

**TABLE 4-9: FACILITY REQUIREMENTS SUMMARY
ARC: B-I (SMALL)**

Item	Short Term (1-10 years)	Long Term (11-20 year)
Runway 15/33	<ul style="list-style-type: none"> • Pavement Maintenance¹ • Maintain Clear Approaches (trees) • Extend Runway to 3,400 feet accommodate 100% of small airplane fleet 	<ul style="list-style-type: none"> • Pavement Maintenance • Overlay Runway
Parallel Taxiway	<ul style="list-style-type: none"> • Pavement Maintenance¹ • Parallel Taxiway Extension (north end, in conjunction with runway extension) 	<ul style="list-style-type: none"> • Pavement Maintenance¹ • Construct Aircraft Holding Area at Rwy 15 end of parallel taxiway • Overlay Taxiway
Aircraft Apron	<ul style="list-style-type: none"> • Reconfigure and Overlay Apron • Helicopter Parking • Business Aircraft Parking • Pavement Maintenance¹ 	<ul style="list-style-type: none"> • Expand Apron • Pavement Maintenance¹ • FBO Development Reserves (fuel, etc.)
Hangars	<ul style="list-style-type: none"> • Hangar Development Reserves 	<ul style="list-style-type: none"> • Site Development (new hangar sites) • Construct additional north hangar area taxilanes • Hangar Development Reserves
Navigational Aids and Lighting	<ul style="list-style-type: none"> • PAPI (Rwy 15) • Beacon Replacement • Taxiway Edge Reflectors (Parallel and Main Taxiways) 	<ul style="list-style-type: none"> • REIL (Rwy 15 & 33) • MITL (taxiway edge lighting)
Fuel Storage & FBO Facilities	<ul style="list-style-type: none"> • Define Reserve for additional storage capacity 	<ul style="list-style-type: none"> • Same
Utilities	<ul style="list-style-type: none"> • Extend electrical and water service to new facilities 	<ul style="list-style-type: none"> • Same
Roadways & Vehicle Parking	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • Extend Access Road to new hangar sites
Security	<ul style="list-style-type: none"> • Flood Lighting 	<ul style="list-style-type: none"> • Same

1. Vegetation control, crackfill, sealcoat

Chapter Five

Airport Development Alternatives

CHAPTER FIVE AIRPORT DEVELOPMENT ALTERNATIVES

The evaluation of development options for Florence Municipal Airport is intended to address both demand-driven facility needs (aircraft parking, hangars, etc.) and FAA airport design standards. Based on these needs, preliminary runway and landside development alternatives have been developed to address the specific facility requirements as outlined in Chapter Four. A no action option also exists, in which the airport would essentially maintain existing facilities without performing facility upgrades or expansion to address future demand. This option is described below.

Do-Nothing/No-Action Alternative

The Do-nothing/No-action alternative does not address the specific facility requirements noted in the previous chapter and instead focuses on maintaining current airport capabilities. 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 forecast aviation demand beyond current facility capabilities. Future aviation activity would be constrained by the capacity, safety and operational limits of the existing airport facilities.

The Do-nothing/No-action alternative concept established a baseline from which the action alternatives were 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 (i.e. hangar construction) at an airport. Public investment in facilities is driven by safety, capacity and the need to operate the airport on a financially self-sufficient basis.

Based on the factors noted above, the Do-nothing/No-action alternative is inconsistent with the management and development policies of the City of Florence 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 preliminary development alternatives are described in the chapter with graphic depictions (**Figures 5-1 through 5-6**) provided to illustrate the key elements of each alternative. The preliminary alternatives are intended to facilitate a discussion and evaluation about the best path to meet the facility needs of the airport. The primary facility needs identified in the Facility Requirements analysis include runway length, aircraft parking and aircraft hangars. The preliminary alternatives have been organized into three groups:

- Runway Development Options
- Terminal Apron Options
- North Landside Development Options

Preferred Alternative Note: Based on local review of the preliminary alternatives in conjunction with review and comment provided by FAA and the Oregon Department of Aviation, a preferred development alternative was selected by the City of Florence reflecting the desired development path for the airport. The primary elements of the preferred alternative are summarized and depicted in **Figure 5-7** and **Figure 5-8** at the end of the chapter. The elements of the preferred alternative are also depicted on the Airport Layout Plan drawing (see Chapter Seven). The airport's twenty year capital improvement program (CIP) includes specific new development projects and major maintenance projects that are prioritized based on a variety of factors including cost, age or condition of existing facilities, demand for new facilities, and anticipated availability of FAA funding (see chapter Six).

