolition within the 14.4 acre CONRAC site, utility upgrades, construction of the 2.281 million square foot facility, and the relocation of rental car operators. The cost is estimated at slightly over $318 million once soft costs and escalation are included.

**Table 6.3**
**Master Plan Capital Costs - CONRAC Projects**

| Project | Year | Escalated Project Cost (Rounded)[2] |
|---|---|---|
| Consolidated Rental Car Facility | 2014 | $318,700,000 |
| **Subtotal** | | **$318,700,000** |

Notes:
1. Based on HCAA Project Management Program (PMP) costs. (in 2013 dollars)
2. Costs rounded to nearest ten thousand dollars

Sources: As noted and HNTB analysis.

## 6.4 Terminal Transfer Level Expansion and Concessions Redevelopment

An initial set of terminal expansion projects will be required to address existing deficiencies and accommodate the new APM. The expansion projects will be initiated in 2014 and main elements include:

- Reconfiguration of the transfer level central concessions area;
- Reconfiguration of the Airside A, E, and F shuttle stations at the transfer level;
- Expansion of the Transfer Level over the Plaza Decks; and
- Expansion of Concessions on Airsides A, C, E, and F.

As shown on **Table 6.4**, the construction costs of these projects are estimated at a total of $104.5 million once soft costs and escalation are included. More detail on the individual projects is provided below.

**Table 6.4**
**Master Plan Capital Costs - Terminal Level Expansion Projects**

| Project | | Year | Escalated Project Cost (Rounded)[2] |
|---|---|---|---|
| Expand Transfer Level/ Redevelop Concessions | | 2014 | $104,500,000 |
| Reconfigure Airside A, E and F Shuttle Stations (Transfer Level) | | 2014 | - |
| Expand Transfer Level over Plaza Decks | | 2014 | - |
| Reverse Flow of Center Escalators | | 2014 | - |
| Terminal Escalator Reconfigure & Replacement (all) | | 2014 | - |
| Wayfinding Signage (all terminal floors) | | 2014 | - |
| Seating Improvements (Transfer & Ticketing Level) | | 2014 | - |
| Expand Concessions on Airside C | | 2014 | - |
| Expand Concessions on Airside F | | 2014 | - |
| Expand Concessions on Airside E | | 2014 | - |
| Expand Concessions on Airside A | | 2014 | - |
| **Subtotal** | | | **$104,500,000** |

Notes:
1. Based on HCAA Project Management Program (PMP) costs. (in 2013 dollars)
2. Costs rounded to nearest ten thousand dollars

Sources: As noted and HNTB analysis.

### 6.4.1 Reconfigure Airside A, E, and F Shuttle Stations

To improve circulation within the main terminal the Airsides A and F shuttle stations will be relocated approximately one train car length outward. The Airside E station will be relocated approximately 60 feet to the west and the Airside C station will remain in its current position until the terminal is expanded northward and the Airside C shuttle system is replaced. The Airside E portion of the project will include relocation of bag screening equipment and conveyors, extension of new columns from the first level to the third level, and building expansion for more lobby area, along with associated electrical work. The Airside A and F portions of the project will involve demolition of portions of the shuttle enclosure, elevated ramp, and tracks, demolition of parts of the building, and construction of expanded floor, roof and exteriors, as well as interior finishes and furnishings, and mechanical and electrical systems.

### 6.4.2 Expand Transfer Level over Plaza Decks

The Transfer Level will be expanded over the Plaza Decks to providing additional circulation, concessions and seating for passengers, meeter/greeters, well-wishers, and employees. The project will include demolition of the old Airside D shuttle station, floor and roof construction, exteriors, interior finishes and furnishings, and mechanical and electrical systems. The expansion will include 46,420 square feet of interior space and 4,000 square feet of exterior plaza space. The project is expected to be completed by the end of 2015.

Elements associated with the Transfer Level Expansion include:

- Reversing the flow of four existing escalators;
- Reconfiguring and replacing the central escalators;
- Providing new wayfinding signage to familiarize users with the new circulation pattern; and
- Seating improvements.

The Central Concessions Area at the Transfer Level will be reconfigured to provide more space for revenue generation. Elements of the project will include demolition of existing concession facilities, and interior construction for 19,540 square feet of space. The project is expected to be completed by the end of 2016.

### 6.4.3 Expand Concessions on Airside C

Concessions space on Airside C will be reconfigured and expanded (total of 21,385 square feet) to enhance the Airport's revenue generating ability. The project includes mechanical and electrical utilities, demolition of existing concessions and separation walls, and the construction of new separation walls. The remainder of the work will be undertaken by the tenant. The project is expected to be completed in 2015.

### 6.4.4 Expand Concessions on Airside F

Concessions space on Airside C will be reconfigured and expanded (total of 26,971 square feet) to enhance the Airport's revenue generating ability. The project includes mechanical and electrical utilities, demolition of existing concessions and separation walls, and the construction of new separation walls. The remainder of the work will be undertaken by the tenant. The project is expected to be completed in 2015.

### 6.4.5 Expand Concessions on Airside E

Concessions space on Airside C will be reconfigured and expanded (total of 18,919 square feet) to enhance the Airport's revenue generating ability. The project includes mechanical and electrical utilities, demolition of existing concessions and separation walls, and the construction of new separation walls. The remainder of the work will be undertaken by the tenant. The project is expected to be completed in 2015.

### 6.4.6 Expand Concessions on Airside A

Concessions space on Airside C will be reconfigured and expanded (total of 21,756 square feet) to enhance the Airport's revenue generating ability. The project includes mechanical and electrical utilities, demolition of existing concessions and separation walls, and the construction of new separation walls. The remainder of the work will be undertaken by the tenant. The project is expected to be completed in 2015.

## 6.5 Other Phase 1 AMPU Projects

Sections 6.2, 6.3, and 6.4 described the APM, CONRAC, and initial terminal projects. **Table 6.5** lists additional Master Plan capital projects recommended for the Phase 1 (2013-2016) period. The total construction cost of these projects is estimated at $72.6 million once soft costs and escalation are included.

### 6.5.1 Widen Taxiway J Bridge

The Taxiway J Bridge, which crosses the Bean Parkway, will be widened to accommodate the roadway expansion and APM, in 2014. This project needs to be completed before the Bean Parkway can be improved (see Section 6.7.13). Project costs are estimated at $30.7 million when soft costs and escalation are included.

### 6.5.2 South Terminal Support Development Area Roadway Improvements

This project involves Realigning the Service Road from the northeast corner of the South Development Area to just north of the ARFF facilities, a distance of approximately 4,000 feet. This requires demolition of the existing Service Road alignment and construction of a new two-lane undivided roadway. It also requires the widening of a culvert bridge, which will occur after the widening of the Taxiway J Bridge is completed.

