

ONTARIO MUNICIPAL AIRPORT - ONO

CHAPTER 5 ALTERNATIVES ANALYSIS

5.1 INTRODUCTION

The previous chapter identified the landside facilities needed to satisfy aviation demand through the long-range planning period. The next step in the planning process is to evaluate reasonable ways these facilities can be provided. The overall goal of the Alternatives Analysis is to provide an airside and landside complex that meets the needs generated by forecasted demand. Corresponding with the limited airside facility analysis in Chapter 4, a singular airside alternative was developed and considered during this process. The recommendations resulting from the analysis will be the basis for Ontario Municipal Airport's long-term development plan.

5.2 AIRPORT DEVELOPMENT OBJECTIVES

It is of primary concern that Ontario Municipal Airport is marketed, developed, and operated for the betterment of the community and its users. To address this concern, the following facility planning objectives have been established to guide the alternatives development process:

- Develop a facility that is responsive to the current and long-term needs of general aviation users.
- Consider the self-sufficiency of a facility in both operational and developmental cost recovery.
- Maintain a safe, attractive, and efficient aviation facility in accordance with applicable federal, state, and local regulations.
- Ensure that future development is environmentally compatible.
- Preserve and protect public and private investments in existing airport facilities.

- Promote economic development for the City of Ontario and the region.

The alternatives developed through this planning effort conform to FAA design standards to ensure grant assurance compliance. Grant assurances, or obligations, require the recipients of Federal Aviation Administration (FAA) administered financial assistance to maintain and operate their facilities safely and efficiently in accordance with specified conditions.

5.3 ALTERNATIVES DEVELOPMENT PROCESS

The FAA provides guidance in Advisory Circular (AC) 150/5070-6B, *Airport Master Plans*, to identify and evaluate alternative development options. The key elements of this process include:

1. **Alternatives Identification:** Find feasible ways to address facility requirements previously identified in Chapter 4.
2. **Alternatives Analysis:** Apply best planning tenants to determine the operational performance, environmental impact, and fiscal restraints of the identified alternatives.
3. **Alternative Selection:** Determine a preferred alternative based on the alternatives analysis, stakeholder input, and sponsor preferences.

The alternatives analysis presents viable solutions to specific problems or challenges identified through this airport planning process. The single airside alternative and various landside alternatives presented in this chapter were developed from the primary planning considerations listed in **Table 5.1**.

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**TABLE 5.1
AIRSIDE AND LANDSIDE PRIMARY PLANNING CONSIDERATIONS**

Airside Planning Considerations

- Plan for additional full-parallel taxiway to accommodate west side development.
- Identify potential land acquisition needed to protect runway approaches.
- Plan for a taxiway connector reconfiguration on the Runway 15 End.
- Identify non-standard pavement areas for future removal.

Landside Planning Considerations

- Consider potential east-side locations for additional aircraft aprons and fuel storage relocation.
- Provide for a mix of ADG I and ADG II tie downs.
- Plan future hangar taxilanes to applicable TDG standards.
- Provide for a mix of hangar types in suitable locations.
- Consider new additional access locations and entrance improvements.
- Identify location for future larger GA terminal building.
- Consider potential locations for vertiports.
- Plan for additional vehicle parking spaces and expanded lots.
- Provide for a mix of aeronautical and non-aeronautical commercial use on the west side.

Source: J-U-B Analysis

5.4 AIRSIDE ALTERNATIVE

The airside alternatives considered in this section address facilities that contribute to the safe and efficient transition of aircraft and passengers from air transportation to the landside facilities at the Airport. Primary airside facility improvements are limited to taxiway pavement removal, a secondary full parallel taxiway, and areas for potential land acquisition and aviation easements. These airport elements are examined in this section and depicted in a single airside alternative (see **Figure 5.1**).

5.4.1 PAVEMENT REMOVAL

The taxiways at Ontario Municipal Airport are designed to Taxiway Design Group (TDG) 2 standards. As stated previously in Chapter 4, the FAA AC 150/5300-13A, *Airport Design*, was

updated to version 13B during this planning effort. To reflect this change, the existing and future TDG at Ontario Municipal Airport has been further classified as TDG 2A.

In the airside alternative depicted in **Figure 5.1**, areas of excess pavement have been highlighted for removal to meet FAA AC 250/5300-13B standards. The proposed pavement removal and reconfiguration of the Runway 15 End taxiway entrance is needed to reduce the hazard caused by aligned Taxiway G. The proposed mitigation of the aligned taxiway involves converting the aligned taxiway pavement into a blast pad, removing Taxiways F and G, and constructing a new entrance taxiway at the standard location.

Taxiway and taxilane protection, separation, wingtip clearance, and sizing standards for TDG

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2A are the same, or smaller, than those for TDG 2. At Ontario Municipal Airport, Taxiway E has a non-standard width between Taxiway A and Runway 15/33. The proposed pavement removal would narrow Taxiway E, previously created from the closed crosswind runway, to TDG 2A standards.

TDG 2A taxiway fillet dimensions for intersection angles are different from TDG 2 standards. As such, the Airport should plan any new or rehabilitated taxiway projects to meet the TDG 2A standards.

The project elements associated with paving and reconstructing the taxiway entrance on the Runway 15 End would likely require a National Environmental Policy Act (NEPA) Categorical Exclusion (CATEX) document prior to project initiation.

5.4.2 ADDITIONAL FULL-PARALLEL TAXIWAY

The landside alternatives include a series of configurations compatible with future airport commercial development on the west side of the Airport. To both attract and support this growth, the airside alternative features a second, full parallel taxiway along the west side of Runway 15/33. This taxiway would be designed to TDG 2A standards to accommodate larger aircraft, which future airport commercial businesses might need to operate in and around the Airport.

