6 TERMINAL DEVELOPMENT OPTIONS

The passenger terminal complex at FLL is in transition as new and/or upgraded terminal, roadway, and parking facilities have come on line over the last 10 years. Additionally, several new projects are currently in the planning stages (Terminal 4 replacement gate and redevelopment, BCAD offices relocation, in-line baggage systems throughout terminal area, etc).

Looking forward, terminal development options have been defined in the Master Plan Update for two development scenarios, as discussed below. These scenarios are referred to as the “Additive Option” and the “Redevelopment Option”. Both scenarios are developed for and near-term and long-term implementation, and both are developed from a common near-term development plan, thereby allowing near-term development to occur without compromising decisions for long-term development.

- The first category, referred to as the Additive Option, would provide for facilities to accommodate forecast demand over the Master Plan study period, but would result in limitations to future development, and would result in reduced passenger service levels over time, and would result in additional incremental airline and airport maintenance and operations costs. A preferred Additive Option has been identified for the long-term which is based on a common near-term development plan as the Redevelopment Option.

- The second category, referred to as the Redevelopment Options would provide facilities to accommodate demand over the Master Plan period, and would preserve options for follow-on longer-term development to accommodate demand beyond 2025. Also, the Redevelopment Option would result in improved passenger service levels over time, and would result in reduced incremental airline and airport maintenance and operations costs. A preferred Redevelopment Option has been identified for the long-term which is based on a common near-term development plan as the Additive Option.

Overall, the short-term options outlined in this section could be developed with crosswind Runway 13-31 in place, but the long-term options require that this runway be decommissioned.

6.1 EXISTING CONDITIONS

6.1.1 Terminals

The existing terminal complex at FLL consists of four unit terminals with 57 air carrier aircraft gates and a double-decked roadway serving the terminals, as shown in Figure 6-1. The terminals include:

- Terminal 1 (T1), comprising Concourses B (9 gates) and C (9 gates).
- Terminal 2 (T2), comprising Concourse D (9 gates).
- Terminal 3 (T3), comprising Concourses E (10 gates) and F (10 gates).
- Terminal 4 (T4), comprising Concourse H (10 gates), which serves as the international terminal.

The original terminal structure was demolished as part of the terminal redevelopment project in the 1980s. The following provides a historical context of the terminals.

Terminal 4 is a unit terminal completed in 1985. The terminal consists of one concourse, Concourse H, which has ten (10) gates. Six of the ten gates are dependent international swing gates, and the remaining four are domestic only. The original design for the gates included the following: Gates H2, H4, and H7 were designed for Aircraft Design.
Group (ADG) V aircraft and Gates H1, H3, H5, H6, and H9 were designed for ADG III aircraft.

Terminal 3 is a unit terminal completed in 1986. The terminal consists of two concourses; Concourses E and F. Each concourse has ten gates for domestic arrivals and departures. Concourse F was designed for the following Gates F1 and F2 for L1011's, Gates F3, F5, F6, F7, F8, and F10 were designed for 727 aircraft, and Gate F9 was designed for DC10 aircraft.

Terminal 2 is a unit terminal completed in 1986. The terminal consists of one concourse; Concourse D. The concourse has nine gates used for domestic arrivals and departures. The original design of all nine gates was for L1011 aircraft.

Terminal 1 is a unit terminal built with two concourses. Concourse C was completed in 2000 and Concourse B was completed in 2003. Each concourse has nine gates for domestic arrivals and departures. Concourse C was originally designed for the following; Gate C2 for 767 aircraft, Gate C4 for MD-11 aircraft, and the remainder of the gates for 757 aircraft. Concourse B was designed for all 757 aircraft.

The terminals and associated modifications have been constructed over several decades. To date there has never been a comprehensive redevelopment plan to optimize and/or modernize the terminal complex. Most redevelopment efforts to date have resulted in incremental solutions that addressed isolated challenges that surfaced. Unfortunately, this has led to a relatively disjointed configuration and inter-relationship amongst the unit terminals.

6.1.2 Parking

The terminals are supplemented by three parking garages. The parking garages from west to east include:

- The Palm Garage, comprising approximately 2,700 structured parking spaces on three levels.
- The Hibiscus Garage, comprising approximately 4,800 structured parking spaces on five levels.
- The Cypress Garage, comprising eight levels, and approximately 4,400 structured parking spaces on the top four levels, and the consolidated rental car facilities on the first four levels.

6.1.3 Roadway System

Access to the terminal complex is provided from US 1 and I-95 on the east side via a newly constructed interchange system. The roadway system is a double-decked five-lane roadway, except at T1 where there is an extra lane. There is a significant elevation difference at the upper level roadway between T1 and T2, which corresponds to the floor heights at these terminals.

The existing curbside roadway turns at a radius of 90 degrees between T2 and T3, and T3 and T4. The radii are very tight and require a significant reduction in speed. This triggers traffic bottlenecks at these locations during peak periods of activity.

After the curbside roadway passes T4, all outbound traffic, including parking and rental car exiting, merges together onto a single level, three-lane roadway. This results in congestion at peak periods.

In addition, pedestrian crosswalks provided at both levels of the terminals produce an impediment to the free-flow of traffic, particularly at peak periods.

6.2 ISSUES AND OPPORTUNITIES

Key issues and opportunities in the terminal complex (airside and landside) are outlined on Figure 6-2 and discussed below.