The north access roadway running east-west will be converted to a three-lane section with two westbound lanes and one eastbound lane. The south access roadway running east-west will be a two-lane section with all traffic travelling eastbound. The “spine” road running north-south through the South Development Area will be a four-lane undivided section with auxiliary lanes for access into the different land uses. At the south end the access road curves to the east and ties into Spruce Street as a two-lane undivided section. In addition, a three-lane curb roadway will be constructed at APM Station 2 for loading and unloading of customers.

Included in the project is the removal of existing pavement, light poles, and traffic signals, site preparation, construction of 10,650 linear feet of roadways, and the installation of new signals and lighting. The project cost is estimated at $21.4 million including soft costs and escalation.

## Table 6.5
## Master Plan Capital Costs - Other Phase 1 (2013-2016) Capital Projects

| Project | Year | Estimated Construction Cost (2013 $)[1] | Years of Escalation[2] | Assumed Annual Escalation Rate[3] | Escalation Factor | Escalated Construction Cost | Soft Cost Factor[4] | Total Project Cost | Date of Cost Estimate | Escalated Project Cost (Rounded)[5] |
|---|---|---|---|---|---|---|---|---|---|---|
| Taxiway J Bridge | 2014 | (based on PMP) | | | | | | | | 30,690,000 |
| South Development Area Roadway Improvements / Service Road | 2014 | (based on PMP) | | | | | | | | 21,410,000 |
| New Central Concessions Warehouse | 2014 | (based on PMP) | | | | | | | | 7,100,000 |
| Implement Phase 1 of SUPPS / CUSS | 2014 | (based on PMP) | | | | | | | | 3,000,000 |
| Site Preparation Perimeter Parcel 1 | 2015 | 223,500 | 3 | 2.70% | 1.079 | 241,056 | 1.43 | 344,711 | 3/1/2013 | 340,000 |
| ATCT Siting Re-evaluation | 2015 | 350,000 | 2 | 2.70% | 1.050 | 367,569 | 1.43 | 525,623 | 3/1/2013 | 530,000 |
| Site Preparation Perimeter Parcel 7 | 2016 | 456,000 | 4 | 2.70% | 1.108 | 505,136 | 1.43 | 722,344 | 3/1/2013 | 720,000 |
| Reclaim Long term Parking from Former Rental Car Areas in Garage | 2016 | 4,601,400 | 4 | 2.70% | 1.120 | 5,154,837 | 1.35 | 6,959,030 | 3/1/2013 | 6,960,000 |
| Construct Additional Airport Maintenance Equipment Storage Space | 2016 | 1,127,942 | 4 | 2.70% | 1.108 | 1,249,482 | 1.43 | 1,786,759 | 3/1/2013 | 1,790,000 |
| Reconfigure Fuel Farm Access Roadway | 2016 | 58,870 | 4 | 2.70% | 1.108 | 65,213 | 1.43 | 93,255 | 3/1/2013 | 90,000 |
| | | | | | | **Subtotal** | | | | **72,630,000** |

Notes:
1. Except where noted, construction costs based on estimates prepared by CMI, Inc. (in 2013 dollars)
2. Calculated using construction mid-point.
3. Assumed escalation rate recommended by HCAA (based on factor used for prior HCAA projects); cost escalation compounded by year
4. Soft costs based on matrix in Table 6.1.
5. Costs rounded to nearest ten thousand dollars

Sources: As noted and HNTB analysis.

### 6.5.3 New Central Concessions Warehouse

The new Central Concessions Warehouse will be located in the Eastside Aviation Development Area southwest of the existing GSE Service Building southeast of the corner of West Cayuga Street and North Westshore Boulevard. The estimated cost will be approximately $7.1 million including soft costs and escalation.

### 6.5.4 Implementation of Phase 1 of SUPPS / CUSS

The first phase of the Shared Use Passenger Processing System (SUPPS) or Common Use Self Service (CUSS) will be implemented in 2014. The cost is estimated at $3.0 million, once escalation is included.

### 6.5.5 Site Preparation Perimeter Parcel (Area 1)

This project includes site preparation for Area 1, located to the north of the Airport between the extended centerlines of Runway 1R/19L and 1L/19R. The parcel consists of 14.9 acres, bordered on the south by Hillsborough Avenue and on the west by North Hoover Boulevard, which could be developed for airport compatible commercial use. Construction costs, in 2013 prices, are estimated at $223,500 and $340,000 when soft costs and escalation are included.

### 6.5.6 ATCT Siting Re-evaluation

TPA is in the site selection process for a replacement Federal Aviation Administration (FAA) Air Traffic Control Tower (ATCT) and associated TRACON facility. The findings of the AMPU may warrant a re-evaluation of the initial recommended layout of the ATCT and TRACON facilities at the southeast edge of the Airside D site. The cost of this study, expected in 2015, is estimated at $350,000, or $530,000 once soft costs and escalation are included.

### 6.5.7 Site Preparation Perimeter Parcel (Area 7)

This project involves site preparation for Area 7, located in the northeast corner of the Eastside Aviation Development Area. The area consists of two tracts, totaling approximately 18.2 acres, which could be used for commercial development after site preparation. Construction costs, in 2013 prices, are estimated at $456,000, or $720,000 when soft costs and escalation are included.

### 6.5.8 Reclaim Long Term Parking from former RAC Areas in Garage

Once the new CONRAC facility is completed (see Section 6.3), the RAC areas in the garage will be vacated and converted to long-term parking. The construction cost of this project will be $4.6 million, $7.0 million once soft costs and escalation are included.

### 6.5.9 Construct Additional Airport Maintenance Equipment Storage Space

Additional enclosed space is necessary to maintain the condition and life expectancy of the more sophisticated maintenance vehicles. The facility will be 7,500 square feet and

construction involves site preparation, a foundation, a pre-engineered building, interior construction and finishes, mechanical and electrical systems, and minor site restoration. Construction costs, in 2013 prices, are estimated at $1.1 million, or $1.8 million when soft costs and escalation are included.

### 6.5.10 Reconfigure Fuel Farm Access Roadway

Fuel Farm access will be reconfigured by constructing an exit route to Westshore Blvd. Project costs include site preparation and pavement for 307 square yards. Construction costs, in 2013 prices, are estimated at $58,870, or $90,000 when soft costs and escalation are included.

## 6.6 Phase 2 AMPU Projects

**Table 6.6** lists the Master Plan capital projects recommended for the Phase 2 (2017-2021) period. The total construction costs of these projects is estimated at $484.0 million in 2013 prices, or $738.6 million once soft costs and escalation are included.

