Final Draft

METROPOLITAN
KNOXVILLE
AIRPORT
AUTHORITY

DKX
KNOXVILLE
DOWNTOWN ISLAND AIRPORT

DOWNTOWN ISLAND AIRPORT (DKX)
FACILITY PLANNING STUDY

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Prepared for

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PURPOSE

The Metropolitan Knoxville Airport Authority (MKAA) retained THE LPA GROUP INCORPORATED to conduct a limited Facility Planning Study of the Downtown Island Airport (DKX) in order to prepare a guide for the future development of the facility.

The purpose of the study is to review the existing DKX facilities and to develop conceptual and schematic requirements for future improvements to the airport. Specifically, LPA was asked to review the airport layout and existing facilities conditions, develop Initial Concepts Development alternatives, review and receive input from the MKAA and the Airport User Group, refine and prepare a recommended Development Concept and provide a document summarizing this process, analysis, and potential cost in order to guide future DKX growth.

History

The Downtown Island Airport began operation in 1930 and has served a variety of general aviation, war training, commercial and agricultural uses over the years. In its early years, the Airport was owned and operated by private individuals. Limited commercial service to the Airport began in 1934. In the 1940's, the Airport served as a training facility for the Army Air Cadets, and then returned to private operation. In 1963, the Airport became a public facility owned by the City of Knoxville. In 1978, the MKAA assumed ownership and operation of the Airport.

DKX is a unique airport in that it is entirely located on Dickinson Island, adjacent to the Tennessee River, approximately 3 miles from downtown Knoxville, Tennessee. DKX provides access for city and county residents, local businesses and industries, the University of Tennessee and visitors into the Knoxville community. It is a small community based general aviation airport that provides a unique opportunity for local pilots and airplane enthusiasts. DKX may be reached by automobile through the historic Island Home neighborhood.

Guidelines

The existing Master Plan for Downtown Island Airport is the "general guide for the orderly and efficient addition of facilities and services on airport property". The MKAA has also adopted "Airport Design Guidelines", dated July 2004, which serve as a basis for guiding the design of building and site improvements to "contribute to the overall quality and enduring value of the airport's built environment and operations". This Planning Study is intended to review the current conditions and provide supplemental guidance to these documents.

INVENTORY

DKX provides facilities for general aviation traffic, flight training activities and aircraft parking rentals including T-hangars, plane ports, community hangars and apron tie-downs. DKX also provides a unique opportunity for condo hangar development. In addition to the numerous individual owners and pilots, current tenants at DKX include Aircraft Technicians, U.S. Aerospace, Horizon Avionics, Knoxville Flight Training, Remote Area Medical (RAM) and the Knox County Sherriff's Department. The Tennessee Wing of the Civil Air Patrol (CAP) has expressed interest in developing a permanent Wing Headquarters facility at DKX.

Existing Conditions

DKX has a single asphalt runway, designation 8-26, of 3,497 feet in length and 75 feet in width (Attachment A - Airport Aerial). The runway complies with FAA requirements for Category B (approach speeds of 121 knots or less), Group II (wingspans of 79 feet or less) design aircraft. DKX supports an annual average of 110,000 operations or approximately 300 operations per day. The airport elevation is 833 feet MSL.

DKX is a non-towered airport. The airport handles an increase in traffic during University of Tennessee home football game weekends, WINGS and other events. It is possible that temporary tower operations could be utilized on these and other similar occasions.

Currently, there are 143 based aircraft at DKX. The largest based aircraft is a Pilatus PC-12 and a DC-3 utilized by RAM. The most common itinerant aircraft at DKX is the King Air 300/350. There are a total of 58 itinerant aircraft tie-down spaces of which approximately 25 are typically used.

Taxiway A, a full length taxiway, 40 feet in width, runs parallel along the south side of the runway. Taxiway A is designed for Group II (wingspans of 79 feet or less) aircraft and has an object free area width of 131 feet.

The FBO, and its parking apron, are centrally located on the field and directly adjacent to Taxiway A. This apron area is approximately 725 feet in length and 160 feet in depth. This apron contains 20 aircraft tie-down locations and 1 helicopter parking location. The FBO and hangar operations are housed in two buildings, Building 1 and Building 2, approximately 24,800 square feet in size. The facility consists of the 2 hangar buildings and lean-to type office and shop support spaces. The facility has access points on both its east and west fronts.

Four plane ports, Building 5, 6, 7 and 8, are located in the area immediately to the east of the central FBO facility. They are aligned parallel to the runway and stacked north to south. Each of the four plane ports provide covered space for 8 aircraft, resulting in a total of 32 covered parking locations. These plane ports are accessed by a perpendicular Taxilane N, located to their east side. Taxilane N is designed in accordance with Group I (wingspans less than 49 feet) aircraft and has a taxilane object free area width of 79 feet. Additional tie-down apron is located south of plane port Building 8 and accessed via Taxilane N. This apron is approximately 17,500 square feet in area and has additional tie-down space for 10 aircraft.

Taxilane N also provides access to Building 3, a corporate box hangar, and to Building 4, the hangar currently utilized by RAM. Both buildings are located at its south end, adjacent to the airport access road (Spence Road). Building 3 is a newer metal building hangar of approximately 10,000 square feet in area (100 feet in width by 100 feet in depth). Building 4 is an older wooden hangar, with applied metal siding, of approximately 16,000 square feet in area (100 feet in width by 160 feet in depth). The hangar doors have been removed. This hangar houses the DC-3 aircraft. This aircraft, based on its wingspan, is a Group III aircraft. Special operational considerations must be utilized during movement of this DC-3 but it should not be used for planning taxilane dimensions.

An 18 unit T-hangar structure, Building 10, is situated parallel to Taxilane N to its east side. This T-hangar building is 60 feet in depth and 450 feet in length for a total of 27,000 square feet of area.

A fueling station is located to the east of Taxilane N and adjacent to Taxiway A. The station has 2 above ground tanks, each holding 12,000 gallons of aviation fuel. The fueling apron, including tank area, consists of approximately 42,000 square feet. Self-service fueling is available.

Farther east is the airports most recent development, consisting of aircraft tie-down apron, new taxilanes, Condo hangars and space for future hangar development. The first perpendicular taxilane is developed to Group I aircraft standards with a taxilane object free area width of 79 feet (face of hangar to face of hangar). A second perpendicular taxilane, also to Group I standards, is stubbed in place. The two taxilanes have a centerline separation distance of 139 feet, allowing a maximum of 60 feet for hangar development. A total of 18 tie-down spaces are set adjacent to the Taxiway OFA along either side and between the two taxilanes (4 + 7 + 7). The original design for the new tie-down apron in the condo hangar development was based on the dimensional standards set forth in the FAA advisory circular AC 150/5300-13. This spacing did not yield the number of spaces the MKAA desired. Also, input from the Tennessee DOA

indicated the price per tie-down space far exceed what they normally saw at other airports. Therefore, the tie-down spacing was re-evaluated and reduced.

The dimension of the existing aircraft tie-down configuration for this apron is 20 feet wide by 20 feet long with a separation distance of 25 feet (45-foot centers). This configuration is reasonably consistent with other tie-down configurations throughout the airport, and falls within the guidance of FAA AC 150/5300-13, in allowing for tie-down locations based on local preference. This spacing increases the number of tie-downs available and is adequate based on the actual aircraft in use. This work was accomplished as part of the 2004 Hangar and Apron Design Report

Twelve condo box hangars have already been constructed along the first taxilane, four to the east and eight to the west. They range in size from 2,750 square feet (50 feet by 55 feet) to 4,800 square feet (80 feet by 60 feet) for a current total of approximately 37,250 square feet of hangar space. Eave heights are between 18 feet to 22 feet above grade and fall below Part 77 airspace restrictions. The second taxilane has not yet been extended and no hangars have been constructed.

An FAA tower previously existed immediately west of the main FBO hangar building. It was no longer operational and had been condemned by the City of Knoxville due to its poor condition. It has since been demolished (2008). One of the original airport hangar buildings was also located just south of the former tower, adjacent to Spence Road. It also was abandoned and in poor condition and has been demolished (2008).

On the west end of the field, three existing buildings, Buildings 12, 13 and 14, are located adjacent to Spence Road as one enters onto the island. The Knox County Sherriff's Department utilizes the office space, Building 12 and hangar Building 13. Building 14 is an open front hangar building. The Sherriff utilizes the apron space adjacent to these buildings and the field. These three buildings total approximately 18,300 square feet of space. Due to the angle of the building to the field, the apron varies in width and depth. Including movement lanes, the apron is approximately 62,000 square feet in area. This apron currently has 9 aircraft tie-down locations and space for 2 helicopters. A local glider club utilizes the grass area west of Building 14 for parking two or three aircraft.

All of the landside automobile parking (157 total spaces) at DKX is concentrated in three distinct areas on the south side of the airport. The first parking area is adjacent to the Sherriff's hangar and all spaces are directly accessible from Spence Road. This area consists of a total 17 (1 handicap accessible) spaces. Apron access is available through a gate located at the east end of the parking

spaces. The surface pavement is asphalt. No information was gathered as to the depth or composition of the pavement. It appears in adequate condition.

Further east, there are two parking areas located between Spence Road and the main FBO buildings. The first lot consists of a total 47 (2 handicap accessible) spaces. The second lot consists of a total 93 spaces. Apron access is available through the first of these lots, along the south side of the FBO building and through a gate onto apron adjacent to the plane ports. The surface pavement is asphalt. No information was gathered as to the depth or composition of the pavement. It appears in adequate condition.

The typical existing airfield pavement section used at DKX consists of a 2-inch bituminous asphalt surface course, 3-inch bituminous base course, 7-inch crushed aggregate base course and geogrid and fabric on top of a compacted subgrade. It could be anticipated that future pavement sections will match the existing section.

The existing airfield lighting and navigational aids (NAVAIDS) are not anticipated to be affected by the scope of the proposed improvements. The proposed new taxilane system is not anticipated to require lighting. A rotating beacon and the airports electrical vault are currently located in the existing FBO's parking area. The airfield lighting and NAVAIDS are fed by circuits located in the electrical vault. It is anticipated that the beacon and the vault will remain in place and any parking lot improvements will work around these items.

Jurisdictions and Zoning

DKX falls under the jurisdiction of the City of Knoxville. Article III Section 3.51 establishes jurisdiction for the City of Knoxville and excludes DKX from the fire district. Any building development on the airport property shall be designed in accordance with all current applicable fire, building, and life safety codes to ensure safe, secure and accessible buildings.

The Knoxville Zoning Ordinance indicates DKX is zoned A-1 General Agricultural. All development shall be designed in accordance with the zoning ordinance. Section 5.22.03.A requires that expansion plans must be submitted to the Planning Commission. Section 5.22.05 limits height of development to 3 stories and 35 feet. Minimum parking requirements for airports are not specifically defined and would be open to determination by the Planning Commission.

NFPA 409 Standard on Aircraft Hangars is another building and fire code standard that is applicable to airport development. It defines Hangar type, size

and construction requirements and the resulting required building separations to insure minimum fire and life safety requirements are met.

All airfield and site developments fall under the direct jurisdiction of the MKAA and the DKX Airport Design Guidelines. Any site developments shall be designed in accordance with these standards and all current applicable codes, engineering standards and FAA standards and will be reviewed and approved by the MKAA, Tennessee DOA, and the FAA.

Portions of the island fall into the Floodway designation for the Tennessee River. The main floor of any development within the Floodway must be constructed a minimum of 1 foot above the 100-year flood elevation. No other floors may be constructed below the main floor and certain building elements must be designed to withstand flooding. Certain requirements also apply to any grade and fill changes within the Floodway. The 100 year flood elevation for the Airport is 830 feet MSL.

Finally, a large portion of the DKX property falls to the north of the runway. This area has no public access due to its position between the runway and the river and is generally inaccessible for development.

Airfield Limitations

In addition to the floodway zone, it appears that the critical limitation to physical development at DKX is the taxiway object free area (OFA) on Taxiway A. This design group II OFA is 131 feet or 65.5 feet from the centerline of the taxiway. FAA Part 77 airspace restrictions for this non-precision approach airport should not present any conflicts for aircraft parking or building development, if kept in their current configurations or if expanded in a similar manner. All airfield requirements and limitations should be verified during the design phase of any future development.

2004 Hangar and Apron Design Report

In 2004, the MKAA authorized a Design Report for the development of hangar and aircraft parking facilities on a limited area of the airport. This report was reviewed as part of this effort for conformance and continuity of layout. The 2004 Report produced a schematic layout depicting the extent of facilities and infrastructure development. The Report was prepared by THE LPA GROUP INCORPORATED in association with Priddy Engineering Company. The Condo Hangar development and associated apron tie-down area were constructed based upon this report. This report is on file with the MKAA.

INITIAL CONCEPTS DEVELOPMENT

THE LPA GROUP INCORPORATED prepared a series of conceptual sketches depicting the current layout and arrangement of DKX facilities and its opportunities and limitations for further development. The sketches also depict a range of overall development for DKX. Specifically, consideration was given to the development of additional apron, hangar, T-hangar and other spaces while optimizing the use of the most accessible and buildable land area. Consideration was also given to the development of a new general aviation terminal facility and its relationship to both airside and landside function. Automobile parking location and airport security were considered as well.

The following sketches were produced and are attached herein (Attachment B):

- Existing Layout
- Minimum Impact Plan
- Minimum Impact Plan – Terminal Area
- Medium Impact Plan
- Medium Impact Plan – Terminal Area
- High Impact Plan
- High Impact Plan – Terminal Area
- Full Impact – Terminal Area

Minimum Impact Plan

The Minimum Impact Plan provides the least impact or change to existing DKX conditions. This plan would require no changes to existing tenant arrangements. This plan continues with the current development plan and extends a series of Group I taxilanes with direct access to Taxiway A. Apron space adjacent to these taxilanes, once clear of the OFA, is devoted to aircraft tie-downs. These tie-down aprons are double loaded where fronted by taxilanes on either side. The tie-down layout is an extension of the existing tie-down dimensions. The linear development of taxilanes and tight hangar rows should require the construction of fire rated walls or the introduction of appropriate separation distances between certain hangar groups once they exceed a total area. The hangars could be constructed as enclosed T-hangar units or plane port type units or could be a continuation of the condo hangar approach should the market warrant. This approach only allows for Group I aircraft and does not provide hangar space for Group II or larger aircraft. This approach also creates numerous aircraft entry points along Taxiway A. Due to each taxilane touching Taxiway A, the amount of new tie-down apron is limited.