6.2.1 Issues

- Airside impacts on taxiways and taxilanes caused by aircraft pushback from gates. The existing terminal configuration is not very conducive to aircraft circulation. Single taxi lanes between piers cause congestion.
6.2.2 Opportunities

- Expansion opportunities are provided when the crosswind Runway 13-31 is decommissioned. The decommissioning of Runway 13-31 will free up approximately 50 acres of land for terminal development to the west of the existing terminal complex.
- The application of Sustainable Design practices to planning and design initiatives at the Airport will provide opportunities to inform and engage the community with tangible environmental benefits. Sustainable Design practice involves a broad range of initiatives including, but not limited to, environmental stewardship of local ecosystems, the selection of sustainable materials for development, recycling of existing materials and resources, reduction in on-Airport emissions due to sustainable planning for airline and airport operations, and the identification of renewable energy projects on-Airport.
- Terminal area parking demand based on historical and forecast needs. The existing parking garages at FLL are very well located relative to industry standards, with relatively short walking distances to the terminal buildings. However, access and wayfinding are generally compromised due to conflicts in circulation and lack of coordinated movement systems within the parking garages. Demand analysis indicates a need for additional parking in the long-term. Potential sites have been identified for the intermodal center within the entrance roadway helix and the Palm Garage. Redevelopment of the Palm Garage also offers an opportunity to redesign the roadway near T3 to improve traffic flow, and to accommodate passenger processing capabilities in concert with a redeveloped terminal area.
- Several regional transit initiatives have been completed or are underway to reduce traffic congestion for the region and the Airport. The Sunport Project Development and Environmental (PD & E) study identifies a range of solutions connecting the Airport with midport and north-port terminals at Port Everglades. The Tri-Rail Jupiter Extension, Broward County Transit improvements, and South Florida East Coast Corridor (SF ECC) studies identify a range of opportunities for providing improved regional mass transit infrastructure that improve access to the Airport and relieve existing congestion.

6.3 OVERVIEW OF DEVELOPMENT OPTIONS

Over the course of Master Plan Update, multiple short- and long-term terminal development options were evaluated based on the following criteria:

1. The future role of FLL in the regional and national system relative to trends in the airline industry and local demographics.
2. Pre-existing inter-local agreements, and DRI and County policies and development objectives.
3. Compatibility with airfield development from the EIS process.
4. Accommodation of projected demand over a 10 and 20 year planning horizon.
5. Flexibility to preserve options over time.
6. Compatibility with ongoing projects.
7. Ground access level of service for roadways, curb and parking facilities.
8. Efficient and safe aircraft movements between gates and the airfield.
9. Passenger level of service, security, and other amenities within the terminal facilities.
10. Greater complexity of future improvements related to potential redeveloping of existing facilities.
11. Phasing considerations:
   a. Maintain supply of available contact gates.
   b. Maximize use of existing facilities to extent possible.
   c. Maintain development flexibility over time.
   d. Manage program costs and financial capacity.

Airfield development decisions subject to the ongoing Proposed South Runway Extension EIS process also impacted the decision-making process for short- and long-term terminal area solutions. Ultimately, a short-term development plan was generated that is common to both the Additive Alternative and Redevelopment Alternative final development options.

As a result of this evaluation, five fundamental alternatives were produced for further consideration in Phase 2, and two final long-term alternatives were further developed as the recommended Master Plan scenarios. These alternatives are outlined below and shown on Figures 6.3 through 6.7. The five options generally fall in two categories, "additive" and "redevelopment." Each category of options is designed to provide facilities that would accommodate demand over the Master Plan (10 – 20 year) timeframe. The first category of options, referred to as "additive" options, would provide for short-term needs by adding capacity to existing structures with the minimum of demolition and redevelopment. The other category of options, referred to as "redevelopment" options, would also provide for short-term needs through the redevelopment of existing structures and facilities. However, only the redevelopment options would preserve the County’s ability to pursue longer-term development at the Airport beyond the 10 – 20 year timeframe. An evaluation of the five options is summarized below.
Additive Concept – Option 1A – This option (shown on Figure 6.3) provides incremental development to accommodate projected demand for the next 10-15 years with an assumed maximum of 79 gates. It includes proposed Concourse A, the T4 International Gateway terminal, and extensions to existing Concourses E and F with an airside connection, and new parking facilities at the intermodal center site. The right of way for a future Automated People Mover (APM) is maintained. Option 1A would meet short-term growth needs effectively, but would result in progressively lower levels of airside and landside service over time, and limit the Airport’s long-term growth potential. While this scheme initially appears to have cost savings in incremental construction, overall the additive development would not be cost effective when considering overall capital expenditures including operational costs. It would also limit the ultimate flexibility of the terminal complex in the long term.

