CHAPTER 4
AIRPORT DEVELOPMENT ALTERNATIVES

In the previous chapter, aviation facilities required to satisfy airside and landside demand through the long-term planning period of the master plan were identified. In addition, various Federal Aviation Administration (FAA) standards that apply to airfield design were discussed. The next step in the planning process is to evaluate reasonable ways in which these facilities can be provided and the design standards can be met. The purpose of this chapter is to formulate and examine rational development alternatives that address the short-, intermediate-, and long-term planning horizon levels. Because there are a multitude of possibilities and combinations, it is necessary to focus on those opportunities that have the greatest potential for success. Each alternative provides a differing approach to meet existing and future facility needs, and these layouts are presented for purposes of evaluation and discussion.

Some airports become constrained due to limited availability of space, while others may be constrained due to adjacent land use development. Careful consideration should be given to the layout of future facilities and impacts to potential airfield improvements at Sierra Vista Municipal Airport-Libby Army Airfield (FHU). Proper planning at this time can ensure the long-term viability of the airport for aviation and economic growth.

The primary goal of this planning process is to develop a feasible plan for meeting applicable safety design standards and the needs that result from the projected market demand over the next 20 years. The plan of action should be developed in a manner that is consistent with the future goals and objectives of the City of Sierra Vista, Fort Huachuca, airport users, the local community, and the surrounding region, all of which have a vested interest in the development and operation of FHU.

The goal is to develop an underlying rationale that supports the final recommended concept. Through this process, an evaluation of the highest and best uses of airport property will be made, while also considering local development goals, efficiency, physical and environmental factors, capacity, and appropriate safety design standards.

The alternatives presented in this chapter have been formulated as potential methods to meet the overall program objectives for the airport in a balanced manner. Through coordination with the City of Sierra Vista, Fort Huachuca personnel, airport management, the planning advisory committee (PAC), and the public, an alternative (or combination of alternatives) will be refined and modified, as necessary, into a recommended development concept; therefore, the planning considerations and alternatives presented in this chapter can be considered a beginning point in the evolution of a recommended concept for the future of FHU.

PLANNING OBJECTIVES

A set of basic planning objectives has been established to guide the alternatives development process. It is the goal of this master planning effort to produce a development plan for the airport that addresses forecast aviation demand and meets FAA and military design standards to the greatest degree possible. As a joint-use facility, the airport is owned by the U.S. Army/Fort Huachuca, and approximately 72 acres of land has been deeded to the City of Sierra Vista, which owns and operates civilian aviation infrastructure in the northeast area of the airport. As such, both entities provide the overall guidance for the operation and development of the airport, with Fort Huachuca having final authority over development within the Libby Army Airfield property boundary. The following basic planning principles and objectives will be utilized as general guidelines during this planning effort:

- Develop a safe, attractive, and efficient aviation facility in accordance with applicable federal, state, and local regulations
- Preserve and protect public and private investments in existing airport facilities
- Provide a means for the airport to grow, as dictated by demand
- Establish a plan to ensure the long-term viability of the airport and promote compatible land uses surrounding the airport
- Develop a facility that is responsive to the changing needs of all aviation users
- Reflect and support the long-term planning efforts that are currently applicable to the region
- Develop a facility with a focus on self-sufficiency in operational and developmental cost recovery
- Ensure future development is environmentally compatible

REVIEW OF PREVIOUS AIRPORT PLANS

The most recent master plan for FHU was completed in 2014. The study used 2011 data for its aviation forecasts baseline and included the following primary recommendations:

- Extension of Taxiway J to function as a full-length parallel taxiway north of Runway 8-26
- Extension of Runway 12-30 to better serve both military and civilian aircraft, with relocation of Eleven Mile Road to accommodate the extension and relocated safety areas
- Installation of a medium intensity approach lighting system with runway alignment indicator lights (MALSR) on Runway 26 to allow for an improved instrument approach with visibility minimums below ¾-mile
- Construction of additional landside facilities associated with Sierra Vista Municipal Airport

The analysis presented in this chapter will revisit some of the recommendations presented on the current airport layout plan (ALP) drawing and in the previous planning study, along with new development options to meet the runway design codes (RDC) outlined in the previous chapters. As stated in Chapter Three, airside facility needs have been based primarily on the Airport Improvement Program (AIP)-eligible RDC, with the military RDC standards included for informational purposes only. The alternatives to follow, which are based on current FAA design standards outlined in Advisory Circular (AC) 150/5300-13B, Change 1, *Airport Design*, will largely focus on potential AIP-eligible improvements.

NO-ACTION/NON-DEVELOPMENT ALTERNATIVES

The City of Sierra Vista is charged with managing Sierra Vista Municipal Airport for the economic betterment of the community and region. In some cases, alternatives may include a no-action option; however, for Sierra Vista Municipal, a no-action alternative would effectively reduce the quality of services being provided to the public, affect the facility's ability to meet FAA design standards, and impact the region's ability to support civilian aviation needs. The ramifications of a no-action alternative extend into impacts on the economic well-being of the region. If facilities are not maintained and improved so the airport provides a pleasant experience for the visitor or business traveler, or if delays become unacceptable, activity and business may shift elsewhere. The no-action alternative is also inconsistent with the primary long-term goal of the FAA and the Arizona Department of Transportation – Aeronautics Group (ADOT), which is to enhance local and interstate commerce. Additionally, the acceptance and use of state and federal grants carry obligations, called grant assurances, which require the City of Sierra Vista to maintain and allow for the improvement of Sierra Vista Municipal Airport as needed to serve local and regional demand. Other significant considerations are previous investments and outstanding contractual agreements with all airport tenants and users. Discontinuing active management and development of the airport would require the city to breach these obligations and could create associated legal actions; therefore, a no-action alternative is not considered further in this master plan.

This study will not consider relocation of services to another airport or development of a new airport site. The development of a new municipal airport is a complex and expensive option. A new site would require greater land area, duplication of investment in facilities, installation of supporting infrastructure that is already available at the existing site, and greater potential for negative impacts to natural, biological, and cultural resources.