Due to the flood way restrictions, hangar development is limited as one moves to the south east tip of the island. This concept keeps all aviation and hangar development out of the flood zone. Grading and environmental costs would be significant as development moves beyond the flood way fringe zone and nearer the 100 year flood line. This area then becomes ideal for non-aviation uses. Additional automobile parking providing closer access to hangars is placed here. Also, the MKAA could consider aviation related support type uses.

The Minimum Impact Plan – Terminal Area concept requires reconfiguration of the grassed area (former hangar and tower site) west of the current FBO buildings and does not impact any of the existing automobile parking areas. A new terminal building would allow DKX to present a “new face” to its visitors, both landside and airside arrivals. A new terminal provides better facilities and services to the pilots. The terminal building is constructed further back from the airfield, allowing for some amount of new itinerant apron parking. The location of the existing FBO hangar would limit views of the airfield from the terminal to the east. An additional 35 to 40 automobile parking spaces are created between the terminal and Spence Road. This new parking can be designated for public use, allowing more of the existing parking to become dedicated to tenants or overnight parking.

Medium Impact Plan

The Medium Impact Plan provides the least impact or change to the existing DKX conditions. This plan would require minor changes to existing tenant arrangements, as the apron area in front of Buildings 12, 13 and 14 is impacted. This plan continues with the current development plan and extends a series of Group I taxilanes to the east; however, without providing each taxilane direct access to Taxiway A. A crossing taxilane is developed between the tie-down apron and the hangar developments. The existing conditions appear to allow for the development of a Group I taxilane (79 feet OFA) but the existing dimensions should be surveyed to verify. This space immediately adjacent to Taxiway A could now be entirely devoted to aircraft tie-downs, attempting to maximize use of this apron and eliminating multiple access points along Taxiway A. Within the apron area, a central taxilane aisle parallel to Taxiway A would be required to be developed. This would allow for one row of tie-downs (41 foot width) between the Taxiway A OFA and this central taxilane aisle (79 foot OFA) and a second row of nested tie-downs (60 foot width). To utilize this parallel tie-down layout, the spacing of the tie-downs would be reduced from that recommended in the FAA AC 150/5300-13 but would be consistent with the spacing of tie-downs existing on Airport currently. A full length parallel Group I taxilane then can be developed between the tie-downs and the condo hangars to allow for access.

The linear development of the perpendicular taxilanes and hangar rows may require the construction of fire rated walls or the introduction of appropriate separation distances between certain hangar groups once they exceed a total area. The hangars can still be constructed as enclosed T-hangar units or plane port type units or could be a continuation of the condo hangar approach should the market warrant. The total length of the hangar rows is now limited on the south end due to the addition of a second parallel taxilane and the introduction of larger box hangar development. This approach allows for Group I aircraft within the central hangar development area and but now also provides hangar space and accessibility for Group II aircraft along the most east and south edge of the development. This approach creates fewer aircraft entry points along Taxiway A by collecting all aircraft movement into two north-south taxilanes. Larger box hangar plots are created along the perimeter, roughly 200 feet square and allow for larger bulk type storage of Group I or II aircraft.

Due to the flood way restrictions, hangar development remains limited as one moves to the south east tip of the island. This concept keeps all aviation and hangar development out of the flood zone, but does encroach farther south. Grading and environmental costs would be significant as development moves beyond the flood way fringe zone and nearer the 100 year flood line. This area then becomes ideal for aviation related support type uses. Additional automobile parking providing closer access to hangars is placed here.

The Medium Impact Plan – Terminal Area concept requires reconfiguration of the grassed area (former hangar and tower site) west of the current FBO building and also the 18 parking spaces adjacent to Building 12. A new terminal building would allow DKX to present a “new face” to its visitors, both landside and airside arrivals. A new terminal provides better facilities and services to the pilots. The terminal building is constructed closer to the airfield than in the Minimal Concept, allowing for less of new itinerant apron parking directly in front of the terminal. Additional apron parking could be constructed by paving the grass area between Taxiway A and the apron in front of Buildings 12, 13, and 14. This would increase the available apron parking above that indicated in the minimal concept.

Views from a new terminal building to the east are less obstructed due to the closer proximity of the terminal to the airfield. An additional 90 to 100 automobile parking spaces are created between the terminal and Spence Road. This new parking can be designated for public use, allowing more of the existing parking to become dedicated to tenants or overnight parking. Some reconfiguration of the pavements adjacent to Building 12 may allow for that parking to remain segregated from the Pubic parking.

High Impact Plan

The High Impact Plan requires the most change to the existing DKX conditions. This plan would affect a number of existing tenant arrangements. The High Impact Plan requires reconfiguration of the entire area west of the current FBO facility including demolition of Buildings 12, 13, and 14, relocation of Building 5 and demolition of Building 4. New facilities or space in another location on airport would be required for relocation of these tenants.

This concept allows for the construction of a terminal building further west on the field and allows for more aircraft parking apron. The terminal building is oriented perpendicular to the field with apron space is developed both east and west of the building. A new terminal building would still allow DKX to present a “new face” to its visitors, both landside and airside arrivals. A new terminal provides better facilities and services to the pilots. Views from a new terminal building are clear in both directions due to the closer proximity of the terminal to the airfield. This arrangement would open the highest number of automobile parking spaces, approximately 125 spaces, to the west. These spaces are segregated from the remainder of the airport and can be designated and monitored as the public use parking at DKX. The downside is this brings cars closer to the active field operations. This concept would require paving infill of the grass area between Taxiway A and the apron in front of Buildings 12, 13 and 14.

Aircraft tie-down parking is developed to the east of the terminal. This concept provides for over 11,000 square yards of aircraft apron adjacent to Taxiway A and the new terminal building. This would greatly increase the proximity of parking to the FBO facility. This concept would also permit the existing automobile parking and support facilities to the south of the existing FBO to remain unchanged. This parking could now be exclusive to DKX tenants as well.

The apron area to the east of the existing FBO facility is also reconfigured to increase the number of tie-down positions. The northernmost plane port building (Building 5) is relocated to a position on the south end of this area. This would impact the tie-downs located at the south but would increase the desirable tie-down positions in near proximity to Taxiway A and the field. Also, Building 4 is demolished to provide for clear access for a Design Group II taxilane at the end of Taxilane N (parallel to field) and providing access to new hangar development on the south east end of the property.

The new hangar development to the east is then zoned in a simple north to south configuration. The first area is devoted to tie-down apron is the closest in proximity to Taxiway A. The second zone is for the development of T-hangars, plane ports or Condo hangars, in a continuation of the current development plan.

The hangars are accessed internally via perpendicular Design Group I taxilanes. The area is surrounded by Design Group II taxilanes, providing a perimeter network for the aircraft movements. The smaller hangar development can be extended as far east as grade and flood way provisions allow. The eastern most north south DG II taxilane location would require coordination with the bypass apron on the east end of Taxiway A. This area has the same movement restrictions as noted in the previous concepts.

The next area south can be devoted to the development of open community or box type hangars. This area would allow for buildings of sufficient size to provide larger DG II or specialty aircraft an opportunity for housing at DKX. There is enough space to develop four such hangars and their associated apron space, approximately 250 feet square. Below this area, tenant-only automobile parking can be developed in the floodway fringe area.

Due to the flood way restrictions, hangar development remains limited as one moves to the south east tip of the island. This concept also keeps all aviation and hangar development out of the flood zone, but does encroach the farthest to the south. Grading and environmental costs would be significant as development moves beyond the flood way fringe zone and nearer the 100 year flood line. This area then becomes ideal for aviation related support type uses.

Full Impact Plan – Terminal Area

This concept is developed to create a cohesive general aviation terminal area for DKX. This concept would require reconfiguration of all of the space between the current FBO building and Buildings 12, 13 and 14. Both of these facilities remain in place. A new terminal building can be more centrally located for the most efficient utilization of apron space. This would allow for tie-down positions and possibly relocation of the helicopter parking positions. This concept allows for a clear direct access of itinerant aircraft to the FBO and terminal building.

The landside parking lots can be redeveloped into a cohesive whole, with appropriate landscaping and possibly short and long term parking separations. It allows for a clear and direct circulation pattern of vehicle movement thru the parking area. It also allows for one entry point and one exit point from the lots onto Spence Road and eliminates the direct access parking. This concept has in mind the idea of creating the most visual impact for improving the appearance of DKX. Access to the east side of the airport can then be limited via an access controlled vehicle gate at the east end of the parking lot.

Public Input Meeting

A presentation of the Initial Concepts Development was made to the public as part of the Downtown Island Airport Advisory Committee Meeting held at 6:00 P.M. on March 27, 2008. LPA presented the Initial Concepts Development in effort to receive public input as to needs. Most input focused on the desire to develop new T-Hangar and other more modest cost parking developments (plane ports and tie-downs) to allow for more based aircraft. Of additional interest was protecting and reinforcing the small airport character and feel of DKX. A summary of the meeting comments is attached herein (Attachment C).

General Aviation Terminal

Design and construction of a new general aviation terminal must be considered as part of the development program. The existing FBO operation has limited space that can be devoted to customer and pilot services. The existing FBO is difficult to expand due to limitations within the existing building structure and lack of adjacent unutilized airfield space. The conditions of the existing FBO do not reflect the unique character of DKX nor the vibrant activity that occurs on a daily basis. A new terminal building would support increasing customer service at DKX and allow for growth of the operation. A new terminal building would present a more efficient use of space. A new terminal building would better reflect the aesthetic character of DKX and the context of its neighborhood. Development of a terminal building and its surrounding landside and airside pavements would increase the functionality and capacity of DKX. A new terminal building would provide an opportunity to dramatically improve the first impression when arriving.

A detailed programming process was not conducted as part of this study. A review of existing peer general aviation terminals was conducted as well as a review of the Tennessee Department of Transportation, Division of Aeronautics prototypical General Aviation Terminal Plan. While the DOA plan serves a guide for space allotment for a small airport terminal, each airport has a specific set of needs. The DKX plan should not be expected to only follow the DOA plan and it will be a plan based on the specific needs, circumstances and space available at DKX.

Prototypical General Aviation Terminal Plan

The Tennessee Department of Transportation, Division of Aeronautics has produced a Prototype General Aviation Terminal Building design package. This design serves as a resource to smaller airports throughout Tennessee and is intended to “convey architectural design standards” the DOA has determined appropriate. The terminal is a 1,984 square foot building, roughly 32 feet by 62

feet in dimension. It is intended to be constructed under certain structural and seismic conditions. The design is built from wood studs, brick veneer, wood roof trusses and a metal roof system, all materials appropriate for a building of this scale. The construction methods also allow for participation of most small contractors and builders in the bidding and construction process.

The space program for this prototype is as follows:

- Central Lobby
- Conference Room (views to the airside)
- Vending / Eating Area (sink, cabinets, vending machines)
- Dispatch Area / Reception Counter (views to the airside)
- Office
- Mechanical Room
- Men's and Women's Toilet Rooms (no showers and 2 toilet fixtures and 1 lavatory fixture each)
- Pilot's Lounge (landside views and with direct access to the Men's Toilet)
- Flight Planning (with direct access to the exterior and to Pilot's Lounge)

This prototypical plan is intended to serve very small airports in terms of operations and staff. The arrangement of the plan does allow for after hours arrivals and access to pilots and toilet facilities without providing access to the remainder of the building. The plan does provide for a covered automobile drop-off and pick-up location at the landside front door. The space accommodates only the most basic function and would be found to be inadequate for DKX.

RECOMMENDATIONS

Facility Plan - Unified Field Concept

After review and consideration of the concepts presented, the MKAA has determined that the Medium Impact Plan serve as the basis of the recommended Unified Field Concept for guiding future facilities development at DKX. The Unified Field Concept plan is attached herein (Attachment D). Specifically, this plan includes the following summary of new development:

- Completion of the current condo hangar development – 4 additional units and extension of the existing taxilane and construction of a second Design Group I taxilane and 8 additional condo hangar units;
- 6 T-Hangar buildings, each approximately containing 11 aircraft units, for a total of 66 aircraft spaces;
- 3 new taxilanes, designed to Group I standards, perpendicular to Taxiway A, allowing for access to new T-Hangar buildings;
- Sites for up to 3 bulk storage hangars, 12,000 SF each in area, along the east perimeter of the site;
- Future development of 2 additional bulk storage hangar sites on the south east perimeter of the site and approximately 68 new automobile parking spaces for use by, and immediately south of, the bulk storage hangar tenants;
- Development of a perimeter taxilane, south and east, designed to Group II standards, allowing for access to new bulk storage hangar units;
- Site for the Civil Air Patrol Wing Headquarters facility, automobile parking and space for parking up to 4 aircraft (plane port);
- Connection of existing Taxilane N along the north side of Building 4 to the new perimeter taxilane system. The existing clear dimension between Building 4 and Building 10 is approximately 6 to 7 feet less than the standard clear OFA for a Design Group I taxilane and appropriate operational limitations will be required;
- A Terminal Building, oriented parallel to the runway, with a program developed specifically for DKX;
- New apron pavements in the area of the new Terminal to provide additional transient aircraft parking locations;
- Landside terminal building drive and public automobile parking of approximately 95 new spaces;
- Resurfacing and restriping of the existing FBO parking lots;
- The fuel storage and servicing operation was not specifically reviewed as part of this study.

Priorities

Priorities for development of facilities at DKX should be included to assist in the implementation of the Unified Field Concept and should be ordered as follows:

1. Aircraft Storage (T-Hangars)
2. Terminal Building
3. Aircraft Storage (Plane Ports)
4. Aircraft Storage (Bulk Hangars)
5. Tie-Down/Ramp Space

Typically, at general aviation airports, the demand exists for storing approximately 80 percent of the based aircraft in some type of covered or hangar facility. Of this demand, approximately 80 percent falls to T-Hangar type facilities and 20 percent to bulk storage type hangar facilities. There currently exists a large demand for additional aircraft storage facilities at DKX and specifically the need for T-Hangars. All of the existing T-Hangars are currently leased and the MKAA has a waiting list for leasing opportunities once additional units become available. Due to the demand and its potential for immediate revenue generation, design and construction of new T-Hangar units, and the pavements required to access them, should be given the highest priority.