Runway Options

The facility requirements analysis defined the length of runway required to accommodate 95 and 100 percent of the small airplane fleet (aircraft weighing 12,500 pounds and less) at Florence Municipal Airport. The current and future design aircraft, a light twin-engine piston aircraft, represents the requirements of the small airplane fleet. The current runway length (3,000 feet) can accommodate approximately 96 percent of the small airplane fleet. For planning purposes, a length capable of accommodating 100 percent of the small airplane fleet is appropriate, reflecting the broad range of piston and turbine aircraft currently operating at the airport. The preliminary runway options are each based on the future runway length of 3,400 feet, which coincides with the length required to accommodate 100 percent of the small airplane fleet. A comparison of costs for the runway options is presented in **Table 5-1**.

Runway Option A

Runway Option A (see **Figure 5-1**) reflects the future configuration of Runway 15/33, as depicted on the current Airport Layout Plan (ALP) drawing. In this option, a 400-foot runway extension is located at the north end of the runway, combined with a parallel taxiway extension.

A preliminary review of terrain located beyond the north end of the runway indicates that approximately 210,000 cubic yards of sand would need to be removed to obtain a standard 20:1 approach surface for the Runway 15 extension. The recently-completed sand dune removal and grading project provides a clear approach to the current end of Runway 15. The cost of obstruction removal for Option A noted in **Table 5-1** assumes that the sand removed from the airport would be transported to the adjacent Port industrial site, the method that was used in the previous sand dune removal project. However, in the event that the material must be transported a greater distance off site for disposal, the costs could increase significantly.

Primary benefits include:

- Increased runway length to accommodate needs of small airplane fleet
- No displaced threshold required
- No property acquisition required

Primary impacts include:

- Highest cost for obstruction removal

Runway Option B

Runway Option B (see **Figure 5-1**) also includes a 400-foot extension at the north end of Runway 15/33. However, in this option, the extension includes a 200-foot displaced threshold for Runway 15 to offset the obstruction created by the sand dune. Through the use of the FAA's threshold siting criteria, a 20:1 obstacle clearance surface (OCS) would be used in conjunction with the displaced threshold to obtain an unobstructed 20:1 surface. The visual OCS slope begins at the displaced landing threshold, rather than 200 feet beyond the end of the runway. As such, the beginning of the future OCS would coincide with the existing unobstructed 20:1 approach surface for Runway 15. This option could be maintained long-term or as an interim configuration until the sand dune can be lowered to reduce or eliminate the approach obstruction.

Primary benefits include:

- Increased runway length to accommodate needs of small airplane fleet

- Lower initial/permanent costs for obstruction removal (compared to Option A)
- No property acquisition required

Primary impacts include:

- Displaced threshold reduces landing distance available for Runway 15 by 200 feet (compared to Option A)

Runway Option C

Runway Option C (see **Figure 5-2**) provides the additional 400 feet of runway length through two 200-foot extensions at both runway ends. A south extension of the parallel taxiway and aircraft holding area would be added in conjunction with the south runway extension. The north runway extension would connect to the existing parallel taxiway at the new runway end.

The south runway extension includes a 200-foot displaced threshold in order to maintain the current landing threshold location and aircraft flight path over neighboring areas south of the runway. Both runway ends would utilize visual obstacle clearance approaches (OCS) to provide unobstructed 20:1 approach paths. As with Option B, the use of an OCS for Runway 15 with the 200-foot runway extension provides an unobstructed 20:1 surface without requiring extensive terrain removal.

Primary benefits include:

- Increased runway length to accommodate needs of small airplane fleet
- Lower initial/permanent costs for obstruction removal (compared to Option A)
- Allows north and south runway construction projects to be phased
- No property acquisition required

Primary impacts include:

- Displaced threshold reduces landing distance available for Runway 33 by 200 feet (compared to Option A or B)
- Slightly higher cost for runway construction (2 project areas)

**TABLE 5-1: COMPARISON OF PLANNING LEVEL COST ELEMENTS
 (RUNWAY)**

Project Elements	Runway Option A (400-foot North Extension)	Runway Option B (400-foot North Extension w/ 200-foot displaced threshold and OCS)	Runway Option C (200-foot North & South runway extensions w/ OCS)
Approach Obstruction Removal	\$1,100,000*	\$0	\$0
Runway and Parallel Taxiway Improvements (Extension, Lighting)	\$400,000	\$425,000	\$490,000
Subtotal	\$1,500,000	\$425,000	\$490,000
40% Contingency, Engineering, Environmental	\$600,000	\$170,000	\$196,000
Total	\$2,100,000	\$595,000	\$686,000

* Assumes material disposal on adjacent Port industrial property.