### 6.6.1 Site Preparation Perimeter Parcel (Area 6)

Area 6 is located to the southeast of the Airport, North of Spruce Street and west of Westshore Boulevard. Once site preparation is complete, the parcel will be available for commercial development. Construction costs in 2013 prices are estimated at $138,000, or $220,000 when soft costs and escalation are included.

### 6.6.2 Construct Replacement ATCT/TRACON

A replacement ATCT/TRACON will be built at one of two locations: 1) integrated into a future Airside D gate facility (primary site), or 2) on the current Red Side Garage site (secondary site). The proposed base building will be in the range of 21,000 to 26,850 square feet, depending on whether District offices are accommodated on site (larger footprint) or remotely (smaller footprint). There are approximately 113 parking spaces included in the current plan. The tower location is consistently shown in the primary location in all concept alternatives, but the base building/TRACON is seen as flexible and may be arranged on two or more levels and located on any side of the tower. Once the replacement facilities are complete the existing ATCT/TRACON will be demolished to provide room for other terminal expansion (see Section 6.6.14).

The project is expected to be complete in 2019, and the construction cost is estimated at $39.8 million in 2013 prices, and $61.4 million when soft costs and escalation are included.

### 6.6.3 Demolish Red Side Garage

The Red Side Garage will be demolished to provide space for the new FAA ATCT, TRACON and support facilities described in Section 6.6.2. The demolition involves 372,752 square feet and is anticipated to be complete in 2017. The cost of the demolition is estimated at $5.0 million in 2013 dollars, and $8.0 million once soft costs and escalation are included.

## Table 6.6

## Master Plan Capital Costs - Phase 2 (2017-2021) Capital Projects

| Project | Year | Estimated Construction Cost (2013 $)[1] | Years of Escalation[2] | Assumed Annual Escalation Rate[3] | Escalation Factor | Escalated Construction Cost | Soft Cost Factor[4] | Total Project Cost | Date of Cost Estimate | Escalated Project Cost (Rounded)[5] |
|---|---|---|---|---|---|---|---|---|---|---|
| Site Preparation Perimeter Parcel 6 | 2017 | 138,000 | 5 | 2.70% | 1.138 | 156,997 | 1.43 | 224,506 | 3/1/2013 | 220,000 |
| Construct Replacement ATCT/TRACON at Red Side Garage Site | 2018 | 39,800,000 | 6 | 2.70% | 1.168 | 46,501,519 | 1.32 | 61,382,006 | 3/1/2013 | 61,380,000 |
| Demolish Red Side Garage | 2018 | 4,955,129 | 6 | 2.70% | 1.168 | 5,789,473 | 1.39 | 8,047,368 | 3/1/2013 | 8,050,000 |
| Employee Parking Garage in S. Development Area | 2018 | 75,221,500 | 6 | 2.70% | 1.168 | 87,887,287 | 1.28 | 112,495,728 | 3/1/2013 | 112,500,000 |
| Construct New Administration/Tenant building in South Development Area | 2018 | 24,845,304 | 6 | 2.70% | 1.168 | 29,028,753 | 1.34 | 38,898,530 | 3/1/2013 | 38,900,000 |
| Expand GSE Secure Apron Equipment Storage Area | 2018 | 79,760 | 6 | 2.70% | 1.168 | 93,190 | 1.43 | 133,262 | 3/1/2013 | 130,000 |
| Site Preparation Perimeter Parcel 3 & 4 | 2018 | 788,000 | 6 | 2.70% | 1.168 | 920,683 | 1.43 | 1,316,577 | 3/1/2013 | 1,320,000 |
| Demolish Existing ATCT and TRACON | 2019 | 1,356,362 | 7 | 2.70% | 1.200 | 1,627,534 | 1.43 | 2,327,374 | 3/1/2013 | 2,330,000 |
| Demolish Existing Marriott Hotel | 2019 | 5,362,544 | 7 | 2.70% | 1.200 | 6,434,657 | 1.34 | 8,622,440 | 3/1/2013 | 8,620,000 |
| Demolish Existing Airport Service Building (Red side) | 2019 | 1,540,311 | 7 | 2.70% | 1.200 | 1,848,259 | 1.43 | 2,643,011 | 3/1/2013 | 2,640,000 |
| Construct New Central Plant Chillers and Main Power Reconfiguration | 2019 | 11,458,075 | 7 | 2.70% | 1.200 | 13,748,844 | 1.34 | 18,423,451 | 3/1/2013 | 18,420,000 |
| Construct Third Eastside Hangar for MRO Use - | 2019 | 41,024,688 | 7 | 2.70% | 1.200 | 49,226,595 | 1.32 | 64,979,106 | 3/1/2013 | 64,980,000 |
| Buy Out Lease of Existing Hotel | 2019 | 45,000,000 | | | | | | | | 45,000,000 |
| Expand Transfer Level for Consolidated Airside C & D Checkpoint | 2020 | 68,563,778 | 8 | 2.70% | 1.232 | 84,498,967 | 1.28 | 108,158,677 | 3/1/2013 | 108,160,000 |
| Temporary Truck Docks for Terminal (5,000 sq. ft. X $69.18) | 2020 | 345,900 | 8 | 2.70% | 1.232 | 426,292 | 1.43 | 609,598 | 3/1/2013 | 610,000 |
| Improve Infrastructure for MRO Cluster Area | 2020 | 4,466,571 | 8 | 2.70% | 1.232 | 5,504,665 | 1.39 | 7,651,484 | 3/1/2013 | 7,650,000 |
| Expand Airside C to Include Reconfigured Shuttle Station | 2021 | 70,598,921 | 9 | 2.70% | 1.266 | 89,356,297 | 1.28 | 114,376,061 | 3/1/2013 | 114,380,000 |
| Reconfigure Airside C Shuttle Alignment | 2021 | 88,474,150 | 9 | 2.70% | 1.266 | 111,980,783 | 1.28 | 143,335,402 | 3/1/2013 | 143,340,000 |
| **Subtotal** | | **484,018,993** | | | | **535,030,798** | | **693,624,579** | | **738,630,000** |

## Table 6.6

## Master Plan Capital Costs - Phase 2 (2017-2021) Capital Projects

| Project | Year | Estimated Construction Cost (2013 $)[1] | Years of Escalation[2] | Assumed Annual Escalation Rate[3] | Escalation Factor | Escalated Construction Cost | Soft Cost Factor[4] | Total Project Cost | Date of Cost Estimate | Escalated Project Cost (Rounded)[5] |
|---|---|---|---|---|---|---|---|---|---|---|

Notes:
1. Construction costs based on estimates prepared by CMI, Inc. (in 2013 dollars)
2. Calculated using construction mid-point.
3. Assumed escalation rate recommended by HCAA (based on factor used for prior HCAA projects); cost escalation compounded by year
4. Soft costs based on matrix in Table 6.1.
5. Costs rounded to nearest ten thousand dollars

Sources: As noted and HNTB analysis.