The purpose of this study is to examine aviation needs at Sierra Vista Municipal Airport over the course of the next 20 years; therefore, this master plan will examine the needs of the existing airport and present a program of needed capital improvement projects to cover the scope of the plan. The airport is a lucrative business, transportation utility, and economic asset for the region. It can accommodate existing and future demand and should be developed accordingly to support the interests of local residents and businesses that rely on it. Ultimately, the final decision regarding development rests with the City of Sierra Vista, the FAA, ADOT, and Fort Huachuca on an individual project basis. The following analysis considers airside and landside development alternatives that take into account an array of facility demands, including safety, capacity, access, and efficiency.

AIRPORT DEVELOPMENT ALTERNATIVES

The development alternatives are categorized into two functional areas: airside and landside. The airside relates to runways, taxiways, navigational aids, lighting and marking aids, etc., which require the greatest commitment of land area to meet the physical layout of an airport and the required airfield safety standards. The design of the airfield also defines minimum setback distances from the runway and object clearance standards; these criteria are defined first to ensure the fundamental needs of FHU are met. The landside includes terminal services, hangars, and aircraft parking aprons, as well as utilization of remaining property to provide revenue support for the airport and benefit the economic development and well-being of the regional area. Consideration will also be given to the acquisition of property in order to expand facilities on the north side of the airport.

Each functional area interrelates and affects the development potential of the others. As such, all areas must be examined individually and then coordinated as a whole to ensure the final plan is functional, efficient, and cost-effective. The total impact of these factors must be evaluated to determine if the investment in FHU will meet the needs of the surrounding area during and beyond the planning period of this study.

AIRSIDE CONSIDERATIONS

Airside planning considerations generally relate to airport elements that contribute to the safe and efficient transition of aircraft and passengers from air transportation to the landside facilities at the airport. Planning must factor and balance many airside items, including meeting FAA design parameters of the established airport critical aircraft, instrument approach capability, airfield capacity, runway length, taxiway layouts, and pavement strengths. Each of these elements for FHU was analyzed in the previous chapter. The alternatives to follow will examine airside improvement opportunities to meet AIP-eligible design standards. A summary of the primary airside planning issues to be considered in this alternatives analysis is included below.

Airside Planning Considerations
1. Meet ultimate runway design standards
2. Analyze extension options for Runway 12-30
3. Mitigate non-standard conditions in safety areas
4. Instrument approach capability to Runway 12-30
5. Corrective measures for non-standard taxiway geometry
6. Upgraded/new visual approach aids

Consideration #1 – Meet Ultimate Runway Design Standards

The critical aircraft analysis in Chapter Two concluded that primary Runway 8-26 should meet RDC E-V-4000 design standards for military planning purposes in the ultimate condition. The AIP-eligible design standards to be met in the ultimate condition for this runway have been determined as RDC B-II-4000. For crosswind Runway 12-30, the ultimate design standards are set at RDC C-III-5000 for military planning purposes and RDC B-II-5000 for AIP-eligible purposes. Runway 3-21 has an ultimate RDC of B-II-VIS for both military and AIP-eligible planning purposes; however, this runway is planned to be decommissioned at some point in the future. The airside alternatives to follow will illustrate various options for a two-runway system, with potential modifications to meet ultimate AIP-eligible design standards on Runways 8-26 and 12-30. One alternative will consider short-term, continued maintenance of Runway 3-21 with some limited corrective actions to meet standards in the event the decommissioning of this runway is delayed.

Consideration #2 – Analyze Extension Options for Runway 12-30

Primary Runway 8-26 is 12,001 feet long and 150 feet wide and should be maintained at these dimensions to accommodate the military aircraft that operate at FHU. Crosswind Runway 12-30 is 5,366 feet long and 100 feet wide and currently accommodates a mix of both military and general aviation aircraft. This runway has historically been planned to be extended to 8,000 feet. The runway length analysis in the previous chapter reevaluated the recommended runway length for Runway 12-30, using the FAA's runway length calculator, as well as calculation models based on specific aircraft operating requirements. The analysis found that 6,000 feet of runway length is needed to accommodate 95 percent of small general aviation aircraft, and 6,700 feet of runway length is recommended to accommodate 75 percent of the larger business jet fleet at 60 percent useful load. Moreover, discussions with Fort Huachuca personnel indicated a desire to extend Runway 12-30 to better accommodate military operations; as such, the alternatives to follow will depict extension options for crosswind Runway 12-30. These options will carefully weigh the cost/benefit of extending one or both runways when considering existing constraining factors, including adjacent off-airport development. As previously stated in Chapter Three, if FAA funding assistance is requested for an extension project on Runway 12-30, additional study and justification for the extension will be required.

Consideration #3 – Mitigate Non-Standard Conditions in Safety Areas

As summarized previously on Exhibit 3H, several safety areas associated with each runway contain obstructions or are deficient for both the military and AIP-eligible safety areas. In terms of the AIP-eligible portion of each safety area, the primary areas of concern are the runway safety area (RSA),

runway obstacle free zone (ROFZ), and runway object free area (ROFA). The ROFA and ROFZ associated with primary Runway 8-26 contain obstructions, while the RSA, ROFA, and ROFZ associated with Runway 12-30 extend beyond the airport boundary and contain obstructions. The airside alternatives will illustrate options to mitigate these non-standard conditions. Runway 3-21 also has deficient/obstructed safety areas; however, as this runway is planned for ultimate closure, the majority of the alternatives to follow will not depict any corrective actions to bring these safety areas into standard. As mentioned, one option to correct deficiencies on Runway 3-21 will be shown, primarily for short-term planning purposes if there is a delay in decommissioning the runway.

In terms of non-standard runway protection zone (RPZ) features, portions of the RPZs for each runway are unowned or not controlled through easement. Additionally, the northeast corner of the Runway 26 RPZ contains a public roadway (State Highway 90). While the FAA prefers ownership of RPZ land and for the property to be unencumbered by incompatible land uses, some land uses may be permitted to remain if no significant changes are planned to the runway environment. This is likely the case for State Highway 90, as no changes to the Runway 8-26 environment are proposed. As such, the alternatives to follow will not depict modifications to the highway or Runway 8-26 in order to bring the RPZ into compliance.