An environmental assessment (EA) would likely be required for the construction of a full-length parallel taxiway due to the changes in airfield layout and runway access.

5.4.3 LAND ACQUISITION AND EASEMENTS

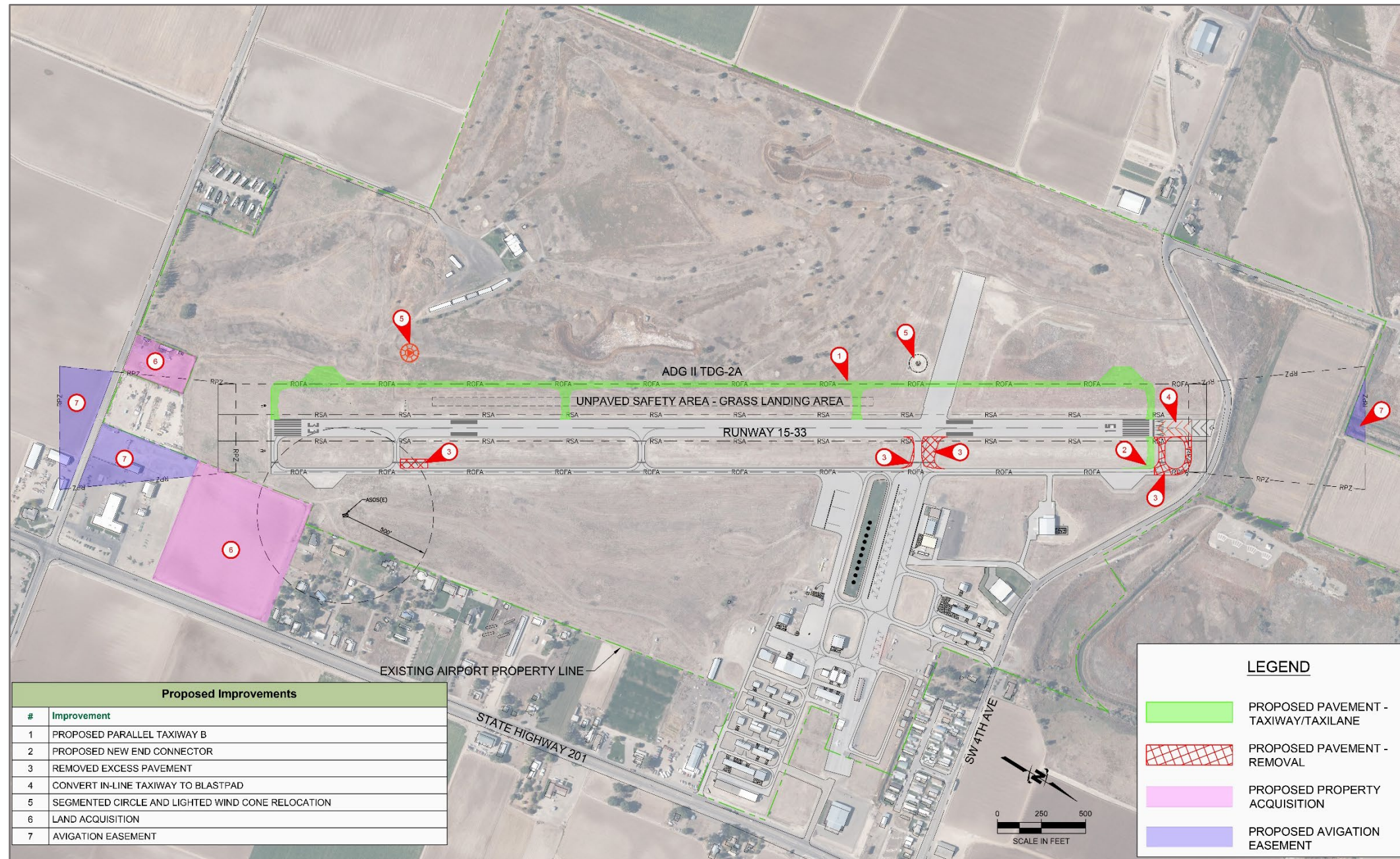
The airside alternative identifies different opportunities to acquire appropriate property interests to the south and north of Runway 15/33. The properties proposed for either

acquisition or avigation easement are within the Runway Protection Zones (RPZs) and airport owner control in these areas is recommended by the FAA.

A NEPA CATEX document would likely be required for the proposed land acquisition. If farmland would be converted away from agricultural uses, additional coordination with the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) would be required.

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**FIGURE 5.1
AIRSIDE CONFIGURATION**



Advantages

- The addition of a second full parallel taxiway would support corporate business demand resulting from aeronautical and non-aeronautical commercial development on the west side of the Airport.
- Minor pavement removal to bring the Airport up to FAA AC 150/5300-13B standards.
- Options for both land acquisition and aviation easements.

Total Estimated Project Cost: \$4,232,930

Source: J-U-B

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5.5 LANDSIDE ALTERNATIVES

Landside facilities are those elements that provide support to the aviation function of an airport. The landside alternatives presented in this section considered development options for aircraft storage facilities and parking areas, helipads, vertiports, and fuel service as well as vehicle entry points, access roads, and parking areas. Areas identified for landside growth opportunities are located north and south of existing terminal and hangar development, west of Runway 15/33, and near the Airport's main entrance. The landside improvement configurations, which have been created for each of these development areas, are summarized in this section and depicted in **Figures 5.2 – 5.7**.

5.5.1 ENTRANCE IMPROVEMENTS

A rendering of main airport entrance improvements in **Figure 5.2** shows a welcome park area and multipurpose hangar for a future FBO. The entrance improvements are identified on the east landside configurations between the

existing FBO facilities and Life Flight hangar (see **Figures 5.3-5.5**). Parking options for airport users and the public are depicted on the south and east sides of the proposed FBO structure. While shown as one large hangar, this structure or area could be planned for a single or combination of uses, including but not limited to:

- FBO
- Aviation businesses
- GA terminal building
- Restaurant
- Observation area

The McDonnell Douglas F-4 Phantom II aircraft is on loan from the U.S. Air Force and is displayed in an area easily accessed by the public. Improvements to the main entrance of the Airport could provide an opportunity to draw interest and business from the City of Ontario's non-flying public.

A NEPA CATEX document would likely be required for the proposed airport entrance improvements.

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FIGURE 5.2
FUTURE FBO/WELCOME PARK



Source: J-U-B

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5.5.2 EAST LANDSIDE DEVELOPMENT

There are three alternatives depicting proposed improvements to the area east of Runway 15/33 (see **Figure 5.3-5.5**). The landside facility configurations in each alternative are designed to be compatible with existing development and the proposed BLM SEAT Base. As such, most options require little to no removal of existing facilities to accommodate the proposed improvements. The east landside alternatives largely focused on the size, number, and location of future aircraft parking and storage options and possible places to relocate the fuel island.

The design of the relocated BLM SEAT Base is in the predesign phase; therefore, the proposed base location remains unaltered in each alternative. Additional facilities that do not change include the corporate hangars, helipads, and entrance improvements.

The proposed buildout of the three East Landside Alternatives would likely require an EA given the amount of proposed development and potential aircraft capacity increase.

Alternative 1A

East Landside Alternative 1A, as shown in **Figure 5.3**, depicts the construction of a new apron area between the existing jet apron and proposed BLM SEAT Base. The apron is designed to accommodate 20 small A/B-I aircraft or 8 large A/B-II aircraft. Two additional taxilanes extend east from this apron to provide box hangar access. The taxilanes are designed to ADG II/TDG 2A standards to accommodate larger A/B-II aircraft. The box hangars would be similarly intended for larger aircraft storage. The fuel island in this configuration has been moved to the eastern edge of the existing grass strip, between the jet apron and main aircraft apron. The section of grass strip would need to be paved to accommodate a fuel island. Two

additional taxilane fingers would extend east from the proposed apron.

Alternative 1B

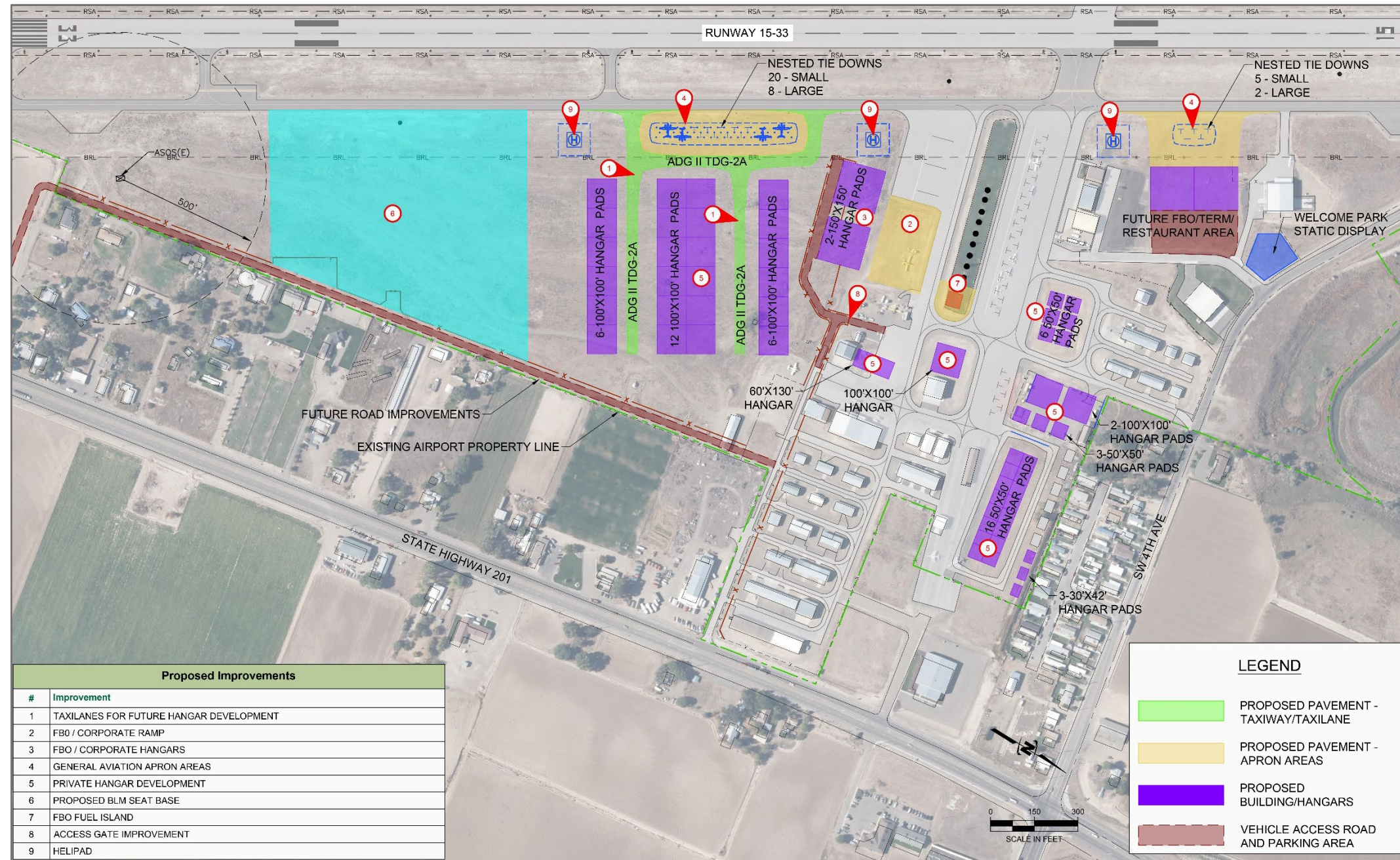
East Landside Alternative 1B is depicted in **Figure 5.4** and includes direct taxilane access between the parallel taxiway and proposed box hangar pads. Two of the taxilanes are designed to ADG I/TDG 1B standards and provide hangar access to smaller A/B-I aircraft. The remaining taxilane, which is shown to ADG II/TDG 2A standards, provides A/B-II aircraft access to larger hangar pads. The grass strip between the jet apron and main aircraft apron is paved in this option to accommodate 27 small aircraft tiedowns. The fuel island is shown relocated to the existing BLM SEAT Base vehicle parking area. The parking lot would need to be paved for taxiing aircraft and fuel island access.

Alternative 1C

East Landside Alternative 1C is depicted in **Figure 5.5** and includes a combination of some of the previously discussed improvements. A similarly sized apron to that in Alternative 1A is located west of the proposed box hangar pads; however, there are four additional taxilanes that extend east from the apron taxilane. These taxilanes vary in size based on the size of hangar pads they access. This is the only alternative that includes the option for a row of T-hangar pads. The previously mentioned grass strip, adjacent to the existing jet apron, is paved to accommodate 27 small aircraft tiedowns. The fuel island is relocated to the east side of the corporate ramp area depicted in each alternative. This ramp, which provides access to two adjoining corporate hangars, would extend from the jet apron to the east.

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**FIGURE 5.3
EAST LANDSIDE CONFIGURATION NO. 1A**



Advantages

- A/B-I aircraft potential apron positions: 25
- A/B-II aircraft potential apron positions: 10
- Box hangar pads: 56
- Corporate hangar pads: 4
- Helipads: 3
- Obstacle separations were configured to accommodate both large and small aircraft tiedowns.
- The relocated fuel island is more centrally located to existing landside development.
- Helipads could be available to accommodate corporate business demand.

Disadvantages

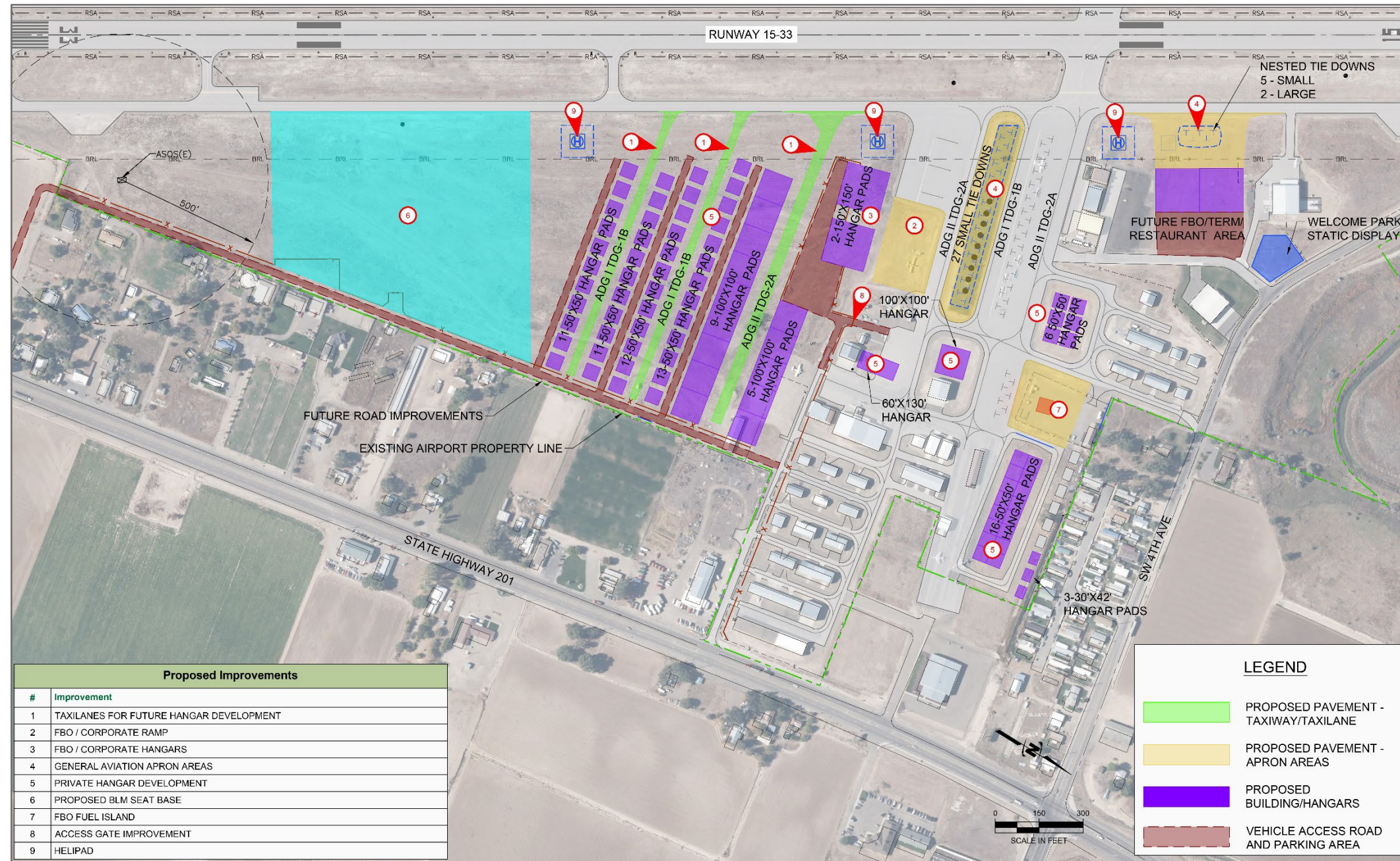
- With the least number of small aircraft parking positions and storage options, this configuration is the least accommodating to smaller GA aircraft.
- The position of the relocated fuel island is in an area constrained by existing facilities, which could limit aircraft accessibility.
- There are no additional vehicle parking options to accommodate future growth.

Total Estimated Project Cost: \$6,193,345

Source: J-U-B

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**FIGURE 5.4
EAST LANDSIDE CONFIGURATION NO. 1B**



Advantages

- A/B-I aircraft potential apron positions: 32
- A/B-II aircraft potential apron positions: 2
- Box hangar pads: 88
- Corporate hangar pads: 4
- Helipads: 3
- The relocated fuel island is easily accessible by larger aircraft.
- Helipads could be available to accommodate corporate business demand.

Disadvantages

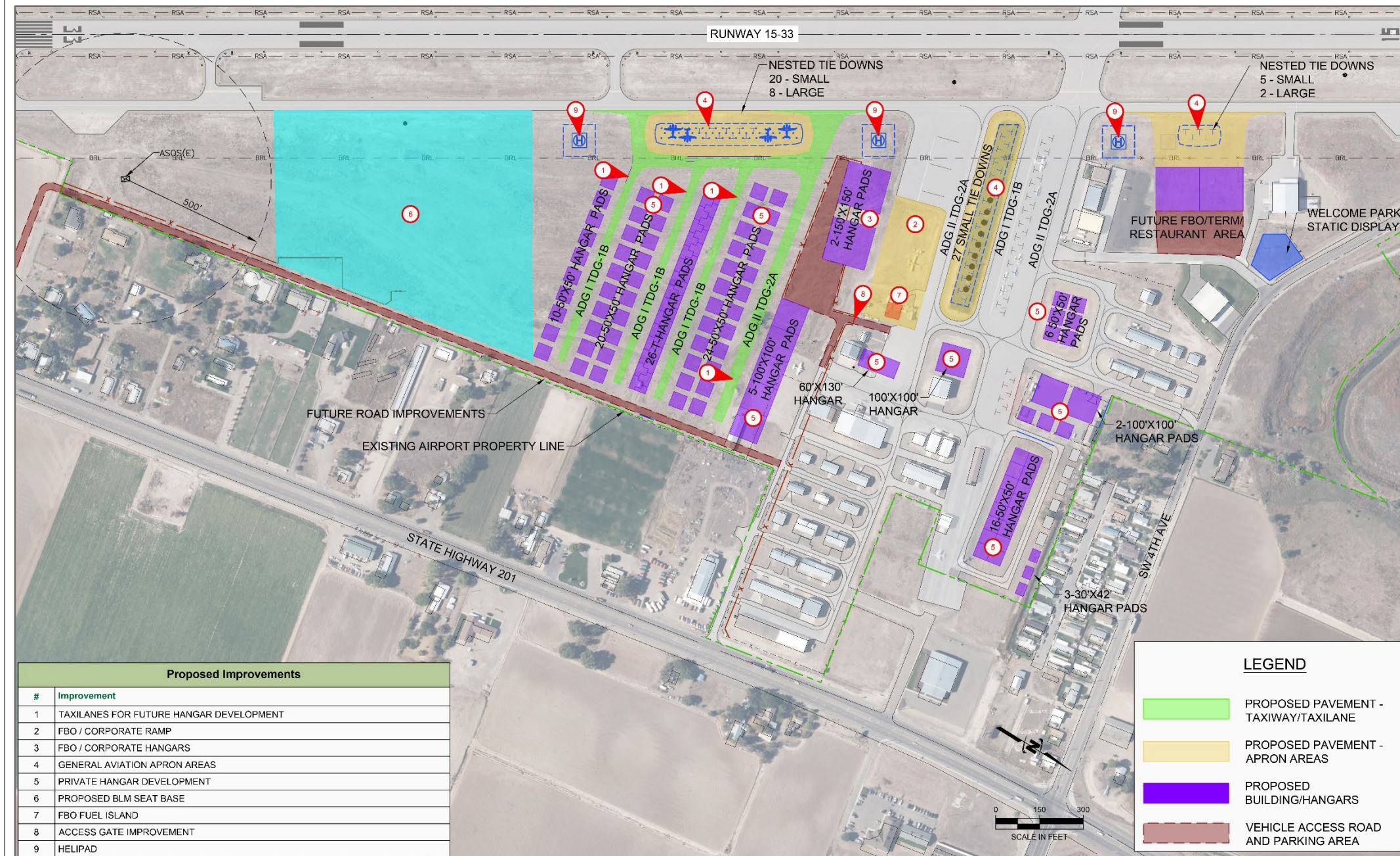
- Not all obstacle separations could be configured to accommodate both large and small aircraft tiedowns on every apron.
- The site of the proposed fuel island is not centrally located and the farthest from future development.

Total Estimated Project Cost: \$6,727,050

Source: J-U-B

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**FIGURE 5.5
EAST LANDSIDE CONFIGURATION NO. 1C**



Advantages

- A/B-I aircraft potential apron positions: 52
- A/B-II aircraft potential apron positions: 10
- T-hangar pads: 26
- Box hangar pads: 91
- Corporate hangar pads: 4
- Helipads: 3
- Improvements designed to maximize the number of aircraft parking positions and storage options available for future east side development.
- The only landside configuration to feature T-hangar pads.
- The relocated fuel island is centrally located and easily accessible by larger aircraft.
- Helipads could be available to accommodate corporate business demand.

Disadvantages

- Not all obstacle separations could be configured to accommodate both large and small aircraft tiedowns on every apron.

Total Estimated Project Cost: \$7,952,460

Source: J-U-B

5.5.3 WEST LANDSIDE DEVELOPMENT

Two alternatives have been developed to depict potential improvements to the area west of Runway 15/33 (see **Figure 5.6** and **Figure 5.7**). These design concepts were created as a proactive planning measure to guide Ontario Municipal Airport through logical and orderly development decisions over the planning period and beyond.

The landside facility configurations in each alternative are designed to be compatible with future airport commercial development west of the full parallel taxiway depicted in the airside alternative in **Figure 5.1**. As such, proposed taxilane access to future corporate and large box hangars is shown to ADG II/TDG-2A standards. The alternatives designate land for future aeronautical or non-aeronautical commercial use; however, the Airport would need a release of obligation from the FAA before any airport property could be designated for non-aeronautical use.

As previously recommended in Chapter 4, potential vertiport locations have been presented in consideration of an evolving eVTOL market. Design standards do not yet exist for the infrastructure or airspace needed to safely land or launch these aircraft. As such, the vertiport concepts depicted in these alternatives are suggestions based largely on passenger accessibility.

An EA would likely be required for the build out described for the two West Landside Alternatives given the amount of proposed development and potential aircraft capacity increase.

Alternative 2A

West Landside Alternative 2A, as shown in **Figure 5.6**, depicts two tiedown aprons adjacent to five corporate hangars on the southwest side

of the proposed development. The aprons could each accommodate 18 small, nested aircraft or 7 A/B-II large aircraft. A fuel island is situated on the southern end of this apron area. A series of box hangars, taxilanes, and access roads separate the two aprons from a third apron on the northwest side. This area is much smaller and could include up to 5 small nested tiedowns or 2 large tiedowns. The box hangar and taxilane configuration is similar in both options; however, this alternative has more box hangars with better vehicle access. The agricultural aircraft taxilanes and hangars are adjacent to the northern most row of box hangars. A road runs parallel to the western edge of the landside facilities, providing access to both the proposed development and the 109 acres of future aeronautical or non-aeronautical commercial use land.

Alternative 2B

West Landside Alternative 2B is depicted in **Figure 5.7** and includes a different layout of the access roads, aprons, hangar pads, and agricultural use area. A larger apron area is depicted between the corporate hangars and parallel taxiway that would accommodate greater quantities and sizes of aircraft. In total, the aprons in this area could park up to 54 small aircraft, 36 A/B-II aircraft, or 15 large jets. An expanded apron design and more corporate hangars does impact the number of box hangar pads. The northwest section has been slightly reconfigured to accommodate a larger apron area between the box hangars and agricultural operators. The apron is perpendicular to the parallel taxiway and could park 15 small aircraft or 6 A/B-II large aircraft. The primary access road along the western boundary of the landside development is located further west in this alternative. As such, fewer acres have been designated for future aeronautical or non-aeronautical commercial use.

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FIGURE 5.6
WEST LANDSIDE CONFIGURATION 2A



Advantages

- A/B-I aircraft potential apron positions: 41
- A/B-II aircraft potential apron positions: 16
- Box hangar pads: 31
- Corporate hangar pads: 5
- Future Commercial Use Acres: 109
- Obstacle separations were configured to accommodate both large and small aircraft tiedowns.
- The agricultural taxilane configuration near the old crosswind runway would be easier and more cost effective in the short-term for users to begin operating from.
- Airport vehicle road configuration provides easy access to all proposed hangars.
- Vertiport location could be easily accessed from SW 4th Avenue.

Disadvantages

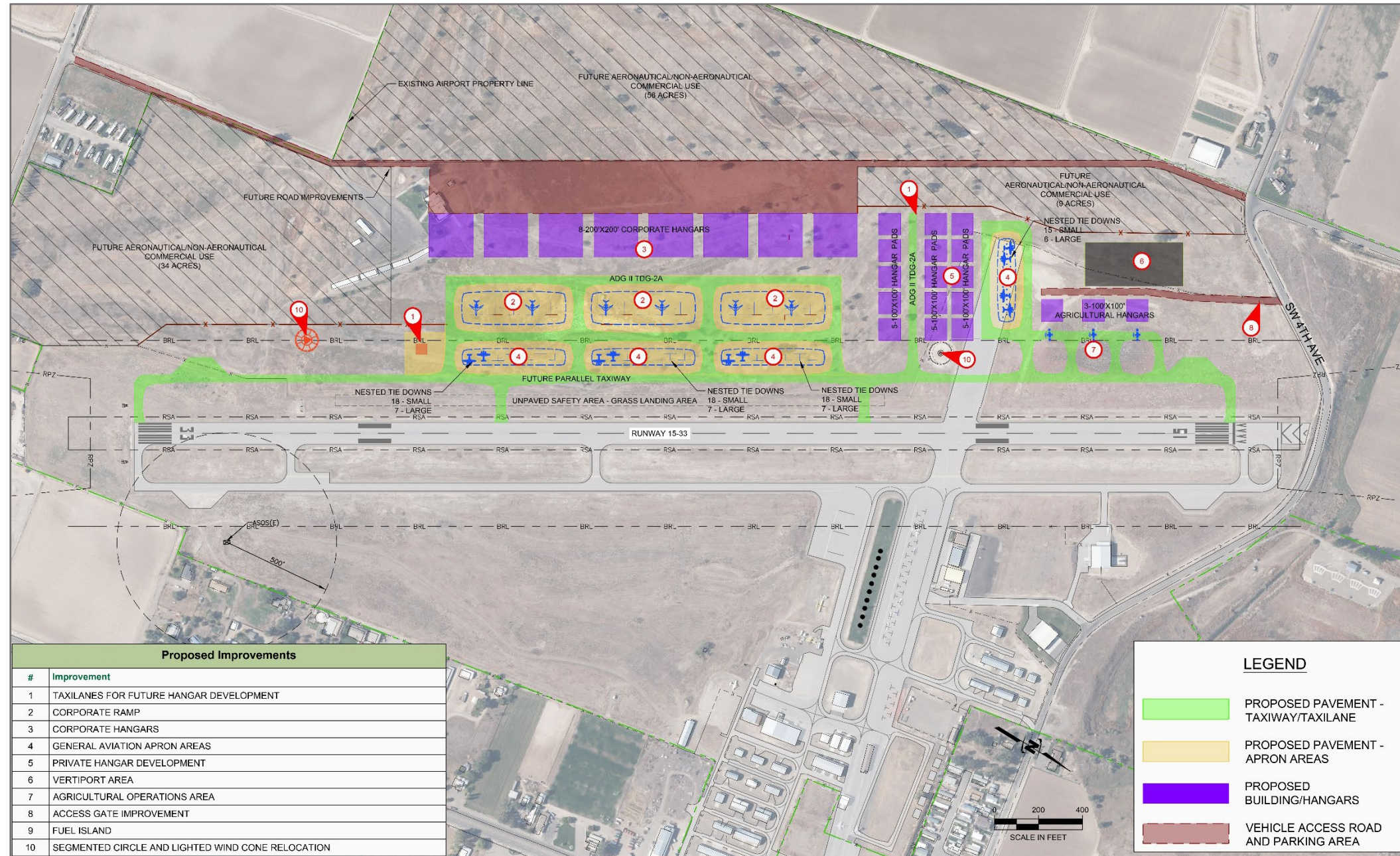
- No apron tiedown positions for large jet aircraft that might be associated with future commercial development.
- Limited and less convenient vehicle parking for corporate hangars could be a concern for future business operations.

Total Estimated Project Cost: \$7,633,965

Source: J-U-B

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**FIGURE 5.7
WEST LANDSIDE CONFIGURATION 2B**



Advantages

- A/B-I aircraft potential apron positions: 69
- A/B-II aircraft potential apron positions: 42
- Large jet aircraft potential apron positions: 15
- Box hangar pads: 18
- Corporate hangar pads: 8
- Future Commercial Use Acres: 99
- Obstacle separations were configured to accommodate both large and small aircraft tiedowns.
- Large jet aircraft tiedown positions strategically located to service future commercial development.
- The road layout and vehicle parking area location are the most accommodating to future commercial development.
- Vertiport location could be easily accessed from SW 4th Avenue.

Disadvantages

- Less land dedicated to future aeronautical or non-aeronautical land use.
- Limited vehicle access to box hangars.

Total Estimated Project Cost: \$13,101,640

Source: J-U-B

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5.6 ALTERNATIVES ANALYSIS SUMMARY

The development objectives outlined in the introduction of this chapter were used to guide the identification, evaluation, and selection of alternatives at Ontario Municipal Airport. To ensure the objectives were met and adequate consideration given each development option, all alternatives were evaluated using the following criteria:

Safety: All alternatives were crafted to be compliant with FAA design standards.

Cost: Planning-level cost estimates were created for the evaluation of alternatives; a more detailed cost analysis will be completed in the upcoming chapter for the selected improvements.

Operational Effectiveness: The alternatives were evaluated for their ability to meet forecasted growth throughout the planning period and beyond.

Environmental Issues: Each alternative was analyzed based on the extent of its potential environmental impact. Coordination with the FAA environmental specialist will be required to determine the ultimate environmental level of effort for any future development.

Revenue Generation: Opportunities considered in this evaluation include revenue generated by fuel sales, hangar pad and tiedown leasing availability, and vehicle parking.

The evaluation of each alternative using these criteria is summarized in **Table 5.2**.

**TABLE 5.2
ALTERNATIVES ANALYSIS SUMMARY**

	Airside Alternative	Landside Alternatives				
		East			West	
		1A	1B	1C	2A	2B
Alternative with the Lowest Estimated Cost per Each Development Area	✓	✓			✓	
Alternatives Exceeding \$7 Million in Estimated Costs				✓	✓	✓
Potential for NEPA Reporting						
EA Potential	✓	✓	✓	✓	✓	✓
Categorical Exclusion Potential	✓					
Private Investment Opportunities						
Alternative with the Most Proposed Hangar Pads per Development Area				✓	✓	
Alternatives with Corporate Hangars		✓	✓	✓	✓	✓
Alternatives with Additional FBO Facilities		✓	✓	✓		
Alternatives with Commercial Use Land					✓	✓
Revenue Generating Potential		✓	✓	✓	✓	✓
<i>Source: J-U-B Analysis</i>						

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5.7 PREFERRED ALTERNATIVE SELECTION

The configurations presented in this chapter provided the City of Ontario different development options to accommodate forecasted growth at the Airport, create opportunities for business development, and address any deficiencies identified in the facility requirement analysis. With guidance from the Technical Advisory Committee (TAC) and public input from an open house event, the East Landside 1C and West Landside 2A Configurations were selected, revised, and consolidated into a 20-year development plan for Ontario Municipal Airport.

The airside development depicted in the preferred alternative (see **Figure 5.8**) was not altered from the initial configuration and is largely focused on standards compliance. Airside improvements include taxiway pavement removal, secondary full-parallel taxiway construction, and potential land acquisition or easement purchases. The City expressed an early interest in expanding aviation and non-aviation commercial development on the west side of the Airport. As such, the second full-parallel taxiway and adjacent landside facility improvements were designed to be compatible with this future airport commercial development. The proposed west landside facilities include large commercial hangar lots and aprons, direct access to SW 4th Avenue, and designated areas for aeronautical and non-aeronautical use. Most projects planned for westside development likely exceed the 20-year planning scope; however, this area was proactively designed to guide the City of Ontario through logical and orderly development decisions over the planning period and beyond.

Additional landside facility improvements east of Runway 15/33 were configured to maximize the space available for development and provide increasing levels of demand accommodation. This is achieved with additional hangar lots, tie-down aprons, helipads, vertiports, vehicle entry points, access roads, and parking areas as well as a relocated fuel facility. An additional improvement not included in the previous configurations proposes a partial shift of SW 4th Avenue to the east. This project moves the public road further from the Runway End 15 approach, enhancing the visibility and safety of pilots flying into Ontario Municipal Airport.

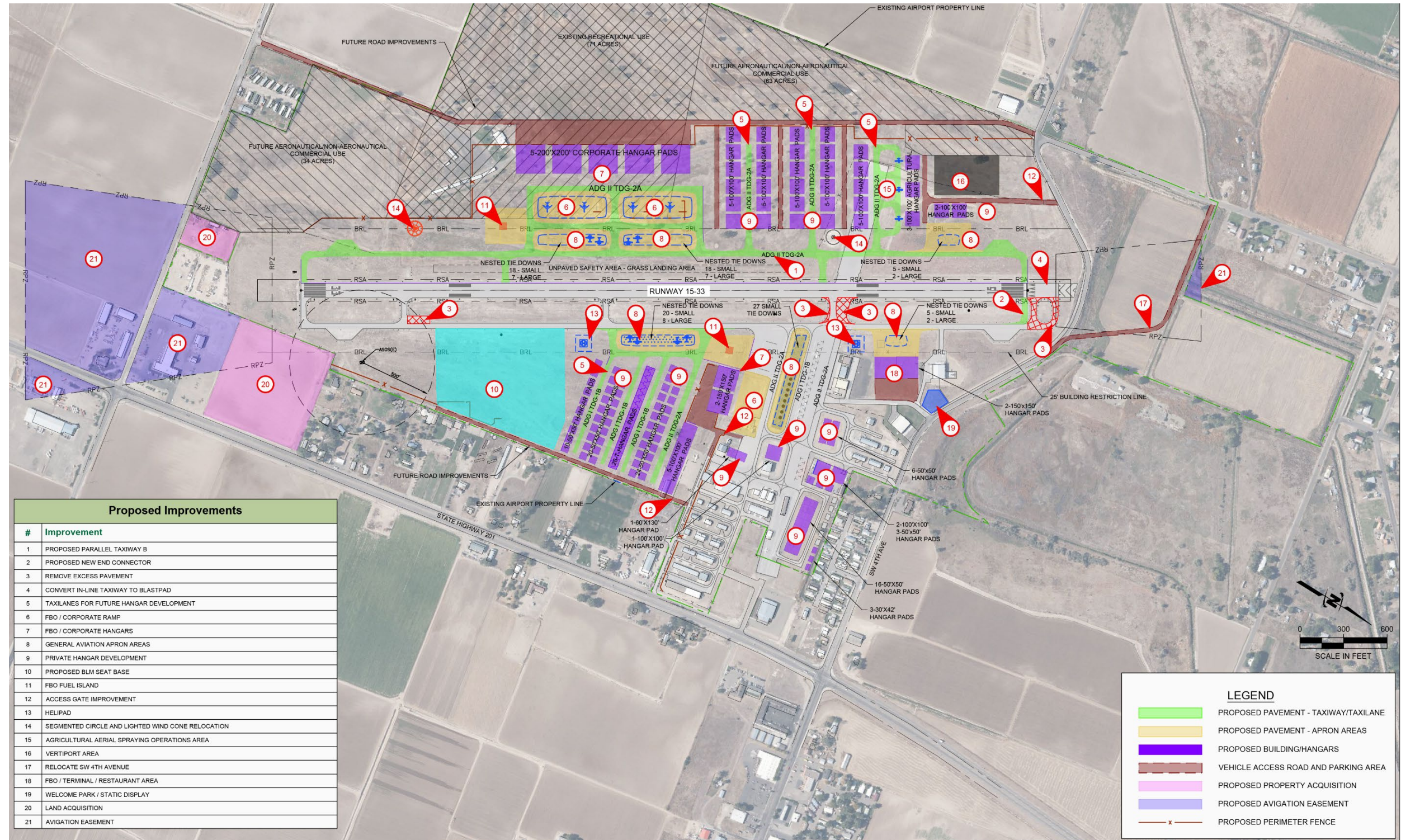
Coordination with the FAA would occur prior to any development activities associated with the Preferred Alternative to determine NEPA documentation requirements. Based on the amount of proposed land acquisition, potential for increased aircraft use, construction of a vertiport, and potential for increased nonaeronautical uses, certain elements of the Preferred Alternative would likely require completion of an Environmental Assessment (EA).

Following a recommendation from the TAC, the City Council approved the preferred alternative depicted in **Figure 5.8** as the basis for the phased development plan and ALP drawings.

The inclusion of identified improvements in the preferred alternative does not indicate a commitment on the part of the FAA or the State of Oregon to provide funding for any or all projects. Justification for any future improvements will be based on activity levels at the time the project is requested for development. Documentation of actual activity levels will need to meet planning levels to justify AIP funding for eligible projects.

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FIGURE 5.8
AIRSIDE AND LANDSIDE PREFERRED ALTERNATIVE



Source: J-U-B