### 6.6.4 Employee Parking Garage in South Terminal Support Development Area

A new employee parking garage, programmed for 2018, will be constructed in the South Development Area to facilitate employee access to the terminal via the new APM. In addition, this project will free up the North Terminal site for long-term development. Costs include demolition of the existing surface parking lot and buildings at the new location, site preparation, site improvements and utilities. The new structure will be a four level parking garage, totaling 1,150,000 square feet, and including a helix access system. Construction costs, in 2013 prices, are estimated at $75.2 million, and $112.5 million when soft costs and escalation are included.

### 6.6.5 Construct New Administration Tenant Building in South Terminal Support Development Area

A new Administration Tenant Building will be required to replace the current Service Building that will be demolished to free up space for the expansion of the new Consolidated Security Checkpoint and new shuttle stations for Airsides C and D (see Sections 6.6.14 and 6.6.17). The new facility will be located in the South Development Area and accessible via the new APM. It will be 100,000 square feet and construction will include site grading and preparation, site improvements and site utilities. Construction costs, in 2013 prices, are estimated at $24.8 million, and $38.9 million when soft costs and escalation are included.

### 6.6.6 Expand GSE Secure Apron Equipment Storage Area

This project involves a 1,000 square yard expansion of the Ground Service Equipment (GSE) Secure Apron on the east end of the terminal building. The project includes site preparation, construction, and electrical utilities. Construction costs, in 2013 prices, are estimated at $79,760, and $130,000 when soft costs and escalation are included.

### 6.6.7 Site Preparation Perimeter Parcels (Areas 3 and 4)

This project involves site preparation for Areas 3 and 4. Area 3 encompasses approximately 18.2 acres and is located to the east of the Airport and lies to the north of the extended centerline of Runway 10-28 along the west side of North Dale Mabry Highway/Highway 92 and the south side of W. Tampa Bay Boulevard. Area 4 is located on the east/southeast side of the Airport generally bordered by North Dale Mabry to the east and Boy Scout Road to the south, and encompasses approximately 21 acres. After site preparation, the parcels will be available for commercial use. Construction costs, in 2013 prices, are estimated at $0.8 million, and $1.3 million when soft costs and escalation are included.

### 6.6.8 Demolish Existing ATCT and TRACON

The existing ATCT, TRACON and support facilities will be demolished to provide space for the new Consolidated Security Checkpoint, shuttle stations for Airsides C and D and for the expansion at Airside D to accommodate international swing gates (see Sections 6.6.14 and 6.6.17). The demolition includes the ATCT, the main FAA base building (10,393 square feet) and the out-building to the north of the main FAA building (840 square feet). The cost of the

demolition is estimated at $1.4 million in 2013 dollars, and $2.3 million once soft costs and escalation are included.

### 6.6.9 Demolish Existing Marriott Hotel

The existing Marriott Hotel will be demolished to provide space for the new Consolidated Security Checkpoint, shuttle stations at C and D, and for the expansion of Airside D to accommodate international swing gates (see Sections 6.6.14 and 6.6.17). The demolition involves 403,400 square feet and is anticipated to occur in 2019. The cost of the demolition is estimated at $5.4 million in 2013 dollars, and $8.6 million once soft costs and escalation are included.

### 6.6.10 Demolish Existing Airport Service Building (Red Side)

The existing Airport Service Building will be demolished to provide space for the new Consolidated Security Checkpoint and shuttle stations for Airsides C and D (see Sections 6.6.14 and 6.6.17). Demolition costs in 2013 prices are estimated at $1.5 million and $2.6 million when soft costs and escalation are included.

### 6.6.11 Construct New Central Plant Chillers and Main Power Reconfiguration

Constructing the central plant chillers and reconfiguring the main power system will enable the expansion of the Transfer Level of the Consolidated C and D Checkpoint (see Section 6.6.14). The construction cost of this enabling project will be $11.5 million in 2013 prices, and $18.4 million once soft costs and escalation are included.

### 6.6.12 Construct Third MRO Hangar

A third MRO Hanger, including an airside ramp and vehicle parking area, will be constructed next to the existing PEMCO facility for MRO use in 2019. The hangar will be 171,600 square feet and will include site development, a foundation, a pre-engineered building, steel support structures, interior finishes, and mechanical and electrical systems. The ramp area will include 161,010 square feet and the vehicle parking area will be 9,450 square yards. Construction costs in 2013 prices are estimated at $41.0 million, or $65.0 million when soft costs and escalation are included.

### 6.6.13 Buy Out Lease of Existing Hotel

To demolish the existing hotel (see Section 6.6.10) the existing lease will need to be bought out. It is anticipated that this will occur in 2019 and that the cost at the time will be $45 million.

### 6.6.14 Expand Transfer Level for Consolidated Airside C and D Checkpoint

This project expands the Transfer Level to accommodate a consolidated Airside C and D checkpoint. The new checkpoint optimizes TSA operations, increases non-aeronautical revenue opportunities by exposing passengers to more non-secure concessions, allows passengers the flexibility to transfer between flights on Airsides C and D without rescreening, and frees up

space at each airside for enhanced concessions. This new SSCP space meets the combined Airside C and D requirement for 16 lanes, but has expansion capability to grow to 18 lanes if needed.

The total expansion space will be 162,340 square feet, and the project will involve demolition of existing facilities, substructure, floor and roof construction, exteriors, interior partitions, finishes and furnishings, elevators, escalators and moving walkways, as well as mechanical and electrical systems. Construction cost is estimated at $68.6 million in 2013 prices, increasing to $108.2 million once soft costs and escalation are included.

### 6.6.15 Add Temporary Truck Docks for Terminal

Temporary truck docks will be required during terminal construction to allow concessionaires to move inventory into the terminal building between the existing truck dock's demolition and the new truck dock's opening. The temporary building will be 5,000 square feet, with 1,380 square yards of asphalt pavement, two truck bays, and loading dock equipment. Construction cost is estimated at $345,900 in 2013 prices, increasing to $610,000 once soft costs and escalation are included.

### 6.6.16 Improve Infrastructure for MRO Cluster Area

This project, commencing in 2020, will provide a cluster of six flex development parcels in the Eastside Development Area intended for MRO support businesses. Water, sewer, and storm systems infrastructure will be provided for 48 acres of land. Construction costs, in 2013 prices, are estimated at $4.5 million, and $7.7 million when soft costs and escalation are included.