Additive Option 1A ultimately became the base for the County’s preferred Additive option that was further developed and represented in section 6.9 below.
Redevelopment Concept – Option 2A – This option (shown on Figure 6.4) ultimately connects the existing unit terminals through incremental development, and maintains options for future additional development. Option 2A includes proposed Concourse A, a modification to the ‘International Gateway’ terminal concept to allow for integration with a connected terminal facility, the ultimate replacement of Concourses E and F with a new connected ‘satellite’ concourse west of the existing terminal complex, the redevelopment of the Palm Garage as an upgraded parking facility with commercial pick-up / drop-off on level one, and new parking facilities at the intermodal center site. The right of way for a future Automated People Mover (APM) is maintained. Linkage of the existing unit terminals would provide better curbside presentation for passenger pick-up and drop-off. Option 2A would require a more significant capital investment than Option 1A, but would provide for better level of service operations in the long term and added flexibility to accommodate options for the provision of future capacity.
6.6 REDEVELOPMENT CONCEPT - OPTION 2B

Redevelopment Concept – Option 2B - This option (shown on Figure 6.5) ultimately connects and replaces the existing unit terminals through incremental development, and maintains options for future additional development. Option 2B includes proposed Concourse A, phased replacement of Terminals 2, 3, and 4, and includes a new parallel concourse configuration oriented to maximize the relationship with the new parallel runway configuration of the EIS B1 options. This option also includes a redevelopment of the Palm Garage as an upgraded parking facility with commercial pick-up / drop-off on level one, and new parking facilities at the intermodal center site. The right of way for a future Automated People Mover (APM) is maintained. Linkage of the new unit terminals would provide better curbside presentation for passenger pick-up and drop-off. This option would maintain passenger level-of-service standards, and accommodate forecast demand to 2025 and beyond.
**6.7 REDEVELOPMENT CONCEPT - OPTION 2C**

Redevelopment Concept – Option 2C - This option (shown on Figure 6.6) provides for incremental development to achieve ultimate redevelopment of the terminal complex into a centralized passenger processing facility to maximize passenger convenience, and operational efficiency and flexibility. Option 2C includes the proposed Concourse A, upgrades to Terminal 1, and ultimate replacement of Terminals 2, 3, and 4 with a new central processor at the west end of a redeveloped access roadway and parking system, linking a parallel concourse configuration for optimized airfield access. International gates would be located at the west end of the central processor to facilitate airline flight connection opportunities, and to optimize the international/domestic split of airfield movements. This option also includes the redevelopment of the Palm Garage as an upgraded parking facility with commercial pick-up/drop-off on level one, and the option of an expansion of the Hibiscus Garage, thereby maximizing the potential of terminal area parking facilities. Development of new parking facilities at the intermodal site would not be required in this scheme due to the increased parking capacity afforded in the terminal area by the central processor concept. The right of way for the future Automated People Mover (APM) is maintained, but reduced in required length and scope due to the inherent efficiencies of the central processor concept. This option would greatly improve passenger level of service standards, maximize flexibility for future aviation industry changes, and accommodate forecast demand to 2025 and beyond.

Redevelopment Option 2C ultimately became the base for the County’s preferred Redevelopment option further developed and represented in section 6.10 below.
6.8 REDEVELOPMENT CONCEPT - OPTION 2D

Redevelopment Concept – Option 2D - This option (shown on Figure 6.7) ultimately connects and replaces the existing unit terminals through incremental development to an ultimate unified terminal complex, and maintains options for future additional development. Option 2D includes proposed Concourse A, phased replacement of Terminals 2, 3 and 4, and includes a new parallel concourse configuration oriented to maximize the relationship with the new parallel runway configuration of the EIS B1 options. Under Option 2D, a continuous crescent shaped roadway scheme is developed to maximize curb frontage, which becomes the driver for the terminal configuration. However, the resultant terminal complex retains many of the unit terminal characteristics of the four unit terminal configuration, thereby reducing the inherent benefits of a central processor concept. This option also includes a redevelopment of the Palm Garage as an upgraded parking facility with commercial pick-up / drop-off on level one, and the option of an expansion of the Hibiscus Garage. The right of way for the future Automated People Mover (APM) is maintained, but reduced in required length and scope due to the efficiencies of the concept. This option would improve passenger level-of-service standards, and accommodate forecast demand to 2025.
6.9 MASTER PLAN PREFERRED REDEVELOPMENT ALTERNATIVE

Preferred Redevelopment Alternative - The preferred Master Plan Development Plan (shown on Figure 6.6) provides for incremental development to achieve ultimate redevelopment of the terminal complex into a centralized passenger processing facility to maximize passenger convenience, and operational efficiency and flexibility. The Preferred Redevelopment Alternative includes upgrades to Terminal 1, and ultimate replacement of Terminals 2, 3 and 4 with a new central processor at the west end of a redeveloped access, roadway and parking system, linking a parallel concourse configuration for optimized airfield access. International gates would be located along the west elevation of the central processor in order to facilitate centralized airline connection opportunities, and to optimize the international/domestic split of airfield movements. This alternative also includes the redevelopment of the Palm Garage as an upgraded parking facility with commercial pick-up/drop-off on level one, and the option of an expansion of the Hibiscus Garage. Development of new parking facilities at the intermodal site would not be required in this scheme due to the increased parking capacity afforded in the terminal area by the central processor concept. The right of way for the future Automated People Mover (APM) is maintained, but reduced in required length and scope due to the inherent efficiencies of the central processor concept. This option would greatly improve passenger level-of-service standards, maximize flexibility for future aviation industry changes, and accommodate forecast demand to 2025 and beyond.

The Redevelopment Alternative has both near- and long-term potential. The preferred option involves the redevelopment of the terminal complex over a 20+ year period. The primary features of the Redevelopment Alternative are:

- Proposed T4 redevelopment project in the near-term.
- Redevelopment of T2 and T3 in subsequent phases to meet near- and long-term demand.
- Significant roadway improvements to T2, T3, and T4 by integrating passenger processing facilities and providing continuous curbside and additional bypass capability on the roads to meet long-term demand.