Consideration #4 – Instrument Approach Procedures

FHU is currently equipped with four published instrument approach procedures, all of which are associated with Runways 8 and 26. Additional or improved approaches to this runway were examined in Chapter Three, but it was ultimately determined that any new or enhanced approach would fall under the purview of the U.S. Army, given the need for new ground-based equipment (i.e., an approach lighting system) and the potential for additional land acquisition due to increased RPZ dimensions. As such, the alternatives will not present any options for instrument approaches with lower than ¾-mile visibility minimums, as the FAA is unlikely to support or participate in funding assistance for such an upgrade.

Runway 12-30 does not have instrument approach capability, and the alternatives will depict the potential for an instrument approach to Runway 12-30 with visibility minimums not lower than one-mile. The addition of this instrument approach would not change the size of the RPZs currently associated with the crosswind runway.

Consideration #5 – Corrective Measures for Non-Standard Taxiway Geometry

The taxiway geometry at FHU does not meet FAA design standards in several locations, including the intersection of Runway 12-30 and Taxiways D and J, which does not follow the three-path concept and could be confusing to pilots. There is also direct access from the terminal apron to Runway 12-30 via Taxiway D, and Taxiway D crosses Runway 8-26 in the high-energy portion of the runway. Various options for correcting these non-standard conditions will be presented in each airside alternative.

Consideration #6 – Upgraded/New Visual Aids

Both ends of primary Runway 8-26 are equipped with four-light precision approach path indicator (PAPI-4) systems, as are both ends of crosswind Runway 12-30. Because FHU experiences a high level of jet activity, these systems should remain in place. Neither Runway 8-26 nor Runway 12-30 is equipped with runway end identifier lights (REILs), which are recommended for runways that are lighted and are not planned for more sophisticated approach lighting systems. The alternatives will include a depiction of REILs on each runway to increase visibility of the runway ends and enhance safety. Runway 3-21 is not equipped with any visual approach aids, and none are proposed for consideration, as this runway is ultimately planned for closure.

AIRSIDE ALTERNATIVE 1

Airside Alternative 1 is depicted on **Exhibit 4A** and considers several upgrades to the airfield. This alternative maintains primary Runway 8-26 at its current dimensions and does not consider any major improvements or changes to this runway environment. Runway 12-30 is also proposed to remain at its existing dimensions of 5,366 feet long by 100 feet wide. While the Facility Requirements chapter identified a potential need for a longer runway, maintaining the existing length is an important scenario to consider because an extension to the runway is not a certainty. From an eligibility standpoint, a runway extension requires justification to the FAA to be eligible for funding through the AIP. Justification typically involves documentation of at least 500 annual operations by aircraft and operators expressing a need for the additional runway. An environmental assessment (EA) process would also need to be completed, along with public outreach. If justification for a runway extension is not achieved for several years (or ever), a contingency airfield plan should be available.

The primary focus of Airside Alternative 1 is correcting non-standard safety areas and taxiway geometry. This includes:

1. Closure of Runway 3-21, with a portion of pavement on the north end preserved (as feasible) for use as taxiway pavement to connect the Runway 12 threshold with the general aviation (GA) area extending from Taxiway K. The remaining pavement associated with Runway 3-21 is proposed to be removed.

   An optional scenario that maintains Runway 3-21 as an active runway is depicted in the upper left inset on the exhibit. This is an important scenario to consider if the decommissioning process is delayed or otherwise does not come to fruition. As shown on the inset, this option maintains Runway 3-21 as an active runway, with consideration given to land acquisition in the safety areas alongside the runway. Approximately 9.5 acres of property would need to be acquired to control the RSA and ROFA associated with Runway 3-21, and some removal of obstructing vegetation would be necessary. No other upgrades (i.e., inclusion of visual approach aids, instrument approach procedures, etc.) are proposed. Unowned property within the RPZs associated with this runway may also be considered for acquisition in fee or protected via easement.

2. Closure of a portion of Taxiway J. To alleviate confusion at the intersection of Runway 12-30, Taxiway D, and Taxiway J, portions of Taxiway J on either side of Runway 12-30 are proposed to be removed. Removal of these pavement sections results in a single, right-angle taxiway crossing (Taxiway D) of Runway 12-30 and follows the three-path concept, as recommended by the FAA.

3. Realignment/partial closure of Taxiway D. This alternative proposes a reconfiguration of Taxiway D south of Runway 12-30. This includes a realignment of the taxiway so that standard, right angles are achieved when intersecting both Runways 12-30 and 8-26. Taxiway D pavement south of Runway 8-26 is also proposed for closure, with a new taxiway connector constructed approximately 420 feet to the east. The intent behind this relocation is to move the taxiway crossing out of the Runway 8-26 high-energy area. Additionally, relocating the southern portion of Taxiway D has the added benefit of eliminating a direct-access point from the military apron to Runway 8-26. It should be noted that relocation would also enhance safety for military aircraft operating in this area.

4. Closure of the north portion of Taxiway C. If Runway 3-21 is decommissioned, the northern portion of Taxiway C that connects to Runway 3 will no longer be needed and is proposed for removal.

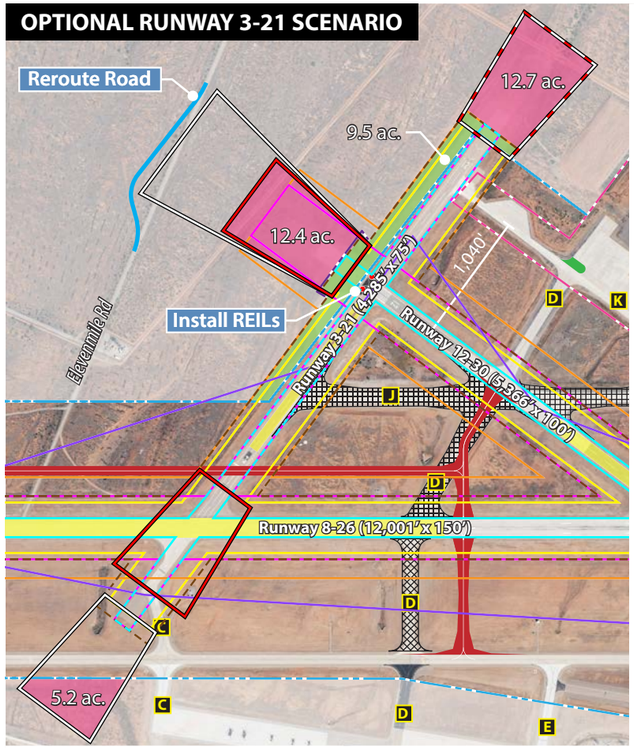
5. Construction of a new partial-parallel taxiway north of Runway 8-26. This taxiway is proposed to extend from the realigned Taxiway D to the Runway 8 threshold to serve general aviation aircraft accessing Runway 8 from the north side. The taxiway as depicted is 50 feet wide and set at a separation of 450 feet from the runway, centerline to centerline, in accordance with ultimate ADG V and TDG 3 standards. A connector taxiway is also proposed to serve as an exit for aircraft landing on Runway 8-26.