### 6.6.17 Expand Airside C to Include Reconfigured Shuttle Station

This project involves relocating the SSCP to the terminal and constructing a new Airside C shuttle system to allow central entry in between the existing Airside C and the expansion, with additional space to fulfill the concessions program requirements. The project provides a 37,600 square foot increase in concession space, creating a total concession area of 58,400 square feet. The expansion also allows for an additional baggage make-up carousel and additional space for airline operations at the Ramp Level.

The Airside C expansion accommodates the same number of gates as today. If and when international traffic is served at Airside C, three to five of the gates may be configured with vertical circulation cores to access a sterile corridor system on the mezzanine, or third level. The sterile corridor would lead to a shuttle station where passengers would board a sterile train to take them to the CBP facility in the terminal.

The project includes the demolition of the existing shuttle station, the exterior wall, and selected parts of the interior. Also included are construction of the substructure, superstructure and the roof, as well as interior work, a new shuttle enclosure, escalators, elevators, and a new baggage handling system. Three boarding bridges and new ramp pavement (74,500 square feet) are also be added. Once complete, the expanded Airside C encompasses 163,950 square feet. The construction cost of this project is $70.6 million in 2013 prices, and $114.4 million once soft costs and escalation are included.

### 6.6.18 Reconfigure Airside C Shuttle Alignment

To accommodate the flow of Airside C passengers through the new north consolidated checkpoint, a new shuttle system will be constructed between the Transfer Level and Airside C. This four-car shuttle system will have two sterile train cars to transfer international arriving passengers from Airside C to the new Customs and Border Protection facility at the terminal and two secure train cars to transport all other passengers to and from Airside C. The project will extend 492 linear feet and includes site preparation and improvement, steel piles, columns, concrete guideway decks, the shuttle system, utilities, and landscape restoration. The construction cost of this project would be $88.5 million in 2013 prices, and $143.3 million once soft costs and escalation are included.

## 6.7 Phase 3 AMPU Projects

**Table 6.7** lists the Master Plan capital projects recommended for the Phase 3 (2022-2031) period. The total construction costs of these projects is estimated at $455.3 million in 2013 prices, or $797.7 million once soft costs and escalation are included.

### 6.7.1 New Airside D International Gates and Affiliated Airside Spaces

The recommended concept for Airside D maximizes the number of gates that can be developed in the South Terminal area and will provide 16 domestic/international swing gates. Ten gates will have access to vertical circulation cores connecting international arriving passengers to a mezzanine level sterile corridor system. These ten gates are split between the north and the south sides of the Airside in order to provide greater flexibility for airline assignment. Airside D accommodates two airline clubs on its mezzanine level and provides the required 39,400 square feet in concessions space. The new Air Traffic Control Tower and TRACON is integrated into Airside D at the southeast end (see Section 6.6.2). The ramp level contains baggage make-up devices, inbound baggage drop-off belts, airline operations areas, and a loading dock.

Construction elements include the demolition of the old Airside D elevated shuttle guideway and aircraft apron, construction of the substructure, floors, and roof, exterior walls, skylights, the shuttle enclosure, interior walls, finishes and furnishings, elevators and escalators, baggage handling system, passenger boarding bridges, and mechanical/electrical systems. When completed in 2024, the total project will consist of 370,250 square feet of new airside space. Total construction cost is estimated at $145.3 million in 2013 dollars, and $230.5 million once soft costs and escalation are included.

### 6.7.2 Airside D Ramp Reconfiguration and Expansion

The Airside D Ramp will be reconfigured and expanded to accommodate the 16 new Airside D gates (see Section 6.7.1). The project will include site grading, pavement construction, utilities, lighting, and a new hydrant fueling system. When complete, the improved ramp area will consist of twenty acres. Construction costs are estimated at $15.8 million in 2013 prices and $27.5 million once soft costs and escalation are included.

## Table 6.7
## Master Plan Capital Costs - Phase 3 (2022-2031) Capital Projects

| Project | Year | Estimated Construction Cost (2013 $)[1] | Years of Escalation[2] | Assumed Annual Escalation Rate[3] | Escalation Factor | Escalated Construction Cost | Soft Cost Factor[4] | Total Project Cost | Date of Cost Estimate | Escalated Project Cost (Rounded)[5] |
|---|---|---|---|---|---|---|---|---|---|---|
| New Airside D International Gates and Affiliated Airside Spaces | 2022 | 145,319,288 | 10 | 2.70% | 1.300 | 188,895,149 | 1.22 | 230,452,082 | 3/1/2013 | 230,450,000 |
| Airside D Ramp Reconfiguration and Expansion | 2022 | 15,766,997 | 10 | 2.70% | 1.300 | 20,494,934 | 1.34 | 27,463,212 | 3/1/2013 | 27,460,000 |
| International Curb for CBP Facility | 2022 | 4,534,288 | 10 | 2.70% | 1.300 | 5,893,953 | 1.39 | 8,192,594 | 3/1/2013 | 8,190,000 |
| New CBP/FIS on North End of Main Terminal | 2022 | 80,946,956 | 10 | 2.70% | 1.300 | 105,219,944 | 1.28 | 134,681,528 | 3/1/2013 | 134,680,000 |
| Develop New shuttle Alignment to Airside D | 2022 | 85,686,508 | 10 | 2.70% | 1.300 | 111,380,712 | 1.28 | 142,567,311 | 3/1/2013 | 142,570,000 |
| Additional Equipment Storage Facilities in Airport Maintenance Area, | 2023 | 1,127,942 | 11 | 2.70% | 1.335 | 1,505,757 | 1.43 | 2,153,232 | 3/1/2013 | 2,150,000 |
| Expanded Airport Police Facilities in East Development Area | 2023 | 1,619,132 | 11 | 2.70% | 1.335 | 2,161,475 | 1.43 | 3,090,909 | 3/1/2013 | 3,090,000 |
| Site Preparation Perimeter Parcel 2 | 2025 | 607,500 | 13 | 2.70% | 1.408 | 855,435 | 1.43 | 1,223,272 | 3/1/2013 | 1,220,000 |
| Dynamic Signage on Roads Leading to Airport & Bean Parkway | 2026 | 3,662,323 | 14 | 2.70% | 1.446 | 5,296,240 | 1.39 | 7,361,774 | 3/1/2013 | 7,360,000 |
| Construct Extension of Run-Up Taxilane and Ramp to Fourth Hangar Site | 2027 | 10,785,893 | 15 | 2.70% | 1.485 | 16,019,080 | 1.32 | 21,145,185 | 3/1/2013 | 21,150,000 |
| Construct Fourth MRO Hangar - 99,600 sq. ft. | 2027 | 19,922,876 | 15 | 2.70% | 1.485 | 29,589,219 | 1.34 | 39,649,553 | 3/1/2013 | 39,650,000 |
| Construct Crossfield Taxiway M | 2028 | 28,727,277 | 16 | 2.70% | 1.525 | 43,820,575 | 1.32 | 57,843,158 | 3/1/2013 | 57,840,000 |
| Construct Iimprovements to Bean Parkway to Meet Demand | 2028 | 3,098,046 | 16 | 2.70% | 1.525 | 4,725,758 | 1.39 | 6,568,803 | 3/1/2013 | 6,570,000 |
| Construct Existing Dedicated Cargo building Expansion | 2029 | 3,745,639 | 17 | 2.70% | 1.567 | 5,867,863 | 1.39 | 8,156,330 | 3/1/2013 | 8,160,000 |
| Close and Remove Taxilane A Between Airside C and D | 2029 | 242,032 | 17 | 2.70% | 1.567 | 379,164 | 1.43 | 542,204 | 3/1/2013 | 540,000 |
| Expand Air Cargo Ramp | 2029 | 19,194,798 | 17 | 2.70% | 1.567 | 30,070,289 | 1.34 | 40,294,187 | 3/1/2013 | 40,290,000 |