Additional terminal area parking would be provided through the development of a new facility in the intermodal center site within the roadway interchange, followed by redevelopment of the Palm Garage. Also, supplemental remote surface parking on the West Side of the Airport would be provided on an interim basis.

The ability to expand the terminal complex beyond the 10-15 year period. Option 2B can be expanded to meet demand beyond 2020.

The short-term development plan for Option 2C is shown on Figure 6-8 and described on the following pages.

6.9.1 Near-Term Development Plan

The Redevelopment Alternative and the Additive Alternative share a common short-term plan for development based on the premise that terminal development at the Airport would proceed with several projects already in the planning phase by the end of the master planning and EIS processes. The Near-term development plan is anticipated to meet the demands of the airport until approximately 2017/2018. The fundamental goals for near-term development are to:

- Coordinate with the South Runway project.
- Move forward with a T4 redevelopment and Concourse H replacement project.
- Provide improvements to other terminals to improve passenger convenience and operations.
- Proceed with development of new Broward County Aviation Department office space.
- Proceed with development of new office space to lease to the TSA.
- Proceed with improvements to in-line baggage systems for all terminals.
- Implement operational improvements to landside operations.
- Initiate a concessions optimization program through-out the terminal and landside areas.
- Pursue optimization of revenue generation opportunities.
- Maintain a current facilities maintenance program.

Terminal 1 – Review opportunities to optimize the passenger convenience and operations at Terminal 1 including the following:

- Evaluate opportunities to improve passenger convenience and operational efficiencies relative to the existing security checkpoints. Consider a single, central security checkpoint with secure linkage between Concourses B and C.
- Improve concessions opportunities in coordination with the security checkpoint improvements.
- Implement a new in-line baggage system serving the entire terminal.
- Preserve options for aviation related use for the Concourse A site including the accommodation of RON and commuter operations.
- Review options to improve curbside management.
- Implement enhanced O&M requirements to minimize/eliminate deferred maintenance issues.

Terminal 2 – Review opportunities to optimize the passenger convenience and operations at Terminal 2 including the following:

- Evaluate opportunities to improve passenger convenience and operational efficiencies relative to the security checkpoint and queuing.
- Improve concessions opportunities in coordination with security checkpoint improvements and the potential relocation of existing airline club operations. Take advantage of the 'open' configuration of the concourse at Terminal 2.
- Implement a new in-line baggage system serving the entire terminal in coordination with baggage system considerations for Terminal 3.
- Review options to improve curbside management.
- Implement enhanced O&M requirements to minimize/eliminate deferred maintenance issues.

Terminal 3 – Review opportunities to optimize the passenger convenience and operations at Terminal 3 including the following:

- Evaluate opportunities to improve passenger convenience and operational efficiencies relative to the security checkpoints and queuing. Consider a single security checkpoint with secure linkage between Concourses E and F.
- Improve concessions opportunities in coordination with security checkpoint improvements.
- Coordinate a secure connection with the Terminal 4 development.
- Implement a new in-line baggage system serving the entire terminal in coordination with baggage system considerations for Terminals 2 and 4.
- Review options to improve curbside management.
- Implement O&M requirements to minimize/eliminate deferred maintenance issues.

Terminal 4 – Implement the planned redevelopment of Terminal 4 in coordination with the new south runway project. Review opportunities to optimize the passenger convenience and operations at Terminal 4 including the following:

- Implement the planned redevelopment of Terminal 4 and replacement of Concourse H resulting in a 14 gate facility with swing gate capability at all gates for domestic and international use.
- Evaluate opportunities to improve passenger convenience and operational efficiencies relative to the security checkpoint and queuing.
- Enhance F5 operations to accommodate future demand related to near-term improvements.
- Improve concessions opportunities in coordination with security checkpoint improvements.
- Provide a secure connection with the Terminal 3 development.
- Provide new BCAD office space and associated dedicated parking facilities.
- Provide new office space to accommodate TSA programmatic leasing requirements.
- Implement a new in-line baggage system serving the entire terminal in coordination with baggage system considerations at Terminal 3.
- Provide RON and commuter operation facilities at the ramp level.
- Review options to improve curbside management.
Figure 6-8
SHORT-TERM DEVELOPMENT PLAN FOR OPTION 2C
Near-term Capacity - As described earlier, it is currently anticipated that the near-term plan for both the Redevelopment and Additive Alternatives would meet the demand for anticipated activity levels until 2025. The need to address the long-term development option decisions will become apparent as the level of service decreases over time. A structured, systematic review and update of the Master Plan assumptions is recommended to monitor the ‘trigger’ date for decisions and implementation of a long-term solution.

Compatibility with EIS Alternatives - The common Near-term Development Plan for the Redevelopment and Additive Alternatives is compatible with the development scenarios currently in consideration for the implementation of the B1b EIS south runway alternative. The northern limit of the retaining wall for the south runway construction must be established to allow for the final planning and design of the Terminal 4 component of the Near-term Development Plan.