Construction of a new terminal building and its associated development of landside parking and access should be considered next in the list of priorities. This would increase the level of service provided to pilots and improve the opportunity for increased operations. It would also enhance the first impression of DKX to visitors and build upon its unique character.

Continuing to increase the opportunity for inexpensive aircraft storage in the form of plane ports should be third in the list of priorities. The current plane ports are fully leased. Development of plane ports is easily accomplished and may be converted into hangared space at a future date with relatively little infrastructure impact and cost.

As indicated above, the demand for box or bulk storage hangars is generally less than the demand for plane ports and T-Hangar facilities but is anticipated to continue at DKX. Assigning space on the airfield for future development of bulk storage type hangars is an essential part of the Unified Field Concept. As the opportunities for development of bulk storage hangars occur, the MKAA is well positioned to act in a timely manner.

Ramp space for transient parking and tie-downs is currently adequate at DKX. By its nature, the development of the aircraft movement pavements will result in

increases in the availability of new parking locations. These can be constructed at the same time as the development of the taxilane system at a relatively lower cost.

Security Recommendations

The Department of Homeland Security/Transportation Security Administration, or TSA, in conjunction with FAA and other general aviation industry representatives, has developed Information Publication A-001 “Security Guidelines for General Aviation Airports” in effort to provide recommendations and guidance in addressing security issues at general aviation airports such as DKX. This document does not apply to airports required to meet provisions of 49 CFR 1542 and it is not its intent to have general aviation airports meet 49 CFR 1542 requirements. Security at DKX needs to be both flexible and fixed and be reflective of the available resources and potential threats specific to DKX.

All unattended aircraft at DKX should be secured. This may be accomplished by a variety of methods, including door locks, keyed ignitions, ignition disabling devices, prop and throttle locking mechanisms and aircraft tie-downs. Aircraft may also be stored in lockable hangar buildings. This is a responsibility that falls on individual owners and pilots but should be encouraged by the MKAA.

The MKAA should consider installation of a closed circuit surveillance system for sensitive areas at DKX. This system should cover all airfield access points, terminal and FBO and hangar and automobile parking areas. Cameras may also be employed to cover the generally inaccessible north side of the island.

Airfield fencing along the DKX property should be improved with taller 6-foot fencing. Existing fencing in poor condition or less than the recommended height should be replaced and made consistent along all accessible areas. Highest priority for fencing would be the areas between the airfield and Spence Road and those areas easily accessible by automobile and pedestrian traffic.

Vehicular access points to the airfield should be reduced and controlled. Fewer access points allows for easier monitoring and notification of unauthorized access. If funding is available, the access gates should be automated with newer mechanical operator systems for automatic gate closings and to allow for ease of gate operation and access by tenants. These systems should be appropriately timed to limit the piggybacking of vehicles. Access points should also be monitored by a camera system and have electronic access control via push codes or proximity cards. Manual access gates for vehicles and pedestrians should be lockable. Distribution of codes, cards or keys must be controlled, tracked and limited to authorized individuals.

The general public should be allowed into the FBO and terminal area only. Access to areas beyond should be limited to only tenant, pilot and other authorized individuals. This would provide greater security to tenants and limit public access east of the central FBO area. Monitoring of public vehicles would be consolidated in one location. This also provides an effective separation for tenant parking needs.

The quality and quantity of signage at DKX should be improved. Signage can present a consistent appearance to airport property. Signage should contain appropriate warnings to deter unauthorized access and should include appropriate phone/contact information to report unauthorized and suspicious behaviors. Signage should be located at all access points and appropriately spaced at intervals around the parking and fenced areas.

The MKAA continuously monitors and updates its DKX security plan. The Knox County Sherriff's department is located on airport property. The MKAA also has a public safety department that operates regular patrols on DKX property. Continued development of good community relationships between the airport and the Island Home neighborhood can enhance DKX security through a neighborhood watch program.

The existing lighting configurations and output were not evaluated as part of this report.

Improvements to the overall airport security infrastructure should be undertaken in a timely manner to ensure the safety and security of all DKX operations, personnel and property. In terms of priority, improvements to fencing and gates, lighting and signage are the most important. The addition of surveillance systems and electronic access control are of next importance. Various aspects of the security recommendations can be undertaken as need arises and funding is procured. Some of these improvements may be undertaken as individual or stand alone project without any direct impact on operations or other airport development. However, a number of these improvements coordinate directly with and will have direct impact on the physical development of other airport facilities and, as such, should be coordinated and undertaken at the same time.

DKX General Aviation Terminal Building Program

A brief review of the DKX operations was conducted by MKAA as part of this study in effort to develop the outline of a program that address both current and future terminal building needs. A conceptual terminal building program, based on

the current understanding of needs, has been developed and is attached herein (Attachment E). The program includes the following major spaces:

- Customer Service Counter and Reception
- FBO Managers office
- Administrative office/work area
- Office (A/R technician)
- MKAA Managers office
- Flight Line office and work area
- Passenger Lobby
- Public Restrooms
- Pilots Restrooms to include shower facilities
- Pilot Briefing/Flight Planning/Weather Center
- Pilot Lounge/Quiet Room
- Food Service Area – coffee, snacks, vending, flight catering, kitchen and break function
- Conference Room
- Small second floor office space that can also be utilized as a temporary air traffic control tower
- Support spaces for mechanical, electrical and communications
- Circulation, including entry vestibules

The terminal building should also include appropriate design of exterior functional spaces, to include covered airside space for ground equipment and tugs, apron development and layout to maximize the aircraft parking opportunities, covered landside automobile drop-off/pick-up, covered entry doors and vestibules, landscaping to reflect the local context, access control vehicle gate to allow for monitored airfield access, appropriate fencing and CCTV camera system to increase security, and improvements to utility infrastructure as necessary. The plan should also allow for after hours access for pilots and flight crews into a limited portion of the building.

It is recommended that the MKAA select an experienced terminal building design consultant and develop a more detailed analysis of needs and their resulting program. It can be recommended that a conceptual general aviation terminal building consisting of approximately 6,500 to 7,200 square feet of space and including redevelopment of apron parking and landside roadway, parking and landscaping components be a part of the overall development plan for DKX.

Civil Air Patrol

The Tennessee Wing of the Civil Air Patrol (CAP) has submitted a request to the MKAA for development of a new Wing Headquarters facility at DKX. The facility

would consist of a two-story building of approximately 5,000 to 6,000 square feet. The building would serve as the permanent headquarters for the CAP and house all meeting, classroom, support and functional spaces. The facility would require the landside support of approximately 25 vehicle parking spaces. The facility would require the airside support of one or two constructed plane port structures to house up to four CAP aircraft. The CAP has determined that DKX is uniquely situated to support the CAP mission. Space is identified within the Unified field concept to develop this facility. A complete description of the CAP program is on file with the MKAA.

Funding

Planned improvements may be eligible for funding through Federal or State sources. DKX receives a Federal entitlement through the Vision 100 - Century of Flight Authorization Act of 2003, Public Law 108-176, authorized on December 12, 2004. This legislation provides a level of funding to general aviation airports listed in the National Plan of Integrated Airports (NPIAS). These funds can be used for eligible projects or eligible portions of projects based on Federal Aviation Administration (FAA) determined criteria.

The FAA utilizes the Airport Improvement Program handbook (Order 5100.38C) for determining the policies and procedures for administration of the Federal (FAA) entitlements. DKX is classified as a non-primary airport and receives an entitlement of $150,000 per year. The project costs for eligible improvements are typically funded with the Federal entitlement at 90% with the remaining 10% required to be matched through State and local funding sources.

Generally, revenue producing developments, such as hangar projects, are not eligible for funding with the Federal entitlements. Chapter 3 Section 301 of the AIP handbook indicates that the prohibition of using Federal entitlements for the development of hangar projects and public parking facilities at non-primary and non-Part 139 airports does not apply. Chapter 5 Section 526 of the AIP handbook outlines the additional conditions under which hangar facilities at non-primary Airports are eligible. It is the FAA's intent that public safety and security projects receive priority for funding over other types of projects. Airports such as DKX are required to have satisfied, or have provisions in place to satisfy, all required airfield safety and security conditions. These conditions include, but may not be limited to, removing obstructions within approach surfaces, airfield pavement condition index above 80, lighting, capacity and other similar airfield safety and security issues. If these conditions are met, hangar and parking facility development at DKX may be eligible.

Planned improvements may also be eligible for funding through the Tennessee Department of Transportation, Division of Aeronautics (DOA). The DOA will typically participate in the funding of general aviation terminal building projects in the form of a 50/50 State/Local matching grant. The total value of the participation is up to a $700,000 limit, resulting in a maximum $350,000 State commitment and a $350,000 Local commitment. The DOA would review and confirm eligibility of a general aviation terminal program. Direct revenue producing spaces and non-terminal related spaces may not be eligible for receipt of State funds.

Please note: Federal entitlements to general aviation airports are subject to Congressional reauthorization, State funds are dependent on legislative action and are less predictable in “lean” budget years, and the competition for discretionary funds among airports is intense. This report makes no determination that the projects identified in the Unified Field Concept will receive approval and funding from the sources indicated, nor that the amounts of funding received will cover all of the eligible costs of planned improvements. Excerpts from the AIP Handbook are attached herein (Attachment F).

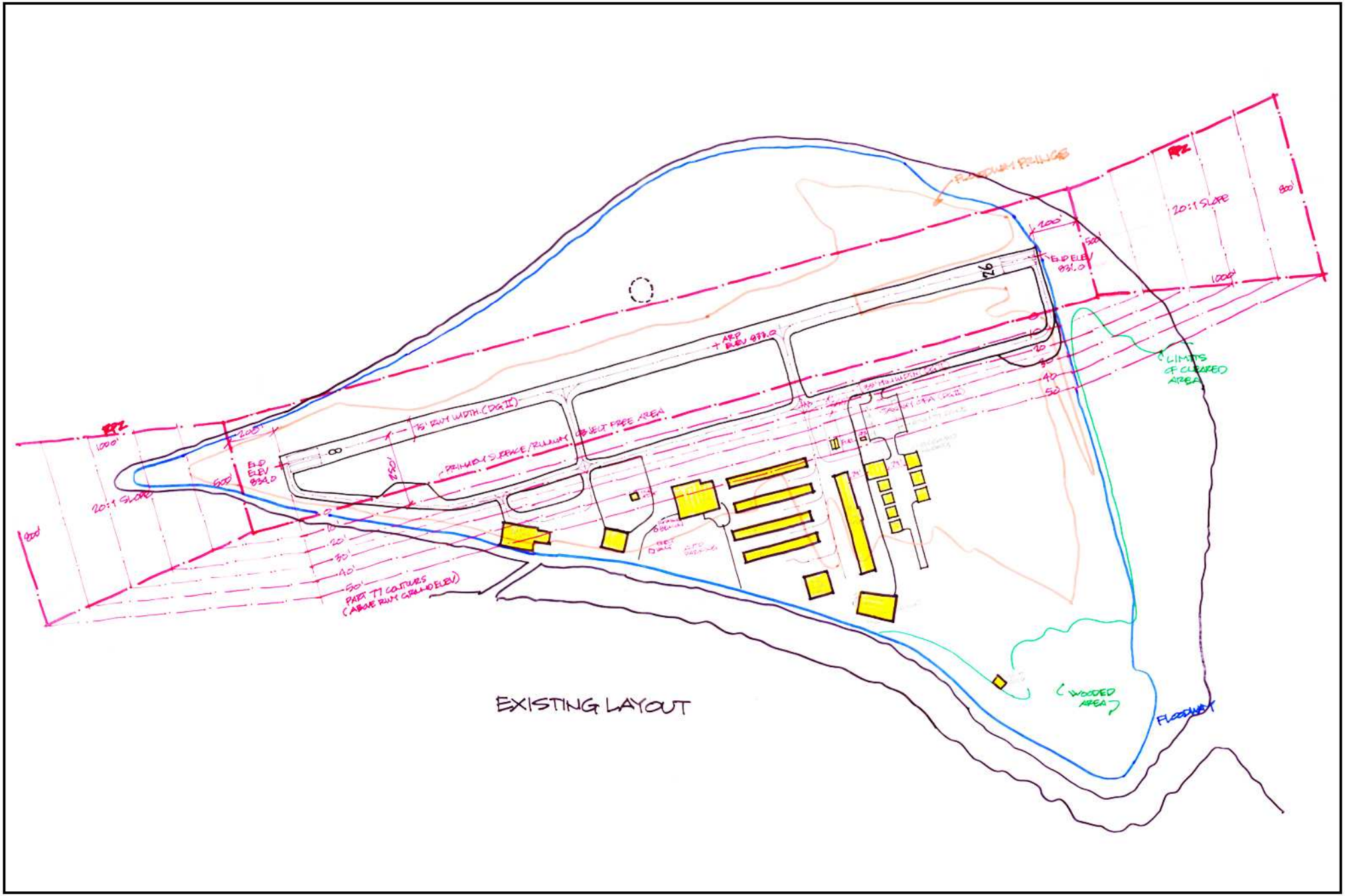
Continued development of the condo hangars and its infrastructure would be funded by the existing private developer.