## Table 6.7
## Master Plan Capital Costs - Phase 3 (2022-2031) Capital Projects

| Project | Year | Estimated Construction Cost (2013 $)[1] | Years of Escalation[2] | Assumed Annual Escalation Rate[3] | Escalation Factor | Escalated Construction Cost | Soft Cost Factor[4] | Total Project Cost | Date of Cost Estimate | Escalated Project Cost (Rounded)[5] |
|---|---|---|---|---|---|---|---|---|---|---|
| Extend Taxiway A to South End of Runway 1R/19L | 2030 | 14,058,434 | 18 | 2.70% | 1.609 | 22,618,377 | 1.34 | 30,308,625 | 3/1/2013 | 30,310,000 |
| Expand Belly Cargo Building and ramp | 2031 | 5,253,286 | 19 | 2.70% | 1.652 | 8,680,125 | 1.34 | 11,631,368 | 3/1/2013 | 11,630,000 |
| New Multi-Tenant Air Cargo Building, Phase 1 - 60,000 sq. ft | 2031 | 11,011,129 | 19 | 2.70% | 1.652 | 18,193,941 | 1.34 | 24,379,881 | 3/1/2013 | 24,380,000 |
| **Subtotal** | | **455,310,344** | | | | **621,667,988** | | **797,705,210** | | **797,690,000** |

Notes:
1. Construction costs based on estimates prepared by CMI, Inc. (in 2013 dollars)
2. Calculated using construction mid-point.
3. Assumed escalation rate recommended by HCAA (based on factor used for prior HCAA projects); cost escalation compounded by year
4. Soft costs based on matrix in Table 6.1.
5. Costs rounded to nearest ten thousand dollars

### 6.7.3 International Curb for CBP Facility

A new curb is required to provide road access to the new Customs and Border Protection Facility on the north end of the existing terminal (see Section 6.7.4). The project includes site preparation, 26,000 square feet of additional arrivals curb, 63,500 square feet of additional plaza pavement, new pavement marking, and electrical systems including lighting. The construction cost is estimated at $4.5 million, or $8.2 million once soft costs and escalation are included.

### 6.7.4 New CBP/FIS on North End of Main Terminal

This project is part of the northward expansion of the terminal, providing space for a consolidated security screening checkpoint (see Section 6.6.14) and a new Customs and Border Protection (CBP) facility below, both serving Airsides C and D. The facility is 219,720 square feet, and includes site preparation, substructure, floor construction, exterior closure, interior partitions, finishes, furnishings, and signage, escalators and elevators, three baggage claim devices, utilities, and mechanical and electrical systems.

The new CBP is expected to be complete by 2024 with a construction cost of $80.9 million in 2013 dollars. Once soft costs and escalation are included, the total cost becomes $134.7 million.

### 6.7.5 Develop New Shuttle Alignment to Airside D

The new and expanded Airside D facilities (see Section 6.7.1) will require a new shuttle alignment to provide access. This four-car shuttle system will have two sterile train cars to transfer international arriving passengers from Airside D to the new Customs and Border Protection facility at the terminal and two secure train cars to transport all other passengers to and from Airside D. The project will extend 425 linear feet and includes site preparation and improvement, steel piles, columns, concrete guideway decks, the shuttle system, utilities, and landscape restoration. The construction cost of this project will be $85.7 million in 2013 prices, and $142.6 million once soft costs and escalation are included.

### 6.7.6 Additional Equipment Storage Facilities in Airport Maintenance Area

An additional equipment storage facility is programmed for 2023. The facility will be 7,500 square feet and construction will involve site preparation, foundations, a pre-engineered building, interior construction and finishes, mechanical and electrical systems, and minor site restoration. Construction costs, in 2013 prices, are estimated at $1.1 million, and $2.2 million when soft costs and escalation are included.

### 6.7.7 Expanded Airport Police Facilities in East Development Area

The demolition of the current Airport Police facilities located in the current Airport Service Building will necessarily result in relocation. The new Police facilities in the East Development area will be placed to the southeast of the K-9 training facility. The facility will accommodate police training and a shoot house. The airport police training facilities will be expanded by 7,500 square feet in 2023. The expansion includes site preparation, foundations, a pre-engineered building, interior finishes and equipment, mechanical and electrical systems, and minor site

restoration. Construction costs, in 2013 prices, are estimated at $1.6 million and $3.1 million when soft costs and escalation are included.

### 6.7.8 Site Preparation Perimeter Parcel (Area 2)

Area 2, located east of the Airport, encompasses approximately 65 acres and is separated from the primary airport land area by North Dale Mabry Highway/Highway 92. Once site improvements are implemented, the parcel will be available for commercial development. Construction costs, in 2013 prices, are estimated at $0.6 million, and $1.2 million when soft costs and escalation are included.

### 6.7.9 Dynamic Signage on Roads Leading to Airport & Bean Parkway

Ten dynamic overhead variable-message signs will be constructed on the roads leading to the Airport and Bean Parkway. Costs will include structural support, such as foundations, posts, and cross bars, site utilities, the signage, and restoration of disturbed areas. Construction costs in 2013 prices are estimated at $3.7 million, or $7.4 million when soft costs and escalation are included.