Terminal Apron Options

As noted in the facility requirements analysis, several needs were identified related to the existing aircraft apron that needed to be addressed in the evaluation of alternatives:

- Aircraft Fueling Area (clearance from apron taxilanes, apron congestion)
- Apron Taxilane Clearances (non-standard clearances to parked aircraft, fueling, etc.)
- Aircraft Parking (configuration and capacity)
- Helicopter Parking (dedicated parking for helicopter)

It is evident in both apron expansion options that the amount of readily-developable land limits future parking capacity. As demand for itinerant parking increases, the need to develop a second apron would be expected. These needs are addressed in the North Landside Options presented later in the chapter.

Apron Option A

Apron Option A (see **Figure 5-3**) reconfigures and expands the existing apron to address the facility needs identified above. In this option, the existing aircraft fueling island location is maintained and the apron taxilanes and aircraft parking positions are reconfigured to meet FAA design standards. The existing apron is expanded to the south and west to provide additional parking capacity.

The reconfigured aircraft parking configuration included three drive-through positions for multi-engine aircraft or other business aircraft. Four rows of light aircraft tiedowns are added in the expanded apron (14 light aircraft tiedowns). The front (west) edge of the apron is expanded to increase parking capacity; the parallel taxiway object free area (measured 44.5 feet from taxiway centerline) establishes the required setback for aircraft parking. Two connecting taxiways are added to the apron to improve ground movement and flow between the apron and parallel taxiway.

The existing south connecting taxilane would be reconfigured to provide standard clearance (minimum 39.5 feet) from the northwest corner of the large hangar. The remaining undeveloped areas in the terminal area are reserved for future hangar development.

A separate helicopter parking pad is located near the south end of the expanded apron. The segmented circle and windsock would be relocated to the west side of the runway, near mid-field.

Apron Option B

Apron Option B (see **Figure 5-4**) reconfigures and expands the existing apron to address the facility needs identified above. In this option, the existing aircraft fueling island is relocated on the apron and the apron taxilanes and aircraft parking positions are reconfigured to meet FAA design standards. The existing apron is expanded to the south and west to provide additional parking capacity.

The new aircraft fueling island is located near the northwest corner of the apron, with 360-degree access provided for aircraft fueling. This option requires extending underground fuel supply, electrical and telephone lines to serve the new pump location. The main access taxilane and a second taxilane located south of the fueling area are designed with standard taxilane clearances to allow simultaneous aircraft fueling and aircraft taxiing.

The reconfigured aircraft parking rows begin south of the relocated fuel island, with two drive-through positions for multi-engine aircraft or other business aircraft and four rows of light aircraft tiedowns. The configuration and number (14) of light aircraft tiedowns in this option is similar to Option A. The front (west) edge of the apron is expanded to increase parking capacity. As with Option A, the parallel taxiway object free area (measured 44.5 feet from taxiway centerline) establishes the required setback for aircraft parking. Two connecting taxiways are added to the apron to improve ground movement and flow between the fueling area, aircraft parking and the parallel taxiway. The segmented circle and windsock would be relocated to the west side of the runway, near mid-field.

The existing south connecting taxiway would be reconfigured to provide standard clearance (minimum 39.5 feet) from the northwest corner of the large hangar. The remaining undeveloped areas in the terminal area are reserved for future hangar development.

A separate helicopter parking pad is located south of the connection taxiway.

North Landside Development Options

The primary focus of the North Landside Options is to provide for the future expansion of aircraft hangar space and aircraft parking apron.

As noted earlier, the capacity limit for the expanded terminal apron is eventually expected to become a significant operational constraint, prompting the need to develop a second parking apron. The existing north hangar area currently has 14 vacant spaces (served by taxiways) to accommodate near-term demand for conventional hangars.

North Landside Option A

North Landside Option A (see **Figure 5-5**) extends the existing hangar rows and provides a new aircraft parking apron with 27 light aircraft tiedowns. All landside development in Option A is located inside the existing fencing that runs along the east side of the existing hangar access road. The existing access road is extended to serve the new facilities. A new controlled access gate is located at 27th Street to provide access to the expanded landside facilities.