ATTACHMENT A

DOWNTOWN ISLAND AIRPORT - 2007

NOVEMBER 19, 2008

ATTACHMENT B



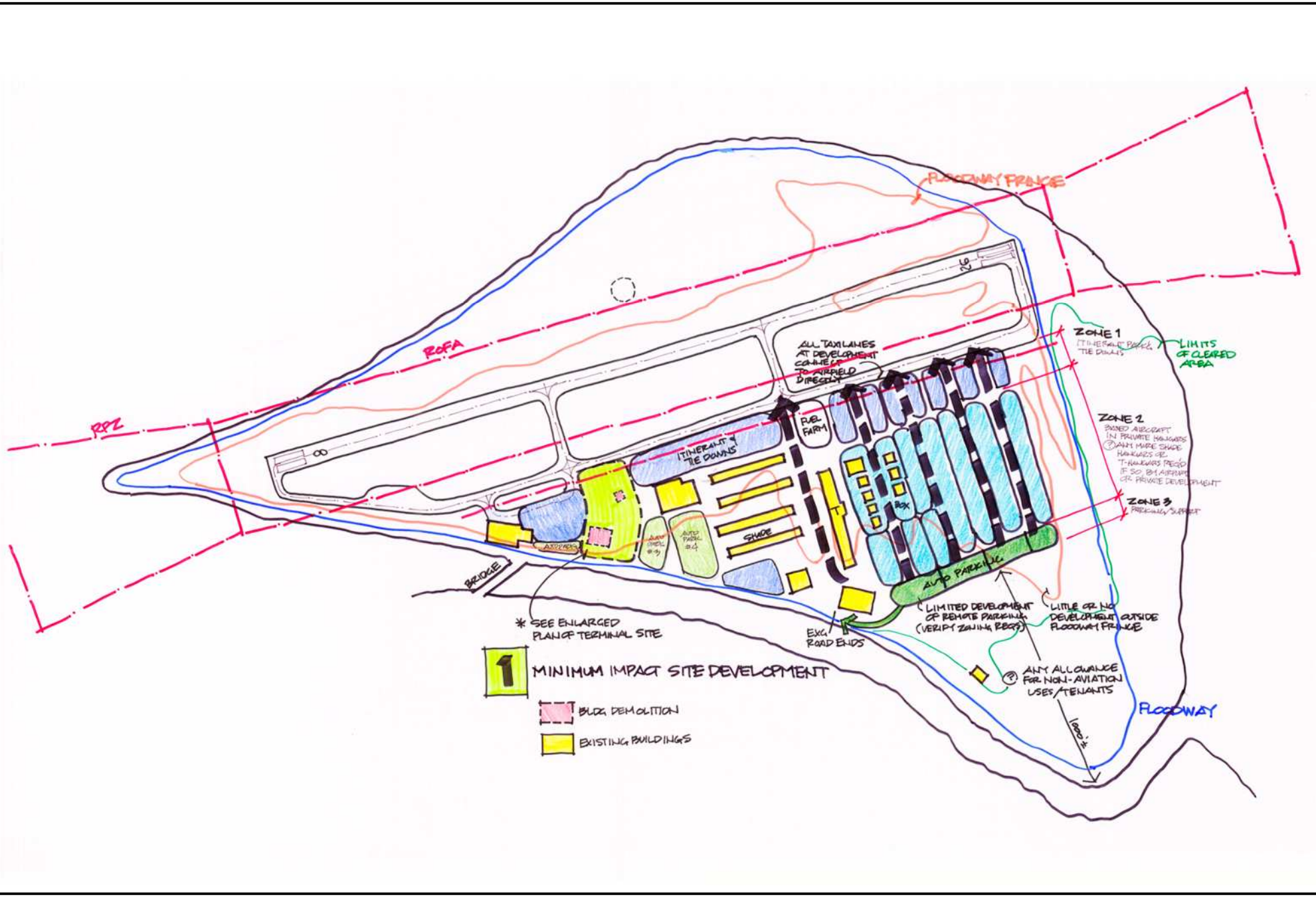
EXISTING LAYOUT

DOWNTOWN ISLAND AIRPORT - FACILITY PLAN - EXISTING LAYOUT

November 19, 2008

KNOXVILLE DOWNTOWN ISLAND AIRPORT

THE LPA GROUP
ENGINEERS • ARCHITECTS • PLANNERS



DOWNTOWN ISLAND AIRPORT - FACILITY PLAN - MINIMUM IMPACT PLAN

November 19, 2008

THE LPA GROUP
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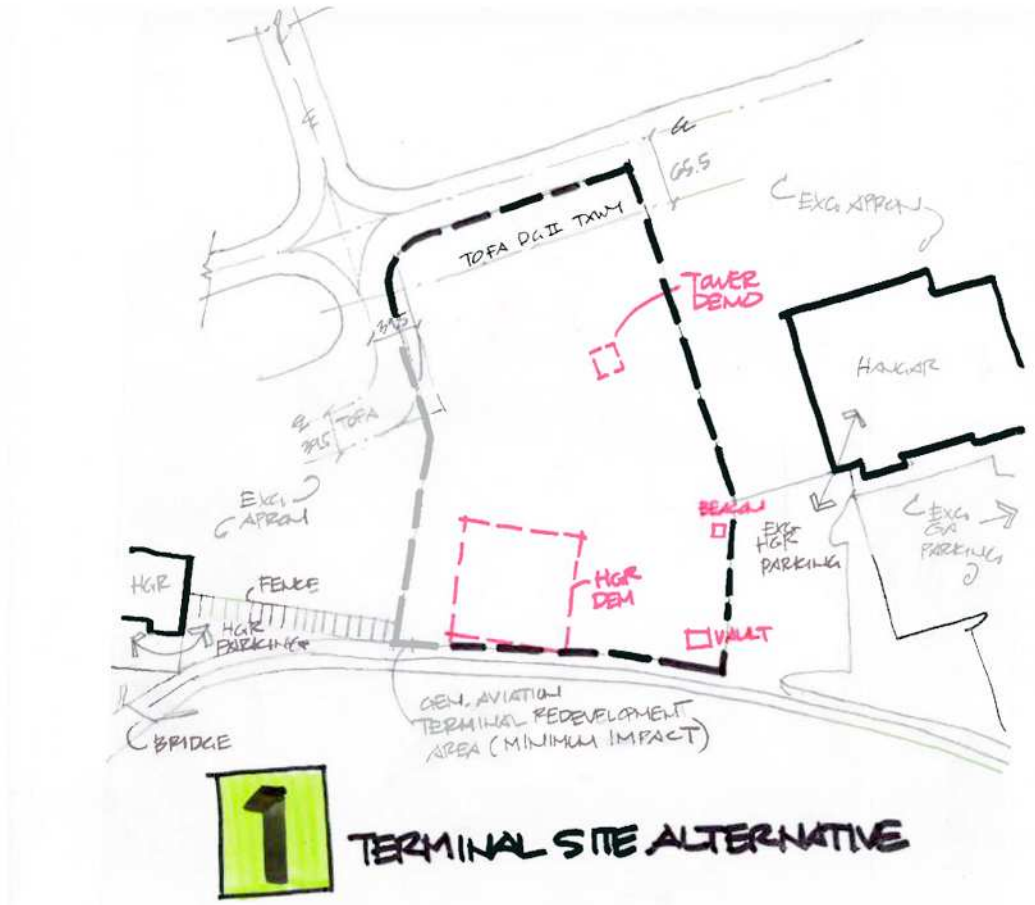
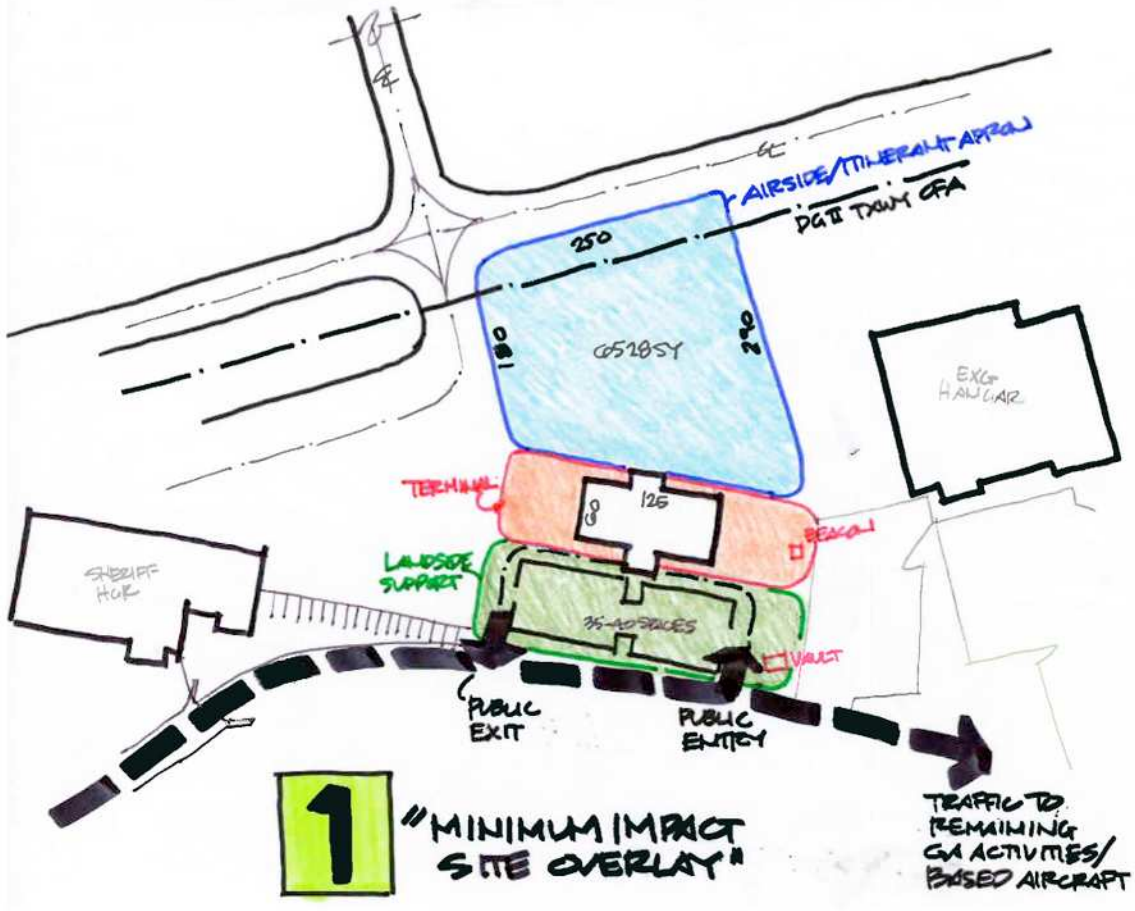
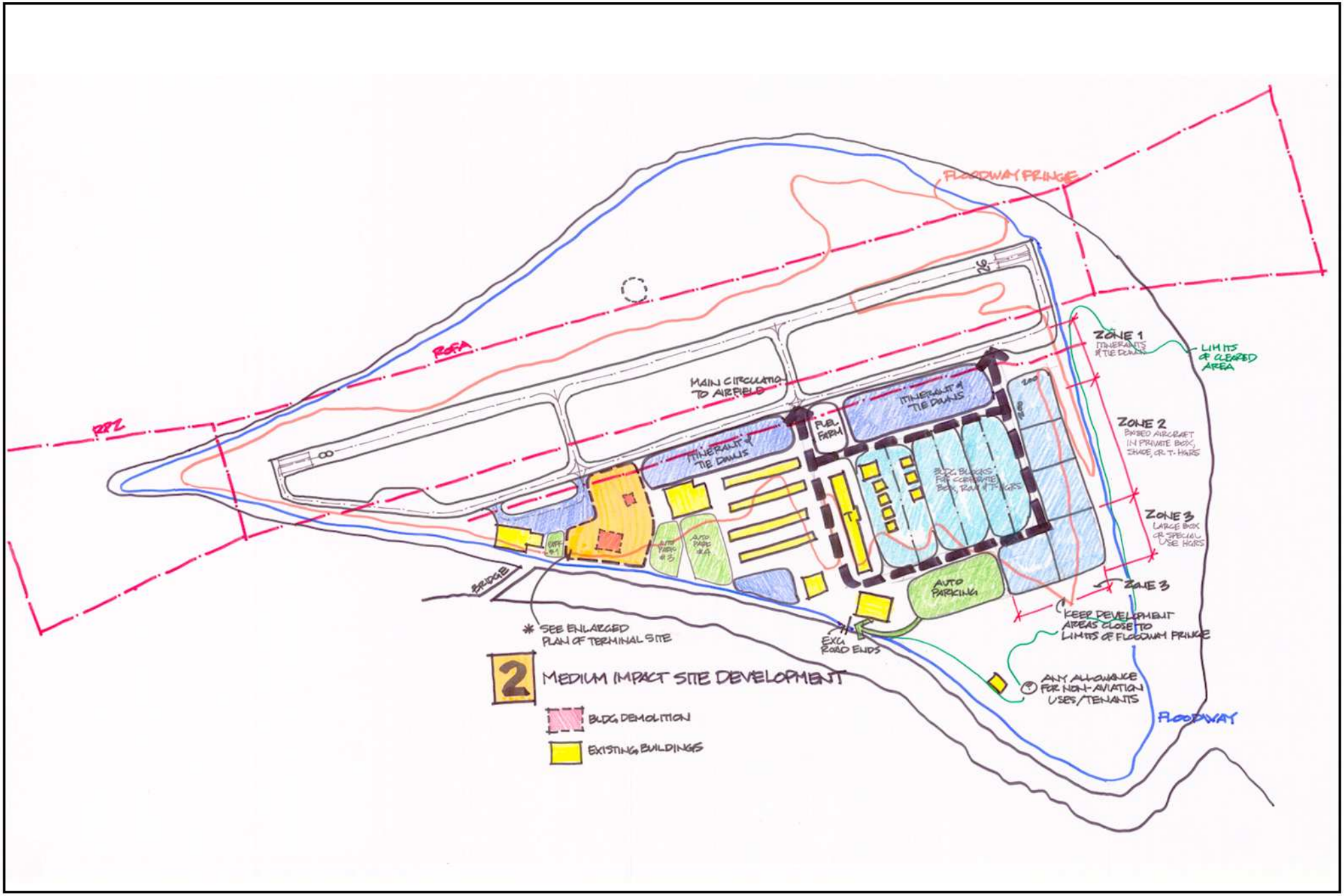


1 TERMINAL SITE ALTERNATIVE



1 "MINIMUM IMPACT SITE OVERLAY"