### 6.7.10 Construct Extension of Run-Up Taxilane and Ramp to Fourth MRO Hangar Site

This project, programmed for 2027, includes the construction of a taxiway to the 4$^{th}$ MRO hangar site (see Section 6.7.11) along with a paved airside apron and vehicle parking. The asphalt taxiway includes 2,917 square yards of pavement along with another 2,725 square yards of paved shoulders. The concrete apron accounts for 265,005 square feet and vehicle parking accounts for another 5,200 square yards. Costs include site preparation, construction, and lighting. Construction costs, in 2013 prices, are estimated at $10.8 million and $21.2 million when soft costs and escalation are included.

### 6.7.11 Construct Fourth MRO Hangar

Concurrent with the associated taxilane and ramp (section 6.7.10), a fourth MRO hangar (airline maintenance/aircraft paint facility) will be constructed. It will be 103,000 square feet and the costs will include site preparation, the foundation, a pre-engineered structure, steel support structures, interiors, and mechanical and electrical systems. Construction costs, in 2013 prices, are estimated at $19.9 million and $39.7 million when soft costs and escalation are included.

### 6.7.12 Construct Crossfield Taxiway M

The new Taxiway M will be constructed in 2028, replacing existing Taxilane A (see Section 6.7.15) and providing a north south transportation (ground vehicle) corridor between the Main Terminal Complex and future development in the North Terminal Development Area. Taxiway M will also provide the ability to sort ground traffic by east and west destinations rather than crossing aircraft in the air with attendant impacts to airfield. Construction costs in 2013 prices are estimated at $28.7 million, or $57.8 million when soft costs and escalation are included.

### 6.7.13 Construct improvements to Bean Parkway to Meet Demand

Bean Parkway will be widened to meet demand and improve the level of service. The northbound (inbound) Bean Parkway will be widened from the northbound on-ramp from the north side of the South Terminal Support Development Area to the Recirculation Roadway on-ramp (approx. 3,600 feet). This will involve a single sided widening of one lane and resurfacing of the existing lanes. The southbound (outbound) Bean Parkway will be widened from the Recirculation Roadway off-ramp to approximately 700 feet south of the Taxiway J bridge (approx. 2,000 feet). This involves a single-sided widening of one lane and resurfacing of the existing lanes. These improvements will occur after the widening of the Taxiway J Bridge is completed.

These projects will involve site preparation, milling and resurfacing of the existing roadway (35,020 square yards), new asphalt pavement for the lane widening (10,667 square yards), concrete curbs and gutters, a storm drainage system, roadway lighting fixtures, and site restoration along the shoulders. Construction costs, in 2013 prices, are estimated at $3.1 million and $6.6 million when soft costs and escalation are included.

### 6.7.14 Construct Existing Dedicated Cargo Building Expansion

A 22,725 square foot expansion of the existing FedEx cargo facility is anticipated by 2029. The building addition will include site preparation, site restoration, foundations, a pre-engineered expansion, interior construction and finishes, and mechanical and electrical systems. Construction costs, in 2013 prices, are estimated at $3.7 million and $8.2 million when soft costs and escalation are included.

### 6.7.15 Close and Remove Taxilane A between Airside C and D

This project will remove Taxilane A north of Airside C and D. Included in the project will be demolition and removal of 3,544 square yards of existing pavement, minor site grading, and restoration of sod. Utility lines will also be removed where necessary. Demolition costs, in 2013 prices, are estimated at $242,032 and $530,000 when soft costs and escalation are included.

### 6.7.16 Expand Air Cargo Ramp

This project, along with the associated Multi-Tenant Air Cargo Building (see Sections 6.7.19 and 6.8.1), provides TPA with the ability to accommodate significant increases in air cargo demand should it develop. The project is programmed for 2029, but the timing could be adjusted depending on the timing of the new demand. The project provides sufficient ramp area to accommodate five additional 747-400 positions in 2029. The project encompasses 505,710 square feet (11.6 acres) and includes site preparation, an expansion of the concrete ramp, signage, and lighting. Construction costs, in 2013 prices, are estimated at $19.2 million, or $39.1 million when soft costs and escalation are included.

### 6.7.17 Extend Taxiway A to South End of Runway 1R/19L

This project will be implemented in 2030 and will extend Taxiway A to the South End of Runway 1R/19L. The extended taxiway provides a second parallel taxiway serving the Runway 1R departure flow and enhances capacity to stage and queue aircraft departing to north and northeast destinations. Further, the extended taxiway provides the enhanced ability to bypass aircraft that might be experiencing departure delays due to flow control or weather conditions at their destination airport. The project includes site preparation and grading, construction of taxiway pavement to a thickness of 17 inches (252,750 square feet), construction of shoulders to a thickness of 4 inches (235,900 square feet), storm drainage and light fixtures. Construction costs, in 2013 prices, are estimated at $14.1 million and $30.3 million when soft costs and escalation are included. It should be noted that this extension of Taxiway A as recommended in the previous Master Plan requires a small portion of the northeast corner of the rental car storage lot. This would marginally affect the amount of rental car storage area and should be reassessed closer to the time of development, when requirements for both the airfield and rental car operations will have evolved.

### 6.7.18 Expand Belly Cargo Building and Ramp

This project expands the existing belly cargo facility and supporting apron to accommodate increases in belly cargo demand should they occur. Therefore, although the project is programmed for 2031, the timing is provisional and could be deferred. The building addition will be 26,100 square feet and includes site preparation, a foundation, a pre-engineered expansion, interior construction and finishes, and mechanical and electrical systems. Associated improvements include 3,638 square yards of landside parking (asphalt and concrete) and 5,065 square yards of airside maneuvering area. Lighting for the parking and ramp areas are also provided. Construction costs, in 2013 prices, are estimated at $5.3 million and $11.6 million when soft costs and escalation are included.

### 6.7.19 New Multi-Tenant Air Cargo Building – Phase 1

This project provides TPA with the ability to accommodate significant increases in air cargo demand should it emerge. Programmed for 2031, it constitutes the first phase of a multi-tenant air cargo structure and associated landside facilities (see Section 6.7.16 for Air Cargo Ramp and Section 6.8.1 for second and third phases of the building). The building will be 60,000 square feet, and the landside parking and loading area will be about 72,000 square feet. Building construction includes site preparation, foundations, a pre-engineered building, interior finishes, and mechanical and electrical systems. Landside pavement construction includes site preparation, concrete pavement and light fixtures. Construction costs, in 2013 prices, are estimated at $11.0 million and $24.4 million when soft costs and escalation are included.

## 6.8 AMPU Projects – 2032 and Beyond

**Table 6.8** lists capital projects that are not recommended prior to 2032. It is anticipated that, as aviation activity continues to grow past 2031, the need for these projects will arise. However, the ultimate configuration and costs of these facilities will be affected by technologies and policies that emerge in the interim.