The hangar configuration includes space for three additional conventional hangars and two eight unit T-hangars. The overall increase in hangar capacity is approximately 19 aircraft, plus the 14 spaces currently served by taxiways (+33 based aircraft). Additional hangar development reserves are identified beyond the north end of the proposed development area.

The east parallel taxiway would be extended to provide access to the apron and additional hangar taxiways. The north end of the parallel taxiway is slightly angled to avoid the future runway protection zone for Runway 15.

North Landside Option B

North Landside Option B (see **Figure 5-6**) extends the existing hangar rows and provides a new aircraft parking apron with 17 light aircraft tiedowns. In this option, the new aircraft apron has an east-west orientation, with the eastern portion of the apron extending east of the existing airport fence into undeveloped airport industrial park lease lots.

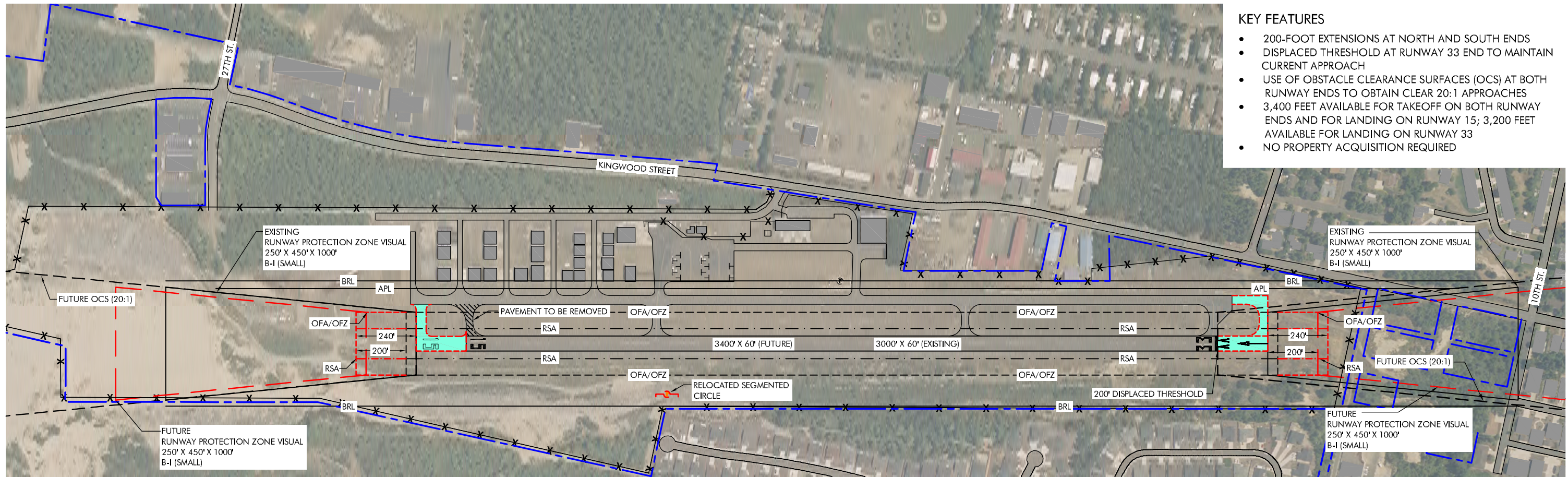
A new controlled access gate is located at 27th Street to provide access to the expanded landside facilities. Additional vehicle access and parking is provided with a connection to Kingwood Street and a connection to the existing hangar access road.

The hangar configuration includes space for six additional conventional hangars, one multi-unit executive hangar, and two eight unit T-hangars. The overall increase in hangar capacity is approximately 26 aircraft, plus the 14 spaces currently served by taxilanes (+40 based aircraft). Additional hangar development reserves are identified beyond the north end of the proposed development area.

The east parallel taxiway would be extended to provide access to the apron and additional hangar taxilanes. As with Option A, the north end of the parallel taxiway is slightly angled to avoid the future runway protection zone for Runway 15.

