

Chapter 5 – Airport Development Alternatives





Chapter 5 – Airport Development Alternatives

The evaluation of future development alternatives represents a critical step in the airport master planning process. The primary goal is to define a path for future development that provides an efficient use of resources and is capable of accommodating the forecast demand and facility needs defined in the master plan.



Introduction

As noted in the facility requirements evaluation, current, and long-term planning for Ken Jernstedt Airfield is based on maintaining and improving the airport's ability to serve a wide range of general aviation and business aviation aircraft. The alternatives evaluation process presents different concepts that are capable of accommodating current and future facility needs. All proposed facility improvements are consistent with applicable FAA airport design standards and FAR Part 77 airspace planning standards.

Note: This chapter was written in two stages, beginning with the preliminary development alternatives and concluding with the recommended preferred development alternative. A summary of the preferred alternative is presented at the end of the chapter and is incorporated into the Airport Layout Plan (ALP) presented in Chapter 8. The original sequence used to create and refine the airport development alternatives has been maintained without revising earlier draft materials to present an accurate record of the evaluation process.

As part of the evaluation and refinement of the preliminary preferred alternative, a specific change in design criteria was made to better align current and planned airfield facilities with aircraft use. The original design guidance applied Airplane Design Group II (ADG II) standards for Approach Category A & B aircraft (large and small aircraft). Upon further review, it was determined that use of "small" airplane subcategory was



appropriate for ADG II. By FAA definition, small airplanes have a maximum takeoff weight of 12,500 pounds and less. This change affected RPZ and OFZ dimensions, which allowed some modification of the preferred alternative development concepts.

Evaluation Process

Creating preliminary alternatives represents the first step in a multi-step process that leads to the selection of a preferred alternative. It is important to note that the current FAA-approved airport layout plan (ALP) identifies future improvements recommended in the last master planning process. The master plan update provides a fresh look at addressing facility needs, but also allows the components of the previous preferred alternative to be retained or modified, if they meet current needs, or discarded if no longer relevant.

The preliminary alternatives will be evaluated to identify general preferences for both individual items and the overall concepts being presented. The process will allow the widest range of ideas to be considered and the most effective facility development concept to be defined. From this evaluation process, elements of a preferred alternative will emerge that can best accommodate all required facility improvements. The Consultant will integrate these items into a draft preferred alternative that will be reviewed and refined as the Port proceeds through the process of selecting a final preferred development alternative for Ken Jernstedt Airfield. Throughout this process, public input and coordination with the Master Plan Advisory Committee, FAA and ODA will also help to shape the preferred alternative.

Once the preferred alternative is selected by the Port, a detailed capital improvement program will be created that identifies and prioritizes specific projects to be implemented. The elements of the preferred alternative will be integrated into the updated ALP drawings that will be used to guide future improvements at the airport.

No-Action Alternative

In addition to proactive options that are designed to respond to future facility needs defined in the previous chapter, a “no-action” option also exists, in which the Port may choose to maintain existing facilities and capabilities without investing in facility upgrades or expansion to address future demand. The existing airfield configuration would remain unchanged from its present configuration and the airport would essentially be operated in a “maintenance-only” mode.

The primary result of this alternative would be the inability of the airport to accommodate aviation demand beyond current facility capabilities. Future aviation activity would eventually be constrained by the capacity, safety, and operational limits of the existing airport facilities. However, the no-action alternative establishes a baseline from which the action alternatives can be developed and compared.



The purpose and need for the action alternatives is defined by the findings of the forecasts and facilities requirements analyses. Forecast aviation activity and the factors associated with increased activity (potential for congestion, safety, etc.) are the underlying rationale for making facility improvements. Market factors (demand) effectively determine the level and pace of private investment (hangar construction, business relocation to the airport, etc.) at an airport. Public investment in facilities is driven by safety, capacity, and the ability to operate an airport on a financially sustainable basis.

Based on the factors noted above, the no-action alternative is inconsistent with the management and development policies of the Port of Hood River and its long-established commitment to provide a safe and efficient public air transportation facility that is socially, environmentally, and economically sustainable.

Preliminary Development Alternatives

The facility needs identified in the previous chapter include a variety of airside (runway-taxiway) and landside needs (aircraft parking, hangars, fueling, FBO facilities, etc.). Items such as fencing, lighting improvements, minor roadway extensions and pavement maintenance do not typically require an alternatives analysis and will be incorporated into the preferred development alternative and the ALP.

The preliminary alternatives are organized by type of facilities (airside and landside) and are intended to facilitate a discussion and evaluation about the most efficient way to meet the facility needs of the airport. The preliminary development alternatives are described below with graphic depictions provided to illustrate the key elements of each alternative. A new section for this chapter will be added to reflect the refined/preferred development alternatives once the evaluation of preliminary alternatives is completed.

It is important to note that the eventual preferred alternative selected by the Port may come from one of the preliminary alternatives, a combination or hybrid of the preliminary alternatives, or a new concept that evolves through the evaluation and discussion of the preliminary alternatives. As noted earlier, the Port also has the option of limiting future facility improvements based on financial considerations or development limitations.

Airside Development Options (Runway-Taxiway Improvements)

As noted in the Facility Requirements chapter, the recent runway shift/reconstruction and the reconstruction/relocation of the north parallel taxiway have addressed the majority of airside facility needs at the airport. All newly constructed items associated with Runway 7/25 meet FAA ADG II (small) design standards. Two primary airside improvements are proposed for the runway-taxiway system (see **Figure 5-1**).

RUNWAY

The Port of Hood River maintained the current length (3,040 feet) of Runway 7/25 when the runway was reconstructed and shifted east several years ago. This decision reflected practical site characteristics and



the desire to keep the Runway Protection Zone (RPZ) for Runway 7 entirely within airport property (immediately east of Tucker Road). Based on this guidance, no extensions of Runway 7/25 will be considered in this alternatives analysis.

The existing runway length is adequate for single engine aircraft operations in most conditions and can accommodate multi-engine aircraft under favorable conditions. However, most multi-engine aircraft takeoffs are constrained by runway length during warm temperatures or when operating near maximum takeoff weight.

Multi-Engine Aircraft Performance Characteristics: Accelerate-Stop Distance

For most multi-engine aircraft, pilots are trained that if an engine fails before attaining liftoff speed, the only proper action is to discontinue the takeoff. If the engine fails after liftoff with the landing gear still down, the takeoff should be discontinued if touch-down and roll-out on the remaining runway is still possible. Continuing a takeoff on one engine is only recommended when other options are not available since multi-engine piston aircraft typically lose 80 to 90 percent of their climb performance when operating on one engine.

The “accelerate-stop distance” is the distance required for an aircraft to accelerate to liftoff speed and, assuming failure of an engine at the instant liftoff speed is reached, throttle to idle, apply maximum braking and stop. Aircraft manufacturers assume that the pilot will recognize the engine failure within 3 seconds and act decisively. The accelerated-stop distance for a typical multi-engine piston aircraft (Beechcraft Baron 58P) was reviewed for Ken Jernstedt Airfield to evaluate runway length requirements. At maximum gross takeoff weight on a typical summer day, the Baron 58P requires approximately 3,650 feet for the accelerate-stop distance on a dry runway surface, no wind, and with optimal pilot performance (recognizing engine failure and responding within 3 seconds). This distance could be expected to increase by up to 15 percent (approximately 4,200 feet) on a wet runway. The required distances may be reduced when aircraft are operated at lower weights or when weather conditions are more favorable (lower temperature, headwind, etc.). However, the distances can increase with less than optimal pilot performance.

The manufacturer indicates that at 81 knots just before takeoff, upon engine failure, the aircraft will travel approximately 410 feet in the 3 seconds before the pilot cuts power on the good engine and begins to apply maximum braking. Although the accelerate-stop calculation is not reflected in the “normal” takeoff distances required for takeoff roll and climb to 50 feet, it reflects a valid margin of safety for pilots operating multi-engine aircraft on Runway 7/25 and warrants consideration in the master plan moving forward.

The importance of having the longer of the accelerate-stop distances for multi-engine aircraft operations is emphasized in the [FAA Handbook 8083.3A – Transitioning to Multi Engine Airplanes](#). As noted in the handbook “*Once the decision to reject a takeoff is made (when an engine failure occurs before liftoff), the pilot should promptly close both throttles and maintain directional control with the rudder, nose wheel*



steering, and brakes. Aggressive use of rudder nose wheel steering, and brakes may be required to keep the aircraft on the runway. Particularly, if an engine failure is not immediately recognized and accompanied by prompt closure of both throttles. However, the primary objective is not necessarily to stop the airplane in the shortest distance, but to maintain control of the airplane as it decelerates. In some situations, it may be preferable to continue into the overrun area under control rather than to risk directional control loss, landing gear collapse, or tire/brake failure in an attempt to stop the airplane in the shortest possible distance.”

STOPWAY

As noted earlier, the existing runway length will be maintained in the evaluation of airside improvements. However, the potential exists to use an existing 585-foot section of former runway (west end) to improve safety for Runway 25 operations, which is reported by local pilots as the favored runway for takeoff. The former runway section was closed as part of the recent runway shift and is currently marked as a paved overrun. Converting the paved overrun to a designated “stopway” would allow multi-engine pilots to legally include the surface in their accelerate-stop calculations for Runway 25.

As noted in FAA AC 150/5300-13A, paragraph 312: “A stopway is an area beyond the takeoff runway centered on the extended runway centerline and designated by the airport owner for use in decelerating an aircraft during an aborted takeoff. It must be at least as wide as the runway and able to support an aircraft during and aborted takeoff without causing structural damage to the aircraft....When a stopway is provided, the stopway length and the declared distances must be provided in the A/FD.”

The current ALP identifies multi-engine aircraft as the current and future design aircraft for Runway 7/25. The updated aviation activity forecast (Chapter Three) anticipates growth in multi-engine piston activity, but identifies a multi-engine turboprop or small business jet as the future design aircraft. For planning purposes, the runway length requirements of a typical (ARC B-I) multi-engine piston aircraft will continue to provide a reasonable indication of need, as activity transitions into increased ADG I and ADG II turbine aircraft activity.

Converting the paved overrun at the west end of Runway 7/25 into a designated stopway improves multi-engine aircraft operational safety without requiring new construction. Normal takeoff and landing distances on the runway would not be affected, although the improved margin of safety for Runway 25 operations is significant. The proposed improvement does not increase the published length of the runway (3,040 feet) and would not involve any changes to the existing RPZs for Runway 7 or 25.

Modifications to Runway 7 threshold lights and upgraded pavement markings (yellow chevrons) may be required on the stopway. Declared distances would be published in FAA airfield directories and pilots are responsible for observing the published dimensions and operating within the limits of their aircraft.



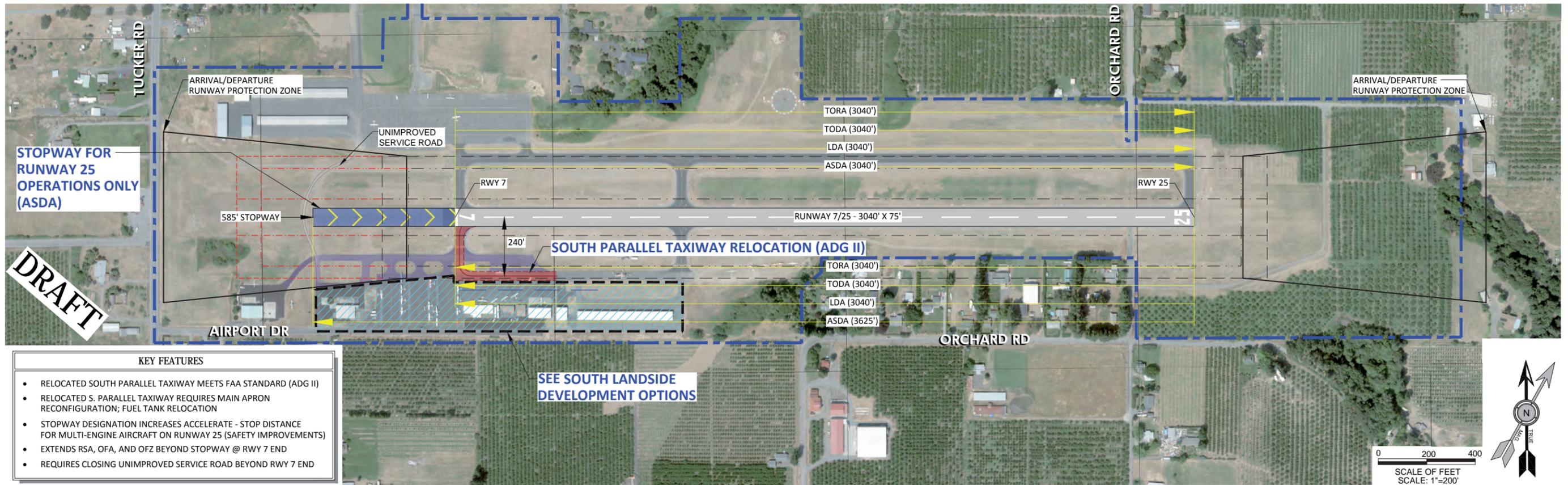
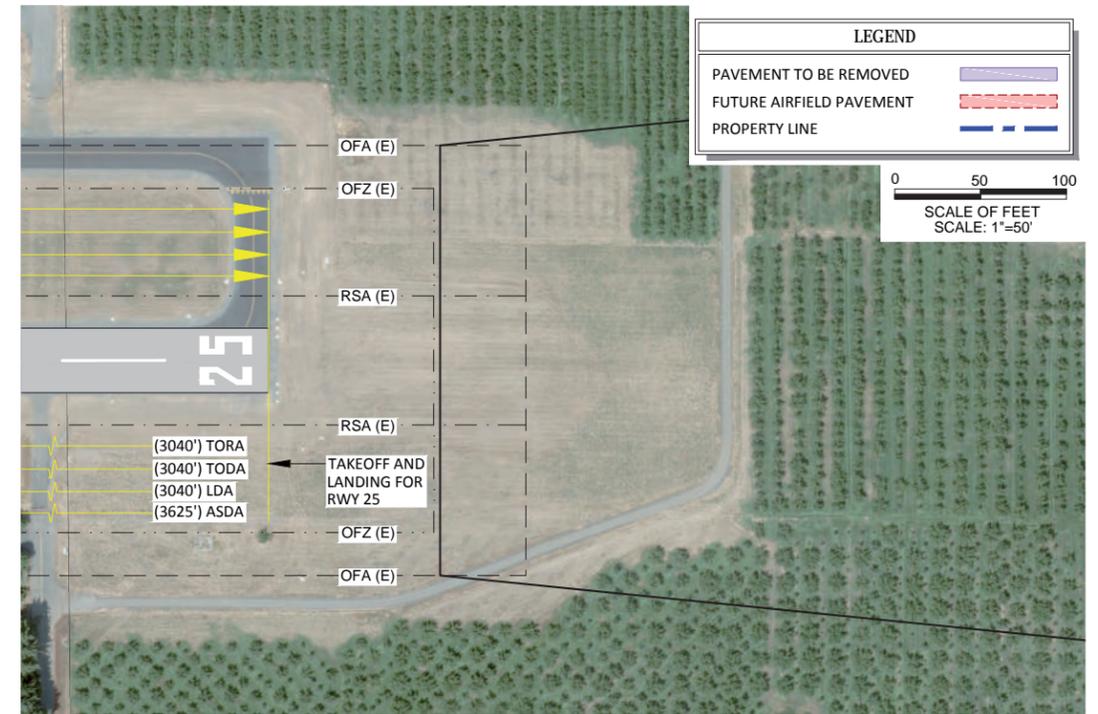
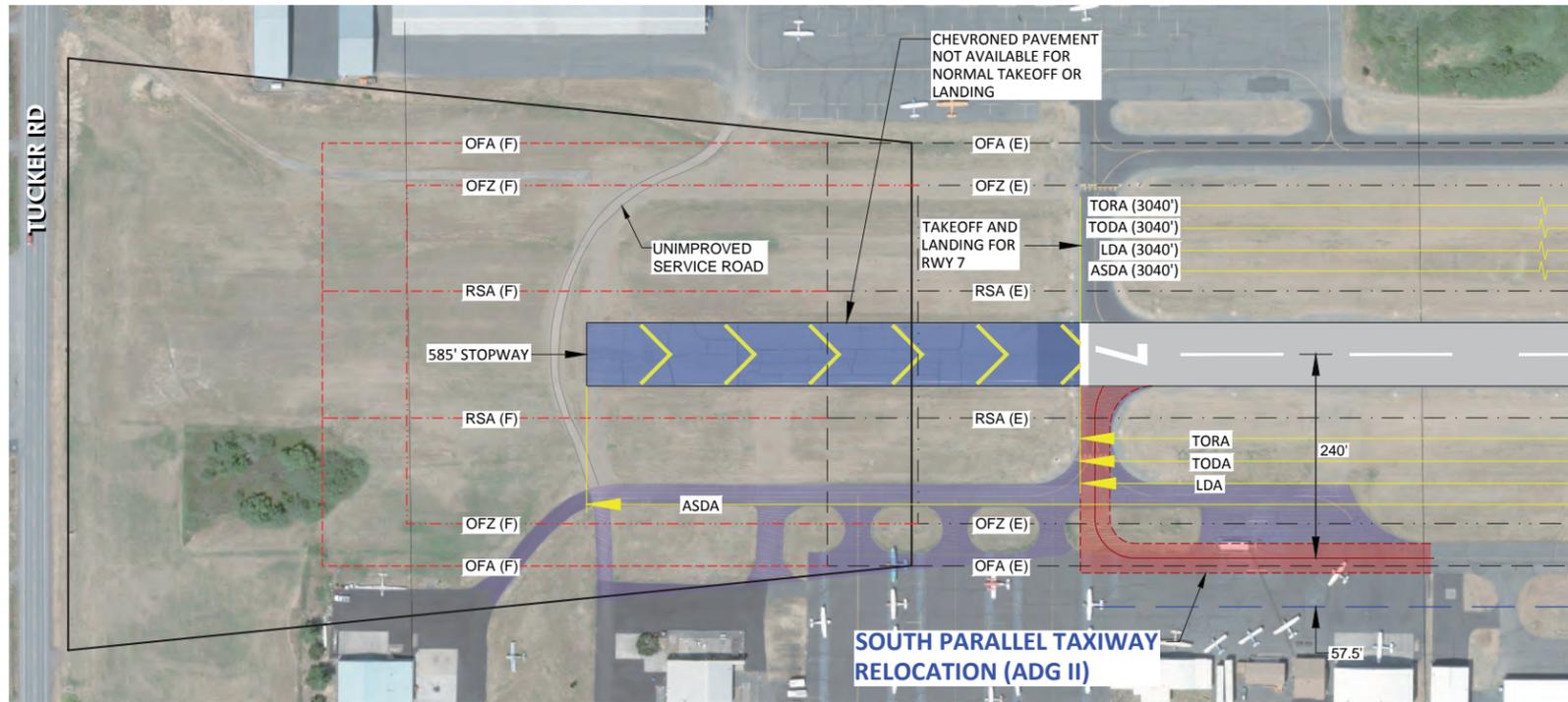
The accelerate-stop distance available (ASDA) for a runway is determined by the length of the runway plus stopway declared available and suitable to accelerate from brake release to take-off decision speed, and then decelerate to a stop, plus safety factors.

The proposed improvement would increase the ASDA for Runway 25 from the current 3,040 feet to 3,625 feet, an increase of 585 feet or 19.2%. The proposed improvement does not affect the ASDA for Runway 7 or any of the other declared distances for Runway 7 or 25 (takeoff distance available, takeoff run available, landing distance available), where the runway length available is 3,040 feet.

TAXIWAYS

The south parallel taxiway (Taxiway B) requires reconfiguration to meet FAA ADG II design standards. This recommendation appears on the current ALP drawing and remains valid based on current conditions. The proposed improvements to Taxiway B include the following items:

- Western Section - a new taxiway section will extend east from the Runway 7 threshold and connect to Taxiway B2. The existing east section of parallel taxiway that extends from the northeast corner of the main apron to Taxiway B2 meets ADG II runway separation standards and will be rehabilitated as part of the improvements.
- Taxiway B will be 35 feet wide and located 240 feet from runway centerline (ADG II standards).
- Taxiway B1 (western 90-degree exit taxiway) will be extended to connect to the relocated parallel taxiway.
- The existing section of Taxiway B that extends west of the Runway 7 threshold will be closed (pavement removed) and replaced with a new taxiway located outside of the Runway 7 RPZ (see South Landside Options).
- The existing section of Taxiway B that extends east of the Runway 7 threshold, along the northern edge of the south apron, will be closed (pavement removed).
- The south apron will be reconfigured (and rehabilitated/reconstructed) to accommodate the shifted Taxiway B:
 - The existing aircraft fuel storage tank and dispensing facilities will be relocated;
 - Existing aircraft tiedowns located within the relocated Taxiway B object free area (65.5 feet from taxiway centerline) will be eliminated.
- New aircraft parking lines will be established on the south and north aprons no closer than 305.5 feet from runway centerline to maintain adequate clearance from adjacent taxiways.
- The future configuration of the south apron will be determined by the preferred south landside development option selected by the Port.



- KEY FEATURES**
- RELOCATED SOUTH PARALLEL TAXIWAY MEETS FAA STANDARD (ADG II)
 - RELOCATED S. PARALLEL TAXIWAY REQUIRES MAIN APRON RECONFIGURATION; FUEL TANK RELOCATION
 - STOPWAY DESIGNATION INCREASES ACCELERATE - STOP DISTANCE FOR MULTI-ENGINE AIRCRAFT ON RUNWAY 25 (SAFETY IMPROVEMENTS)
 - EXTENDS RSA, OFA, AND OFZ BEYOND STOPWAY @ RWY 7 END
 - REQUIRES CLOSING UNIMPROVED SERVICE ROAD BEYOND RWY 7 END





Preliminary Landside Development Options

Ken Jernstedt Airfield currently has a limited amount of undeveloped land available to support future facility development. The current FAA-approved ALP depicts two parcels of land adjacent to the north side of the airport previously recommended for acquisition and hangar development. Future on-airport facility improvements (commercial hangar, FBO building, etc.) adjacent to the north apron are also planned. As noted in the inventory chapter, no new hangars have been constructed on the airport since the completion of the last master plan, nor has the recommended property acquisition occurred. The Port maintains a hangar waiting list that currently includes thirty-nine individuals.

The current backlog of hangar demand and the absence of recent development suggest that reliance on property acquisition to accommodate new hangars has created an impediment within the overall development program that should be considered in the updated planning for the airport.

With this in mind, options for redeveloping, improving, or infilling existing developed areas on the airport will be examined to lessen the dependence on property acquisition as an element of the overall development program. The goal of this approach is to maximize land use efficiency, reduce/defer the need for property acquisition, and facilitate timely facility development in response to demand. Property acquisition may still be prioritized depending on the Port's objectives, airport activity, and future facility demand.

The developed landside areas of the airport are located on the north and south sides of the runway, near its west end. These landside areas accommodate aircraft parking aprons, FBO facilities, hangars, and aircraft fueling. The north landside area includes an undeveloped area located north of the apron and east of Air Museum Road. The south landside area has a limited undeveloped areas located between existing hangars. A small area located near the east end of the airport (east of the vacated section of Orchard Road) also has development potential as the result of the recent runway shift.

The landside development options for Ken Jernstedt Airfield depicted in **Figures 5-2 through 5-10** focus on these primary areas:

- South Landside Area
- North Landside Area
- Southeast Landside Area

The current ALP reflects a development option that locates the majority of new hangars on adjacent land parcels (to be acquired). This option serves as the current baseline for development that will be examined with other updated landside options.



South Landside Area Options

Two proposed apron reconfiguration options were initially developed for the south landside area. The primary objective of these options is to provide developable space for new hangars. The planned relocation of Taxiway B will reduce the available parking capacity on the south apron, regardless of the preferred south landside development concept. The proposed south landside options reflect the pending reduction in functional apron capabilities and consider the potential for more efficient facility design.

The relocation of Taxiway B and rehabilitation/reconstruction of the south apron is currently programmed by FAA as the next development project for Ken Jernstedt Airfield. The configuration of the apron in that project will be determined by the preferred south landside development option defined in the airport master plan.

The existing aircraft tiedowns in the west section of the apron are eliminated and the aircraft would be relocated to the north tiedown apron or hangared. Proposed redevelopment in the western section of the landside area is intended to be compatible with existing hangars. Redevelopment of the eastern section of the landside area (near current FBO building) will depend on the Port's preferred location for future FBO facilities.

The south landside options are not dependent on any particular landside option for the north or southeast areas of the airport, but they should be evaluated both in terms of their overall effectiveness and compatibility with other existing or planned landside facilities.

The western tiedown area on the south apron currently has 28 small airplane tiedowns. The planned relocation (southern shift) of Taxiway B will eliminate 13 existing tiedowns. If the proposed redevelopment of the south apron area to accommodate hangars (described below) is not preferred, the apron will have 15 small airplane tiedowns remaining south of the new parallel taxiway. However the evaluation of taxilane clearances between existing tiedown rows conducted in the Facility Requirements chapter (see Figure 4-3) indicates less than standard taxilane object free area clearances, which may require reconfiguration and the further reduction in parking capacity.

SOUTH LANDSIDE AREA - OPTION A

South Landside Option A (see **Figure 5-2**) reconfigures the western section of the south apron to accommodate aircraft storage hangars, modified taxilanes, and a temporary fuel tank. The eastern section of the landside area (apron) is reconfigured to accommodate the new Taxiway B.

The elements of South Landside Option A include:

- Multi-unit one sided aircraft storage hangars (up to 8 units constructed in phases) with north facing doors;
- New ADG I taxilane to serve multi-unit hangars;



- Conventional hangar sites (located near the west end of the landside area between two existing hangars);
- Parallel taxiway (Taxiway B) shifted and designed for ADG II standards;
- New ADG I taxilane west of Taxiway B, located outside RPZ;
- 28 small airplane tiedowns removed and existing unused pavement to be removed;
- Temporary fuel system location;
- Vehicle parking;
- New airport security fencing and gates; and
- Existing FBO building and site redevelopment (optional).

The proposed development of a single row of one-sided storage hangars is comparable to a multi-unit T-hangar that provides rental hangar space for small aircraft. The building would have a common roof with up to 8 individual hangar units. The hangar is located as far south as possible to avoid penetrating the runway transitional surface slope. The runway setbacks do not permit siting a two-sided T-hangar (with north and south taxilanes) in this area. The option of constructing the hangar in two phases is identified to accommodate a temporary fuel facility. Although not depicted in this option, the proposed hangar could be doubled to 16 units if the existing hangar site located to the west was redeveloped.

The temporary fuel tank location is intended to provide a near-term option for relocating the existing aviation fuel tank. The planned shift of Taxiway B to meet ADG II standards requires relocating the existing fuel tank, currently located on the main apron. The current ALP depicts a future fuel tank on the north apron as part of an overall plan to relocate fixed base operator (FBO) facilities to the north side of the runway.

However, in the event that the timing for the taxiway construction/fuel tank relocation and construction of a new FBO building do not coincide, FBO operations would be temporarily impacted. The proposed location for the temporary fuel tank is intended to maintain current 100LL Aviation Gasoline (AVGAS) capabilities and use by primarily small (ADG I) aircraft.

For planning purposes, the aboveground fuel storage tanks are located at least 50 feet from the nearest structure. The development of a temporary fueling area would require the adjacent hangar and taxilane development to be divided into two phases. Phase I would include relocating the fuel tank (to the temporary location), providing taxilane access to the fueling area, and developing up to five hangar units. Phase II is initiated by the permanent relocation of the fuel tank, which provides space for three additional storage hangars and allows the “fueling” taxilane and hangar taxilane to be connected.



The potential addition of a second fuel tank for jet fuel (Jet A) should be planned for the permanent fueling location. In the event that FBO facilities are maintained in the south landside area, the temporary fueling location could be expanded to accommodate a second tank and ADG II aircraft access. The Phase II hangar development described above would be eliminated.

The two hangar sites identified near the west end of the landside area are intended to be small or medium hangars with a roof height of 20 feet or less required to avoid penetrating the runway transitional surface. Access to the hangar sites is provided by the reconfigured taxilane that would extend along the edge of the Runway 7 RPZ.

The existing access (Airport Road) entering the south landside area from Tucker Road remains unchanged. Existing street parking remains unchanged; additional vehicle parking is planned adjacent to the proposed hangars.

SOUTH LANDSIDE AREA - OPTION B

South Landside Option B (see **Figure 5-3**) provides a variation of hangar redevelopment for the south landside area. Although the configuration of individual elements may differ from Option A, the overall facilities are similar and are driven by the same development constraints.

The elements of South Landside Option B include:

- Four multi-unit one sided aircraft storage hangars (up to 8 units constructed in phases) constructed in short north-south rows with east/west facing doors;
- Two north-south ADG I taxilane stubs to serve multi-unit hangars;
- Conventional hangar sites (located near the west end of the landside area between two existing hangars and north of the proposed temporary fueling location);
- Parallel taxiway (Taxiway B) shifted and designed for ADG II standards;
- New ADG I taxilane west of Taxiway B, located outside RPZ;
- 28 small airplane tiedowns removed and existing unused pavement to be removed;
- Temporary fuel system location;
- Vehicle parking;
- New airport security fencing and gates; and
- Existing FBO building and site redevelopment (optional).



The proposed development of four north south hangar rows provides a slight increase in hangar capacity compared to Option A, but is otherwise comparable. The hangars are sited at or south of the 15' building restriction line (BRL), which is compatible with small hangars and low profile roofs.

As with Option B, the option of constructing the hangar in two phases is identified to accommodate a temporary fuel facility, and the proposed hangar development could be doubled to 16 units if the existing hangar site located to the west was redeveloped. The factors related to the fuel tank described in Option A are unchanged in Option B.

A similar hangar phasing sequence is used in Option B to accommodate the temporary fueling location. Phase I would include relocating the fuel tank (to the temporary location), providing taxilane access to the fueling area, and developing up to six hangar units with two stub taxilanes. Phase II is initiated by the permanent relocation of the fuel tank, which provides space for three additional storage hangars and converts the "fueling" taxilane to hangar taxilane.

SOUTH LANDSIDE AREA - OPTION C

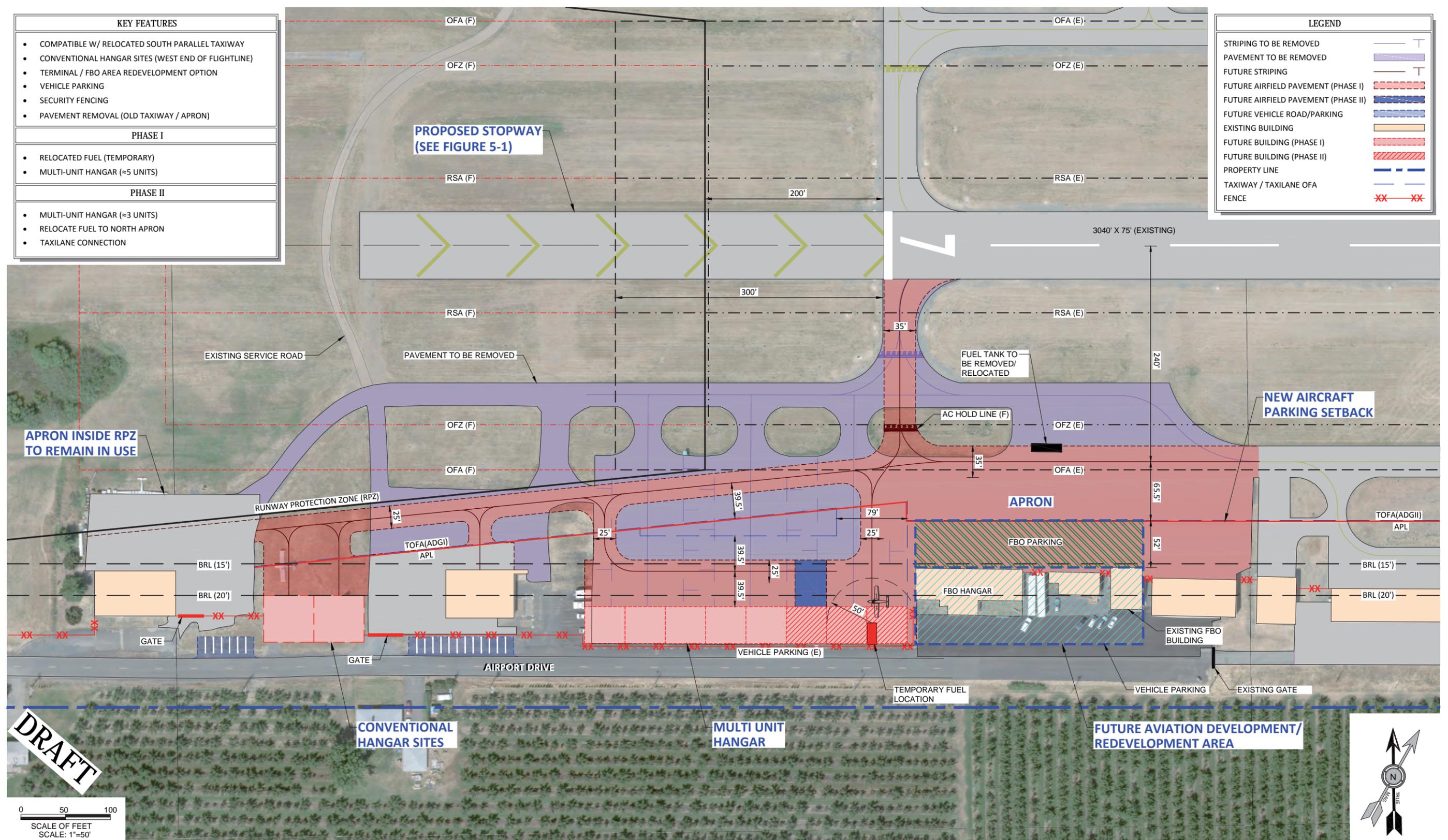
South Landside Option C (see **Figure 5-4**) was created in response to PAC and staff review of the preliminary landside options and an interest in providing an option that preserved aircraft parking on the south apron rather than redeveloping the area to accommodate hangars.

The elements of South Landside Option C include:

- Three north-south ADG I taxilane stubs to serve reconfigured tiedowns (17 tiedowns);
- Conventional hangar sites (located near the west end of the landside area between two existing hangars);
- Parallel taxiway (Taxiway B) shifted and designed for ADG II standards;
- New ADG I taxilane west of Taxiway B, located outside RPZ;
- Temporary fuel system location;
- Vehicle parking;
- New airport security fencing and gates; and
- Existing FBO building and site redevelopment (optional).

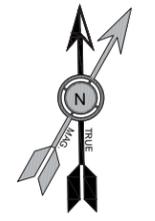
KEY FEATURES
<ul style="list-style-type: none"> COMPATIBLE W/ RELOCATED SOUTH PARALLEL TAXIWAY CONVENTIONAL HANGAR SITES (WEST END OF FLIGHTLINE) TERMINAL / FBO AREA REDEVELOPMENT OPTION VEHICLE PARKING SECURITY FENCING PAVEMENT REMOVAL (OLD TAXIWAY / APRON)
PHASE I
<ul style="list-style-type: none"> RELOCATED FUEL (TEMPORARY) MULTI-UNIT HANGAR (≈5 UNITS)
PHASE II
<ul style="list-style-type: none"> MULTI-UNIT HANGAR (≈3 UNITS) RELOCATE FUEL TO NORTH APRON TAXILANE CONNECTION

LEGEND	
STRIPING TO BE REMOVED	
PAVEMENT TO BE REMOVED	
FUTURE STRIPING	
FUTURE AIRFIELD PAVEMENT (PHASE I)	
FUTURE AIRFIELD PAVEMENT (PHASE II)	
FUTURE VEHICLE ROAD/PARKING	
EXISTING BUILDING	
FUTURE BUILDING (PHASE I)	
FUTURE BUILDING (PHASE II)	
PROPERTY LINE	
TAXIWAY / TAXILANE OFA	
FENCE	



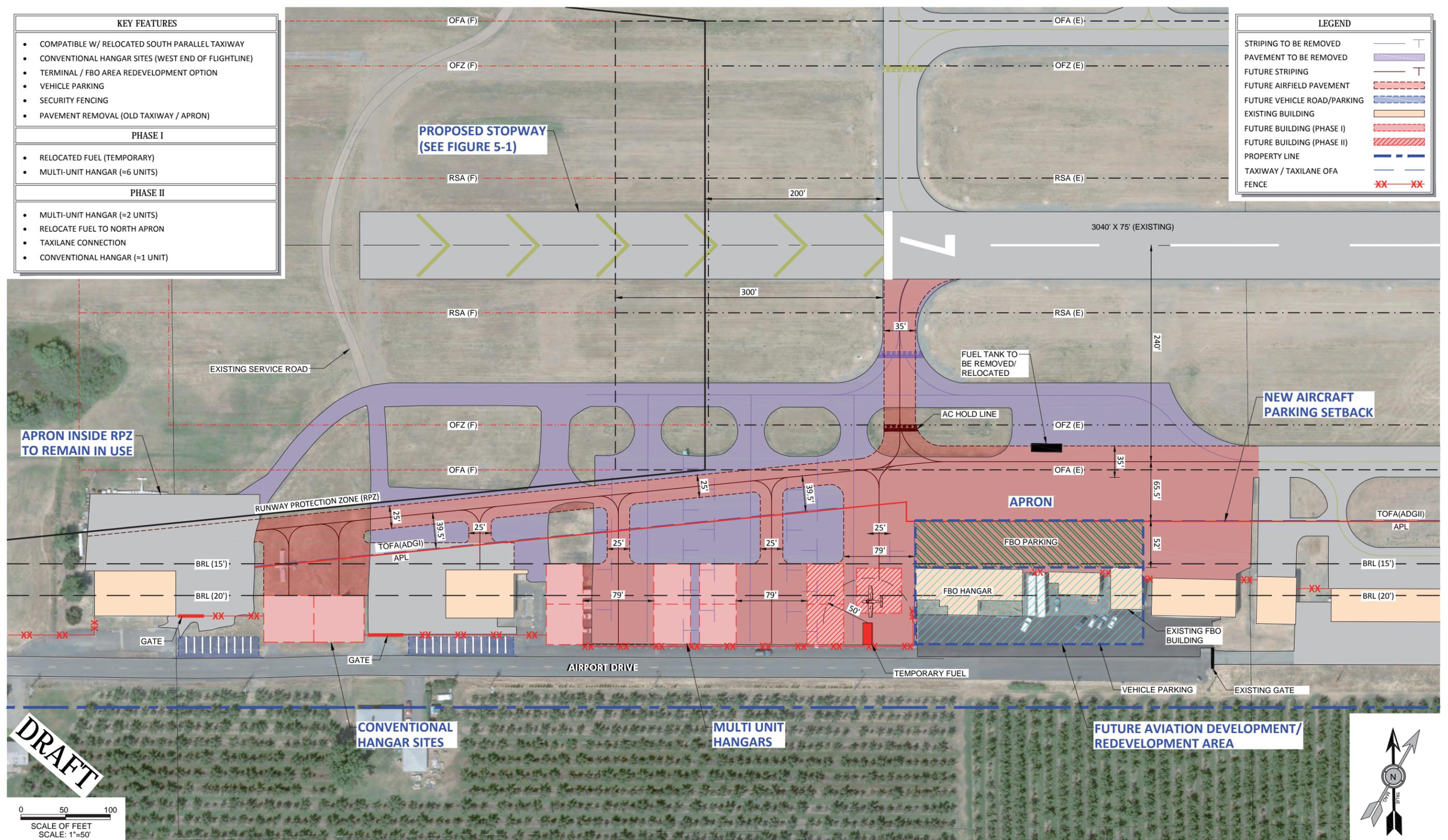
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SCALE: 1"=50'



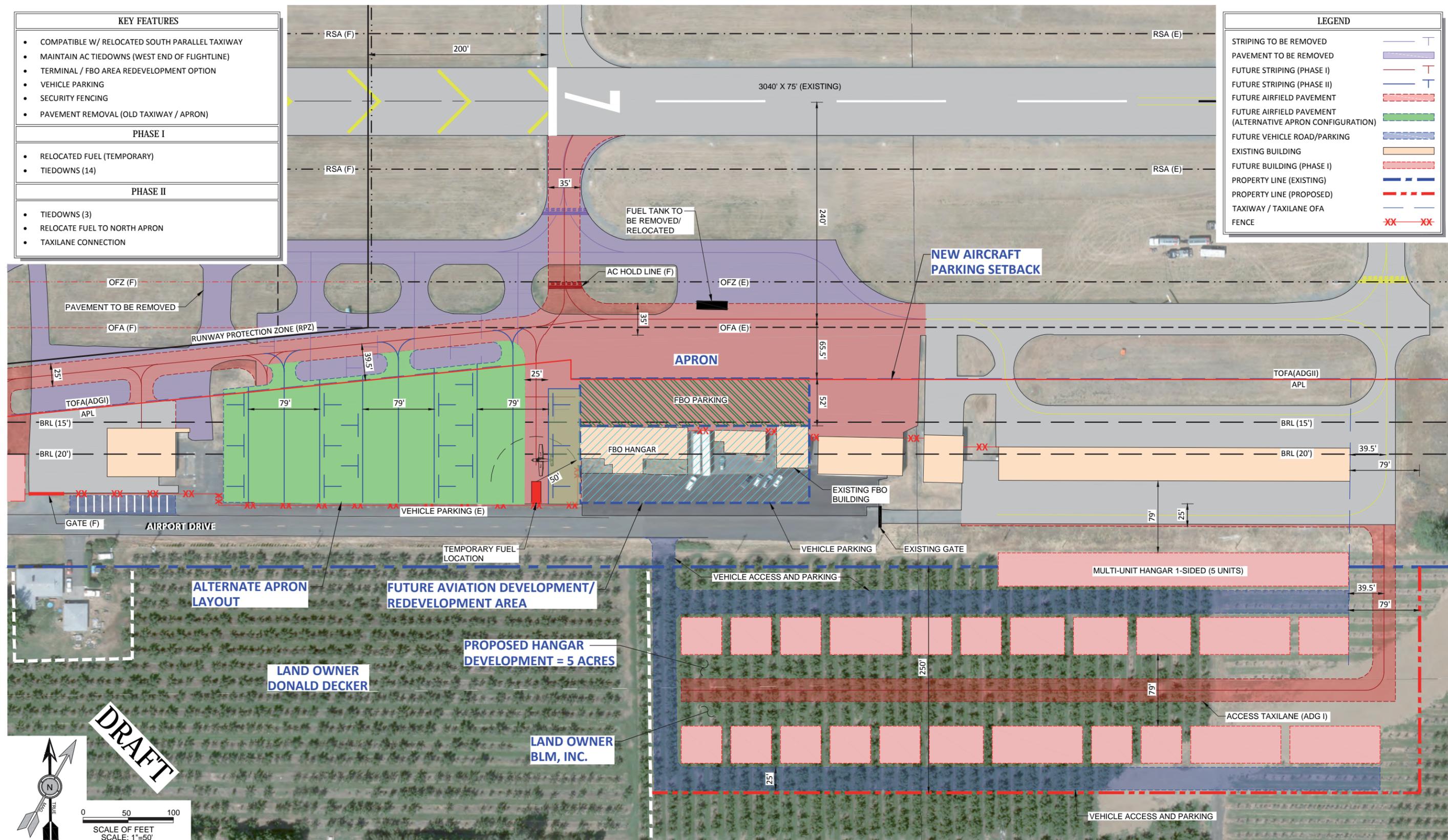
KEY FEATURES
<ul style="list-style-type: none"> COMPATIBLE W/ RELOCATED SOUTH PARALLEL TAXIWAY CONVENTIONAL HANGAR SITES (WEST END OF FLIGHTLINE) TERMINAL / FBO AREA REDEVELOPMENT OPTION VEHICLE PARKING SECURITY FENCING PAVEMENT REMOVAL (OLD TAXIWAY / APRON)
PHASE I
<ul style="list-style-type: none"> RELOCATED FUEL (TEMPORARY) MULTI-UNIT HANGAR (≈6 UNITS)
PHASE II
<ul style="list-style-type: none"> MULTI-UNIT HANGAR (≈2 UNITS) RELOCATE FUEL TO NORTH APRON TAXILANE CONNECTION CONVENTIONAL HANGAR (≈1 UNIT)

LEGEND	
STRIPING TO BE REMOVED	
PAVEMENT TO BE REMOVED	
FUTURE STRIPING	
FUTURE AIRFIELD PAVEMENT	
FUTURE VEHICLE ROAD/PARKING	
EXISTING BUILDING	
FUTURE BUILDING (PHASE I)	
FUTURE BUILDING (PHASE II)	
PROPERTY LINE	
TAXIWAY / TAXILANE OFA	
FENCE	



KEY FEATURES	
• COMPATIBLE W/ RELOCATED SOUTH PARALLEL TAXIWAY	
• MAINTAIN AC TIEDOWNS (WEST END OF FLIGHTLINE)	
• TERMINAL / FBO AREA REDEVELOPMENT OPTION	
• VEHICLE PARKING	
• SECURITY FENCING	
• PAVEMENT REMOVAL (OLD TAXIWAY / APRON)	
PHASE I	
• RELOCATED FUEL (TEMPORARY)	
• TIEDOWNS (14)	
PHASE II	
• TIEDOWNS (3)	
• RELOCATE FUEL TO NORTH APRON	
• TAXILANE CONNECTION	

LEGEND	
STRIPING TO BE REMOVED	
PAVEMENT TO BE REMOVED	
FUTURE STRIPING (PHASE I)	
FUTURE STRIPING (PHASE II)	
FUTURE AIRFIELD PAVEMENT	
FUTURE AIRFIELD PAVEMENT (ALTERNATIVE APRON CONFIGURATION)	
FUTURE VEHICLE ROAD/PARKING	
EXISTING BUILDING	
FUTURE BUILDING (PHASE I)	
PROPERTY LINE (EXISTING)	
PROPERTY LINE (PROPOSED)	
TAXIWAY / TAXILANE OFA	
FENCE	





North Landside Area Options

The north landside area has been identified as the airport's primary area for siting new landside facilities in airport master plans dating back to the late-1970s. The current FAA-approved ALP drawing identifies new FBO facilities, aircraft fueling, aircraft parking and hangars being located in the north landside area, and the future acquisition of adjacent property.

The preliminary development options prepared for the north landside area focus on improving the efficiency of facility layouts, accommodating a variety of user needs, conforming to FAA design standards, and identifying expansion opportunities. A primary consideration in evaluating the north landside area options and the south landside options, described earlier in the chapter, is to determine the desired mix of aircraft parking and other development (hangars, etc.) that can be accommodated within the defined areas while meeting FAA design standards.

Based on input provided by the owner of the adjacent property previously identified for acquisition, the preliminary development options were designed to be contained entirely within existing airport property ownership. Based on the property owner's planned use of the land to support expanded WAAAM facilities, the Port determined that the updated ALP will not depict future property acquisition of this area. This was later modified to recognize the potential for a land trade that would be favorable to both the Port and the land owner. The previous preferred alternative that included property acquisition was also presented for reference (see North Landside Option C).

The evaluation of north apron taxiway clearances between existing tiedown rows conducted in the Facility Requirements chapter (see Figure 4-2) indicates less than standard taxiway object free area clearances, which may require reconfiguration and a reduction in parking capacity even if more ambitious development, including accommodating ADG II aircraft, is not pursued.

Two proposed apron reconfiguration options were developed for the north landside area in addition to the current planned facility configuration depicted on the ALP drawing.

NORTH LANDSIDE AREA - OPTION A

North Landside Option A (see Figure 5-5) reconfigures the north landside area and existing north apron to accommodate a variety of facilities and aircraft parking.

The elements of North Landside Option A include:

- FBO building/maintenance hangar;
- FBO tiedowns (3);
- Small airplane tiedowns (26);



- Drive through parking positions (4) (ADG II design standards);
- Helicopter parking position (1);
- Aviation fuel storage and dispensing area (Jet A and AVGAS);
- Reconfigured/expanded apron (ADG I/II areas with standard taxilane access);
- Mobile fuel vehicle parking/spill containment;
- Large commercial hangar site;
- Conventional hangar sites;
- Non-aviation (airport commercial/industrial) building site;
- Vehicle parking and access road improvements;
- Upgraded airport security fencing and gates; and
- Preserves existing “through-the-fence” access (two access points).

The reconfigured apron includes two east-west rows of doubled-sided small airplane tiedowns (26 tiedowns) in the western section served by three ADG I taxilanes. The eastern section of the apron is reconfigured to accommodate aircraft fueling and transient helicopter parking near the front with FBO facilities and business aircraft parking located toward to the back portion of the apron. The primary taxilanes serving the north apron are designed to accommodate ADG II aircraft, which requires a total clear area of 115 feet along the length of the taxilane.

The FBO facilities are conceptual to demonstrate site capabilities and would be customized in final design to reflect available budget and specific design characteristics.

As depicted, one large commercial hangar (100'x120' typical) and two medium conventional hangars (50'x 50' typical) are located along the northern end of the landside development with direct access to the apron.

The existing access road (Air Museum Road) entering the north landside area is shortened to accommodate reconfigured access roads and vehicle parking on airport property. The existing vehicle gate is relocated as part of a new fencing/access plan. Vehicle parking is located along the access roads in the north landside area.

NORTH LANDSIDE AREA - OPTION B

North Landside Option B (see **Figure 5-6**) provides a variation of redevelopment for the north landside area. Although the configuration of individual elements differs from Option A, the overall facilities are similar.



The elements of North Landside Option B include:

- FBO building/maintenance hangar;
- FBO tiedowns (5);
- Small airplane tiedowns (30);
- Drive through parking positions (4) (ADG II design standards);
- Helicopter parking position (1);
- Aviation fuel storage and dispensing area (Jet A and AVGAS);
- Reconfigured/expanded apron (ADG I/II areas with standard taxilane access);
- Mobile fuel vehicle parking/spill containment;
- Conventional hangar sites (4);
- Vehicle parking and access road improvements;
- Upgraded airport security fencing and gates; and
- Preserves existing “through-the-fence” access (two access points).

The reconfigured apron includes three north-south rows of doubled-sided small airplane tiedowns (30 tiedowns) in the western section served by three ADG I taxilanes. The eastern section of the apron is reconfigured to accommodate aircraft fueling and transient helicopter parking near the front, business aircraft parking near the center, and conventional hangar sites located toward to the back portion of the apron. The primary taxilanes serving the north apron are designed to accommodate ADG II aircraft, which requires a total clear area of 115 feet along the length of the taxilane.

The FBO facilities are located near the northwest corner of the landside area and include an FBO building/GA terminal and an FBO maintenance hangar. As depicted, the FBO building is located near the entrance to the landside area to provide an enhanced “front door” for airport visitors. The building and hangar may also be switched if providing a premium view of Mount Hood takes priority. The FBO facilities are conceptual to demonstrate site capabilities and would be customized in final design to reflect available budget and specific design characteristics.

The existing access road (Air Museum Road) entering the north landside area is shortened to accommodate reconfigured access roads and vehicle parking on airport property. The existing vehicle gate is relocated as part of a new fencing/access plan. Vehicle parking is located along the access roads in the north landside area.



NORTH LANDSIDE AREA - OPTION C

North Landside Area – ALP Option (see **Figure 5-7**) includes the recommended facilities that are depicted on the current ALP drawing.

The elements of North Landside ALP Option include:

- FBO building/maintenance hangar;
- Aviation fuel storage and dispensing area;
- Reconfigured/expanded tiedowns (41 tiedowns);
- Access taxilanes to new hangar areas;
- Property acquisition (two north parcels zoned Airport District -AD);
- (4) Rows of double-sided T-hangars (requires property acquisition);
- (5) Conventional hangars (2 hangars located on airport property; 3 hangars require property acquisition); and
- Vehicle parking adjacent to FBO.

The North Landside Area ALP Option reconfigures the existing tiedown apron to meet ADG I design standards and adds additional ADG I tiedowns in the area north of the existing apron. The area north of the existing apron accommodates the new FBO building with maintenance hangar and conventional hangars. The aviation fuel area is located near the southeast corner of the apron. The ALP option relies heavily on property acquisition to accommodate new hangar construction.

If the on-airport components of this option are maintained as part of a preferred alternative, a reconfiguration to accommodate ADG II aircraft is recommended for the areas in the vicinity of the FBO building and aircraft fueling areas.

NORTH LANDSIDE AREA - OPTION D

North Landside Area Option D (see **Figure 5-8**) was created in response to PAC and staff review of the preliminary landside options and an interest in creating an option that incorporated a proposed land trade between the Port and WAAAM (.47 acres) and several specific design refinements that represented a heavily modified hybrid of the original North Landside Options A and B.

The elements of North Landside ALP Option D include:

- FBO building/maintenance hangar;
- Aviation fuel storage and dispensing area;



- Reconfigured/expanded small tiedowns (32);
- Drive through parking positions (4) (ADG II design standards);
- Helicopter parking position (1);
- Aviation fuel storage and dispensing area (Jet A and AVGAS);
- Access taxilanes to new hangar areas;
- Conventional hangars (9) with vehicle parking and access from Tucker Road;
- Vehicle parking adjacent to FBO; and
- Preserves existing “through-the-fence” access (two access points).

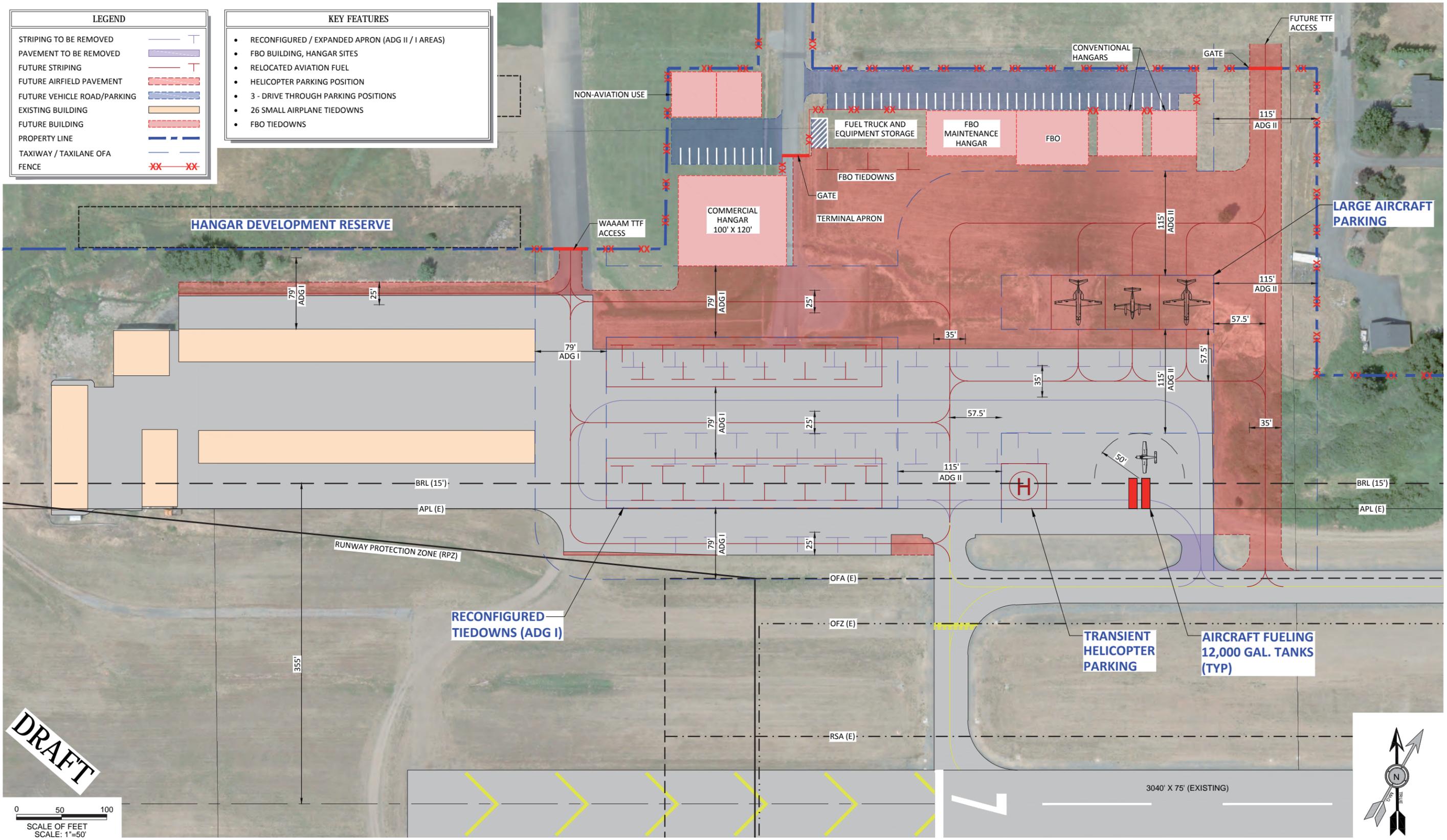
The reconfigured apron includes two east-west rows of doubled-sided small airplane tiedowns (32 tiedowns) in the western section served by three ADG I taxilanes. The eastern section of the apron is reconfigured to accommodate aircraft fueling and two drive-through parking positions. The primary taxilanes serving the north apron are designed to accommodate ADG II aircraft, which requires a total clear area of 115 feet along the length of the taxilane.

Option D would locate the FBO facilities including the FBO building/GA terminal and an FBO maintenance hangar at the end of Air Museum Road (south facing) to provide an enhanced “front door” for airport visitors. A dedicated FBO apron area with a transient helicopter parking position would be located in front of the FBO building. The FBO facilities are conceptual to demonstrate site capabilities and would be customized in final design to reflect available budget and specific design characteristics.

The existing access road (Air Museum Road) entering the north landside area is shortened to accommodate the future FBO building. The existing vehicle gate is relocated as part of a new fencing/access plan. Vehicle parking is located along the access roads in the north landside area.

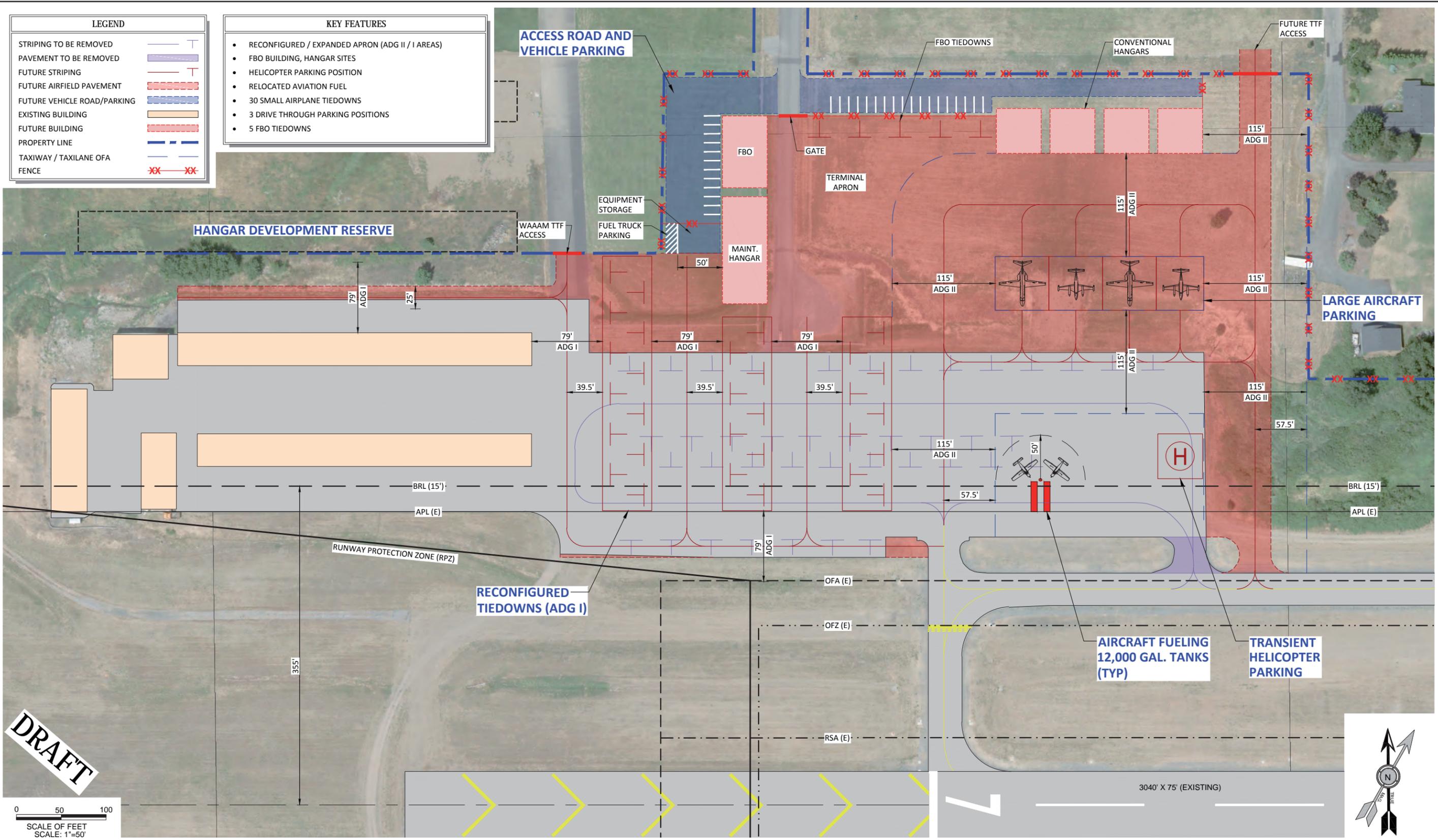
LEGEND	
STRIPING TO BE REMOVED	
PAVEMENT TO BE REMOVED	
FUTURE STRIPING	
FUTURE AIRFIELD PAVEMENT	
FUTURE VEHICLE ROAD/PARKING	
EXISTING BUILDING	
FUTURE BUILDING	
PROPERTY LINE	
TAXIWAY / TAXILANE OFA	
FENCE	

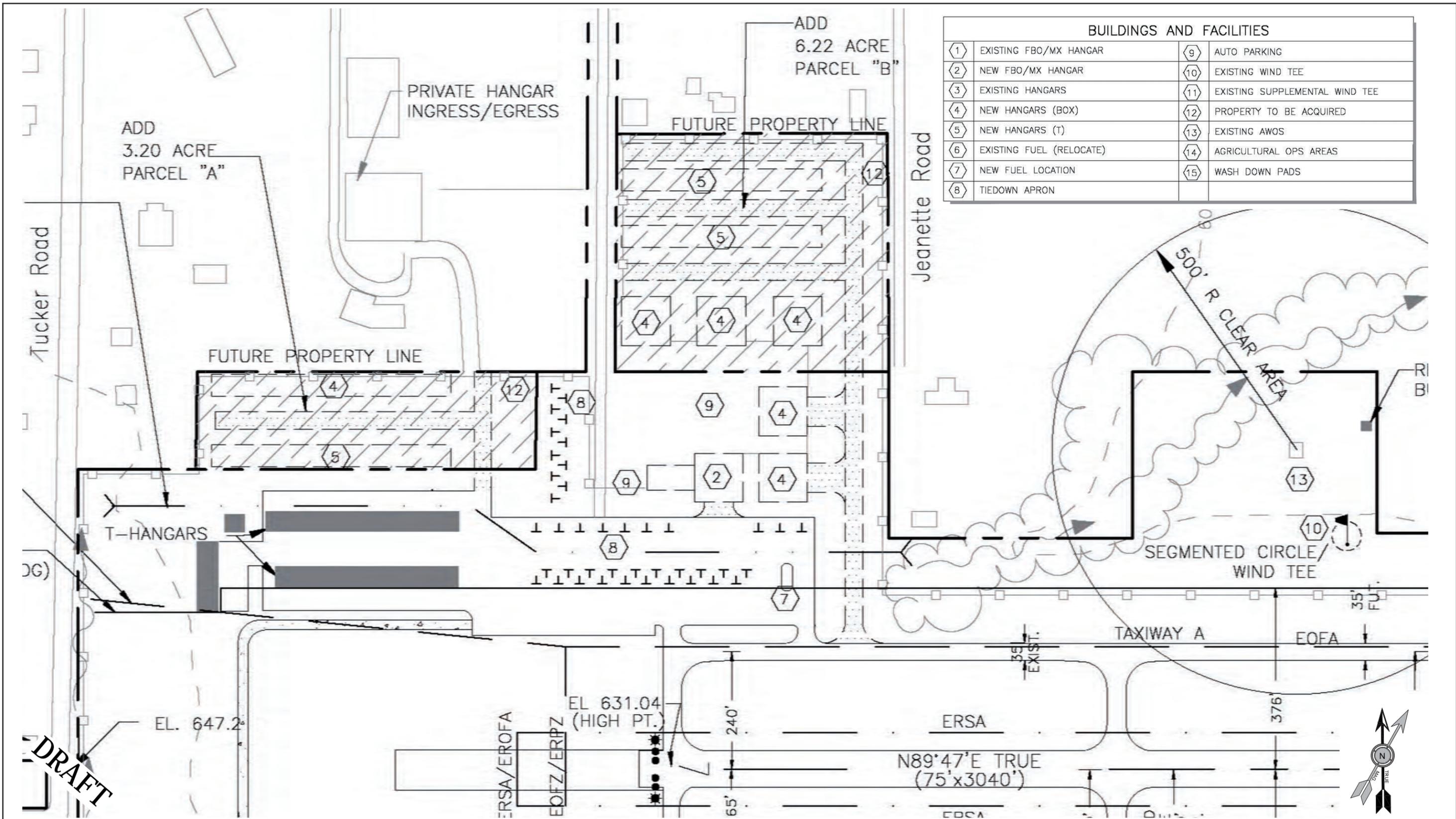
- | KEY FEATURES | |
|--------------|--|
| • | RECONFIGURED / EXPANDED APRON (ADG II / I AREAS) |
| • | FBO BUILDING, HANGAR SITES |
| • | RELOCATED AVIATION FUEL |
| • | HELICOPTER PARKING POSITION |
| • | 3 - DRIVE THROUGH PARKING POSITIONS |
| • | 26 SMALL AIRPLANE TIEDOWNS |
| • | FBO TIEDOWNS |



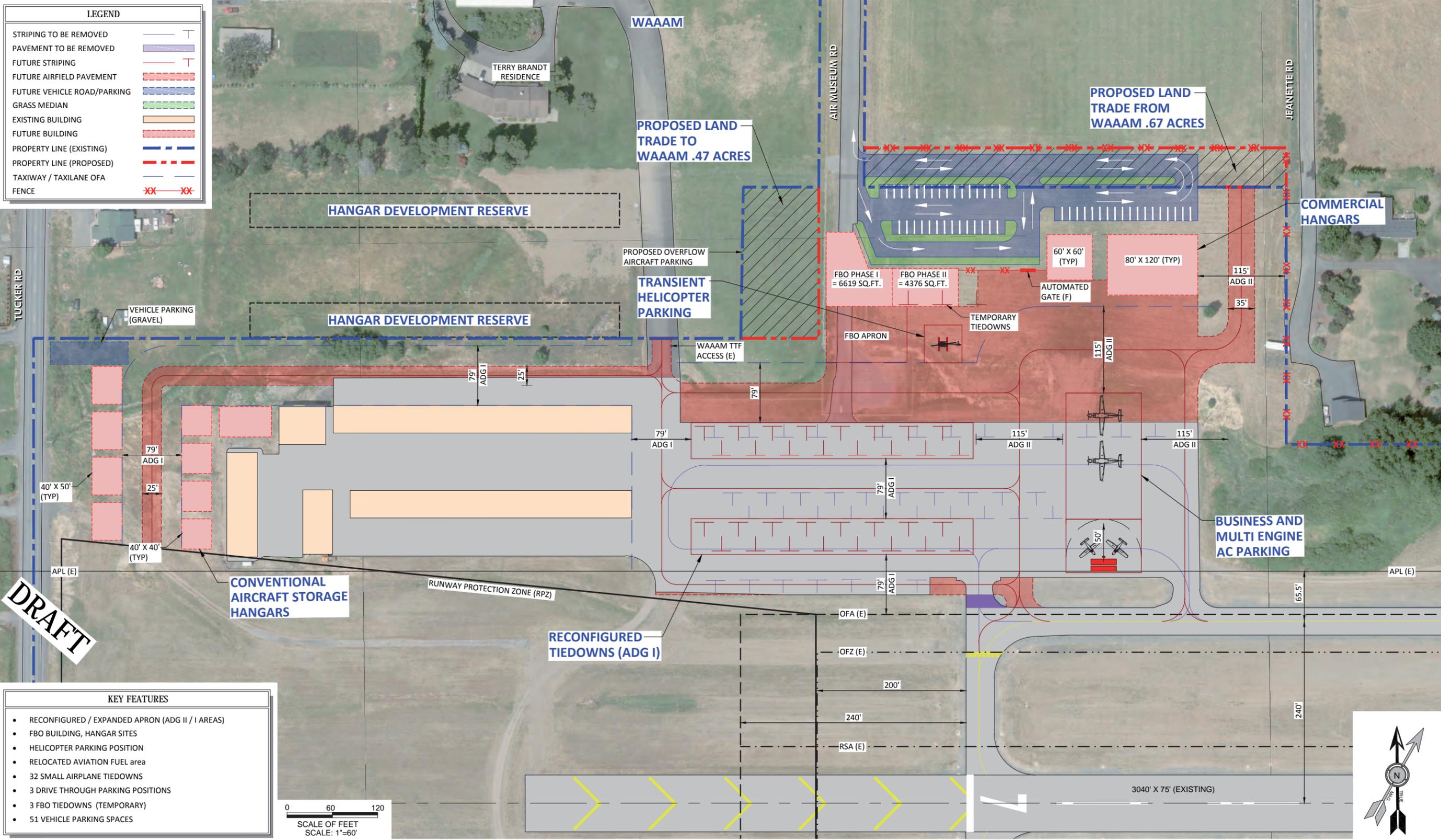
LEGEND	
STRIPING TO BE REMOVED	
PAVEMENT TO BE REMOVED	
FUTURE STRIPING	
FUTURE AIRFIELD PAVEMENT	
FUTURE VEHICLE ROAD/PARKING	
EXISTING BUILDING	
FUTURE BUILDING	
PROPERTY LINE	
TAXIWAY / TAXILANE OFA	
FENCE	

- | KEY FEATURES |
|--|
| • RECONFIGURED / EXPANDED APRON (ADG II / I AREAS) |
| • FBO BUILDING, HANGAR SITES |
| • HELICOPTER PARKING POSITION |
| • RELOCATED AVIATION FUEL |
| • 30 SMALL AIRPLANE TIEDOWNS |
| • 3 DRIVE THROUGH PARKING POSITIONS |
| • 5 FBO TIEDOWNS |



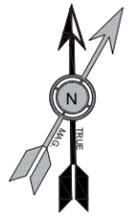


LEGEND	
STRIPING TO BE REMOVED	
PAVEMENT TO BE REMOVED	
FUTURE STRIPING	
FUTURE AIRFIELD PAVEMENT	
FUTURE VEHICLE ROAD/PARKING	
GRASS MEDIAN	
EXISTING BUILDING	
FUTURE BUILDING	
PROPERTY LINE (EXISTING)	
PROPERTY LINE (PROPOSED)	
TAXIWAY / TAXILANE OFA	
FENCE	



- KEY FEATURES**
- RECONFIGURED / EXPANDED APRON (ADG II / I AREAS)
 - FBO BUILDING, HANGAR SITES
 - HELICOPTER PARKING POSITION
 - RELOCATED AVIATION FUEL area
 - 32 SMALL AIRPLANE TIEDOWNS
 - 3 DRIVE THROUGH PARKING POSITIONS
 - 3 FBO TIEDOWNS (TEMPORARY)
 - 51 VEHICLE PARKING SPACES

0 60 120
SCALE OF FEET
SCALE: 1"=60'





Southeast Landside Area Options

The area located near the southeast corner of the airport has been identified as having landside development potential. This area was previously separated from the runway-taxiway system by a section of Orchard Road, which was vacated to accommodate the recent runway shift.

It is noted that this area of the airport (east of the former Orchard Road) is zoned Exclusive Farm Use (EFU) and may require obtaining a special use permit from Hood River County to site new airport uses, or consider rezoning the area to Airport Development (AD).

For planning purposes, two conceptual development options have been prepared for the southeast landside area. Proposed landside development for both options is located entirely outside the Runway 25 Protection Zone (RPZ) and other protected areas for the runway.

An existing airport service road that travels through the Runway 25 RPZ is realigned (only the portion outside of the RPZ is affected) to accommodate taxiway and hangar development.

SOUTHEAST LANDSIDE AREA - OPTION A (ADG I)

Southeast Landside Option A (see **Figure 5-9**) provides a hangar development that would accommodate ADG I aircraft.

The elements of Southeast Landside Option A include:

- General aviation hangars (9 units depicted);
- Access taxiway (25 feet wide) connecting hangar development to Runway 25;
- Hangar taxiway;
- Glider storage/ parking area;
- New surface access connection (to Orchard Road) and vehicle parking;
- Modified airport service road (only the section outside the RPZ); and
- Airport fencing and gate.

The proposed facility configuration consists of a single row of one-sided hangars located clear of the Runway 25 RPZ and the protected areas for Runway 7/25. As depicted, the proposed configuration is similar to the development proposed in the South Landside Area Option A (see figure 5-2), providing 9 individual hangar units within a larger hangar building. As with the south landside area, the runway setbacks do not permit siting a two-sided T-hangar (with north and south taxiways) in this area. The option of constructing the hangar in two phases also exists based on demand and funding.



The layout provides adequate space south of the hangars for vehicle parking, airport service road, and automated vehicle gate for controlled access.

SOUTHEAST LANDSIDE AREA - OPTION B (ADG II)

Southeast Landside Option B (see **Figure 5-10**) provides a hangar development that would accommodate ADG I and ADG II aircraft.

The elements of Southeast Landside Option B include:

- Conventional hangar sites (5 units depicted, varying in size);
- Access taxiway (35 feet wide) connecting hangar development to Runway 25;
- Hangar taxilane;
- Glider storage/ parking area;
- New surface access connection (to Orchard Road) and vehicle parking;
- Modified airport service road (only the section outside the RPZ); and
- Airport fencing and gate.

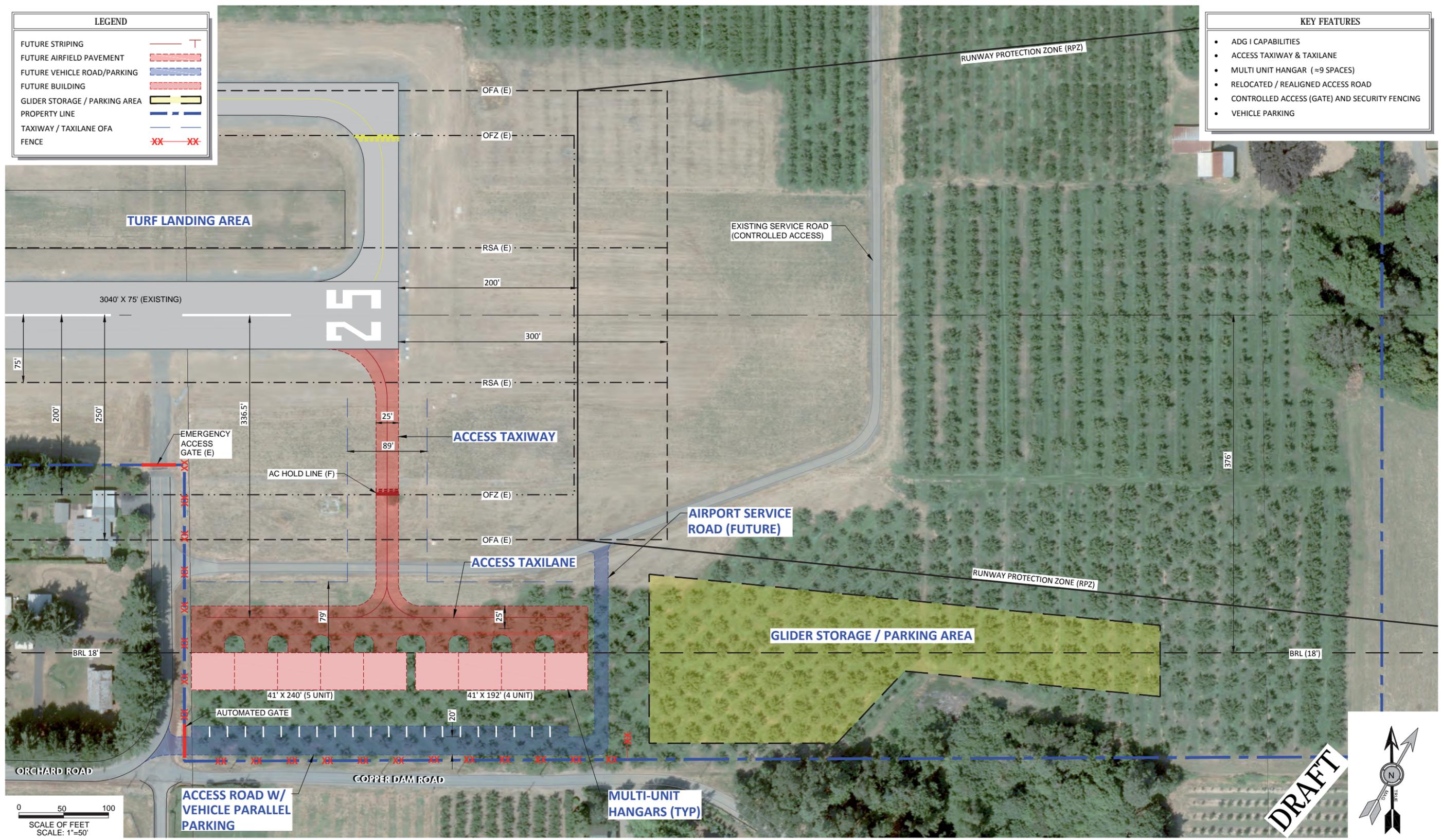
The hangar sites identified are intended to be small or medium hangars with a roof height of 20 feet or less required to avoid penetrating the runway transitional surface.

Option B also includes an alternative taxilane configuration that would allow development of a small apron area between the hangars and the hangar taxilane. However, since the apron is would provide access to the adjacent hangars, it would need to be leased as part of the adjacent hangar sites and would therefore not be eligible for FAA funding as an exclusive use facility.

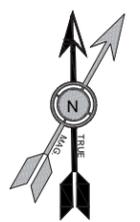
The layout provides adequate space south of the hangars for vehicle parking, airport service road, and automated vehicle gate for controlled access.

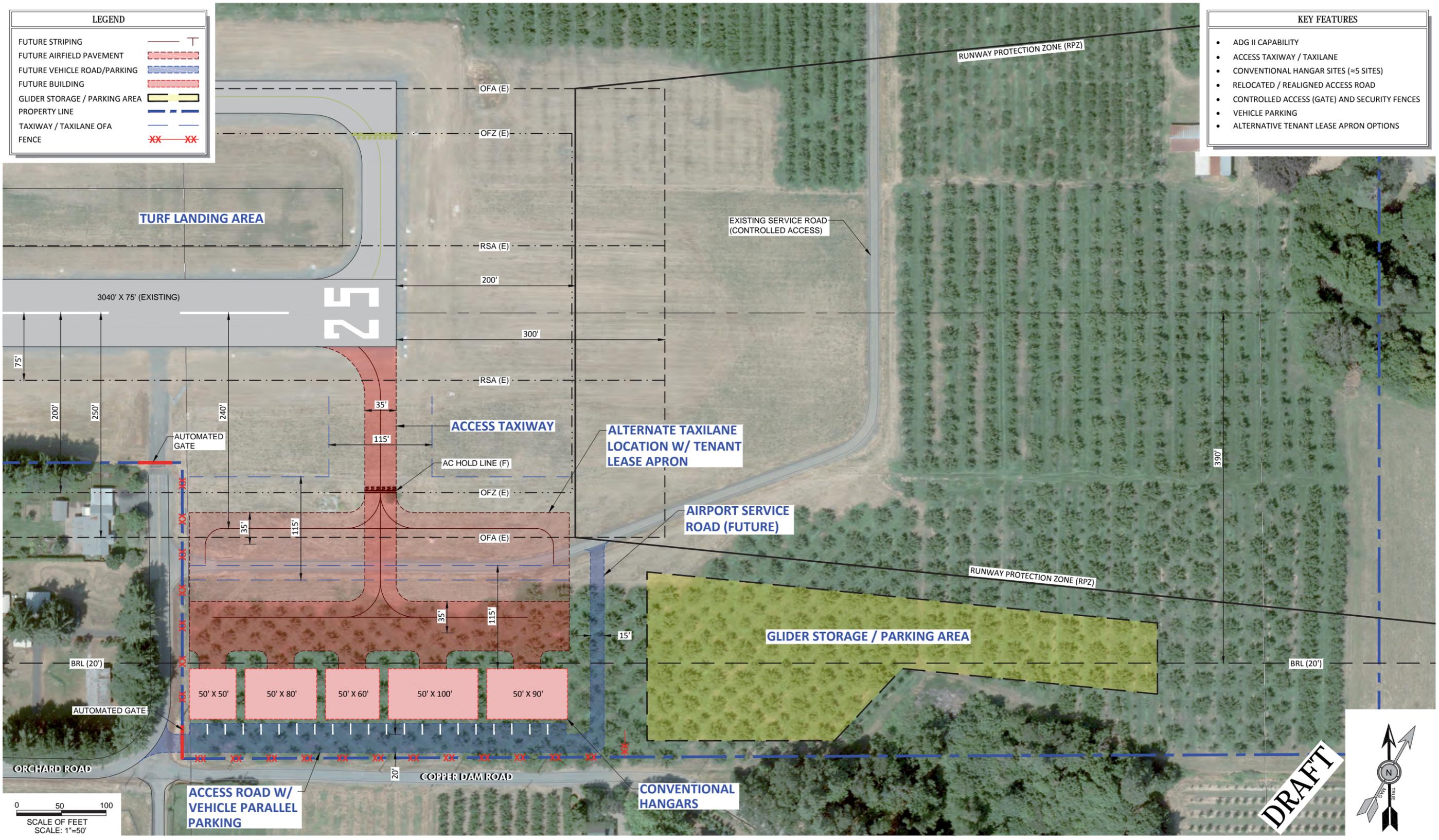
LEGEND	
FUTURE STRIPING	
FUTURE AIRFIELD PAVEMENT	
FUTURE VEHICLE ROAD/PARKING	
FUTURE BUILDING	
GLIDER STORAGE / PARKING AREA	
PROPERTY LINE	
TAXIWAY / TAXILANE OFA	
FENCE	

- | KEY FEATURES |
|---|
| • ADG I CAPABILITIES |
| • ACCESS TAXIWAY & TAXILANE |
| • MULTI UNIT HANGAR (≈9 SPACES) |
| • RELOCATED / REALIGNED ACCESS ROAD |
| • CONTROLLED ACCESS (GATE) AND SECURITY FENCING |
| • VEHICLE PARKING |



DRAFT





KEN JERNSTEDT AIRFIELD- HOOD RIVER | AIRPORT MASTER PLAN | SOUTHEAST LANDSIDE AREA OPTION B (ADG II) | FIG. 5-10





Adjacent Off Airport Land Areas

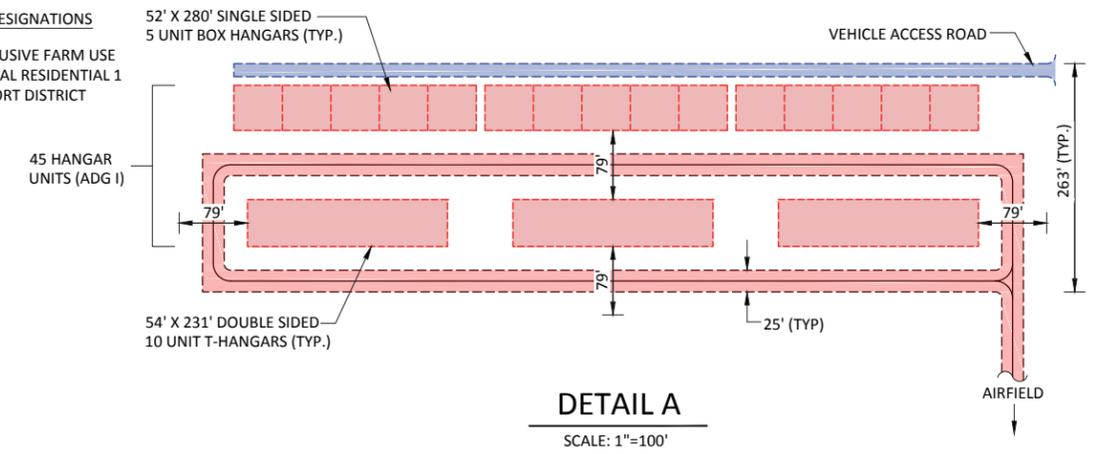
During the master planning process, interest has been expressed by adjacent landowners to consider utilizing adjacent off airport land parcels to accommodate future landside development, either through purchase by the Port or through future airport access (“through-the-fence”) agreement with private land owners.

With the exception of two land parcels located adjacent to the north landside area, the undeveloped lands are currently in agricultural use and are zoned Exclusive Farm Use (EFU) by Hood River County. Development of aviation use facilities on EFU-zoned land presents a unique challenge that requires local land use approval. **Figure 5-11** depicts the parcels adjacent to the airport and associated zoning. For illustration purposes, the figure includes a conceptual hangar layout with a compact development that could be accommodated on a relatively narrow land parcel.

PARCEL DATA TABLE					
	OWNER	ACRES	COUNTY ZONING*	AIRPORT OVERLAY ZONING	PARCEL #
1	RODRIGO CARRILLO-CARRILLO	9.35	EFU	N/A	02N10E11A-601
2	RICHARD L (TOD) CLARKE	1.36	EFU	N/A	02N10E11A-700
3	PEGGY & KENNETH WOODRUFF	2.32	EFU	N/A	02N10E11A-800
4	BIG PEAR, LLC	6.18	EFU	N/A	02N10E11A-900
5	MICHAEL C ET UX HUBERT	0.91	RR-1	N/A	02N10E11A-1200
6	NANCY E & PEPITONE HUBERT	0.45	RR-1	N/A	02N10E11A-1300
7	LYLE L & MARES THORNTON	0.5	RR-1	N/A	02N10E11A-1400
8	JEREMY J & KARA CHRISTINE YOUNG	0.94	RR-1	N/A	02N10E11A-1600
9	WILLIAM E & REBECCA J ET VEATCH	0.92	RR-1	N/A	02N10E11A-1800
10	TIMOTHY J U-2 ET AL O'DONNELL	0.97	RR-1	N/A	02N10E11A-1900
11	DEBRA K KING	0.93	RR-1	N/A	02N10E11A-2000
12	AMIT & GAIL DAGAN	0.89	RR-1	N/A	02N10E11A-2001
13	SHANE & SANDRA OSTLER	0.93	RR-1	N/A	02N10E11A-2002
14	PASQUALE & JACQUIE L BARONE	1.23	RR-1	N/A	02N10E11A-2100
15	ROBERT S BENTON	9.85	EFU	N/A	02N10E11A-2300
16	RODRIGO CARRILLO-CARRILLO	9.85	EFU	HHO	02N10E11A-2400
17	TERRY R BRANDT TRUSTEE	9.8	EFU	HHO	02N10E11B-400
18	TERRY R BRANDT TRUSTEE	5.34	AD	HHO	02N10E11B-1600

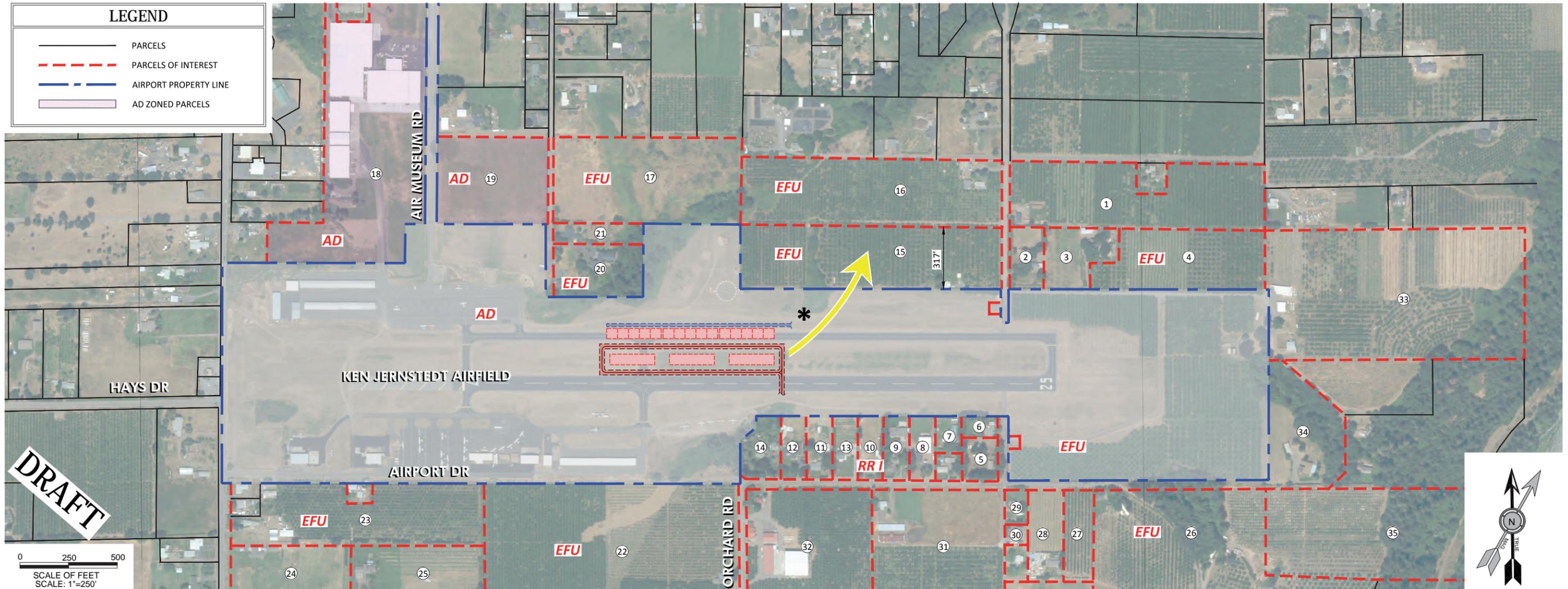
PARCEL DATA TABLE					
	OWNER	ACRES	COUNTY ZONING*	AIRPORT OVERLAY ZONING	PARCEL #
19	TERRY R BRANDT TRUSTEE	5.65	AD	HHO	02N10E11B-1603
20	RONALD E & CYNTHIA C KURAHARA	2.64	EFU	HHO	02N10E11B-2500
21	MARGRET STRASSER	1.26	EFU	HHO	02N10E11B-2502
22	BLM INC	19.85	EFU	HHO	02N10E11C-101
23	DONALD W DECKER	8.07	EFU	HHO	02N10E11C-300
24	GENE L & JUDY A JONES	4.77	EFU	HHO	02N10E11C-700
25	DONALD W DECKER	5	EFU	HHO	02N10E11C-701
26	JEANNETTE COOPER	43.65	EFU	N/A	02N10E11D-300
27	JEANNETTE H COOPER	1.63	EFU	N/A	02N10E11D-401
28	JEANNETTE H COOPER	1.87	EFU	N/A	02N10E11D-500
29	JEANNETTE H COOPER	0.44	EFU	N/A	02N10E11D-600
30	DONALD P & KRISTI BUCHANAN	0.28	EFU	N/A	02N10E11D-700
31	CATHERINE BENTON HAMADA	9.69	EFU	N/A	02N10E11D-1400
32	RICHARD L ET AL WILCOX	9.4	EFU	N/A	02N10E11D-1500
33	TAMURA RITZ, NANCY ALMA TRUSTEE	20	EFU	N/A	02N10E12-2400
34	TED S & SHIRLEY L EKKER	5.01	EFU	N/A	02N10E12-2500
35	JEANNETTE COPPER	13	EFU	N/A	02N10E12-2600

* ZONING DESIGNATIONS
 EFU = EXCLUSIVE FARM USE
 RR-1 = RURAL RESIDENTIAL 1
 AD = AIRPORT DISTRICT



* CONCEPTUAL LAYOUT FOR ILLUSTRATION ONLY

LEGEND	
	PARCELS
	PARCELS OF INTEREST
	AIRPORT PROPERTY LINE
	AD ZONED PARCELS





Preferred Development Alternative

The preferred airside and landside facility configurations were selected by the Port of Hood River following local review and coordination of the preliminary development alternatives with the FAA. Project review was extensive and included input from the master plan advisory committee, airport users, Port staff, the Oregon Department of Aviation (ODA), FAA, and the general public. Several issues emerged late in the planning process that were analyzed and incorporated into the preferred alternative. The preferred airside and landside improvements were incorporated into the Airport Layout Plan and Terminal Area Plan, and are depicted in **Figures 5-12 and 5-13**.

The change in airport reference code for Runway 7/25 noted earlier (A/B-II to A/B-II Small) resulted in the following changes in design standards dimensions:

- Runway Obstacle Free Zone (width reduced from 400 feet to 250 feet); and
- Runway Protection Zones (trapezoid dimensions reduced from 500 x 700 x 1000 feet to 250 x 450 x 1000 feet).

The “small” airplane designation is consistent with “utility” runways defined in FAR Part 77:

- Primary Surface (width reduced from 500 feet to 250 feet);
- Approach Surface (trapezoid inner and outer width dimensions reduced; no change to length or 20:1 approach surface slope); and
- Transitional Slope (7:1 slope begins 125 feet from runway centerline (previously 250 feet), which increases obstruction clearance for built and natural items located to the sides of the runway.

RECOMMENDED AIRSIDE IMPROVEMENTS

The recommended airside improvements include the reconfiguration of Taxiway B (south parallel taxiway) and converting the existing 585-foot paved overrun at the west end of the runway to a stopway. The reduction in runway protection zone (RPZ) dimensions noted earlier allowed an extension of Taxiway B to replace the existing taxiway serving the west end of the south flight line. Aircraft hold lines on all connecting taxiways may be located 125 feet from runway centerline, based on OFZ clearance requirements.

RECOMMENDED LANDSIDE IMPROVEMENTS

The recommended landside improvements are located in two existing development areas (NW and SW sections of the airport) and two new development areas (SE and NE sections of airport). Individual projects include new development and reconfiguration of existing facilities:



South Landside Area

- Convert SW apron to hangar development area in conjunction with Taxiway B ADG II reconfiguration (remove existing taxiway pavement);
- Develop approximately five medium/large conventional hangars (2 building sites) at the west end of the landside area with vehicle parking and access from Airport Drive;
- Remove 28 small airplane tiedowns and the existing unused apron pavement;
- Temporary aircraft fuel storage and dispensing location;
- Vehicle parking along Airport Drive;
- Install new airport security fencing and vehicle gates; and
- Optional reconfiguration of existing FBO area.

Southeast Landside Area

The future development in this area will accommodate ADG I/II aircraft hangars and a glider staging area (see **Figure 5-10** for detail). The improvements include:

- Construct 90-degree south access taxiway (ADG II) at Runway 25 threshold;
- Construct parallel taxiway to access hangars;
- Develop approximately five conventional hangars with optional apron area;
- Glider staging area (east of hangar sites, turf);
- Relocate/extend a section of the existing airport service road;
- New vehicle parking; and
- Install new airport security fencing and vehicle gates.

North Landside

The preferred option was developed after several preliminary alternatives were considered and modified. This development concept includes the proposed land trade between Port-owned airport property and WAAAM-owned property of (.47 acres) and it preserves existing access easements and a potential through-the-fence access point to the east of the apron.

The recommended landside improvements include:

- Modified connector taxiways for North Apron and Taxiway A (North Parallel Taxiway);



- Expanded and reconfigured North Apron:
 - Reconfigured North Apron taxilanes (ADG I and II);
 - Reconfigured North Apron small aircraft tiedowns (26 tiedowns);
 - Two drive-through aircraft parking positions (multi-engine/large aircraft);
 - One transient helicopter parking position;
 - Taxilane access for two WAAAM/Terry Brandt easement points;
 - Aircraft fueling area at east end of apron (two 12,000-gallon above ground fuel tanks);
- New building development:
 - FBO building and maintenance hangar
 - Conventional hangar sites (6 units depicted – center and east section of apron)
 - Small conventional hangars (9 building sites depicted – NW hangar area)
- Extend northwest hangar taxilane to access new NW hangar sites;
- Vehicle parking adjacent to FBO and hangars;
- Vehicle access from Air Museum Road and Jeanette Road (east end of north apron); and
- Install new fencing and automated vehicle gates.

Northeast Landside Area

The future development in this area will accommodate ADG I aircraft hangars. The single row hangar configuration is designed to maximize use of available developable land and effectively connect with the existing taxiway system. The area is able to accommodate individual units (typically 30' x 40') or several multi-unit hangars. A parallel taxilane will connect to Taxiway A, near the end of Runway 25. Vehicle access will be provided from Orchard Road.

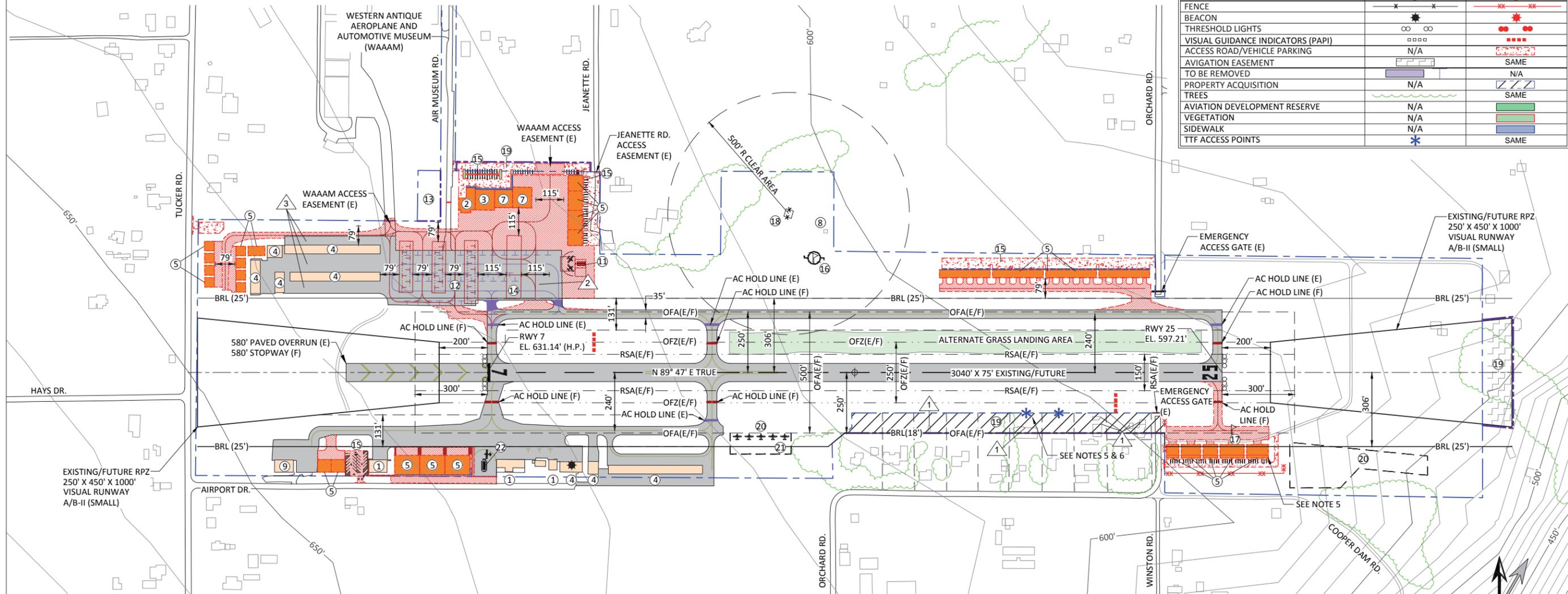
The recommended landside improvements include:

- Construct 90-degree north access taxiway (ADG I) near Runway 25 threshold;
- Construct taxilane (ADG I) to serve a single row of conventional or multi-unit hangars (south facing doors);
- Develop approximately twenty hangar units (four multi-unit hangars are depicted); and
- New vehicle parking on north side of hangars.

BUILDING/FACILITY KEY	
DESCRIPTION	DESCRIPTION
1 FBO / MAINTENANCE HANGAR (E)	12 TIEDOWN APRON
2 FBO BUILDING (F)	13 WAAAM OVERFLOW AIRCRAFT PARKING (F)
3 MAINTENANCE HANGAR (F)	14 TRANSIENT HELICOPTER PARKING
4 HANGARS (E)	15 AUTO PARKING (F)
5 BOX HANGARS (F)	16 WIND TEE (E)
6 MULTI-UNIT HANGARS (F)	17 SUPPLEMENTAL WIND TEE (E)
7 COMMERCIAL HANGAR (F)	18 AWOS (E)
8 REGULATOR BUILDING	19 PROPERTY TO BE ACQUIRED
9 AGRICULTURAL OPS AREAS	20 GLIDER STORAGE / PARKING AREA (E/F)
10 FUEL LOCATION (E)	21 OVERFLOW PARKING AREA (F)
11 FUEL LOCATION (F)	22 TEMPORARY FUEL LOCATION

NON STANDARD CONDITIONS			
NO.	ITEM	DESCRIPTION	DISPOSITION
1	ROFA	SOUTHEAST SIDE RESIDENCES	FUTURE PROPERTY ACQUISITION
2	TAXILANE OFA APRON	TAXILANE CLEARANCES TO PARKED AIRCRAFT (ADG I & ADG II)	RECONFIGURE APRON
3	TAXILANE OFA (HANGARS)	LESS THAN STD. ADG I CLEARANCES	MODIFY WHERE FEASIBLE

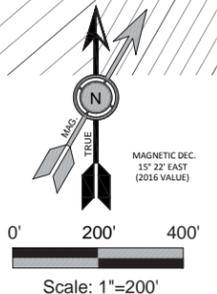
LEGEND		
	EXISTING	FUTURE
BUILDINGS	[Orange Box]	[Red Box]
AIRFIELD PAVEMENT	[Grey Box]	[Red Box]
BUILDING RESTRICTION LINE (BRL)	[Blue Line]	[Red Line]
AIRPORT PROPERTY LINE	[Blue Line]	[Red Line]
RUNWAY SAFETY AREA (RSA)	[Dashed Blue Line]	[Dashed Red Line]
OBJECT FREE AREA (OFA)	[Dashed Blue Line]	[Dashed Red Line]
OBSTACLE FREE ZONE (OFZ)	[Dashed Blue Line]	[Dashed Red Line]
TAXIWAY OBJECT FREE AREA (TOFA)	[Dashed Blue Line]	[Dashed Red Line]
RUNWAY PROTECTION ZONE (RPZ)	[Dashed Blue Line]	[Dashed Red Line]
GROUND CONTOURS	[Dashed Blue Line]	SAME
AIRPORT REFERENCE POINT (ARP)	[Circle with Crosshair]	SAME
RUNWAY END IDENTIFIER LIGHTS (REIL)	[Crosshair]	[Crosshair]
WIND INDICATOR	[Circle with Arrow]	[Circle with Arrow]
SEGMENTED CIRCLE WIND INDICATOR	[Circle with Arrow]	[Circle with Arrow]
FENCE	[X Mark]	[X Mark]
BEACON	[Star]	[Star]
THRESHOLD LIGHTS	[Circle]	[Circle]
VISUAL GUIDANCE INDICATORS (PAPI)	[Square]	[Square]
ACCESS ROAD/VEHICLE PARKING	[Blue Line]	[Red Line]
AVIGATION EASEMENT	[Blue Line]	SAME
TO BE REMOVED	[Blue Line]	N/A
PROPERTY ACQUISITION	N/A	[Blue Line]
TREES	[Green Line]	SAME
AVIATION DEVELOPMENT RESERVE	N/A	[Green Box]
VEGETATION	N/A	[Green Box]
SIDEWALK	N/A	[Blue Line]
TTF ACCESS POINTS	[Star]	SAME

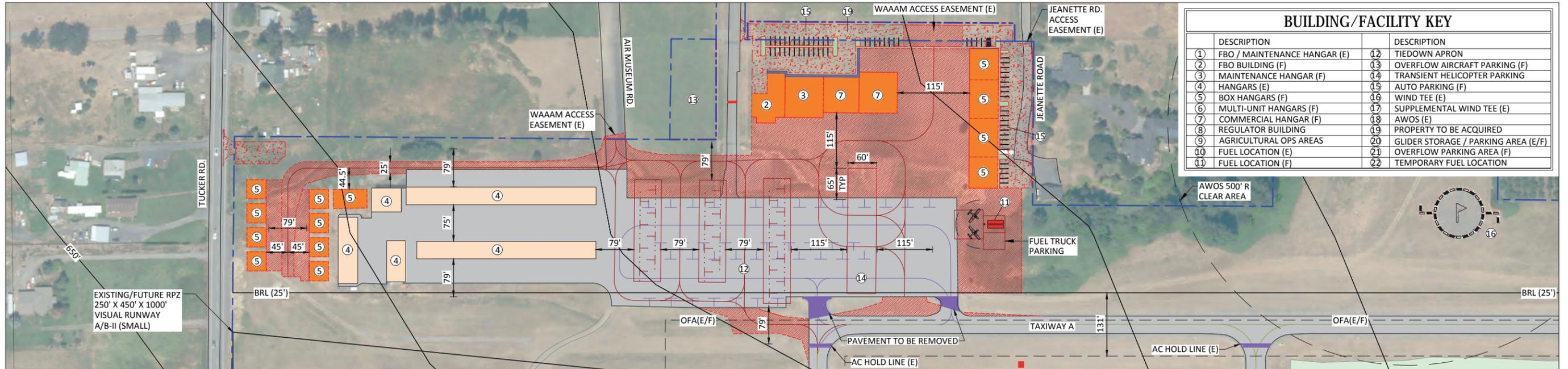


THE PREPARATION OF THIS DOCUMENT MAY HAVE BEEN SUPPORTED, IN PART, THROUGH THE AIRPORT IMPROVEMENT PROGRAM FINANCIAL ASSISTANCE FROM THE FEDERAL AVIATION ADMINISTRATION (PROJECT NUMBER 3-41-0001-012-01) AS PROVIDED UNDER TITLE 49, UNITED STATES CODE, SECTION 47104. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THIS REPORT BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED THEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS.

NOTES:

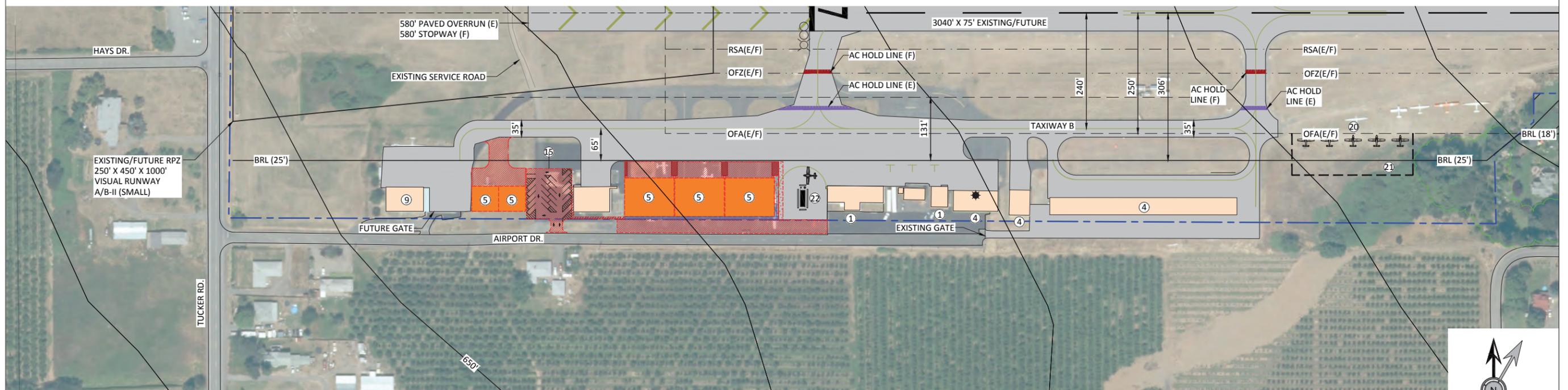
- STOPWAY (F) AT WEST END OF RUNWAY WILL INCREASE FUTURE ACCELERATE - STOP DISTANCE AVAILABLE (ASDA) FOR RUNWAY 25 TO 3,620 FEET.
- HIGH POINT (SURVEYED) ON RUNWAY IS 631.14' MSL. PUBLISHED AIRPORT ELEVATION (FAA A/FD) TO BE UPDATED FOR CONSISTENCY.
- AIRPORT IS NOT SUBJECT TO 100-YEAR FLOODING.
- FUTURE STOPWAY AT RUNWAY 7 END REQUIRES DECLARED DISTANCES AND STOPWAY DESIGNATION PUBLISHED IN FAA CHART SUPPLEMENT.
- AIRPORT USES DEPICTED ON PARCELS ZONED EFU OR RR ARE SUBJECT TO FUTURE COMPREHENSIVE PLAN MAP AMENDMENT AND REZONE APPLICATION(S) AND DETERMINATION(S) BY HOOD RIVER COUNTY.
- PROPERTY TO BE ACQUIRED TO ALLOW AIRPORT CONTROL OF RUNWAY OBJECT FREE AREA. CONFIGURATION OF PROPERTY TO BE ACQUIRED AND ACCOMMODATION OF EXISTING THROUGH THE FENCE AGREEMENTS WILL BE COORDINATED WITH THE PROPERTY OWNER.





BUILDING/FACILITY KEY	
DESCRIPTION	DESCRIPTION
① FBO / MAINTENANCE HANGAR (E)	⑫ TIEDOWN APRON
② FBO BUILDING (F)	⑬ OVERFLOW AIRCRAFT PARKING (F)
③ MAINTENANCE HANGAR (F)	⑭ TRANSIENT HELICOPTER PARKING
④ HANGARS (E)	⑮ AUTO PARKING (F)
⑤ BOX HANGARS (F)	⑯ WIND TEE (E)
⑥ MULTI-UNIT HANGARS (F)	⑰ SUPPLEMENTAL WIND TEE (E)
⑦ COMMERCIAL HANGAR (F)	⑱ AWOS (E)
⑧ REGULATOR BUILDING	⑲ PROPERTY TO BE ACQUIRED
⑨ AGRICULTURAL OPS AREAS	⑳ GLIDER STORAGE / PARKING AREA (E/F)
⑩ FUEL LOCATION (E)	㉑ OVERFLOW PARKING AREA (F)
⑪ FUEL LOCATION (F)	㉒ TEMPORARY FUEL LOCATION

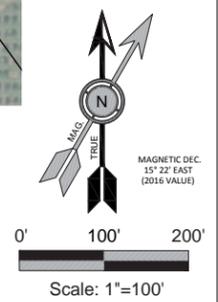
NORTH APRON



SOUTH APRON

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- NOTES:**
- SEE AIRPORT LAYOUT PLAN (SHEET 3) FOR FULL LEGEND.
 - APL FOR SOUTH APRON IS DEFINED BY TAXIWAY OFA.
 - ALTERNATIVE FUELING LOCATION DEPICTED FOR NORTH APRON WOULD ELIMINATE CO-LOCATED HANGAR SITES.



Chapter 6 – Environmental Review





Chapter 6 – Environmental Review



Introduction

The purpose of this environmental review is to identify physical or environmental conditions of record, which may affect the recommended improvements at Ken Jernstedt Airfield.

The scope of work for this element is limited to compiling, reviewing, and briefly summarizing information of record from applicable local, federal, and state sources for the airport site and its environs. The environmental review technical memorandum is included in **Appendix A** and a brief overview is provided below.

Local Site Conditions

Ken Jernstedt Airfield is located in an area with predominantly agricultural usage. An environmental review of existing airport site conditions and items of interest was conducted as part of the master plan and included land use, water resources (wetlands, stormwater), species of concern, federal lands, and essential fish habitat.

The environmental review identified that there are no known sensitive, threatened, or endangered plants and animals, or critical habitats on airport property. A wetland inventory was included in the review.



Wetlands are under the jurisdiction of both the Oregon Department of State Lands (DSL) and the US Army Corps of Engineers (Corps). This review identified Cedar Creek, approximately 0.83 acres in size and Alder Creek (a tributary to Cedar Creek), approximately 0.14 acres in size within the airport boundary. These two creeks drain into Hood River, approximately 1.9 miles northeast of the airport. There are no documented species included in the Endangered Species Act (ESA) within Cedar Creek or Alder Creek; however, there are ESA species in Hood River. The review identified six ESA species that are present in the vicinity of the airport including four fish species found in Hood River, one bird, and one mammal. The six ESA species include:

- Chinook Salmon
- Coho Salmon
- Steelhead
- Bull Trout
- Northern Spotted Owl
- Fisher

It is noted that future FAA-funded improvement projects are subject to environmental review under the requirements established in the National Environmental Policy Act (NEPA). Projects that involve potentially substantial environmental impacts may require an FAA-funded Environmental Assessment (EA) or Environmental Impact Statement (EIS), depending on the nature of the impact.

Chapter 7 – Financial and Development Plan





Chapter 7 – Financial and Development Program



Introduction

The purpose of this chapter is to present the projects identified in the Airport Capital Improvement Program (ACIP) that have been developed and assembled based on the analyses conducted in the Facility Requirements and Development Alternatives evaluations (Chapters Four and Five). The ACIP projects are summarized in **Table 7-1** later in the chapter. The ACIP is organized into short, intermediate, and long-term planning periods that reflect both project prioritization and financial capabilities. Several factors were considered in determining project prioritization, including safety, forecast demand, the need to maintain/replace existing airfield facilities, and financial capabilities of both the Port and FAA to support the development program based on existing funding mechanisms.

The Master Plan preferred alternative includes both airside elements and landside elements. Minor pavement maintenance items such as vegetation removal and crack filling are not included in the ACIP, but will need to be undertaken by the Port on an annual or semi-annual basis.

A brief environmental review was prepared and is presented in Chapter Six and **Appendix A**. The review provides an overview of areas of potential concern associated with proposed development. In addition, all federally funded projects will require some level of project-specific environmental study, as determined by FAA.

The ACIP lists all major projects included in the twenty-year planning period addressed in the Airport Master Plan. Individual projects for the first five years of the planning period are listed in order of priority by year. Projects for the intermediate and long-term phases of the planning period (years 6-20) are listed in



order of priority but have not been assigned a year. Each project’s eligibility for FAA funding is noted, based on current federal legislation and funding formulas. Specific project details are depicted on the updated Airport Layout Plan and Terminal Area Plan drawings contained in Chapter 8.

A primary source of potential funding identified in this plan is the FAA’s Airport Improvement Program (AIP). As proposed, approximately 90 percent of the airport’s twenty-year ACIP will be eligible for federal funding. Funds from this program are derived from the Aviation Trust Fund, which is the depository for all federal aviation taxes collected on such items as airline tickets, aviation fuel, lubricants, tires, aircraft registrations, and other aviation related fees. These funds are distributed by FAA under appropriations set by Congress for all airports in the United States included in the federal airport system (National Plan of Integrated Airport Systems – NPIAS).

However, as noted in **Table 7-1**, the projected twenty-year total for FAA eligible projects in the ACIP significantly exceeds current FAA funding levels through the non-primary entitlement program, which is \$150,000 annually. While other types of FAA funding may be available for some projects, it is reasonable to assume that despite establishing eligibility for FAA funding, not all eligible projects are likely to be funded. The Port must maximize the use of available FAA and other outside sources of funding as it manages its ACIP. In some cases, the limited availability of outside funds may require deferring some projects, or increasing funding with additional local, state, or private funding.

Airport Development Schedule and Cost Estimates

Cost estimates for each individual project were developed in 2015 dollars based on typical construction costs associated with the specific type of project. The project costs listed in the ACIP represent order-of-magnitude estimates that approximate design, engineering, environmental, other related costs, and contingencies. The estimates are intended only for preliminary planning and programming purposes. Specific project analysis and detailed engineering design will be required prior to project implementation to provide more refined and detailed estimates of the development costs.

These cost estimates can continue to assist management through adjustments to the 2015-based amounts to account for subsequent inflation as the plan is carried out in future years. This can be accomplished by converting the appropriate change in the United States Consumer Price Index (USCPI) to a multiplier using the following formula:

$$\frac{X}{I} = Y$$

Where:

X = USCPI in any given future year



Y = Change Ratio
 I = Current Index (USCPI)¹

<i>USCPI-U</i>
244.955
(1982-1984 = 100)
June 2017

Multiplying the change ratio (Y) times any 2015-based cost estimate presented in this study will yield the adjusted dollar amounts appropriate in any future year evaluation. Several different CPI-based indices are available for use and any applicable index may be substituted by the Port in its financial management program.

The following sections outline the recommended development program and funding assumptions. The scheduling has been prepared according to the facility requirements determined through the master plan evaluation. The projected staging of development projects is based on anticipated needs and investment priorities. Actual activity levels may vary from projected levels; therefore, the staging of development in this section should be viewed as a general guide. When activity does vary from projected levels, implementation of development projects should occur when demand warrants, rather than according to the estimated staging presented in this chapter. In addition to major projects, the airport will continue to require regular facility maintenance such as pavement maintenance, vegetation control, sweeping, lighting repair, and fuel system maintenance.

The first phase of the Capital Improvement Program includes the highest priority projects recommended during the first five years of the planning period. Intermediate and long-term projects are anticipated to occur in the 6- to 20-year period, although changes in demand or other conditions could accelerate or slow demand for some improvements. **Table 7-1** provides a complete list of the projects included in the 20-year CIP. The following summary describes the key projects.

SHORT-TERM PROJECTS

The short-term program contains work items of the highest priority. Priority items include safety related improvements. These items will need to be incorporated into the State Capital Improvement Program (SCIP) managed by the FAA Seattle Airport District Office and the Oregon Department of Aviation (ODA). To assist with this process, the short-term projects are scheduled in specific calendar years for the first five years of the planning period (2015-2019).

¹ U.S. Consumer Price Index for All Urban Consumers (USCPI-U)



It is noted that several high priority short term projects identified early in the master planning process have been initiated, with some completed during the final master plan review. These projects are listed as a common group at the beginning of the short term program and included design & construction of airfield improvements needed to meet Airplane Design Group (ADG) II standards on the south side of Runway 7/25.

The initial evaluation (environmental) for the north apron redevelopment project is also included in the short-term development program, to support design and construction early in the intermediate program.

Completed Projects (Years 2015-2017):

- Relocation/reconstruction of the south parallel taxiway (Taxiway B);
- South Apron Rehabilitation;
- Relocation of the aviation fuel storage tank and dispensing facilities; and
- Reconstruction/reconfiguration of the south apron and associated taxilanes to support hangar development.

Short-Term Projects:

- North Apron (Design & Construction)
 - Apron expansion to the north adjacent to future FBO building and hangar facilities;
 - Apron overlay (existing pavement) and reconfiguration of taxilanes and tiedowns;
- Pavement Management Plan (PMP);
- Property Acquisition (South Residences).
 - Acquire parcels or portions of the parcels within the object free area (OFA) of the runway. The estimated cost of acquiring these parcels is based on Hood River's estimated property values with a 30 percent contingency for legal fees and appraisals. For CIP purposes, the estimated cost assumes acquiring full parcels and improvements, although individual parcel requirements will vary. Assumed property values and external costs (legal, environmental) are subject to change and will require property appraisals and additional legal evaluations to verify. The ability to execute this project depends heavily on the ability of FAA to provide required funding. In the event that FAA funding is unavailable in the time frame assumed in the CIP, property related project cost increases are likely to exceed the CIP-derived formula noted earlier.

INTERMEDIATE & LONG-TERM PROJECTS



Several intermediate or long-term projects are considered to be current needs. However, based on the limited funding resources available, it was necessary to shift some projects to subsequent planning periods. Individual projects may be completed sooner in the event additional funding can be obtained.

Intermediate-Term Projects (2023-2027)

- North Apron Area Property Trade;
- South T-Hangar Taxilane (w/connectors to south parallel taxiway) – Overlay;
- Northwest T-hangar Taxilane Construction and Apron Overlay;
- Agricultural Apron – Overlay;
- Stopway Slurry Seal & Repaint Markings;
- Southwest Hangar Apron Development;
- Runway 7- Replace Threshold Lights (modified or flush mounted fixtures compatible with stopway); and
- Replace Taxiway A & Taxiway B Retro-reflective Markers.

Long-Term Projects (2028 and beyond)

- Runway 7/25 Medium Intensity Runway Lights (MIRL) replacement;
- North & South Parallel Taxiway and Runway Exits – Slurry Seal and Repaint Markings;
- Northwest Hangar Taxilane Extension;
- Medium Intensity Taxiway Lights - Taxiway A, B, & Connectors;
- Replace Runway End Identifier Lights (REIL) Runway 7 & 25;
- Replace Beacon;
- Install Perimeter Fencing and Gates (along Airport Road, Tucker Road, and North Apron);
- Northeast Landside Area Development;
- Southeast Landside Development;
- Replace Segmented Circle and Wind Cone;
- Runway 7/25 & Stopway - Slurry Seal and Repaint Markings;
- North & South Parallel Taxiway and Runway Exits – Slurry Seal and Repaint Markings; and
- Master Plan Update and Airports GIS (AGIS) Survey (note: the AGIS may be required by FAA earlier in the planning period).

**Ken Jernstedt Airfield-Hood River Airport Master Plan
20-YEAR CAPITAL IMPROVEMENT PROGRAM**

2015-2034

Current NPE \$ Accumulation: \$48,952 (FY 2017)

Prepared by Century West Engineering

Short Term	Project	ID	Project Category	Unit	Quantity	Unit Cost	Subtotal Cost	Total Cost	FAA GA Entitlement	Other FAA **	Local Costs	
Completed Projects (Years 2015-2017)												
2015	No Projects - Carryover		-									
2016	South Taxiway Extension and Apron Rehabilitation: Design		Engineering									
2017	South Taxiway Extension and Apron Rehabilitation: Construction		Pavement Rehabilitation									
2018	North Apron: Construction (New Pavement - Expansion)***		Pavement Construction	LS	1	-	\$2,000,000	\$2,000,000	\$0	\$0	\$2,000,000	
							Subtotal	\$2,000,000	\$2,000,000	\$0	\$0	\$2,000,000
<i>NPE Accumulation \$48,952</i> <i>FY 2017 NPE \$150,000</i> <i>Total Available (NPE) \$198,952</i>												
2019	North Apron: Environmental (Reimbursement)		Engineering	LS	1	-	\$250,000	\$250,000	\$225,000	\$0	#VALUE!	
	North Apron: Design		Engineering	LS	1	-	\$82,500	\$82,500	\$74,250	\$0	\$8,250	
							Subtotal	\$332,500	\$332,500	\$299,250	\$0	#VALUE!
<i>NPE Accumulation \$198,952</i> <i>FY 2018 NPE \$150,000</i> <i>Total Available (NPE) \$49,702</i>												
2020	North Apron: Construction (Overlay Existing Apron)		Pavement Rehabilitation	LS	1	-	\$1,958,000	\$1,958,000	\$201,952	\$1,560,248	\$195,800	
							Subtotal	\$1,958,000	\$1,958,000	\$201,952	\$1,560,248	\$195,800
<i>NPE Accumulation \$49,702</i> <i>FY 2019 NPE \$150,000</i> <i>Total Available (NPE) -\$2,250</i>												
2021	PMP		Pavement Maintenance	LS	1	-	\$22,000	\$22,000	\$19,800	\$0	\$2,200	
							Subtotal	\$22,000	\$22,000	\$19,800	\$0	\$2,200
<i>NPE Accumulation (\$2,250)</i> <i>FY 2020 NPE \$150,000</i> <i>Total Available (NPE) \$127,950</i>												
2022	Property Acquisiton - OFA Control (South Residences)****		Property Acquisition	Parcel	9	\$1,000,000	\$9,000,000	\$9,000,000	\$280,200	\$7,819,800	\$900,000	
							Subtotal	\$9,000,000	\$9,000,000	\$280,200	\$7,819,800	\$900,000
<i>NPE Accumulation \$127,950</i> <i>FY 2021 NPE \$150,000</i> <i>Total Available (NPE) -\$2,250</i>												
							5-YR Total	\$13,312,500	\$13,312,500	\$801,202	\$9,380,048	#VALUE!

* Current Year Project Grant

** Other FAA Funding Total listed for reference only based on general project eligibility; FAA funding levels are expected to be below projected needs.

*** State Funding (Connect Oregon Grant)

**** Property acquisition includes 30% contingency for legal fees, appraisals, and environmental.

**Ken Jernstedt Airfield-Hood River Airport Master Plan
20-YEAR CAPITAL IMPROVEMENT PROGRAM**

2015-2034

Current NPE \$ Accumulation: \$48,952 (FY 2017)

Prepared by Century West Engineering

Intermediate Term	Project	Project Category	Unit	Quantity	Unit Cost	Subtotal Cost	Total Cost	FAA GA Entitlement	FAA Eligible **	Local Costs
2023-2027	North Apron Area Property Trade	Land Acquisition	LS	1	\$0	\$0	\$0	\$0	\$0	\$0
	South T-Hangar Taxilane (w/connectors to south parallel taxiway) - Overlay	Pavement Rehabilitation	LS	1	\$400,000	\$400,000	\$400,000	\$0	\$360,000	\$40,000
	Northwest T-Hangar Taxilanes and Apron - Rehabilitation (Existing Apron)	Pavement Construction	LS	1	\$1,500,000	\$1,500,000	\$1,500,000	\$0	\$1,350,000	\$150,000
	AG Apron - Overlay	Pavement Construction	LS	1	\$200,000	\$175,000	\$175,000	\$0	\$157,500	\$17,500
	Stopway Slurry Seal & Marking	Pavement Rehabilitation	LS	1	\$150,000	\$150,000	\$150,000	\$0	\$135,000	\$15,000
	Southwest Hangar Apron Development	Other	LS	1	\$300,000	\$300,000	\$300,000	\$0	\$270,000	\$30,000
	Runway 7 - Replace Threshold Lights	Lighting	LS	1	\$35,000	\$35,000	\$35,000	\$0	\$31,500	\$3,500
	Replace Taxiway A & Taxiway B Retro-reflective Markers	Other	LS	1	\$50,000	\$50,000	\$50,000	\$0	\$45,000	\$5,000
	<i>FAA Non Primary Entitlements (5 years - project allocations TBD)</i>								\$750,000	-\$750,000
5-YR Total						\$2,610,000	\$2,610,000	\$750,000	\$1,599,000	\$261,000

** Other FAA Funding Total listed for reference only based on general project eligibility; FAA funding levels are expected to be below projected needs.

5 year NPE \$ = \$750,000

Long Term	Project	Project Category	Unit	Quantity	Unit Cost	Subtotal Cost	Total Cost	FAA GA Entitlement	FAA Eligible **	Local Costs
2028-2034	Runway 7/25 Medium Intensity Runway Lights (MIRL) Replacement	Lighting	LS	1	\$375,000	\$375,000	\$375,000	\$0	\$337,500	\$37,500
	North & South Parallel Taxiway and Runway Exits-Slurry Seal	Pavement Rehabilitation	LS	1	\$350,000	\$350,000	\$350,000	\$0	\$315,000	\$35,000
	Northwest Hangar Taxilane Extension	Pavement Construction	LS	1	\$600,000	\$600,000	\$600,000	\$0	\$540,000	\$60,000
	Runway 25 - Replace Threshold Lights	Lights	LS	1	\$35,000	\$35,000	\$35,000	\$0	\$31,500	\$3,500
	Medium Intensity Taxiway Lights - Taxiway A, B, & Connectors	Lighting	LS	1	\$550,000	\$550,000	\$550,000	\$0	\$495,000	\$55,000
	Runway End Identifier Lights (REIL) Runway 7 & 25	Lighting	LS	1	\$185,000	\$185,000	\$185,000	\$0	\$166,500	\$18,500
	Beacon Replacement	Lighting	LS	1	\$115,000	\$125,000	\$125,000	\$0	\$112,500	\$12,500
	Perimeter Fencing & Gates	Fencing	LS	1	\$450,000	\$450,000	\$450,000	\$0	\$405,000	\$45,000
	Northeast Landside Area	Pavement Construction	LS	1	\$1,900,000	\$1,900,000	\$1,900,000	\$0	\$1,710,000	\$190,000
	Southeast Landside Area	Pavement Construction	LS	1	\$2,300,000	\$2,300,000	\$2,300,000	\$0	\$2,070,000	\$230,000
	North & South Apron Seal Coat	Pavement Rehabilitation	LS	1	\$450,000	\$450,000	\$450,000	\$0	\$405,000	\$45,000
	Segmented Circle/Wind Cone Replacement	Other	LS	1	\$125,000	\$125,000	\$125,000	\$0	\$112,500	\$12,500
	Runway 7/25 & Stopway - Slurry Seal/Repaint NPI Markings	Pavement Rehabilitation	LS	1	\$400,000	\$400,000	\$400,000	\$0	\$360,000	\$40,000
	North & South Parallel Taxiway and Runway Exits-Slurry Seal	Pavement Rehabilitation	LS	1	\$350,000	\$350,000	\$350,000	\$0	\$315,000	\$35,000
	Master Plan Update & AGIS	Other	LS	1	\$500,000	\$500,000	\$500,000	\$0	\$450,000	\$50,000
	<i>FAA Non Primary Entitlements (10 years - project allocations TBD)</i>								\$1,500,000	-\$1,500,000
Total						\$8,695,000	\$8,695,000	\$1,500,000	\$6,325,500	\$869,500
20-YR Total						\$24,617,500	\$24,617,500	\$3,051,202	\$17,304,548	#VALUE!

** Other FAA Funding Total listed for reference only based on general project eligibility; FAA funding levels are expected to be below projected needs.

*** Property Acquisition dependent on willing seller.

Unit: LS=Lump Sum, LF=Linear Foot, SY=Square Yard, EA=Each

10 year NPE \$ = \$1,500,000



Capital Funding Sources & Programs

FEDERAL GRANTS

Federal funding is provided through the Federal Airport Improvement Program. The Airport Improvement Program is the latest evolution of a funding program originally authorized by Congress in 1946 as the Federal Aid to Airports Program (FAAP). The AIP program provides grant funding for airports listed in the NPIAS. Under current legislation, eligible general aviation airports can receive up to \$150,000 per year in “non-primary entitlement” grants. If a project is projected to cost in excess of \$150,000, the participating airport can roll over yearly funding allocations thereby accumulating funds for up to four years (equaling \$600,000 at current non-primary entitlement levels), at which time the accumulated funds can be used for larger projects. Any unused funds remaining beyond the maximum allowable roll over period revert to FAA for use at other airports. These annual entitlement funds may only be used for eligible capital improvement projects and may not support airport operation and maintenance costs. Current FAA funding levels equal 90 percent of eligible costs with a 10 percent local match.

FAA funding is limited to projects that have a clearly defined need and are identified through preparation of an FAA approved Airport Layout Plan (ALP). Periodic updates of the ALP are required when new or unanticipated project needs or opportunities exist that require use of FAA funds and to reflect the status of completed projects. The FAA will not generally participate in vehicle parking, utilities, building renovations, or projects associated with non-aviation development.

Projects such as hangar construction or fuel systems are eligible for funding, although the FAA indicates this category of project would be considered a much lower priority than other airfield needs.

The FAA also provides discretionary grants to airports. The dollar amount of individual grants varies and can be significantly larger than the non-primary entitlements. Discretionary grants are awarded at the FAA's sole discretion. Discretionary funds are distributed after all entitlement funds have been allocated. For larger projects requiring substantially larger amounts of funding, non-primary entitlement, state apportionment, and discretionary grants are often combined. Other types of FAA funding include facilities & equipment (F&E) projects and Congressionally-appropriated dollars for specific projects.



STATE OF OREGON

No specific level of Oregon Department of Aviation (ODA) funding has been assumed in the CIP presented in **Table 7-1**. It is recommended that the Port maximize use of any ODA or other State of Oregon funds available in the planning period.

Pavement Maintenance Program

The Pavement Management Program (PMP) programs airfield pavement maintenance funds on established multi-year cycles. This program is intended to preserve and maintain existing airfield pavements in order to maximize their useful lives and the economic value of the pavement. As noted earlier, several short-term pavement maintenance projects are identified for Ken Jernstedt Airfield in the most recent PMP. The program funds pavement maintenance and associated improvements (crack filling, repair, sealcoats, etc.), including some items that have not traditionally been eligible for FAA funding.

Funding for the PMP is generated through collection of aviation fuel taxes. ODA manages the PMP through an annual consultant services contract and work is programmed on a three-year regional rotation. The program includes a regular schedule of inspections and subsequent field work. Benefits from the PMP include:

- Economy of scale in bidding contracts;
- Federal/State/Local partnerships that maximize airport improvement funds; and
- PMP is not a grant program and local match is on a sliding scale (50% - 5% required).

The PMP includes the following features:

- Review prior year's Pavement Condition Index (PCI) reports;
- Only consider PCIs below 70;
- Apply budget;
- Limit work to patching, crack sealing, fog sealing, slurry sealing;
- Add allowance for markings; and
- Program to include approximately 20 airports per year, depending on funding levels.

Financial Aid to Municipalities (FAM) Grants

ODA's Financial Aid to Municipalities (FAM) grant program has been suspended in recent years due to a lack of funding. Efforts to resume and expand the program are currently being considered by the Oregon legislature. FAM grants up to \$25,000 were previously available to Oregon airports for eligible airport related projects.



Connect Oregon Grants

The Oregon Legislature authorized funding for air, marine, rail, and transit infrastructure, known as ConnectOregon in 2005. This program is intended to improve commerce, reduce delay, and enhance safety for the state's multi-modal transportation system.

Lottery-based bonds, sold by the Oregon Department of Administrative Services are used to fund the program. The funds are deposited into Oregon's Multimodal Transportation Fund and administered by the Oregon Department of Transportation Local Government Section. ConnectOregon funds cannot be used for projects eligible for Oregon's Highway Fund, thereby providing less competition for aviation projects seeking ConnectOregon funding.

In 2014, after the fifth installment of funding, the Legislature had provided \$382 million to the program. Connect Oregon grants fund up to 80-percent of project costs with a 20-percent sponsor match and loans up to 100-percent of project costs.

As noted previously, the Port has applied for a 2016 Connect Oregon grant that would provide funding for a number of projects currently listed within the intermediate-term planning period. Those projects would shift to the short-term planning period if the grant is approved.

House Bill 2075

House Bill 2075 increased the tax on aircraft fuels, providing new revenues for the State Aviation Account. The new tax on jet fuel (Jet-A) is one cent per gallon and aviation gasoline (AVGAS) is nine cents per gallon. These revenues will be distributed to fund a variety of aviation needs including:

- Assisting airports in providing local match for FAA AIP grants;
- Creation of grants to fund emergency preparedness and infrastructure projects;
- Creation of grants to fund services critical to aviation, aviation related business development, and airport development;
- Assisting in commercial air service to rural Oregon; and
- Improvements to state-owned airports.



State Capital Improvement Program (SCIP)

The FAA’s Seattle Airport District Office (ADO) is working with state aviation agencies in Oregon and Washington to develop a coordinated “State” Capital Improvement Program, known as the SCIP. The SCIP is intended to become the primary tool used by FAA, state aviation agencies, and local airport sponsors to prioritize funding. The program has reached full implementation with current and near-term future funding decisions prioritized through evaluation formulas. Airport sponsors are asked to provide annual updates to the short-term project lists annually in order to maintain a current system of defined project needs. The short-term priorities identified in the master plan CIP will be imported into the SCIP and will be subject to additional prioritization for funding in competitive statewide evaluations.

LOCAL FUNDING

As currently defined, the locally funded (Port/tenant) portion of the CIP for the twenty-year planning period is estimated to be approximately \$2.26 million. Hangar and FBO building construction costs and building maintenance have not been included in the CIP, since no FAA funding is assumed.

A portion of local matching funds are generated through airport revenues, including fuel sales, land leases, and hangar rentals.

Airport sponsors occasionally fund infrastructure and revenue-generating development, including hangars and buildings, either through an inter fund loan or the issuance of long-term debt (revenue or general obligation bonds).