## Table 6.8
## Master Plan Capital Costs - 2032 and Beyond Capital Projects

| Project | Year | Estimated Construction Cost (2013 $)[1] | Years of Escalation[2] | Assumed Annual Escalation Rate[3] | Escalation Factor | Escalated Construction Cost | Soft Cost Factor[4] | Total Project Cost | Date of Cost Estimate | Escalated Project Cost (Rounded)[5] |
|---|---|---|---|---|---|---|---|---|---|---|
| New Air Cargo Building Phases 2 and 3 - 120,000 sq. ft | 2032 | 22,022,258 | 19 | 2.70% | 1.65 | 36,387,882 | 1.34 | 48,759,762 | Mar-13 | 48,760,000 |
| Potential Relocation of ARFF Training Facility | long term | n/a | n/a | 2.70% | n/a | n/a | n/a | n/a | n/a | n/a |
| Potential Expansion of Fuel Farm Storage | long term | n/a | n/a | 2.70% | n/a | n/a | n/a | n/a | n/a | n/a |
| Potential North Terminal Complex | long term | n/a | n/a | 2.70% | n/a | n/a | n/a | n/a | n/a | n/a |
| Potential New Runway 17-35 and Taxiway N Extension | long term | n/a | n/a | 2.70% | n/a | n/a | n/a | n/a | n/a | n/a |
| Taxiway E Relocation and Extension and Taxiway T Extension | long term | n/a | n/a | 2.70% | n/a | n/a | n/a | n/a | n/a | n/a |
| **Subtotal** | | **22,022,258** | | | | **36,387,882** | | **48,759,762** | | **48,760,000** |

Notes:
1. Construction costs based on estimates prepared by CMI, Inc. (in 2013 dollars)
2. Calculated using construction mid-point.
3. Assumed escalation rate recommended by HCAA (based on factor used for prior HCAA projects); cost escalation compounded by year
4. Soft costs based on matrix in Table 6.1.
5. Costs rounded to nearest ten thousand dollars

Sources: As noted and HNTB analysis.

### 6.8.1 New Air Cargo Building - Phases 2 and 3

Phases 2 and 3 of the New Air Cargo Building, tentatively scheduled for 2032, will result in the completion of a multi-tenant air cargo structure and associated landside facilities (see Section 6.7.19 for Phase 1). The building will be 120,000 square feet, and the landside parking and loading area will be about 144,000 square feet. Building construction will include site preparation, foundations, a pre-engineered building, interior finishes, and mechanical and electrical systems. Landside pavement construction will include site preparation, concrete pavement and light fixtures. Construction costs, in 2013 prices, are estimated at $22.0 million and $48.8 million when soft costs and escalation are included.

### 6.8.2 North Terminal

The 2005 TPA AMPU identified a need for a new North Terminal Complex to accommodate growing passenger demand. As a result of the more conservative passenger forecasts in this AMPU, the need for the North Terminal is no longer expected to occur within the twenty-year master planning horizon. The North Terminal complex has been retained in the ALP to potentially accommodate passenger growth post-2032. However, since the timing and exact configuration are uncertain, no attempt was made to update the estimated capital costs.

### 6.8.3 New Runway 17-35

A new parallel Runway 17-35 was recommended in the 2005 TPA AMPU to accommodate increasing aircraft operations. The assessment of airfield capacity in the 2012 Master Plan Update indicated no need for significant capacity enhancement within the twenty-year master planning horizon. However, to ensure the continued protection of land area from alternative uses, to ensure airspace is protected and to ensure land area for the runway/taxiway system is preserved, it was determined that the proposed runway should be carried forward to accommodate potential operations growth after 2032. However, since the timing and specific dimensions of the runway are uncertain, no attempt was made to update the estimated capital costs.

### 6.8.4 Extend Taxiway E

This project was recommended as part of the 2005 TPA AMPU. Taxiway E, north of Runway 10-28 was recommended to be shifted to maintain a consistent taxiway to runway centerline separation of 667’ to the current north end of Runway 1R-19L, and ultimately maintain this separation to the future extended runway end. This is a long-term project based on tenant needs or demand.

### 6.8.5 Extend Taxiway T

This project was recommended as part of the 2005 TPA AMPU. Taxiway T was proposed to be realigned and extended provide direct access to Taxiway K and J and to maintain a Taxiway N to Taxiway T centerline separation of 267 feet. Additional reasoning was to accommodate larger aircraft, and provide connectivity to potential GA development to the east. This is a considered

to be a long-term project based on tenant needs or demand. As such facility requirements and configuration may evolve.

### 6.8.6 Potential Relocation of ARFF Training Facility

The North Terminal facility, when built, will displace the current ARFF Training Facility. The recommended replacement site is currently under separate study independent of the Master Plan effort. The HCAA is considering a site within the future cargo expansion area across from the existing FedEx cargo facility. The ARFF training facility would be sited in place of the southern half of the proposed cargo facility shown. This alternative needs to be analyzed in terms of future cargo demand and the need for the facility to remain on campus.

### 6.8.7 Potential Expansion of Fuel Farm Storage

The current fuel farm is adequate to serve the Airport's needs through the next twenty years. Expansion may be required sometime after 2031 to accommodate demand that may emerge. This project involves the preservation of a site totaling between 30,000 square feet and 1 acre south of the current fuel farm to provide a location for future tank expansion should demand present itself.

## 6.9 Phasing Summary

**Table 6.9** summarizes the estimated AMPU cost by phase. As shown, once soft costs and escalation are included, the costs are fairly evenly distributed by planning phase, with $925 million projected for Phase 1, $754 million projected for Phase 2, and $797 million projected for Phase 3. The costs listed for 2032 and beyond are less than $50 million, but they do not include the runway and North Terminal costs, which were not estimated. If they were included, the costs for 2032 and beyond would be much higher. The financing plan for the planned AMPU projects will be developed internally by HCAA.

**Table 6.9**

**Summary of Master Plan Capital Costs by Phase**

| Phase | Period | Escalated Project Cost (Rounded) |
|---|---|---|
| Phase 1 | 2013-2016 | $925,010,000 |
| Phase 2 | 2017-2021 | $ 754,050,000 |
| Phase 3 | 2022-2031 | $797,690,000 |
| 2032 and Beyond | 2032 and Beyond | $48,760,000 |
| **Total** | | **$ 2,525,510,000** |

Sources: Tables 6.2 through 6.8.

**Prepared by:**

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- C&S Companies
- Cost Management Inc.
- Curtis Transportation Consulting
- Lea+Elliott
- TransSystems
- Quest Corporation of America
- TransSolutions