6.9.2 Long-Term Development Plan

The Long-term plan for the Redevelopment Alternative (shown on Figure 6-6) is based on the premise that EIS runway alternative B1c is implemented, and that the terminal complex will be redeveloped to provide for a central processing concept to provide the maximum in future flexibility and efficiency. The fundamental goals for long-term development are to:

- Accommodation of projected demand over a 10 and 20 year planning horizon.
- Maintain the option to provide terminal area gate capacity to meet long-term demand beyond 2025.
- Continue to improve terminal area parking and access (including eventual automated people mover access) to meet long-term demand to 2025 and beyond.
- Anticipate and acknowledge the future role of FLL in the regional and national system relative to trends in the airline industry and local demographics.
- Respond to the pre-existing inter-local agreements, and DRI and County policies and development objectives.
- Maintain compatibility with airfield development from the EIS process.
- Maintain flexibility to preserve options over time.
- Maintain compatibility with ongoing projects.
- Improve ground access level of service for roadways, curb and parking facilities.
- Maximize efficiency and safety of aircraft movements between gates and the airfield.
- Improve passenger level of service, security, and other amenities within the terminal facilities.
- Mitigate the greater complexity of future improvements related to potential redevelopments of existing facilities.
- Optimize phasing considerations:
  - Maintain supply of available contact gates.
  - Maximize use of existing facilities to extent possible
  - Manage program costs and financial capacity.

Terminal 1 - The continued utilization of Terminal 1 including Concourses B and C would be generally consistent with the operational characteristics of the current configuration. As terminal area improvements occur over time, consideration should be given to optimizing operational efficiencies at Terminal 1 including security checkpoint processing, concessions improvements, passenger convenience improvements including toilet rooms, implementation of an in-line baggage system, and analysis of potential uses for the undeveloped Concourse A site including potential RON and commuter aircraft parking and remote loading. In the course of redeveloping the security checkpoint and concessions areas, a secure connection should be developed between Concourses B and C to maximize efficiency and flexibility for the passenger and airlines, and therefore the airport. Eventual consideration of secure or non-secure connections to the newly developed central processor should be considered as the Redevelopment Alternative progresses. Concourse A was a given in the Master Plan scope and was not evaluated comprehensively. The Concourse A concept remains on hold after the completion of an Environmental Assessment. Before proceeding with a Concourse A project, improvements to the passenger processing elements of Terminal 1 will require evaluation and improvement. A Benefit Cost Analysis of the Concourse A project may need to be undertaken in a separate study to establish its value in relation to the entire terminal complex.

Terminal 2 - The long-term plan for the Redevelopment Option would eliminate Terminal 2 in the later phases and incorporate the site into the central processor concept. The site area vacated by the original Terminal 2 processor will enable expanded roadway and curbside operations for the central processor, as well as additional area for close-in parking at the redeveloped Palm Garage site.

Terminal 3 - The long-term plan for the Redevelopment Option would eliminate Terminal 3 in the early phases of the long-term development and incorporate the site into the central processor concept. The existing Terminal 3 facility may be utilized as an interim facility during the construction of the primary central processor component.

Terminal 4 - The new Concourse H developed in the Near-term development plan becomes the prototype for all concourses of the Long-term central processor concept. The original, remaining portion of the Terminal 4 processor area will be eliminated over time as the central processor is developed and becomes operational. The site area vacated by the original Terminal 4 processor will enable expanded roadway and curbside operations for the central processor, as well as additional area for close-in parking at the redeveloped Palm Garage site.

Terminal Area Parking - The long-term plan for the Redevelopment Option would provide for additional terminal area parking due to the redevelopment and significant expansion of the Palm Garage, thereby greatly increasing close-in high value parking. This redevelopment would add approximately 1,300 structured parking spaces, provide for commercial vehicle operations on the ground level of the Palm Garage effectively straddling the roadway with the central processor concept, and also improve the terminal roadway operations. In addition, the option exists for a new ‘south’ Hibiscus Garage, also greatly increasing the capacity of high-value terminal area parking.

Roadways and Curbside - Long-term roadway improvements under the Redevelopment Alternative would include curbside improvements, additional capacity to the exit roadways, and accommodation of the eventual commissioning of an automated people mover system that is planned to be integrated with the a future potential intermodal center and the Port, as well as the light rail. The roadway would be redeveloped in coordination with the implementation of the central processor.
to provide for maximized curbside operations and the complete segregation of pedestrian and vehicular movements via pedestrian bridge connections from all processing areas. These pedestrian bridge connections to parking would be accommodated below the elevated departures roadway similar to the existing configuration at Terminal 1.

**Long-term Capacity** – As described earlier, the long-term plan for the Redevelopment Alternative would meet capacity through 2025 and beyond, and could be developed flexibly as demand warrants.

**Compatibility with EIS** – As described earlier, the Redevelopment Alternative would be compatible with the EIS recommended runway B1b configuration.

### 6.9.3 Operational Advantages and Disadvantages

The main advantages of the Redevelopment Alternative are:

- Short-term capacity benefits from implementation of the Terminal 4 redevelopment and Concourse H replacement.
- More flexibility for allocating international gates at a central location.
- Enhanced airside access for domestic and international aircraft movements throughout the terminal complex.
- Improved inter-terminal passenger flow and convenience provided by the central processor concept.
- Greater level of service for curb access, roadway circulation, and parking facilitated by the central processor concept including the redevelopment of the Palm Garage site and associated roadway improvements.
- Preservation of options for development beyond 2025.
- Long-term reconfiguration of T2 would mitigate conflict between aircraft pushing back from T2 gates and Taxiway C flow.
- Compatible with the recommended EIS alternative.

The main disadvantage of the Redevelopment option is:

- Operational and phasing impacts during the ultimate development of the central processor concept.
- Financial commitment required at the decision point to proceed with the Long-term central development concept.