   It should be noted that previous planning has considered an extension of existing Taxiway J to the Runway 8 threshold to serve as a parallel taxiway on the north side of Runway 8-26. The extension of Taxiway J would require expanding the Libby Army Airfield joint-use property line to accommodate the taxiway and its safety areas. Under this alternative, the proposed partial-parallel taxiway is closer to the runway and would not require property acquisition. It is prudent to at least consider a parallel taxiway north of Runway 8-26 in the event that civilian/GA activity increases and warrants such. Being able to segregate civilian activity from military operations is important to Libby Army Airfield personnel, and limiting crossing on Runway 8-26 is an added safety enhancement for the entire airfield system.

6. Inclusion of a no-taxi island at the entrance to Taxiway D to mitigate the direct-access point on the west side of the terminal apron. A no-taxi island is an area of either natural turf or artificial turf/paint that forces pilots to make a turn prior to entering the runway environment, thereby improving pilot situational awareness and reducing the risk of a runway incursion.

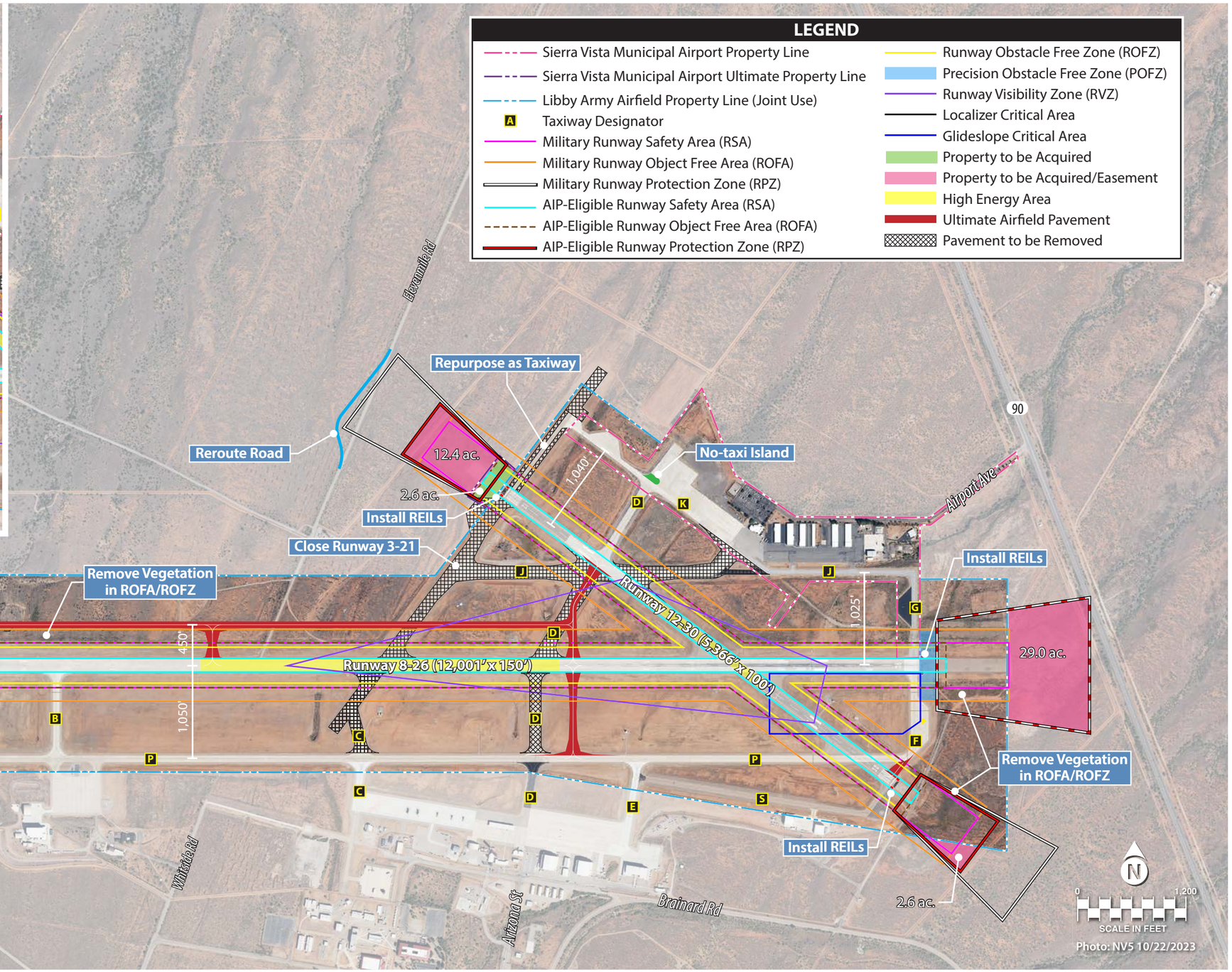
7. Construction of a connector taxiway extending from the junction of Taxiways F and P. This taxiway would lead to the Runway 30 threshold to eliminate the need for GA aircraft to back-taxi when departing on Runway 30.