LEGEND

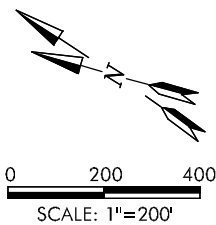
 PROPOSED AIRFIELD PAVEMENT



KEY FEATURES

- 200-FOOT EXTENSIONS AT NORTH AND SOUTH ENDS
- DISPLACED THRESHOLD AT RUNWAY 33 END TO MAINTAIN CURRENT APPROACH
- USE OF OBSTACLE CLEARANCE SURFACES (OCS) AT BOTH RUNWAY ENDS TO OBTAIN CLEAR 20:1 APPROACHES
- 3,400 FEET AVAILABLE FOR TAKEOFF ON BOTH RUNWAY ENDS AND FOR LANDING ON RUNWAY 15; 3,200 FEET AVAILABLE FOR LANDING ON RUNWAY 33
- NO PROPERTY ACQUISITION REQUIRED

RUNWAY OPTION C



**FLORENCE MUNICIPAL AIRPORT
RUNWAY OPTIONS**

FIGURE NO.

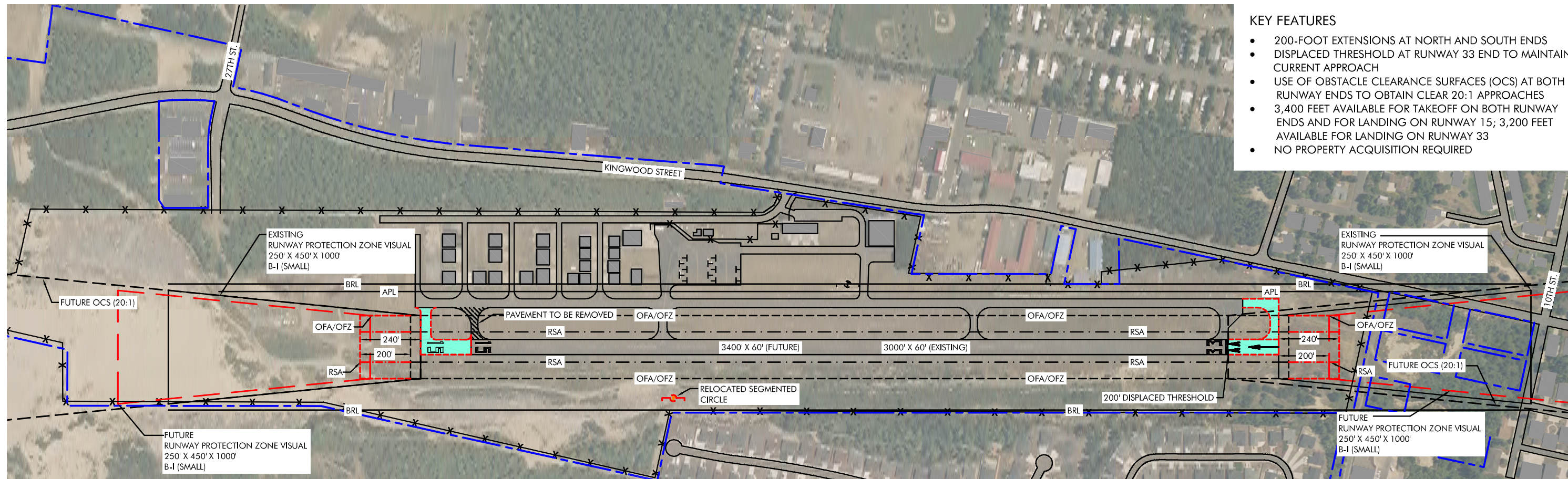
5-2

LEGEND

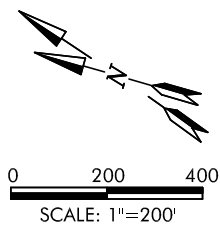
 PROPOSED AIRFIELD PAVEMENT

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- NO PROPERTY ACQUISITION REQUIRED



RUNWAY OPTION C



**FLORENCE MUNICIPAL AIRPORT
RUNWAY OPTIONS**

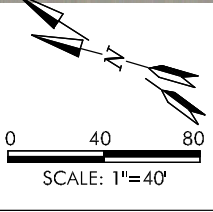
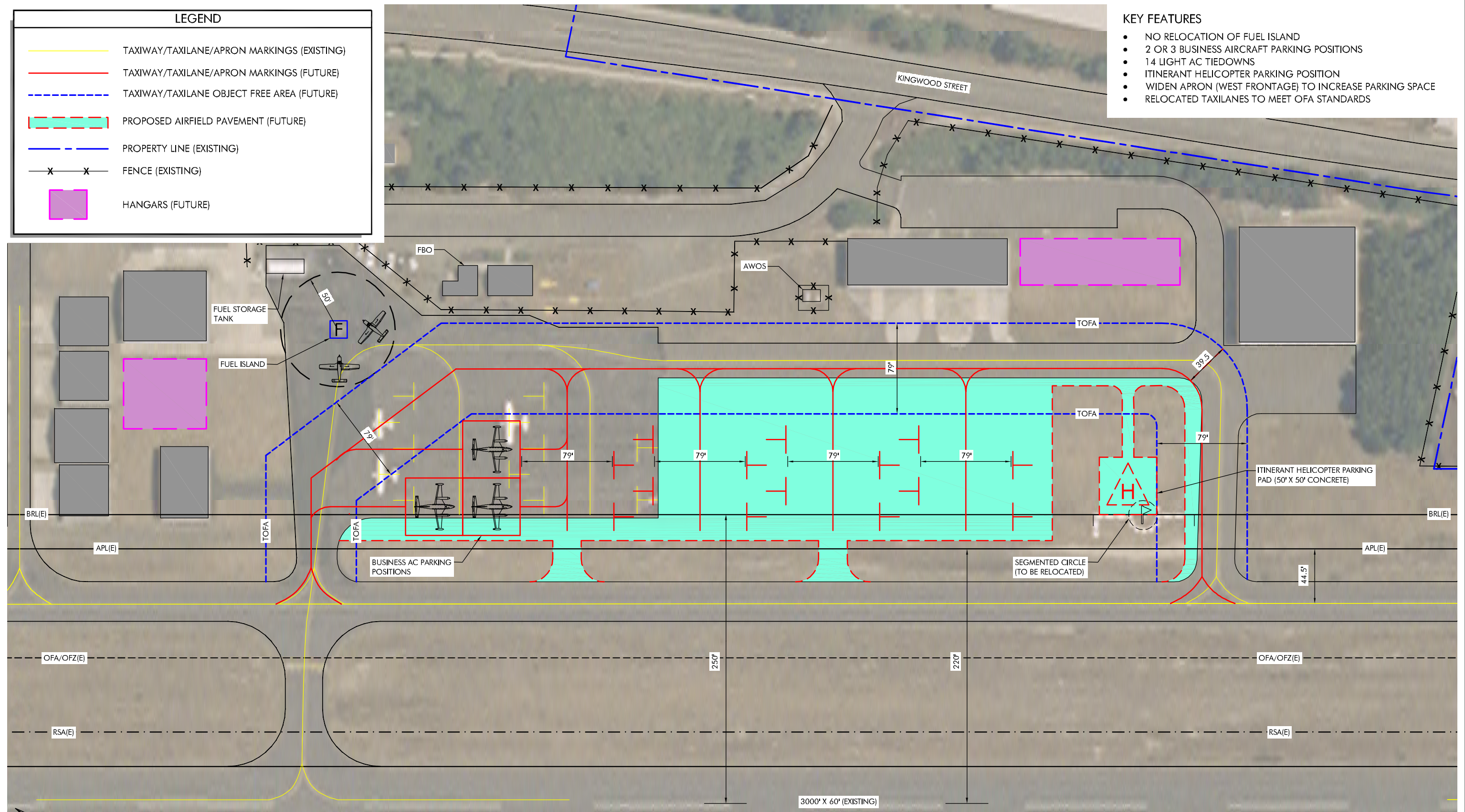
FIGURE NO.

5-2

LEGEND

- TAXIWAY/TAXILANE/APRON MARKINGS (EXISTING)
- TAXIWAY/TAXILANE/APRON MARKINGS (FUTURE)
- TAXIWAY/TAXILANE OBJECT FREE AREA (FUTURE)
- PROPOSED AIRFIELD PAVEMENT (FUTURE)
- PROPERTY LINE (EXISTING)
- x x FENCE (EXISTING)
- HANGARS (FUTURE)

- KEY FEATURES**
- NO RELOCATION OF FUEL ISLAND
 - 2 OR 3 BUSINESS AIRCRAFT PARKING POSITIONS
 - 14 LIGHT AC TIEDOWNS
 - ITINERANT HELICOPTER PARKING POSITION
 - WIDEN APRON (WEST FRONTAGE) TO INCREASE PARKING SPACE
 - RELOCATED TAXILANES TO MEET OFA STANDARDS



CENTURY WEST
ENGINEERING CORPORATION

FLORENCE MUNICIPAL AIRPORT
APRON OPTION A

FIGURE NO.
5-3