### 6.9.4 Phasing

Phasing for the Near-term has been coordinated with the recommended south runway project and will provide necessary gate capacity anticipated through 2017/2018. The Long-term central processor concept development will require a commitment to a more complicated phasing scenario to enable the implementation efficiencies and passenger convenience of the Long-term goals. Phasing is as represented in Figures PH-Redev 1 through 12.

### 6.9.5 Air Carrier Gate Capacity

Air carrier gate capacity and demand will be addressed in a phased approach to respond to fluctuations in the forecast and shifts in airline operational models relative to gate utilization, the evolution of domestic and international traffic volumes, and the fleet mix. Short to medium-term gate demand would be met with the implementation of the Terminal 4 project and operational improvements to Terminals 1, 2 and 3. The implementation of the Central Processor will accommodate demand through the long-term, post-2020 period.

### 6.9.6 Terminal Area Parking Capacity

Short-term parking demand will be met with the current capacity of the Cypress Garage in combination with surface options that exist on the airport. To accommodate demand midway through the planning period, additional terminal area parking capacity would be accommodated through the redevelopment and expansion of the Palm Garage, and the possible supplement of parking in a new south Hibiscus Garage.

### 6.9.7 Financial Analysis

The financial highlights for this development option, as developed during the Master Plan update and stakeholder inputs, are as outlined in Section 4 of this report.
Additive Alternative - This option (shown on Figure 6-9) provides incremental development to accommodate projected demand for the next 10-20 years with an assumed maximum of 79 gates. A near-term plan would be consistent with the Redevelopment Alternative as delineated above, including the implementation of the T4 redevelopment and Concourse H replacement project, and the initial passenger convenience and operational improvements to Terminals 1, 2 and 3. The long-term development would include extensions to existing Concourses E and F with an airside connection, additional improvements to all unit terminals, O&M upgrades throughout the terminal complex, and new parking facilities at the Palm Garage replacement and at the intermodal center site. The right of way for a future APM is maintained. The Additive Alternative would meet near-term growth needs effectively, but would result in progressively lower levels of airside and landside service, and limit long-term growth potential.

The primary features of the Preferred Additive Alternative are:

- The proposed T4 Terminal redevelopment and Concourse H replacement.
- Extensions to Concourses E and F with secure connectivity to meet demand over the planning period with minimum capital investment.
- Landside development is limited to the roadway improvements currently planned as part of the Exit Roadway Project and other circulation improvements, including operational improvements to curbside management and commercial vehicle circulation. Additionally, this alternative includes the redevelopment of the Palm Garage to maximize utilization of the footprint for commercial vehicles, cruise ship passengers, and maximized public parking count.
- Additional terminal area parking is provided at the intermodal center site within the roadway interchange, supplemented by interim remote surface parking on the West Side of the Airport.
- No significant investment is anticipated for roadway improvements within the terminal complex due to site limitations.

The ability to expand the terminal complex beyond the 10-20 year demand level would be limited; therefore, the plans indicate no expansion options beyond the 2025 timeframe.

The Additive Alternative is described as follows.

6.10.1 Near-Term Development Plan

As discussed above, the Additive Alternative and the Redevelopment Alternative share a common short-term plan for development based on the premise that terminal development at the Airport would proceed with projects already in the planning phase by the end of the master planning and EIS processes. The fundamental goals for this option are to:

- Maintain compatibility with airfield development from the EIS process.
- Move forward with a T4 redevelopment and Concourse H replacement project.
- Provide improvements to other terminals to improve passenger convenience and operations.
- Proceed with development of new Broward County Aviation Department office space.
- Proceed with development of new office space to lease to the TSA.
- Proceed with improvements to in-line baggage systems for all terminals.
- Implement operational improvements to landside operations.
- Initiate a concessions optimization program throughout the terminal and landside areas.
- Pursue optimization of revenue generation opportunities.
- Maintain a current facilities maintenance program.

Terminal 1 - Review opportunities to optimize the passenger convenience and operations at Terminal 1 including the following:

- Evaluate opportunities to improve passenger convenience and operational efficiencies relative to the existing security checkpoints. Consider a single, cen-
Numbered items:

- Improve concessions opportunities in coordination with the security checkpoint improvements.
- Implement a new in-line baggage system serving the entire terminal in coordination with baggage system considerations for Terminals 2 and 4.
- Review options to improve curbside management.
- Implement O&M requirements to minimize/eliminate deferred maintenance issues.
- Review options to improve curbside management.
- Implement enhanced O&M requirements to minimize/eliminate deferred maintenance issues.

**Terminal 2** – Review opportunities to optimize the passenger convenience and operations at Terminal 2 including the following:

- Evaluate opportunities to improve passenger convenience and operational efficiencies relative to the security checkpoint and queuing.
- Improve concessions opportunities in coordination with security checkpoint improvements and the potential relocation of existing airline club operations. Take advantage of the open configuration of the concourse at Terminal 2.
- Implement a new in-line baggage system serving the entire terminal in coordination with baggage system considerations for Terminal 3.
- Review options to improve curbside management.
- Implement enhanced O&M requirements to minimize/eliminate deferred maintenance issues.

**Terminal 3** – Review opportunities to optimize the passenger convenience and operations at Terminal 3 including the following:

- Evaluate opportunities to improve passenger convenience and operational efficiencies relative to the security checkpoint and queuing.
- Consider a single security checkpoint with secure linkage between Concourses E and F.
- Improve concessions opportunities in coordination with security checkpoint improvements.