OPTIONAL RUNWAY 3-21 SCENARIO



LEGEND

- Sierra Vista Municipal Airport Property Line
- Sierra Vista Municipal Airport Ultimate Property Line
- Libby Army Airfield Property Line (Joint Use)
- A — Taxiway Designator
- Military Runway Safety Area (RSA)
- Military Runway Object Free Area (ROFA)
- Military Runway Protection Zone (RPZ)
- AIP-Eligible Runway Safety Area (RSA)
- AIP-Eligible Runway Object Free Area (ROFA)
- AIP-Eligible Runway Protection Zone (RPZ)
- Runway Obstacle Free Zone (ROFZ)
- Precision Obstacle Free Zone (POFZ)
- Runway Visibility Zone (RVZ)
- Localizer Critical Area
- Glideslope Critical Area
- Property to be Acquired
- Property to be Acquired/Easement
- High Energy Area
- Ultimate Airfield Pavement
- Pavement to be Removed



EXISTING/ULTIMATE RUNWAY DESIGN CODES

	Planning Purposes (Military)	AIP-Eligible
Runway 8-26	E-V-4000	B-II-4000
Runway 12-30	C-III-VIS / C-III-5000	B-II-VIS / B-II-5000
Runway 3-21	B-II-VIS	Same

Note: Acreages depicted are approximate.

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8. Acquisition of property to control safety areas. Approximately 2.6 acres near the Runway 12 threshold are proposed for acquisition in fee to control the AIP-eligible portion of the RSA, ROFA, and ROFZ associated with Runway 12-30. The FAA recommends ownership in fee of these safety areas.

   Additionally, the uncontrolled AIP-eligible portion of each runway's RPZ is proposed to be acquired in fee or controlled through easement. This includes approximately 27.4 acres within the Runway 8 RPZ and 29.0 acres within the Runway 26 RPZ. For Runway 30, the majority of the RPZ is currently within the airport's boundary, with the exception of approximately 2.6 acres, which are proposed to be acquired fee simple or protected through an easement. Acquisition of property interests is also proposed for approximately 12.4 acres within the Runway 12 RPZ. It should be noted that the RPZs associated with the military design standards are also depicted for planning purposes. For Runway 12-30, the more stringent military design standard corresponds to a larger RPZ, with additional uncontrolled property and a public road (Elevenmile Road) located within the Runway 12 RPZ. An option to reroute this roadway is depicted for consideration; this option is conceptual only, and engineering design would determine the placement and configuration of the rerouted road.

9. Removal of vegetation that obstructs the ROFA and ROFZ associated with Runway 8-26 and Runway 12-30.

10. Installation of REILs on Runways 8, 26, 12, and 30.

AIRSIDE ALTERNATIVE 2

Airside Alternative 2 is depicted on **Exhibit 4B**. This option considers several upgrades to the airfield—most notably, an extension to Runway 12-30. Several of the previous alternative's proposals are also depicted on this alternative, along with a different taxiway geometry design to alleviate non-standard conditions. Features of Airside Alternative 2 include:

1. Extension of Runway 12-30 to the northwest. This alternative proposes a 634-foot extension to Runway 12, bringing the ultimate runway length to 6,000 feet. At this length, the runway could accommodate 95 percent of the small aircraft fleet and is the FAA-recommended length for accommodating this grouping of aircraft.

2. Extension of Taxiway K to provide access to the extended Runway 12 threshold.

3. Closure of Runway 3-21.

4. Closure of Taxiway D north of Runway 8-26. To alleviate confusion at the intersection of Runway 12-30, Taxiway D, and Taxiway J, portions of Taxiway D on either side of Runway 12-30 are proposed to be removed. Removal of these pavement sections at this intersection would result in a standard, three-path concept and has the added benefit of eliminating the direct-access point to Taxiway D from the terminal apron. Taxiway J is proposed to remain as-is near the intersection.

5. Construction of new taxiway pavement west of the Runway 12-30/Taxiway D/Taxiway J intersection. The primary intent of this proposed project is to provide improved access from the military apron to Runway 12. This involves closure of a portion of Taxiway D (north of Runway 8-26), as detailed above, with new pavement extending from Taxiway D (south of Runway 8-26) and connecting with Taxiway J at a right angle. From there, a new partial-parallel taxiway is proposed to extend northwest to provide access to Runway 12 from the south side. This south-side access would eliminate the need for military aircraft to cross onto the general aviation side of the airport when departing on Runway 12.

6. Closure of a portion of Taxiway C. If Runway 3-21 is decommissioned, the northern portion of Taxiway C that connects to Runway 3 will no longer be needed and is proposed for removal.

7. Construction of a connector taxiway extending from the junction of Taxiways F and P. This taxiway would lead to the Runway 30 threshold to eliminate the need for GA aircraft to back-taxi when departing on Runway 30.

8. Acquisition of property to control safety areas. Due to the proposed extension to Runway 12 and associated expansion of taxiway pavement, approximately 34.3 acres near the Runway 12 threshold are proposed for fee simple acquisition to control the AIP-eligible portions of the RSA, ROFA, and ROFZ, along with property needed to construct the proposed taxiways and protect their safety areas. The perimeter fence located near Runway 12 is proposed to be rerouted around the military safety areas.

   Additionally, the uncontrolled portion of each runway's RPZ is proposed to be acquired in fee or controlled through easement. This includes approximately 27.4 acres within the Runway 8 RPZ and 29.0 acres within the Runway 26 RPZ. For Runway 12-30, this includes approximately 12.4 acres within the Runway 12 RPZ and 2.6 acres within the Runway 30 RPZ. The proposed runway extension would also result in Elevenmile Road traversing the Runway 12 RPZ. As such, the road is proposed to be rerouted outside both the AIP-eligible RPZ and the larger RPZ associated with military planning design standards.

9. Removal of vegetation that obstructs the ROFA and ROFZ associated with Runway 8-26 and Runway 12-30.

10. Installation of REILs on each end of Runways 8-26 and 12-30.

AIRSIDE ALTERNATIVE 3

A third option for an ultimate airfield scenario is shown on **Exhibit 4C**. Airside Alternative 3 considers different options for extending Runway 12-30 and modifying the taxiway geometry to meet FAA design standards. Features of Airside Alternative 2 include:

1. Extension of Runway 12-30 to the southeast. Rather than extending Runway 12 to the northwest, Alternative 3 considers a longer extension to the southeast on the Runway 3 end. A 1,334-foot extension is proposed, which would result in a 6,700-foot-long runway. This is the FAA-