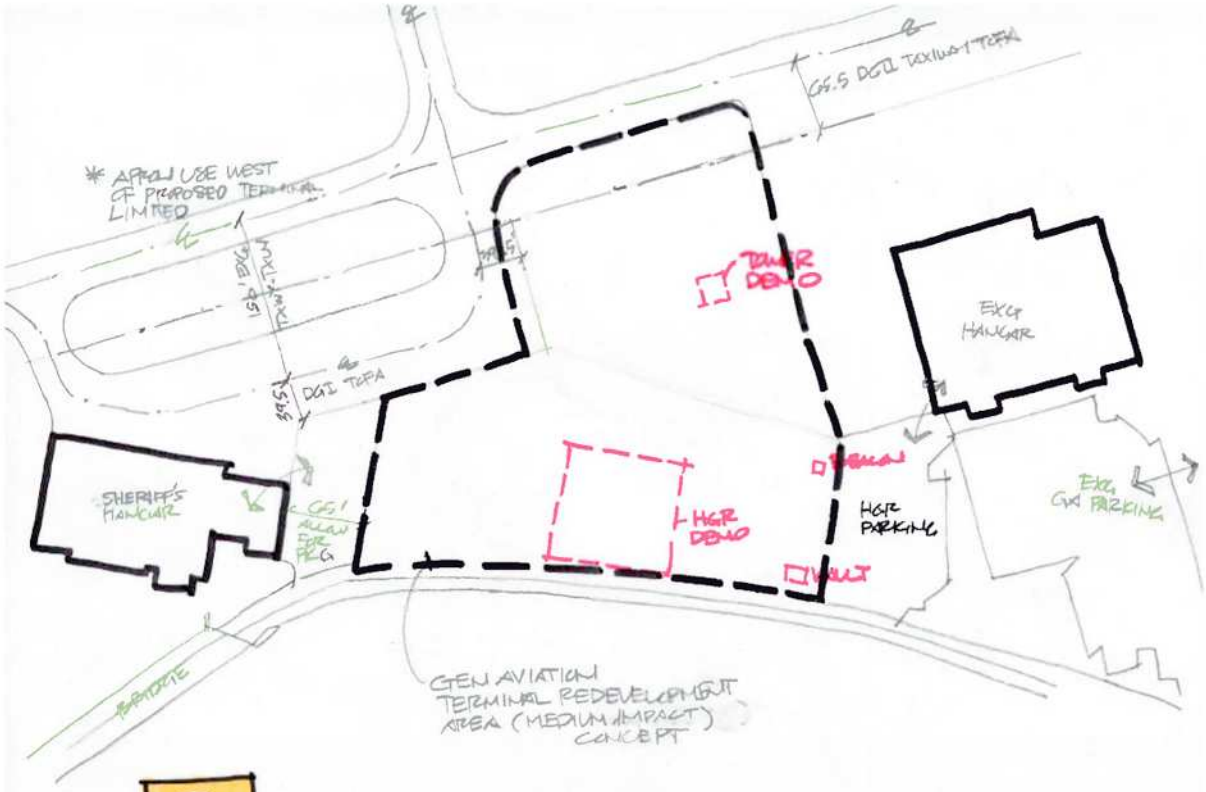
DOWNTOWN ISLAND AIRPORT
MINIMUM IMPACT - TERMINAL AREA
November 19, 2008



DOWNTOWN ISLAND AIRPORT - FACILITY PLAN - MEDIUM IMPACT PLAN

November 19, 2008

THE LPA GROUP
ENGINEERS • ARCHITECTS • PLANNERS



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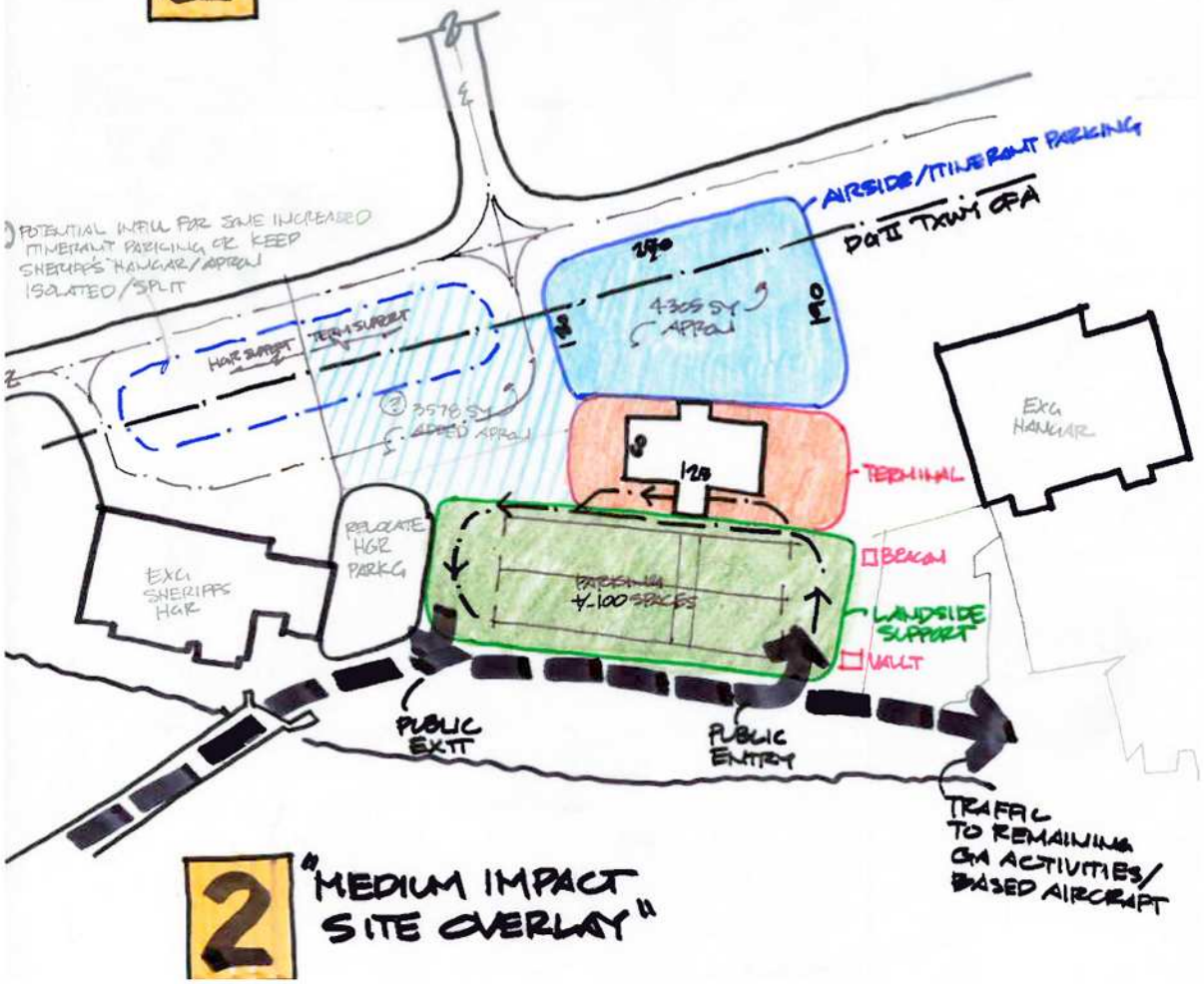
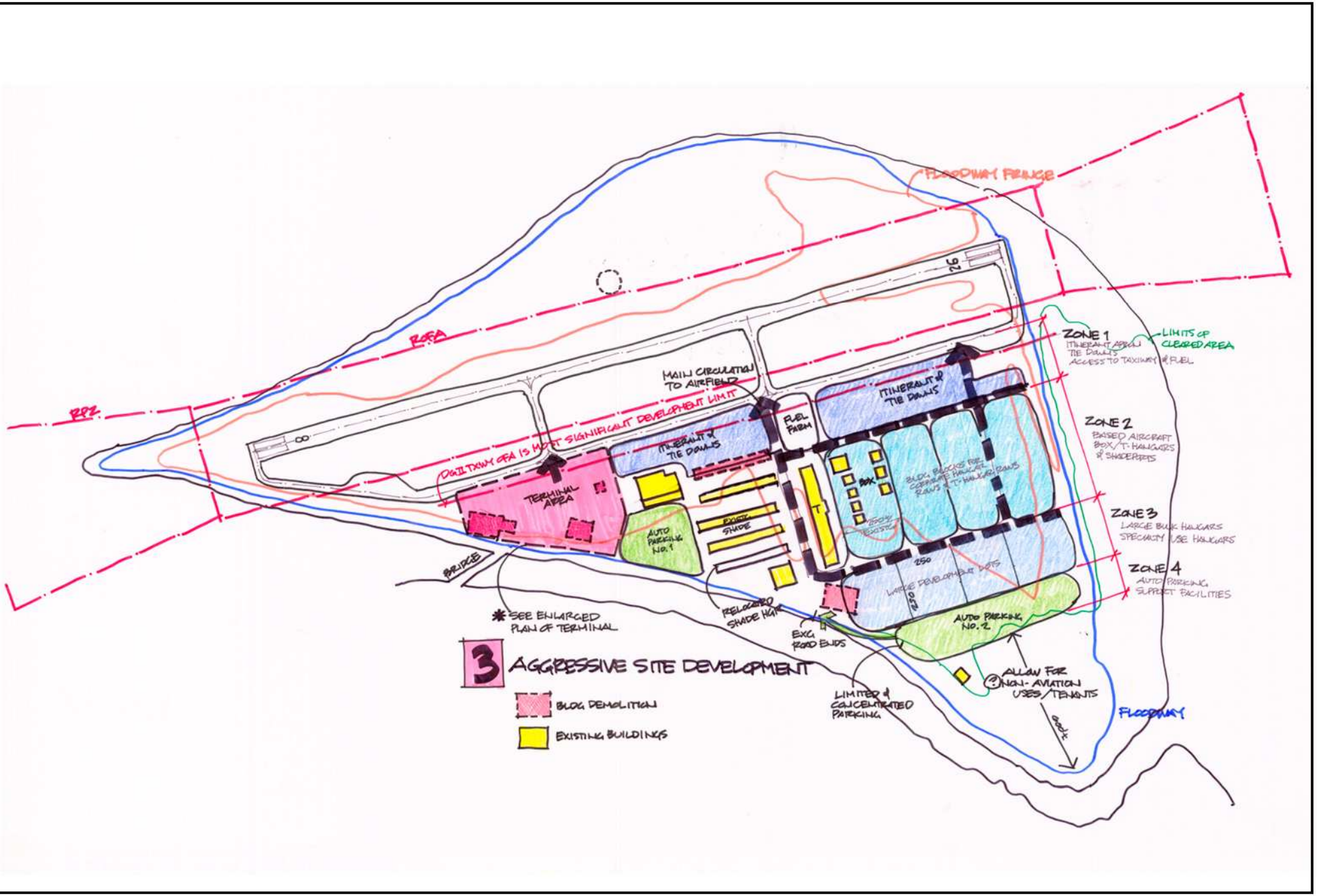


2 "MEDIUM IMPACT SITE OVERLAY"

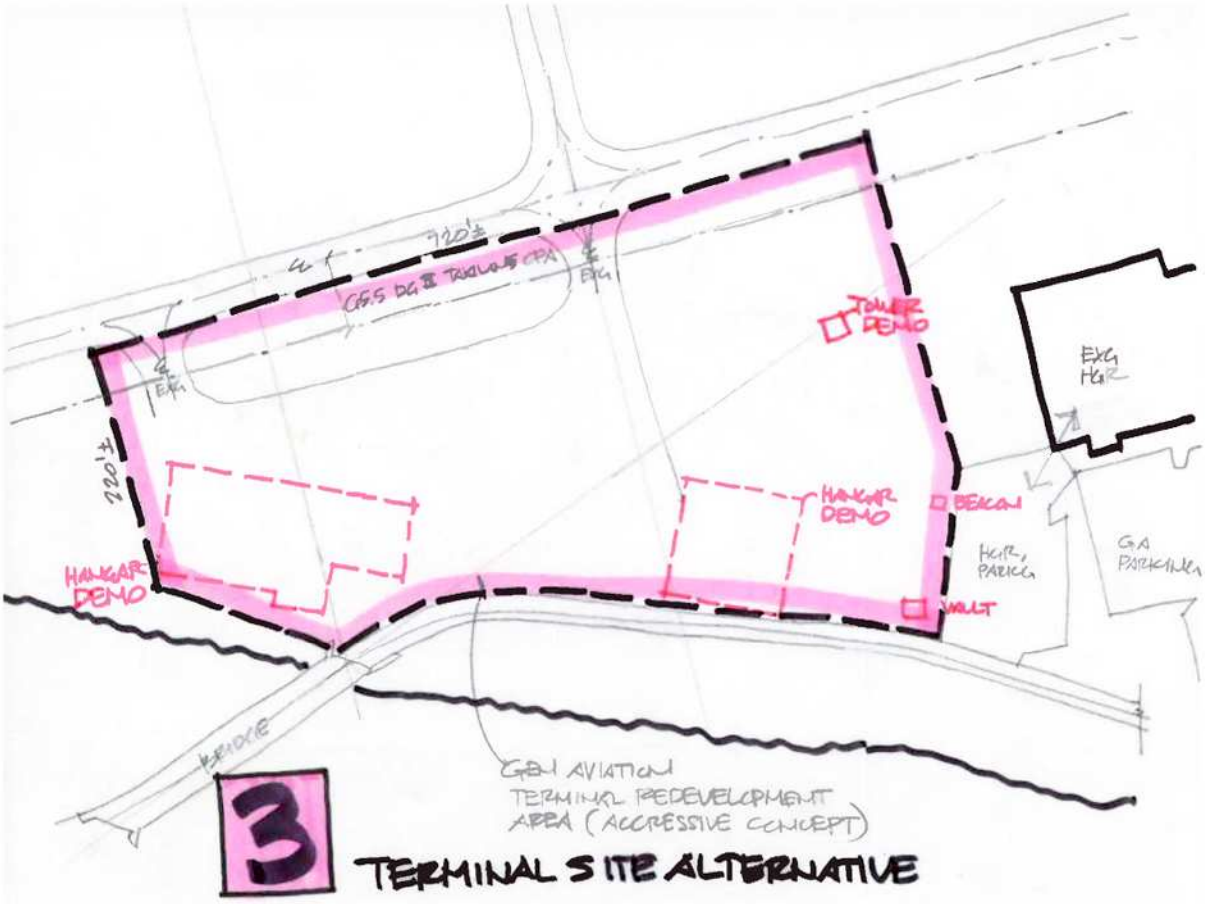
DOWNTOWN ISLAND AIRPORT
MEDIUM IMPACT - TERMINAL AREA
November 19, 2008



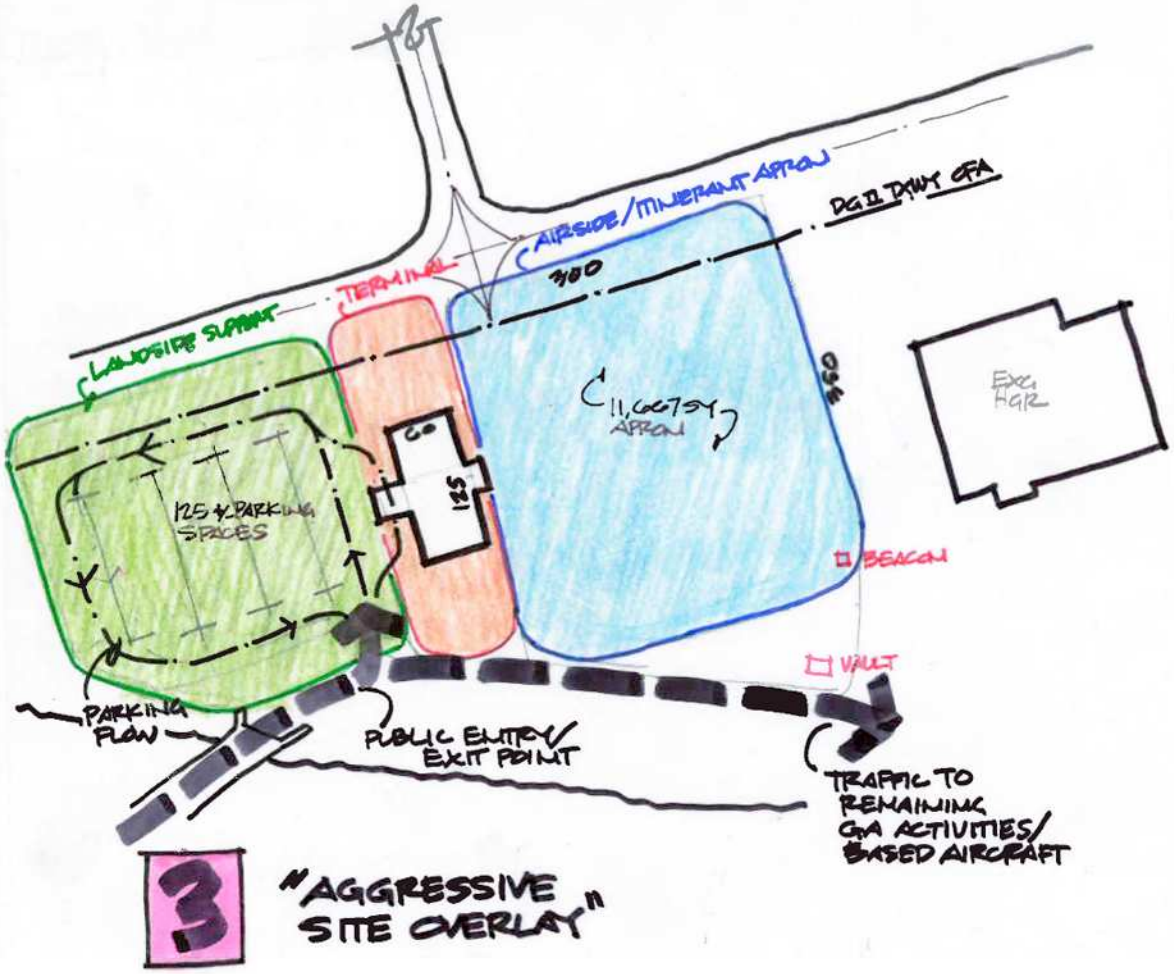
DOWNTOWN ISLAND AIRPORT - FACILITY PLAN - HIGH IMPACT PLAN

November 19, 2008

THE LPA GROUP
ENGINEERS • ARCHITECTS • PLANNERS

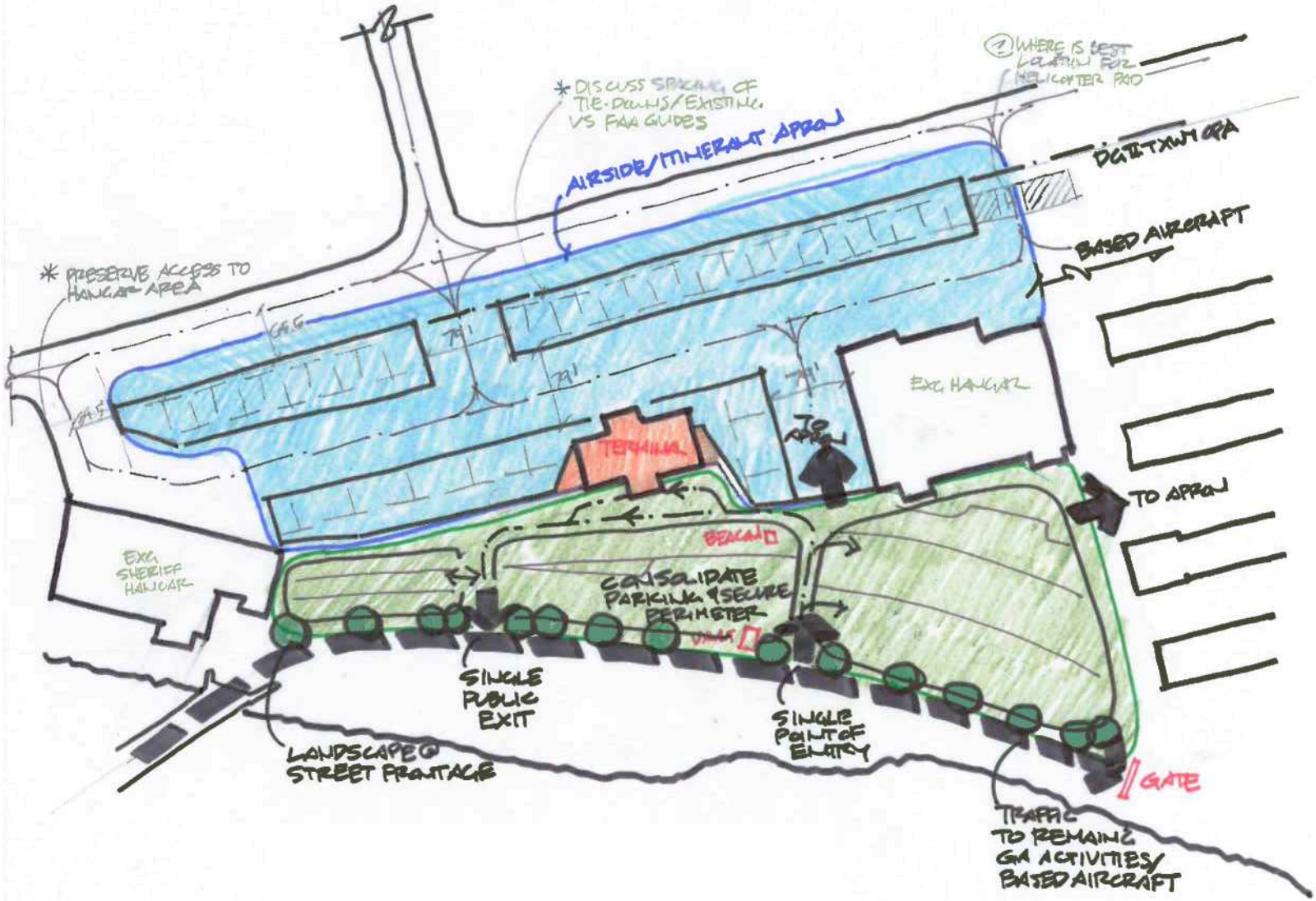


3 TERMINAL SITE ALTERNATIVE



3 "AGGRESSIVE SITE OVERLAY"

DOWNTOWN ISLAND AIRPORT
HIGH IMPACT - TERMINAL AREA
November 19, 2008



DOWNTOWN ISLAND AIRPORT - FACILITY PLAN - FULL IMPACT TERMINAL AREA

November 19, 2008

ATTACHMENT C

METROPOLITAN KNOXVILLE AIRPORT AUTHORITY
MCGHEE TYSON AIRPORT

DOWNTOWN ISLAND AIRPORT
PLANNING STUDY

An Airport Advisory Council meeting was held March 27, 2008 at 6:00 p.m. at the Downtown Island Airport to present the initial conceptual development plans for the Airport. Representatives of the MKAA and DKX staff, THE LPA GROUP INCORPORATED, the Airport Advisory Council and Airport users and neighborhood representatives were in attendance.

The goal of the meeting was to receive public and user input as to both overall and specific development needs at DKX. THE LPA GROUP INCORPORATED presented the following conceptual development plans for what future development of Airport facilities make resemble.

1. Overall Airport Minimum Site Development
2. Overall Airport Medium Site Development
3. Overall Airport Aggressive Site Development
4. Terminal Area Minimum Alternative Overlay
5. Terminal Area Medium Alternative Overlay
6. Terminal Area Aggressive Alternative Overlay
7. Terminal Area Unified Field Concept Overlay

The following input and comments were noted:

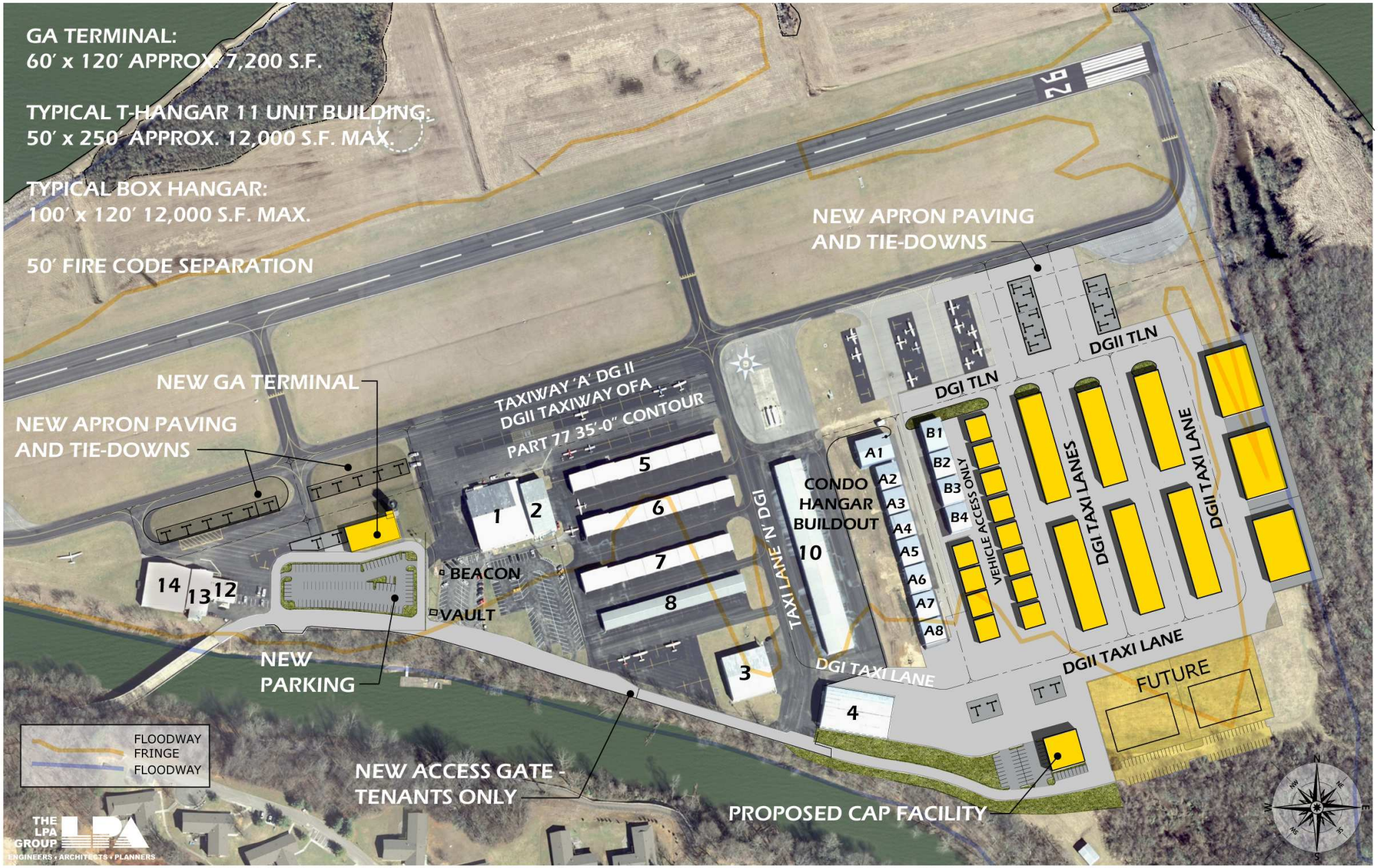
A. This is a small airport with a local neighborhood feel. It is important to not over develop and lose its unique identity. Character is primary.
B. Airport caters to small aircraft and is easy to utilize.
C. The length of the runway limits the field to smaller aircraft. This should be the focus of future development. Any opportunities to increase the length of the runway would be both cost and environmentally prohibitive.
D. Aircraft tie-down space is important for those owners looking for inexpensive parking options.
E. Better or more efficient utilization of the shade hangar area was noted.
F. Demand for T-hangar space was readily noted. Most of the comment centered around the development of additional T-hangar facilities in lieu of box and condo hangars. Consideration of modest cost opportunities for parking aircraft.
G. Some demand was noted for the ability to develop residential living spaces. (Note: there are building and fire code limitations to the development of residential and aircraft storage occupancies in conjunction with each other) – a runway community.
H. More office space for an FBO/Terminal building was noted. If a terminal building is considered, it was requested that the design include space for operation of a temporary tower. Also, consider operation of tower by the City of Knoxville.

I. Development of T-hangar facilities was noted as more critical than terminal building development. Also, enclosed hangar development more than shade hangars, depending on costs.
J. Food service and conferencing facilities would be beneficial.
K. Auto fueling (self) operations may be considered to increase traffic.
L. More attractive leasing arrangements with tenant was suggested.
M. Future development may look for opportunities to increase the Airports relationship with the community through the development of additional recreational opportunities, specifically as it relates to water access to the island.
N. Where they do not create an obstruction to operating aircraft, the Airport should continue to utilize the trees as a buffer.
O. Traffic and operations on football weekends was deemed minor on the airfield. Most of the impact comes on the landside and automobile parking facilities, moving groups to and from buses and on lack of useable space for groups of people to gather.
P. Remote Air Medical – note the existing DC-3 requires taxilane access out of both ends of the existing hangar building.
Q. Opportunities exist for development of additional facilities, such as the Civil Air Patrol wing headquarters.
R. Security must be balanced with other interests. Control point should be established along road to limit access to field by non-tenants. This point should be immediately downstream of the public parking area. Parking may be consolidated in the terminal area or additional parking located near other development. Consider impacts on development of other public or recreational facilities.
S. Fencing and gates to control and separate vehicular access to the airfield is required.
T. Development on the north side of the island is limited due to constraints on vehicular access. Building development is limited within the flood way areas of the island.

It appears that most of the aircraft circulation should be built around Design Group I aircraft, with consideration given to circulation for Design Group II aircraft as well. Largest based aircraft is the King Air. There is a natural efficiency to continued development along the airfield in a regular pattern. Better utilization of space may be made in the current area of the shade hangars. Tie down spaces should be continued adjacent to the taxiway. Development of hangars should give strong consideration to T-hangar layouts. Building and fire code regulations must be overlaid onto any site plan and appropriate building separations included in the plan. Parking should generally be consolidated in one main area for access control and security monitoring when possible. Improvements to fencing, gates and camera systems may be considered.

This meeting summary was submitted on April 21, 2008 by The LPA Group, Inc. Please review and provide any comments to: Robert Moore, The LPA Group, P. O. Box 5805, Columbia, South Carolina 29250, or via E-mail: Rmoore@lpagroup.com

ATTACHMENT D



DOWNTOWN ISLAND AIRPORT - FACILITY PLAN - UNIFIED FIELD CONCEPT

NOVEMBER 19, 2008

ATTACHMENT E

Future Space Program Worksheet
MINIMUM TERMINAL PROGRAM
Downtown Island Airport (DKX)
Knoxville, Tennessee

Spaces Provided	Space Required	Comments
General Use - Site	**800**	
Site - Airside Covered Entry	200	Night phone area required
Site - Landside - Covered Entry	200	
Site - Landside - Vehicle Parking Lot		about 100
Site - Landside - Pick-Up / Drop-Off Lane	400	1 lane wide
Site - Landside - Delivery / Loading Area		access for tractor / trailer rig to apron needed
Site - Landside - Other		location for dumpster
General Use - Building	**1,550**	
Public - Main Lobby	500	Space for 35 people maximum, including seating
Public - Control Center / Reception	250	space for 2-3 people working at counter
Public - Display / Storage – Merchandise	0	Limited merchandise, maps and charts, part of counter
Public - Display / Storage – Memorabilia	0	no separate space for this function is required
Public- Storage- Baggage Room	25	space for storage of bags and "lost and found"
Public - Restrooms - Men	180	more fixtures than code minimums, changing table
Public - Restrooms - Women	225	more fixtures than code minimums, changing table
Public - Observation Area	120	part of lobby space, views to apron and runway
Public - Entry Vestibules	250	at main entries, landside and airside
Passenger Facilities	**520**	
Public - Passenger Waiting	400	seating for 12-15 persons in separated groupings
Public - Telephone Booths	0	
Public - Vending - Coffee Bar / Kitchenette	120	3 vending machines, coffee
Public - Vending - Dining Area	0	seating may not be required in vending area
Public - Local Interest Displays / Advertising	0	no ads, wall space for brochure displays
Public - Souvenir Sales	0	limited, part of merchandise area
Public - Conference Center – Kitchenette / Catering	0	not required if accessible to admin conf/flight catering
Flight Crew	**565**	
Flight Crew Briefing / Flight Planning / Weather	200	2 computer minimum+ laptop, wall space for maps
Flight Crew Lounge	175	seating 6, television, laptop work area(s)
Flight Crew Restroom(s)	70	assumes unisex room with shower
Flight Crew Shower	0	
Flight Crew Quiet Room	120	2-3 lounge chairs
Line Crew / Ground Employees	**500**	
Line Crew Service Counter	50	space for stoage and worksurface
Line Crew Service Area	120	space for four people minimum needed
Line Crew Storage	50	supplies, securable
Line Crew Locker Space	25	space for lockers needed, not necessarily separate
Line Crew Emergency Shower / Eyewash	5	
Line Crew Operations Manager / Supervisor	100	
Flight Catering Kitchen	150	coffee urn, ice machine, ref / freezer, dishwasher
Employee Restrooms - Additional	0	sink for wash-up minimum
Employee Breakroom		no separate facility required
FBO / Airport Administration UseSpaces	**1,850**	
FBO / Airport Admin. – Airport Manager	225	
FBO / Airport Admin. – Administrative Assistant	150	
FBO / Airport Admin. – A/R Technician	150	
FBO / Airport Admin – MKAA Ops	150	
FBO / Airport Admin. – Filing / Copy Room	125	Copier, storage cabinets, file cabinets, flat file
FBO / Airport Admin. – Storage	200	multiple smaller rooms distrubuted
Public - Conference Room	700	flexible furnishings, space for 25 people
Public - Conference Center – Equipment Storage	75	accessible from conference room
FBO / Airport Admin. – Other	75	
Air Traffic Control Tower (ATCT) Use Spaces	**590**	
ATCT – Control Cab	250	
ATCT– FAA Office area	150	
ATCT– FAA Breakroom / Training Room	0	
ATCT- Toilets and Stair / Circulation	140	floor area under 500 SF - no toilets and elevator required
ATCT – FAA Electrical and Equipment Room	50	
ATCT- Mechanical Room	0	
Miscellaneous Use Spaces	**0**	
Other Tenant Space (offices)	0	
Support Services	**1,015**	
Janitor Closet	35	
Mechanical Rooms	200	
Electrical Room	100	separate metering for FBO versus public area
Computer/Telephone Room	80	provide for computer networking
Circulation - Horizontal - 1st Floor	600	allow approximately 12% of total interior
TOTAL BUILDING AREA	**6,590**	excludes covered entry areas

ATTACHMENT F

Table 4-1. Taxiway dimensional standards

ITEM	DIM 1/	AIRPLANE DESIGN GROUP					
		I	II	III	IV	V	VI
Taxiway Width	W	25 ft 7.5 m	35 ft 10.5 m	50 ft2/ 15 m2	75 ft 23 m	75 ft 23 m	100 ft 30 m
Taxiway Edge Safety Margin 3/		5 ft 1.5 m	7.5 ft 2.25 m	10 ft4/ 3 m4/	15 ft 4.5 m	15 ft 4.5 m	20 ft 5 m
Taxiway Pavement Fillet Configuration		- Refer to Table 4-2 -					
Taxiway Shoulder Width		10 ft 3 m	10 ft 3 m	20 ft 6 m	25 ft 7.5 m	35 ft5/ 10.5 m5/	40 ft5/ 12 m5/
Taxiway Safety Area Width	E	49 ft 15 m	79 ft 24 m	118 ft 36 m	171 ft 52 m	214 ft 65 m	262 ft 80 m
Taxiway Object Free Area Width		89 ft 27 m	131 ft 40 m	186 ft 57 m	259 ft 79 m	320 ft 97 m	386 ft 118 m
Taxilane Object Free Area Width		79 ft 24 m	115 ft 35 m	162 ft 49 m	225 ft 68 m	276 ft 84 m	334 ft 102 m

1/ Letters correspond to the dimensions on figures 2-1 and 4-1.

2/ For airplanes in Airplane Design Group III with a wheelbase equal to or greater than 60 feet (18 m), the standard taxiway width is 60 feet (18 m).

3/ The taxiway edge safety margin is the minimum acceptable distance between the outside of the airplane wheels and the pavement edge.

4/ For airplanes in Airplane Design Group III with a wheelbase equal to or greater than 60 feet (18 m), the taxiway edge safety margin is 15 feet (4.5 m).

5/ Airplanes in Airplane Design Groups V and VI normally require stabilized or paved taxiway shoulder surfaces.

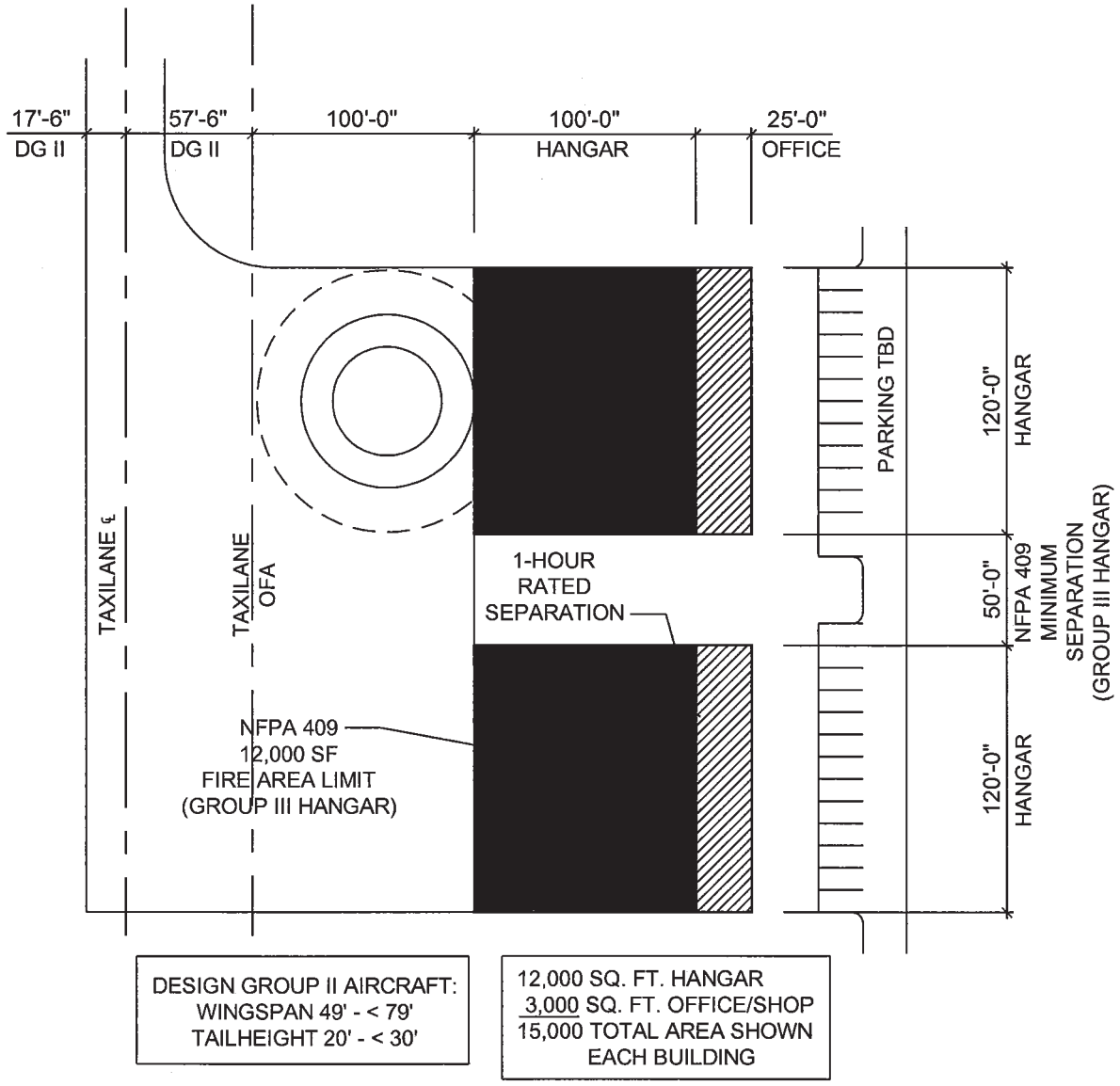
Consideration should be given to objects near runway/taxiway/taxilane intersections which can be impacted by exhaust wake from a turning aircraft.

The values obtained from the following equations are acceptable in lieu of the above standard dimensions for taxiway safety area width, taxiway object free area (OFA) width, and taxilane object free area width:

Taxiway safety area width equals the airplane wingspan;

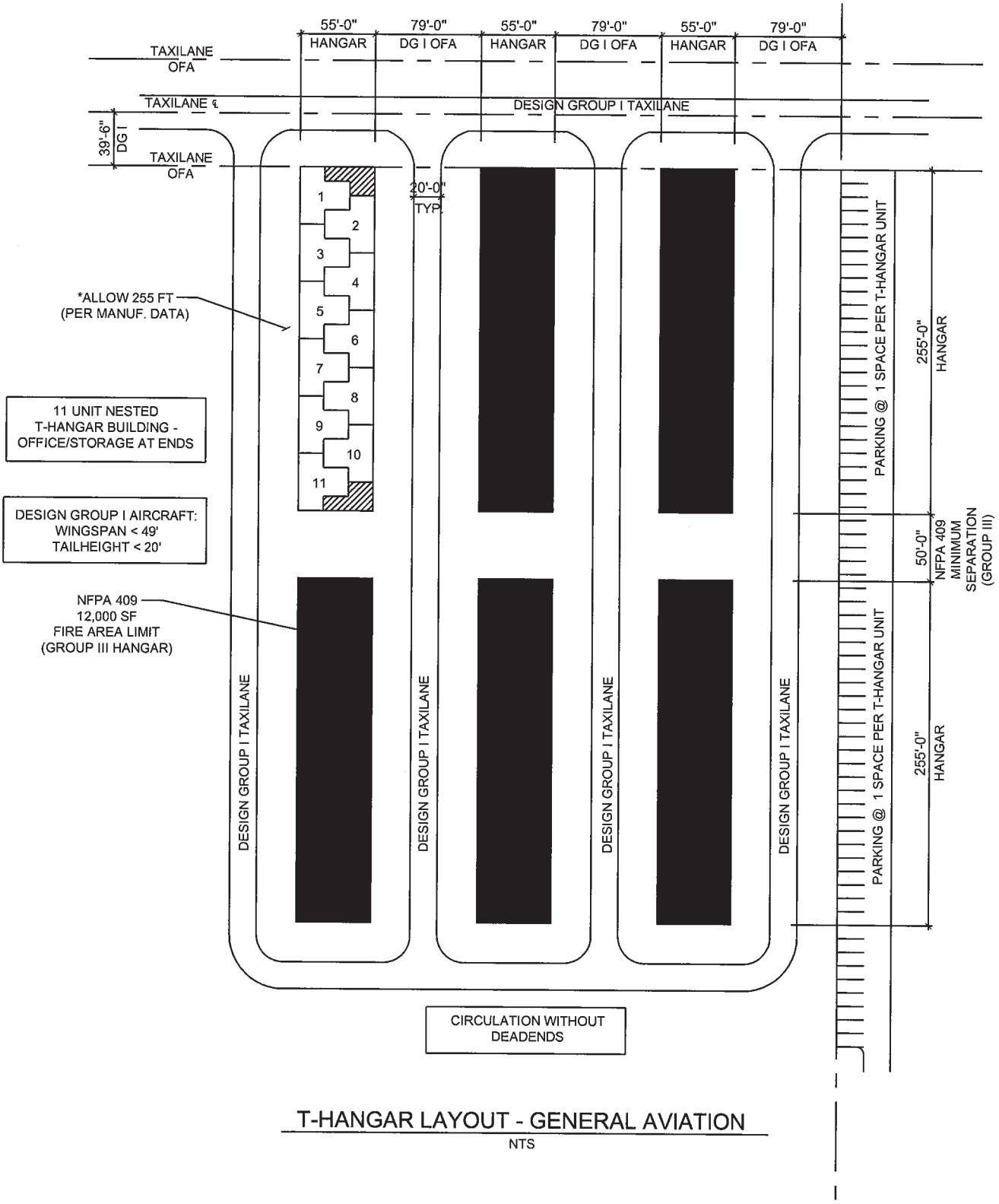
Taxiway OFA width equals 1.4 times airplane wingspan plus 20 feet (6 m); and

Taxilane OFA width equals 1.2 times airplane wingspan plus 20 feet (6 m).



BULK HANGAR LAYOUT - GENERAL AVIATION

NTS



T-HANGAR LAYOUT - GENERAL AVIATION

NTS

Chapter 3. PROJECT ELIGIBILITY, ALLOWABLE COSTS, PRIORITY, AND DONATIONS

Section 1. PROJECT ELIGIBILITY

300. GENERAL PROJECT ELIGIBILITY REQUIREMENTS

a. Chapters 3 through 7 provide guidance on the AIP eligibility of various items, including planning, airport development, land acquisition, and noise program implementation projects. No attempt has been made to identify every possible project as eligible or ineligible. Consequently, if the eligibility of an item is not specifically stated, it is incumbent upon the Airports field personnel to determine if the item meets the general guidelines of these chapters or to consult with the Airport Improvement Program Branch (APP-520) if the eligibility is uncertain. However, no project grant application may be approved unless the Secretary is satisfied that:

(1) The project sponsorship requirements have been met;

(2) The project is reasonably consistent with the plans of planning agencies for the development of the area in which the airport is located;

(3) Sufficient funds are available for that portion of the project not paid for by the United States;

(4) The project will be completed without undue delay;

(5) The airport location is included in the current version of the NPIAS; and

(6) The project involves more than $25,000 in AIP funds unless, in the judgment of the responsible Airports office, it would be in the best interest of the Government to award a grant of a lesser amount.

b. The Act allows the separate funding of projects for the preparation of plans and specifications, including field investigations incidental thereto. These will be funded only if they result in the complete preparation of plans and specifications for airport development work that has every expectation of beginning within two years. Projects involving only field investigations, such as pavement evaluation, will not be funded on a "stand alone" basis except in planning projects. Separate projects that involve construction design for completed work will not normally be allowed. Contact APP-520 if airports propose reimbursement for engineering costs exceeding a maximum increased United States obligation described in Paragraph 1142.

c. A current airport layout plan (ALP) that depicts the proposed project and which has FAA approval from the standpoint of safety, utility, and efficiency of the airport shall be required before a development project is approved. ALPs may be funded as part of master planning which is discussed in Paragraph 406g. ALPs may be funded retroactively upon grant approval as project formulation cost to add the work of the project onto the ALP and reflect actual conditions existing on the airport. If current design standards for the airport need to be reflected on the ALP, this work is eligible as project formulation cost. If an environmental assessment is needed for the project, the assessment is also eligible as project formulation cost. ALP approval requirements and conditions as well as FAA approval actions related to environmental impacts are discussed in Paragraph 428.

301. PROHIBITIONS

a. Legislative Determination. The Act specifically prohibits using AIP funds for decorative landscaping (See Paragraph 592), the provision or installation of sculpture or works of art, and for the construction, alteration, or repair of:

(1) Public parking facilities for passenger automobiles;

(2) A hangar except at nonprimary airports; or

(3) Any part of an airport building except components associated with eligible facilities and those buildings.

The prohibition against public parking facilities does not apply to non-revenue facilities at nonhub primary airports or at nonprimary airports as described in Paragraph 526. In addition, the prohibitions contained in subparagraphs a(1) and a(2) above do not apply to airports designated by the Secretary under the Military Airport Program (MAP). See Paragraph 606.

b. FAA Policy Determination. Headquarters will make a determination on the eligibility of unusual projects on a case-by-case basis and based on FAA's interpretation of the intent of Congress. Appendix 1 lists those projects or work items found ineligible for funding. To insure a consistent national program, field offices must follow this guidance.

302. ENVIRONMENTAL REQUIREMENTS

a. All AIP projects, including projects for plans and specifications, require environmental processing prior to FAA approval. Every project will fall within one of the following categories:

(1) Those requiring an environmental assessment or preparation of an environmental impact statement (EIS) or a finding of no significant impact (FONSI); or

(2) Those that are categorically excluded.

b. Detailed guidance on the environmental process is provided in Order 1050.1, "Policies and Procedures for Considering Environmental Impacts" and in Order 5050.4, "Airport Environmental Handbook".

303. OFF AIRPORT WORK.

Work items must be located within the airport boundary to be eligible. The only exceptions to this requirement are:

a. Removal of obstructions;

b. Outfall drainage ditches. The correction of any damage resulting from construction of ditches is an eligible cost;

c. Relocation of roads and utilities constituting airport obstructions;

d. Relocation of roads and utilities to allow eligible airport development;

e. Installation or relocation of navigational aids (NAVAIDs), including markers;

f. Construction and installation of utilities;

g. Lighting and marking of obstructions;

h. Airport waste-water treatment plants;

i. Noise program implementation projects;

525. TAXIWAYS.

Taxiways to expedite the flow of traffic between runways and aircraft parking areas available for public use are eligible. See Paragraph 526. Typical taxiway development includes the construction of new taxiways and lengthening, widening, strengthening or leveling of existing taxiways to meet FAA design/engineering standards for the critical aircraft.

a. Parallel, Bypass, and Connecting Taxiways. A full-length parallel taxiway connected to each end of an eligible runway is eligible. A partial parallel taxiway may be considered at general aviation airports where cost to construct the full length is excessive and the benefits do not warrant it.

b. Turnarounds and Holding Bays. Turnarounds and holding bays are eligible. Holding bay design standards can be found in AC 150/5300-13, Airport Design, Paragraph 409.

c. Converting Runways to Taxiways. Development related to the conversion of an ineligible runway to a taxiway will be eligible only if it can be justified on the basis of the costs involved and continuing use is assured. Such projects must be identified on the airport layout plan and taxiway marking should be included with the project. (See Paragraph 507b on designating temporary runways.)

526. APRON AREAS AND RELATED FACILITIES.

The construction, alteration, and reconstruction of public use apron areas are eligible. If the sponsor elects to establish aircraft parking facilities or areas in locations other than approved by the region as reasonable and economical, only a portion of the pavement for such area would be eligible. For example, the distance of a proposed parking area from the existing taxiway should be reasonable based on the standards and approved airport layout plan rather than factors related to non-aeronautical uses. Apron areas for the exclusive and near exclusive use of an air carrier, fixed base operator, or other tenant are not eligible. (For purposes of this paragraph, the definition of near exclusive use is that the airport has no procedures for the management and operation of the apron to ensure prompt access by each potential user.) Exclusive use of apron areas, and any determination that such is ineligible, in turn involves eligibility of associated terminal buildings. (See Chapter 6.) Additionally, the apron and related taxiway areas for use of a tenant not furnishing service to the general public are ineligible.

a. Parking Area Taxiways and Taxi-Lanes. Taxiways on, or connecting to, aprons available for use by the general public are eligible. If available for use by the public, this may include taxiways to aircraft storage, hangar, and service areas. Taxiways or taxi-lanes connecting the individual T-hangars to the public taxi-lane are eligible at nonprimary airports subject to determinations in d(1) below. (See Paragraph 525.)

b. Aircraft Ground Deicing Areas. A paved aircraft parking area for ground deicing or anti-icing activities is eligible if the improvements are to be owned by the airport and will become available on a non-exclusive use basis. Storage areas on AIP-funded pavement and foundations for ineligible deicing buildings are not eligible. See Paragraphs 544, 547, and 631.

c. Cargo Aprons. Special consideration may be given to low activity aprons used by cargo-only operators since they contribute to the Airport and Airway Trust Fund. Only one such carrier may serve the airport, although the apron for freight activity would be eligible provided the entire area or not all hours of operation are leased to that operator. The opportunity for another carrier to serve the airport in the future at fairly competitive terms must be provided.

d. Hangars and Other Support Facilities. The construction of certain support facilities or structures to house aircraft may be eligible at nonprimary airports using entitlements. Separate conditions apply to various projects as described below.

(1) Construction of new revenue-producing hangar projects at nonprimary airports may be eligible under 49 USC 47110(h) using entitlements. The region should ensure that the sponsor has

made adequate provisions for financing airfield projects that are currently required before revenue-producing work. Alteration and repair of existing facilities depends upon potential environmental issues and whether such facilities have an adequate remaining useful life. If the proposal is for acquisition, alteration or repair of existing hangars, contact APP-520.

(2) Certain other revenue-producing aeronautical support facilities at nonprimary airports may be allowable using entitlements. Contact APP-520 about such proposals other than the new fuel farms described in paragraph 515 and new hangars.

(3) Non-revenue-producing automobile parking lots associated with a passenger terminal building or hangar at nonprimary airports may be allowable under 49 USC 47119(b)(5). The airport must certify any needed airport development project affecting safety, security or capacity will not be deferred due to the project. See paragraph 604 for additional eligibility criteria for nonprimary and other airports.

527. AIRFIELD SERVICE ROADS.

Internal service roads located within the airfield area may be eligible if the road meets design standards and has resulted from a formal inter-division coordination. Also, see Chapter 6 about terminal area access roads and surface vehicle parking facilities.

a. Service Roads. Service roads in airfield locations identified on the airport layout plan are eligible to separate airplanes and ground vehicles where desirable due to traffic volume, occasional mixing of surface vehicle with aircraft activity, or other safety considerations. Service roads may also be necessary for:

(1) Aircraft rescue and fire fighting as determined by the airport certification safety inspection or an airport emergency response study;

(2) Security in accordance with an FAA approved Title 49 CFR, Part 1542 plan;

(3) Operation and maintenance of the airport;

(4) Access to AIP-funded safety, security, and related facilities, including navigation aids approved under the AIP; and

(5) Temporary access to the airfield for construction equipment; and

(6) Necessary to improve runway safety and reduce the possibility of runway incursions.

b. Roads Ineligible for Funding. Airfield roads along the airport fence, perimeter area, or not required for the functions described in Paragraph 527a, are ineligible unless the ineligible access is incidental to an approved AIP project. Other examples of ineligible roads include:

(1) Access to F&E-funded facilities or equipment exclusively for operating and maintaining FAA projects; and

(2) Roads exclusively serving non-aeronautical properties, areas, or facilities.

528. - 529. RESERVED.

Section 4. AIRFIELD LIGHTING AND SURFACE MOVEMENT

530. GENERAL.

Eligibility of airfield lighting equipment and other surface movement projects is dependent upon the visibility conditions under which the airport operates. Sponsors may choose to install retro-reflective

Chapter 6. TERMINALS, LANDSIDE, AND TERMINAL ACCESS PROJECTS

Section 1. TERMINAL DEVELOPMENT

600. GENERAL ELIGIBILITY.

This chapter includes information concerning eligibility or limitations for an airport terminal building, multi-modal terminal development, other landside projects, and surface access. See Paragraph 613 about prorating of eligible and ineligible terminal building work. As general requirements for eligibility, sponsors must:

a. Design all structures in accordance with the appropriate FAA Advisory Circulars attached to the project grant. At this time the FAA is initiating a revision to Advisory Circular 150/5360-13, Planning and Design Guidelines for Airport Terminal Facilities. This AC plays an important role in the understanding and analysis of airport terminal designs. It establishes requirements for airport terminal design for projects to be funded with AIP grants. It is also used to determine reasonableness of cost for Federal and federally approved funding.

However, industry methodologies for determining terminal space requirements have changed since the research for the original AC was completed. For example, the AC presents the equivalent aircraft factor methodology, while a level of service or similar method as described by the International Air Transport Association (IATA) is currently used by many airport planning and design consultants.

While AC 150/5360-13 continues to be the FAA standard for terminal planning and design, prudence should be applied when reviewing terminal building proposals. As an interim measure until the revision of the Planning and Design Guidelines AC is complete, we recommend methodologies following the IATA recommendations ("Airport Development Reference Manual", 8th edition), and a review of existing terminals facilities at comparable airports be considered as well as the AC recommendations when making FAA determinations. (Contact APP-400 for additional guidance if required.)

b. Submit with the grant application the required "Certification of Compliance with the Seismic Design and Construction Requirements of Title 49 CFR, Part 41". This certification submitted by the sponsor or the Sponsor's authorized representative states that the Sponsor will comply with the requirements set forth in Title 49 CFR, Part 41 in the design and Construction of the building(s) to be financed with the assistance of the Federal Aviation Administration;

c. Certify the airport has, on the date of submittal of the project application, all the FAR Part 139 safety and Title 49 CFR, Part 1542 security equipment required for certification of the airport;

d. In the event that Part 139 does not apply to the airport, certify any needed airport development project affecting safety, security or capacity will not be deferred due to the project; and

e. Provide access for passengers to enplaning and deplaning areas of aircraft other than air carrier aircraft.

601. TERMINAL DEVELOPMENT.

Except as noted by Paragraphs 602-606, "terminal development" is defined in this Chapter as development for non-revenue producing public-use areas that are directly related to the movement of passengers and baggage in terminal facilities within the boundaries of the airport. Typical eligible items include baggage claim delivery areas, automated baggage handling equipment (see Paragraph 602c for limitations), public-use corridors to boarding areas, central waiting rooms, restrooms, holding areas, and foyers and entryways, as well as passenger loading bridges and handicapped boarding assistance