**Terminal Area Parking** – Due to the reduced demand for parking currently in the terminal area, there is a surplus of parking available in the existing structures. As parking demand increases over time, employee parking can be moved from the Cypress Garage to provide additional capacity. At that time, additional parking locations will be necessary for employee parking, possibly remote from the terminal area and served by a shuttle operation. Locations south and west of the airport, as well as east of the airport have been identified as potential sites. Additionally, 350 employee spaces will be provided as part of the Terminal 4 redevelopment for BCAD parking. It is not anticipated that additional public parking will be needed beyond this capacity for several years. When additional capacity is required, the redevelopment of the Palm Garage site has been identified as the primary location for additional terminal area structured parking. This development may happen independently of any other terminal area developments as demand warrants. Interim remote surface parking would be provided to supplement the loss of parking capacity during the redevelopment of the Palm Garage site. Interim remote surface parking options include the future intermodal site, off-airport properties east and west of the airport, and on-airport properties south and west of the airfield.

**Roadways and Curbside** – Curb management and operational improvements should be studied in detail for the entire terminal complex to optimize conditions and extend the useful life of the existing roadway system as long as possible. Improvements should include curb management, lane management, commercial vehicle options and alternatives, pedestrian passenger management, and cruise ship passenger management. Options considered in the Master Plan Update analysis also include detailed analysis of near-term bypass roadway options to minimize cross terminal traffic flows. Additionally, at the time that the redevelopment of the Palm Garage is implemented, commercial vehicle integration alternatives should be implemented to alleviate commercial vehicle congestion on the roadway. It is assumed that planning, development and implementation of the ‘Exit Roadway’ project will be implemented over the course of the Near-term development, resulting in improved exiting traffic flow.

**Near-term Capacity** – As described earlier, it is currently anticipated that the near-term plan for both the Redevelopment and Additive Alternatives would meet the demand for anticipated activity levels until 2017/2018. The need to address the long-term development option decisions will become apparent as the level of service decreases over time.

**Compatibility with EIS Alternatives** – The common Near-term Development Plan for the Redevelopment and Additive Alternatives is compatible with the development scenarios currently in consideration for the implementation of the B1b EIS south runway alternative. The northern limit of the retaining wall for the south runway construction must be established to allow for the final planning and design of the Terminal 4 component of the Near-term Development Plan.

**6.10.2 Additive Alternative Long-Term Development Plan**

The Additive Alternative is based on the premise that terminal development at the airport would proceed with minimum capital expenditure. The fundamental goals of this alternative are to:

- Move forward with the T4 Terminal redevelopment and Concourse H replacement program as currently planned.
- Provide capacity to meet demand over the 20 year planning horizon, however, passenger level of service will decrease over time.

As a result of the strategy to minimize capital expenditures as passenger volume increases, passenger service will deteriorate over time as the existing facilities are increasingly burdened and the age of the facility advances.

**Terminal 1** – The continued utilization of Terminal 1 including Concourses B and C would be generally consistent with the operational characteristics of the current configuration. As terminal area improvements occur over time, consideration should be given to optimizing operational efficiencies at Terminal 1 including security checkpoint processing, concessions improvements, passenger conveniences including toilet rooms, implementation of an in-line baggage system, and analysis of potential uses for the undeveloped Concourse A site including potential RON and commuter aircraft parking and remote loading. In the course of redeveloping the security checkpoint and concessions areas, a secure connection should...
be developed between Concourses B and C to maximize flexibility and efficiency for the passenger and airlines, and therefore the airport.

**Terminal 2** - Terminal 2, and Concourse D, would continue to be used generally consistent with the current configuration. As terminal improvements occur over time, consideration should be given to optimizing operational efficiencies at Terminal 2 including security checkpoint processing, concessions, improvements, passenger convenience improvements including toilet rooms, implementation of an in-line baggage system, and reconsideration of the holdroom configuration relative to the airline club room and concessions opportunities.

**Terminal 3** - Terminal 3 modifications would include extensions to Concourses E and F and modifications to passenger processing and baggage screening areas of T3 to accommodate increased demand and added gates. As terminal improvements occur over time, consideration should be given to optimizing operational efficiencies at Terminal 3 including centralized security checkpoint processing, consolidation of post-security concessions, and implementation of an in-line baggage system. The additional gate capacity generated by the extensions to Concourses E and F will require modification and expansion of passenger processing areas to accommodate the added passenger traffic demand.

Concourse E would be extended to add five new gates with a concessions/retail node at the end of the concourse. Concourse F would be extended to add four new gates with a concessions/retail node at the end of the concourse. As a result of the extensions, long-term demand would be met with limited capital investment. However, the configuration would likely increase the possibility of airside congestion due to increased dependency of aircraft on a single taxiway between Concourses E and F.

**Terminal 4** - The Terminal 4 Redevelopment and Concourse H Replacement project would proceed as currently planned. In the long-term development, further renovations and modifications to Terminal 4 will be necessary to mitigate the challenges presented by increasing passenger traffic. In particular, it is anticipated that further expansions of the FIS facility will be necessary as international traffic increases and Terminal 4 remains the international terminal. If warranted, additional gate capacity beyond the 14 gates developed in the Near-term development plan will be possible by further extension of Concourse H to the east. This would result in longer walking distances and implementation of moving walkways should be considered. In addition, secure and non-secure links between terminals 1 and 2, and 2 and 3 should be evaluated relative to future airline schedules and mixes, and overall airport demand.

**Airfield Gate Requirements** - Based on the goal that the Airport will eventually accommodate seven passenger airline aircraft departures per gate per day (up from approximately five in 2005), which is consistent with gate utilization at many large-hub airports, a total of 79 aircraft gates is estimated to satisfy the demand through 2025.

**Terminal Area Parking** - The redevelopment of the Palm Garage in either the Near or Long-term will increase parking capacity in the terminal area. However, it is anticipated that additional capacity will be needed within the 20 year planning period, and the intermodal site has been identified as the only viable option that would not have a significant impact on the number of shuttle operations and routes. It is anticipated that 6000 additional parking spaces will be required in the terminal area to accommodate parking demand by 2025, for a total of approximately 18,000 spaces.

**Roadways and Curbside** - Beyond the roadway improvements anticipated in the Near-term development plan, no additional improvements of significance are anticipated in the Additive option due to the physical restrictions of maintaining the existing terminal complex. Any potential incremental roadway improvements including by-pass options should be considered if the Additive Alternative is pursued as the final Long-term option. As a result, the level of service of the roadway and curbside will be improved somewhat by the management and operational improvements as discussed in the Near-term development, but over time the level of service of the roadway system will decline and will become a perception level challenge for the airport. Any potential improvements not implemented in the Near-term should be considered for implementation in the Long-term development.

**Long-term Capacity** - As described earlier, the Additive Alternative would allow for development of up to 79 gates, which is likely to be adequate to meet demand for next 10-20 years. However, this option would limit long-term expansion opportunities and may not provide for potential increases in aircraft gate capacity beyond 2025. Capacity increases beyond 2025 would require significant redevelop-ment of the occupied terminal area and environs.

**Compatibility with EIS Alternatives** - The Long-term Development Plan for the Additive Alternative is compatible with the development scenarios currently in consider-ation for the implementation of the B1b EIS south runway alternative.

**6.10.3 Phasing**

It was assumed in the phasing scenarios on Figures PH Additive 1 - through 9 that the first phases of the Addi-tive Alternative would be focused on the Redevelopment of Terminal 4 and Concourse H, as well as incremental improvements to Terminals 1, 2, and 3 as described above. Additionally, concurrent improvements to parking and the roadway would be implemented as described. Further im-provements to all of the terminals and additional parking and incremental improvements would be implemented on an as needed basis over the course of the 20 year planning period.

**6.10.4 Operational Advantages and Disadvantages**

The primary advantages of the Additive Alternative would be:

- Short-term domestic and international capacity benefits from implementation of the Terminal 4 redevelopment and Concourse H replacement project.
- Minimizing capital expenditures for the realization of a 79 gate facility over the long-term for the Airport while minimizing development commitments.

The primary disadvantages of the Additive Alternative would be:

- Limited potential for follow-on development for the terminal complex beyond the realization of a 79 gate facility without significant capital expenditures due to the commitment made to the existing terminal complex over the long-term.
- Continued general decline of passenger convenience over the planning period due to the additional loads placed on existing facilities without reasonable potential for mitigation.
- Continuously increasing O&M costs over the long-term due to 1) the aging rate of the terminal and landside infrastructure, and 2) inherent inefficiencies of the terminal plan relative to gross maintainable area and redundancy of facilities required to operate 4 unit terminals.
- Poor airside access for aircraft taxiing to and from interior gates on Concourses E and F due to single taxiway.
- Continued decline in airside movement performance as existing terminal facilities are required to handle additional traffic.
- As international activity increases, additional burden on the FIS operations, and limited flexibility for the accommodation of connecting domestic and interna-tional traffic.
- Relatively modest improvements in passenger processing capabilities at the terminals resulting in a continued decline in passenger service.
- Low service levels for terminal roadway and parking due to the lack of added capacity within the terminal area.

**6.10.5 Air Carrier Gate Capacity**

Air carrier gate capacity and demand will be addressed in a phased approach to respond to fluctuations in the forecast and shifts in airline operational models relative to gate uti-lization, the evolution of domestic and international traffic volumes, and the fleet mix.

Near-term gate demand would be met with the implemen-tation of T4 redevelopment and Concourse H replacement projects. While it is possible that the Concourse E and F extensions would accommodate demand through long-term 20 year projection, growth options would be limited and the option to expand the terminal complex beyond 79 gates is compromised.
6.10.6 Terminal Area Parking Capacity

Short-term parking demand will be met with the current capacity of the Cypress Garage in combination with surface options that exist on the airport. To accommodate demand midway through the planning period, additional terminal area parking capacity would be developed through the redevelopment and expansion of the Palm Garage.

While the exact timing for the implementation of the intermodal center parking is unknown, there is likely to be a shortfall in terminal area parking capacity to meet forecast traffic volumes by the time this project is implemented and additional terminal area parking spaces become available.

6.10.7 Financial Analysis

The preliminary financial highlights for the Additive Alternative are generally consistent with the financial analysis as represented in Section 4 of this report. The financial implications of the Additive Alternative are similar to the Redevelopment Alternative with the exception that additional flexibility is provided for the implementation of planned development. The Additive Alternate offers greater flexibility for the commitment and scheduling of smaller, incremental development projects.