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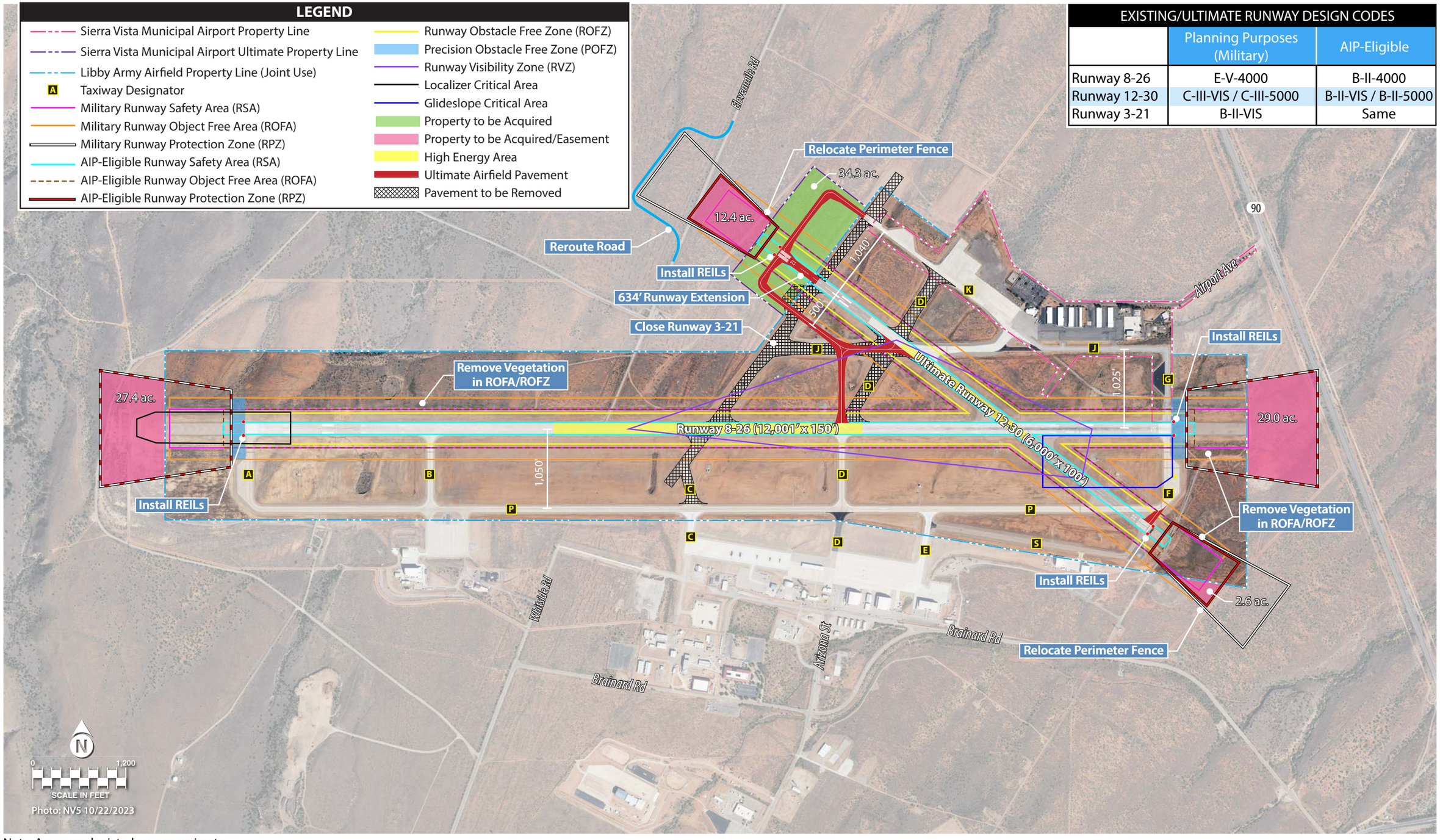
- Military Runway Object Free Area (ROFA)
- Military Runway Protection Zone (RPZ)
- AIP-Eligible Runway Safety Area (RSA)
- AIP-Eligible Runway Object Free Area (ROFA)
- AIP-Eligible Runway Protection Zone (RPZ)
- Runway Obstacle Free Zone (ROFZ)
- Precision Obstacle Free Zone (POFZ)
- Runway Visibility Zone (RVZ)
- Localizer Critical Area
- Glideslope Critical Area
- Property to be Acquired
- Property to be Acquired/Easement
- High Energy Area
- Ultimate Airfield Pavement
- Pavement to be Removed

EXISTING/ULTIMATE RUNWAY DESIGN CODES		
	Planning Purposes (Military)	AIP-Eligible
Runway 8-26	E-V-4000	B-II-4000
Runway 12-30	C-III-VIS / C-III-5000	B-II-VIS / B-II-5000
Runway 3-21	B-II-VIS	Same



Note: Acreages depicted are approximate.

LEGEND

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- Sierra Vista Municipal Airport Ultimate Property Line
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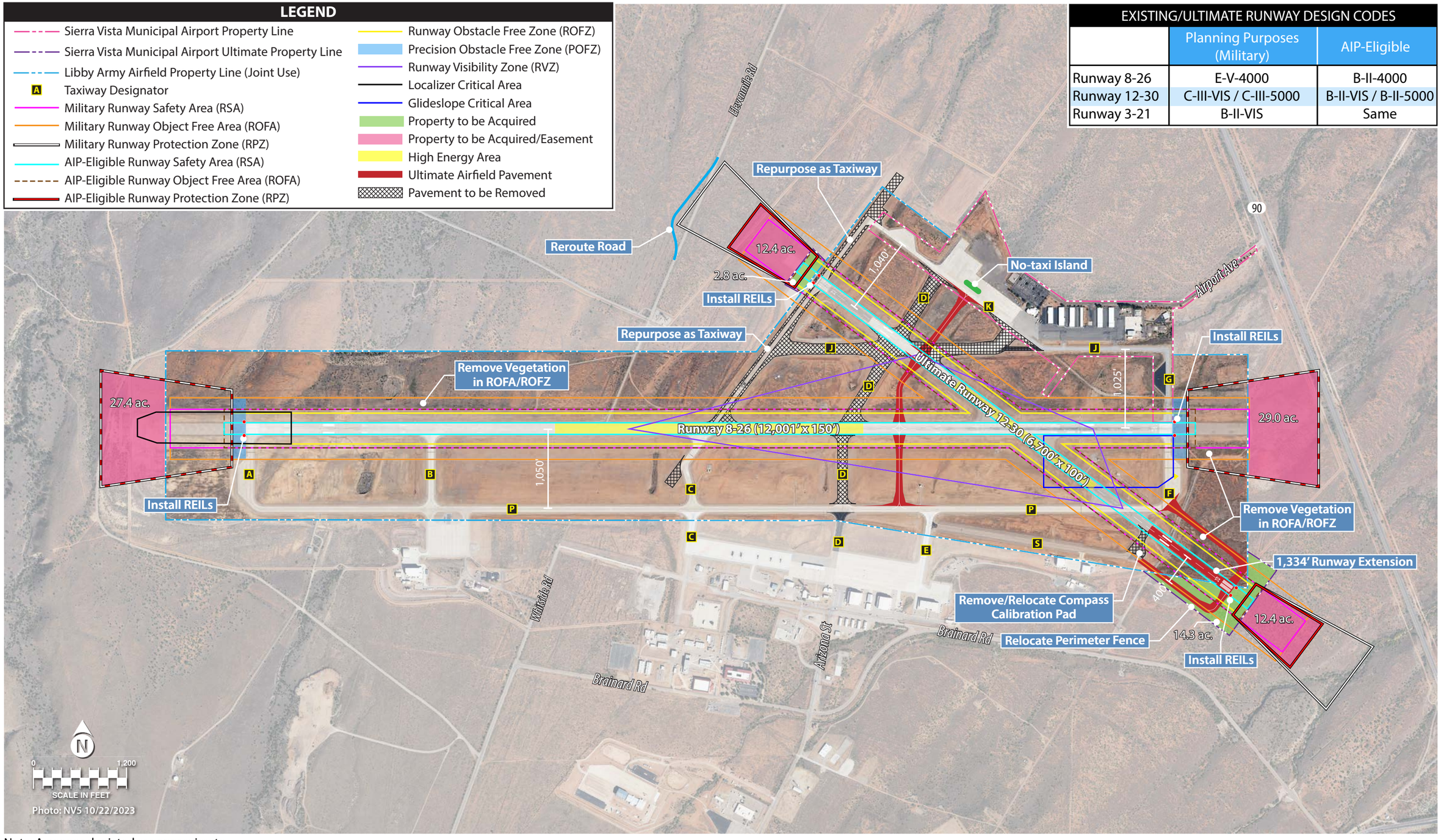
- Precision Obstacle Free Zone (POFZ)
- Runway Visibility Zone (RVZ)
- Localizer Critical Area
- Glideslope Critical Area
- Property to be Acquired
- Property to be Acquired/Easement
- High Energy Area
- Ultimate Airfield Pavement
- Pavement to be Removed

EXISTING/ULTIMATE RUNWAY DESIGN CODES		
	Planning Purposes (Military)	AIP-Eligible
Runway 8-26	E-V-4000	B-II-4000
Runway 12-30	C-III-VIS / C-III-5000	B-II-VIS / B-II-5000
Runway 3-21	B-II-VIS	Same



Note: Acreages depicted are approximate.

recommended length to accommodate 75 percent of the business jet fleet (aircraft that weigh between 12,500 and 60,000 pounds) at 60 percent of their useful loads.[1]

2. Extension of Taxiway S to provide access to the extended Runway 30 threshold from the south. This taxiway is proposed at a 400-foot separation from the runway centerline, in accordance with C-III military planning design standards. The portion of Taxiway S that connects to the existing Runway 30 threshold is proposed to be removed and the compass calibration pad removed or relocated.

3. Construction of a partial-parallel taxiway extending from the holding bay on Taxiway F. This taxiway is intended to serve GA users departing on Runway 30.

4. Closure of Runway 3-21, with pavement repurposed (as feasible) for use as taxiway pavement. This repurposed taxiway would serve two primary purposes: it would provide access to and from Runway 12 for both military and GA users from their respective facilities on the airfield and would serve as an exit taxiway for GA aircraft arriving on Runway 8. This exit would allow GA aircraft to exit the runway more quickly and utilize a north-side exit.

5. Closure of Taxiways D and J to alleviate confusion at their intersection with Runway 12-30. A new taxiway is proposed to extend south from the GA terminal apron and cross each runway (Runways 12-30 and 8-26) at a right angle before connecting to Taxiway P on the south side of the airfield. A no-taxi island is proposed on the terminal apron at the entrance to this taxiway. This proposed taxiway would also eliminate the high-energy area crossing that currently exists with Taxiway D and Runway 8-26, and would remove the current direct-access point from the military apron via Taxiway D.

6. Acquisition of property to control safety areas. Due to the proposed extension to Runway 30 and construction of new taxiway pavement, approximately 14.3 acres near the Runway 30 threshold are proposed for fee simple acquisition to control the AIP-eligible portions of the RSA, ROFA, and ROFZ along with property needed to construct the proposed taxiways and protect their safety areas. Approximately 2.8 acres of property are proposed to be acquired near the Runway 12 end to control the RSA, ROFA, and ROFZ in this area. Relocation of perimeter fencing would also be necessary at each end of Runway 12-30.

   Additionally, the uncontrolled portion of each runway's RPZ is proposed to be acquired in fee or controlled through easement. This includes approximately 27.4 acres within the Runway 8 RPZ and 29.0 acres within the Runway 26 RPZ. For Runway 12-30, this includes approximately 12.4 acres within each RPZ; this property is proposed to be controlled through fee simple acquisition or easement.

[1] Refer to Table 3J in Chapter Three, Facility Requirements.

7. Removal of vegetation that obstructs the ROFA and ROFZ associated with Runway 8-26 and Runway 12-30.

8. Installation of REILs on each end of Runways 8-26 and 12-30.

AIRSIDE ALTERNATIVE 4

The fourth and final airside alternative is presented on **Exhibit 4D**. This option is based on the currently approved ALP drawing, which includes an extension of Runway 12-30 to 8,000 feet. This is detailed below, along with other features of this alternative, including:

1. Extension of Runway 12-30 at each runway end. A 1,300-foot extension is proposed to the northwest (Runway 12) and a 1,334-foot extension is proposed to the southeast (Runway 30) to bring the total runway length to 8,000. As mentioned, this is the planned length for this runway on the ALP currently on file with the FAA. This 8,000-foot length falls short of the FAA-recommended length of 10,400 feet to accommodate 100 percent of the business jet fleet at 60 percent useful load, as well as the recommended lengths to accommodate business jets at 90 percent of their useful loads[2]; however, it provides for added utility and safety margins for many of the general aviation and military aircraft operating at FHU now and in the future.

2. Expansion of the taxiway system to support the extensions on Runways 12 and 30. Partial-parallel taxiways are proposed on both sides of Runway 12 for ease of access from both the military and GA landside areas. These taxiways are proposed at a 400-foot separation from the runway, in accordance with C-III design standards (military planning purposes). For Runway 30, a partial-parallel taxiway is proposed on the north side to extend from Taxiway F and connect to the extended Runway 30 threshold.

3. Closure of Runway 3-21.

4. Closure of a portion of Taxiway J to alleviate confusion at the Runway 12-30/Taxiway D/Taxiway J intersection. Additionally, this closure/removal of pavement allows for construction of the proposed partial-parallel taxiway extending from Taxiway D south of Runway 12.

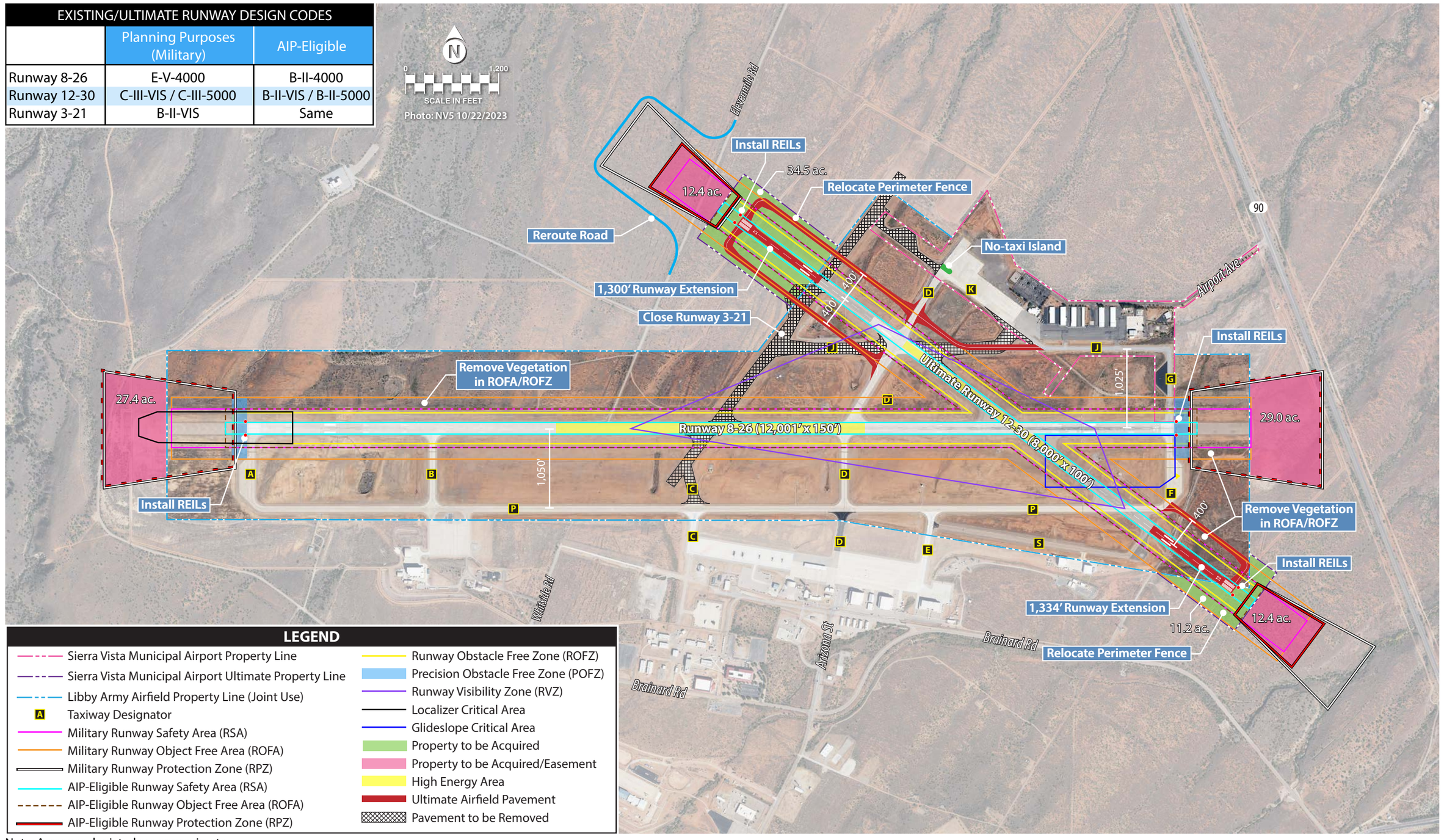
5. Inclusion of a no-taxi island on the GA terminal apron at the entrance to Taxiway D.

6. Closure of a portion of Taxiway C. If Runway 3-21 is decommissioned, the northern portion of Taxiway C that connects to Runway 3 will no longer be needed and is proposed for removal.

7. Acquisition of property to control safety areas. Due to the proposed extensions on Runways 12 and 30 and construction of new taxiway pavement, approximately 34.5 acres near the Runway 12 threshold are proposed for fee simple acquisition to control the AIP-eligible portions of the RSA, ROFA, and ROFZ, along with property needed to construct the proposed taxiways and

[2] Refer to Table 3J in Chapter Three, Facility Requirements.

EXISTING/ULTIMATE RUNWAY DESIGN CODES		
	Planning Purposes (Military)	AIP-Eligible
Runway 8-26	E-V-4000	B-II-4000
Runway 12-30	C-III-VIS / C-III-5000	B-II-VIS / B-II-5000
Runway 3-21	B-II-VIS	Same



LEGEND

- Sierra Vista Municipal Airport Property Line
- Sierra Vista Municipal Airport Ultimate Property Line
- Libby Army Airfield Property Line (Joint Use)
- A Taxiway Designator
- Military Runway Safety Area (RSA)
- