

Airport Plans

Introduction

The plan for the future development of Paine Field has evolved from an analysis of many considerations. Among these are: aviation demand; aviation forecasts; capacity analysis; aircraft operational characteristics; facility requirements; environmental considerations; and as characterized in the previously noted statement of goals, the general direction or thrust of airport development as prescribed by the Snohomish County management and staff. Forecasts are utilized as a basis for planning; however, facilities are only to be constructed to meet actual demand. The Regional Low unconstrained forecast of aviation activity has been adopted by the FAA and Snohomish County. It is recognized that market constraints may limit demand for passenger service at Paine Field.

Previous chapters have established and quantified the future development needs of Paine Field. In this chapter, the various elements of the plan are categorically reviewed and detailed here in an outline and graphic format. A brief written description of the individual elements represented in the set of *Airport Plans* for Paine Field is accompanied by a graphic description presented in the form of the *Airport Layout Plan*, the *Airspace Plan*, the *Inner Portion of the Approach Surface Drawings*, the *Terminal Area Plans*, the *Land Use Plan*, and the *Airport Property Map*.

Airport Layout Plan

The Airport Layout Plan (ALP) is a graphic depiction of existing and ultimate airport facilities which will be required to enable the airport to properly accommodate the forecast future demand. In addition, the ALP also provides detailed information on both airport and runway design criteria, which is necessary to define relationships with applicable standards. The following illustration, entitled *AIRPORT LAYOUT PLAN*, and the following paragraphs describe the major components of the future airport development plan.

Runway System

The airport's basic runway configuration will be retained. The airport's primary north/south runway, Runway 16R/34L, will remain at its existing length and width (9,010' x 150'). The secondary parallel runway (Runway 16L/34R) will also remain at its existing length and width (3,000' x 75'). The crosswind runway (Runway 11/29), also programmed to be retained, has an existing length and width of 4,504' x 75', with a displacement of 799' of the northwest threshold.

Another important consideration related to runway development at Paine Field is the existing and planned instrument approach system.

- Runway 16R currently has CAT I ILS precision approach (200' ceiling and ½ mile visibility minimums) capabilities that will be maintained, as well as NDB and GPS non-precision approach capabilities. The current instrument approach capabilities will be supplemented with precision GPS capabilities when available, and in the long-term very low minimum instrument approach capabilities (CAT II) are programmed for Runway 16R.
- Runway 34L currently has non-precision approach capabilities with ¾ mile visibility minimums. However, it is anticipated that a precision approach with CAT I capabilities (200' ceiling and ½ mile visibility minimums) will eventually be established.
- Runways 16L/34R and 11/29 have visual approach capabilities that will continue to be maintained.

Land Acquisition. In association with the ability to accommodate additional landside facilities, three parcels of land are recommended for acquisition. The first is a 7.5-acre tract east of the Snohomish County Public Works Department and south of 100th St. S.W. The second is a 1-acre tract south of the IAC facility and north of the YMCA, north of 112th St. S.W. This purchase area encompasses the property surrounding the existing air guard facilities. The third parcel is a 3.2-acre tract between Beverly Park Road and 27th Ave W., just east of the 34R RPZ.

The airport should control the height of objects and land use within the RPZ areas. With regard to the future RPZ associated with improved approach capabilities to Runway 34L, this can be accomplished through acquisition of easements; however, the FAA recommends fee simple ownership.

Runway Approach Instrumentation and Lighting. In the short-term, the existing instrument approach capabilities to Runway 16R are to be maintained with the existing approach lighting system and ground based NAVAID system. In the long-term, if CAT II approach capabilities are accommodated, the approach lighting system associated

Figure E1
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AIRPORT LAYOUT PLAN
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with Runway 16R will be improved with an Approach Lighting System with Sequenced Flashers - 2 (ALSF -2), replacing the existing Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR), along with the addition of touchdown zone lights, and a runway visual range (RVR) system. The existing Centerline Lights serving Runway 16R and the High Intensity Runway Light (HIRL) edge lighting serving Runway 16R/34L will be maintained.

Also in the long-term, GPS or ground-based instrument approach capabilities will be improved to provide precision instrument approach procedures to Runway 34L. The Medium Intensity Approach Lighting with Sequential Flashers (MALSF), currently in place for Runway 34L, are programmed to be upgraded to MALSR to coincide with the implementation of the precision instrument approach.

The visual approaches serving Runways 16L/34R and 11/29 will be maintained, along with the Medium Intensity Runway Lights (MIRL) serving these runways. The Visual Approach Slope Indicator (VASI) lights serving Runway 11/29 are recommended to be replaced with Precision Approach Path Indicators (PAPIS). Runway End Indicator Lights (REILs) currently exist on Runway 16L/34R and are programmed for Runway 11/29.

Taxiway System

The parallel taxiway systems serving all runways meet FAA standards for separation between runway centerline and taxiway centerline. A new parallel taxiway system (Taxiway W) on the southwest side of Runway 11/29 is programmed to connect Taxilane H with Taxilane E. In addition, several new exit/access taxiways are proposed for the main runway. On the west side of the main runway, Taxiways K-1 and K-3 are programmed. On the east side of the main runway, a new exit taxiway will be built between existing Taxiways A-2 and A-3.

Landside Development

As discussed in the previous chapter, *CONCEPTS, ALTERNATIVES AND DEVELOPMENT PLAN*, and as illustrated on the previously presented *AIRPORT LAYOUT PLAN*, areas for landside facilities are also allocated. For the purposes of the Master Plan Update, and to coincide with FAA planning terminology, landside facilities include aircraft storage aprons, hangars, industrial aviation facilities, terminal facilities, aviation maintenance facilities, automobile access and parking, support facilities, etc. Detailed descriptions of the landside development areas are provided in the *Area Plans* section of this chapter. As provided on the Airport Layout Plan, proposed landside development includes:

Central, Terminal, and North Ramps. This area is located between the parallel runways north of Runway 11/29. Because the area has excellent airside and landside access,

including adequate aircraft parking ramp, it is programmed to continue to accommodate many of the airport's general aviation, industrial and administrative facilities, along with the airport's passenger terminal facility. This area will accommodate new development related to airport administrative functions, passenger terminal facilities, and Aircraft Rescue and Fire Fighting (ARFF) facilities in the infield area northwest of the existing administrative offices. In addition, new general aviation development is programmed for the Central Ramp and North Ramp areas, and the north side of the Central Ramp is programmed to be redeveloped for aviation use.

West Ramp Area. This area is located between the parallel runways south of Runway 11/29 and north of Taxilane E. Existing facilities include general aviation hangars. Aviation use development/redevelopment is programmed for the east half of this area with the construction of additional general aviation hangars. Units for Design Group 2 aircraft will front on Taxilane E and the more northerly storage units are sized to accommodate Design Group 1 aircraft. Additionally, a parallel taxiway (Taxiway W) is programmed for the southwest side of Runway 11/29.

Bomarc Area. This area is located east of Runway 16L/34R and northeast of Airport Road/100th Street SW intersection. In addition to continued use of the area for Bomarc Business Park and related functions, the area south of 100th Street SW (currently containing Snohomish County Public Works facilities) is identified for commercial development.

As previously mentioned, a 7.5-acre parcel adjacent to, and east of the area containing the Snohomish County Public Works facilities south of 100th Street SW, is programmed for acquisition. To continue to ensure land use compatibility, this new parcel should be classified with an “airport compatible commercial/industrial use” designation.

East Ramp Area. The East Ramp Area is located east of Runway 16L/34R and currently contains several small airplane general aviation hangars. The portion of the area adjacent to the parallel taxiway on the east side of Runway 16L/34R, which is undeveloped, is designated for additional hangar/ramp development. The tract south of Minuteman Lane is designated for Airport Compatible Commercial/Industrial development.

South Ramp. This area is located between the parallel runways and south of Taxilane E. This area currently supports operations and activities associated with Goodrich Inc. Additional facilities associated with the south ramp include the Messerschmitt 262, the Department of Emergency Management, and the airport’s ARFF/Maintenance facility. Future programming for this area involves new industrial aviation development/redevelopment, and general aviation redevelopment. The south ramp has also been identified as the location on the airport that could accommodate a temporary use by large air cargo aircraft.

Goodrich Inc. Ramp. The Goodrich Inc. ramp is located south of the south ramp, adjacent to exit Taxiway A-8. This area accommodates those activities associated with the contract maintenance and upkeep of various large air carrier aircraft, such as Northwest Airlines, FedEx, UPS, and United Airlines. This type of use could be expanded to the south.

West Side-North. This area is located west of Runway 16R/34L, north of the RPZ associated with the approach to Runway 11. It has excellent potential for taxiway access and has been designated for aviation use facilities. For a ground lease, this area is currently subject to a Boeing Company first right of refusal. The portion of this area immediately adjacent to the Runway 11 RPZ will require substantial fills to achieve a runway accessible grade. The northern most portion of this area has been identified for commercial aviation/airport-related facilities including tour center, hotel, restaurant, and museum development.

West Side-South. This area is located west of Runway 16R/34L, south of the Runway 11 RPZ. The area immediately south of the Runway 11 RPZ contains a significant amount of topographic relief; therefore, development within this area may be limited to some extent. The area between the Runway 11 RPZ and Taxiway K-5 within 950 feet of the Runway 16R/34L centerline is programmed for aviation use facilities, as are the K-5 and K-6 areas generally within 1,500 feet of the Runway 16R/34L centerline. The area further west is programmed for airport compatible commercial/industrial development. The area south of Taxiways K-5 and K-6 is also programmed for airport compatible commercial/industrial development.

Programmed facilities within the various development areas are further detailed in the *Area Plans* section later in this chapter.

Airspace Plan

The *Airport Airspace Drawings* are based on Federal Aviation Regulations (FAR) Part 77, *Objects Affecting Navigable Airspace*. In order to protect the airport's airspace and approaches from hazards that could affect the safe and efficient operation of aircraft, federal criteria contained in FAR Part 77 have been established to provide guidance in controlling the height of objects in the vicinity of the airport. FAR Part 77 criteria specify a set of imaginary surfaces which, when penetrated, identify an object as being an obstruction. Objects are identified using the *Airport Obstruction Chart* published by the National Ocean Service (NOS) of the U.S. Department of Commerce in 1993. Even though the airport has an ongoing tree trimming program, some of the identified trees will have grown taller, while others, not identified in 1993, will have grown to the point where they are now obstructions. An updated NOS obstruction survey is programmed; however, the schedule for its production has not been established.

The *AIRPORT AIRSPACE PLAN AND PROFILE*, which is illustrated on the following page, provides a plan view which depicts these criteria as they specifically relate to Paine Field. The plan is based on the ultimate planned runway alignments and lengths, along with the ultimate planned approaches to those runways. Therefore, for Runway 16R/34L, it is based on larger-than-utility criteria, with an existing precision instrument approach to Runway 16R and a future precision instrument approach to Runway 34L. For Runway 16L/34R and Runway 11/29, it is based on visual approaches and utility runway criteria.

Inner Portion of the Approach Surface Drawings

To provide a more detailed view of the inner portions of the Part 77 imaginary approach surfaces and the Runway Protection Zone (RPZ) areas, the following drawings are provided. An RPZ is trapezoidal in shape, centered about the extended runway centerline, and typically begins 200 feet beyond the end of the runway. The RPZs are safety areas within which it is desirable to clear all objects (although some uses are normally acceptable). The size of the RPZ is a function of the design aircraft and the visibility minimums associated with the runway's instrument approach capabilities.

The *Inner Portion of the Approach Surface Drawings*, which are depicted on the following pages, provide large-scale drawings with both plan and profile delineations. They are intended to facilitate identification of the roadways, utility lines, railroads, structures, and other possible obstructions that may lie within the confines of the inner approach surface area associated with each runway end. As with the *Airport Airspace Drawings*, the *Inner Portion of the Approach Surface Drawings* are based upon the ultimate planned runway length, along with the ultimate planned approaches to each runway.

Figure E2
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AIRPORT AIRSPACE PLAN AND PROFILE
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Figure E3
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AIRPORT AIRSPACE PLAN – Runway 34L Plan and Profile
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Figure E4
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Inner Portion of Approach Surface Drawing – Runway 16R
(File Size Approximately 2,696 KB)

Figure E5
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Inner Portion of Approach Surface Drawing – Runway 34L
(File Size Approximately 2,819 KB)

Figure E6
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Inner Portion of Approach Surface Drawing – Runway 16L/34R
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Figure E7
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Inner Portion of Approach Surface Drawing – Runway 11/29
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Terminal Area Plan

The following *Terminal Area Plan* illustrations, present detailed views of the most intensely developed landside use areas on the airport.

Central, Terminal, West and North Ramp Areas

This area is illustrated in the following figure entitled *TERMINAL AREA PLAN NORTH*. These areas are located between the parallel runways north of Taxiway E. The areas illustrated contain many existing airport functions including the airport's administrative offices, FBO facilities, storage hangars and apron, college facilities, museum of flight facilities, industrial aviation facilities, and corporate aviation facilities. The majority of these existing facilities will continue to function in their existing locations. With a focus on new development, the proposed development plan for this portion of the airport is described in the following paragraphs.

General Aviation Facilities. These areas will continue to serve as a center for general aviation activities at the airport. An important area for general aviation activity is the current general aviation terminal facility along with the Inner Terminal Ramp. The general aviation terminal and Inner Terminal Ramp accommodate the majority of the larger itinerant general aviation aircraft use. This type of activity is expected to increase in the future at Paine Field and providing related services should be a primary focus of facilities in the existing terminal area. Related services, which should be accommodated in the general aviation terminal area, could include a pilot lounge, meeting rooms, flight planning facilities, fueling services, rental car service, and other services that might be utilized in business aviation activities. A structure to house such facilities is programmed for the northeast end of the Inner Terminal Ramp, as is a westerly expansion of the paved ramp area.

Another important function related to general aviation activity relates to smaller general aviation aircraft and based aircraft. One site that is underutilized and slated for redevelopment at Paine Field is the site occupied by the airport's restaurant, along with buildings C-5, C-70 and C-71, in the central ramp area. This is a prime development area for activities that relate to based aircraft, such as Fixed Base Operator (FBO) facilities and aircraft storage/maintenance facilities, as well as a new restaurant facility. One of the primary reasons the Central Ramp area is attractive for new development, is the fact that the site provides the opportunity for a substantial amount of automobile parking. When redeveloped, this area will continue to support facilities for smaller general aviation aircraft (ADG 1).

Additional general aviation hangar development is also programmed for the north ramp and west ramp development areas. The north ramp area will continue to be developed

Figure E8
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Terminal Area Plan North
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for hangar facilities to accommodate medium to large general aviation aircraft, while the west ramp area will be utilized for small and medium sized general aviation aircraft.

In addition to the passenger terminal facility development area described above, there are two other undeveloped tracts that are identified for aviation use development. The first is located on the northeast end of the Inner Terminal Ramp, east of the new Air Traffic Control Tower (ATCT). This area, along with the Passenger Terminal Development area will be designed to accommodate the largest business jets and the small to medium size commercial passenger service aircraft [i.e., Gulfstream V, B-737, etc. (ADG 3)]. This area is programmed for the development of FBO/General Aviation Terminal facilities. The second is located in the northeast corner (the north ramp area). This tract will continue to be developed for hangar facilities to accommodate medium to large general aviation aircraft (ADG 2 aircraft).

Airport Administration/Passenger Terminal Facilities. The demand forecast for passenger terminal facilities at Paine Field can be accommodated on the undeveloped infield site northwest of the inner/outer terminal ramp area. The passenger terminal building will also accommodate the airport's administrative offices. In addition to the terminal building, the site will also provide an aircraft parking apron and automobile parking/access facilities to accommodate commercial passenger activity demands.

Air Traffic Control Tower (ATCT). The existing air traffic control tower is currently located on the west end of the Goodrich Inc. Hangar 2. Construction of a new ATCT is currently underway in the area adjacent to, and north of, the Inner Terminal Ramp.

Fuel Storage Facilities. The bulk of the airport's fuel storage capacity will be located in the North Ramp and Inner Terminal Ramp. The North Ramp facility contains six 60,000-gallon above ground storage tanks and one 20,000-gallon above ground storage tank, while the Inner Terminal ramp has one 2,000-gallon underground and three 10,000-gallon underground storage tanks. Much of the North Ramp fuel storage volume is required to accommodate fuel that is off-loaded from aircraft during maintenance.

Industrial Aviation Facilities. Currently, the industrial aviation facilities in this area are focused on the site southeast of the Inner Terminal Ramp, which contains the Goodrich Inc. Hangar 2, Precision Engines, Tyee Aircraft, and Umbra Cucinetti (UCI) facilities. It is expected that in the long-term the industrial aviation uses in this area will be shifted to other locations on the airport.

South Ramp Area

This area is illustrated in the following figure, entitled *SOUTH RAMP AREA*. It is located between the parallel runways south of Taxiway E and, among others, contains numerous

Figure E9
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South Ramp Area
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industrial aviation facilities (including Goodrich Inc.). Sites within the South Industrial area which are planned for development or redevelopment include:

Industrial Aviation Facilities. The South Ramp will continue to be utilized extensively for industrial aviation facilities. In addition to the continued use of Goodrich Hangars 1 and 3, industrial aviation redevelopment can take place in the vicinity of building 201 and 207 (formerly part of the U.S. Army Reserve lease area) and new industrial aviation facilities can be constructed on that portion of the former Navy Housing site, which is adjacent to Goodrich Hangar 3.

General Aviation Facilities. The site just west of the approach end of Runway 34R has been identified as a redevelopment site for general aviation facilities. This site can be provided with taxiway access and, if demands and economic considerations indicate feasibility, it should be redeveloped for small size general aviation aircraft (ADG 1). This redevelopment area currently contains non-aviation functions (facilities that do not require taxiway access).

Aircraft Rescue and Fire Fighting (ARFF) Facility and Airport Maintenance Facility. These functions are currently contained in Building 219 on the western edge of the South Ramp Area. Currently, this building creates some wing-tip clearance concerns for large aircraft on Taxiway A. The ARFF function is programmed to be relocated to a new building that will be located adjacent to the proposed administration/passenger terminal building. After the ARFF function is relocated, Building 219 will be razed and replaced with a new Airport Maintenance Facility.

Navy Housing Site. The South Ramp Area also contains the Navy Housing tract. As stated in the previous chapter, the Navy Housing tract is identified as a potential area to be utilized for “airport compatible commercial/industrial development”. This will help ensure land use compatibility and provide an additional development area for aviation related functions. Additionally, that part of the Navy Housing area located just east of the Runway 34L RPZ can be provided with taxiway access from the southern end of Taxiway A, and is programmed for aviation use.

East Ramp Area

This area is illustrated in the following figure, entitled *EAST RAMP AREA*, and is located east of Runway 16L/34R. North of Minuteman Lane the area contains several general aviation storage hangars and FBO facilities. South of Minuteman Lane, the area contains a County solid waste transfer station, along with undeveloped land.

General Aviation Facilities. The East Ramp Area will continue to be developed as a center for general aviation activity. The northeastern side of the area is reserved for

Figure E10
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East Ramp Area
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commercial general aviation hangar structures (i.e., FBO hangars, maintenance hangars, etc.). The center portion, which is currently undeveloped, will most likely be utilized for additional aircraft parking apron and additional FBO facilities.

Airport Compatible Commercial/Industrial. The East Ramp Area also has two undeveloped sites designated for non-aviation commercial/industrial facilities. The first is located south of 112th Street SW and is separated from the remainder of airport property by the Runway 34 RPZ and by the Air National Guard facilities, thereby making taxiway access impractical.

The second site is located along Airport Road, around the Minuteman Lane Intersection. This area is adjacent to the solid waste transfer station and, because of its location with frontage on Airport Road and Minuteman Lane, has significant potential for commercial uses (e.g., offices, retail, etc.) or airport compatible industrial activity.

Land Use Plan

The *LAND USE PLAN*, presented in the following figure, depicts existing and recommended use of all land within the ultimate airport property line and in the vicinity of the airport (including the area contained in the future 65 DNL noise contour). The purpose of the Land Use Plan is to provide airport management a plan for leasing revenue-producing areas on the airport. It also provides guidance to local authorities for establishing appropriate land use zoning in the vicinity of the airport.

Airport Property Map

The *AIRPORT PROPERTY MAP*, which is presented in a following illustration, indicates how various tracts of land within the airport boundaries were acquired (e.g., Federal funds, surplus property, local funds, etc.). The purpose of the Airport Property Map is to provide information for analyzing the current and future aeronautical use of land acquired with Federal funds.

Figure E11
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Land Use Plan
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Figure E12
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Airport Property Map
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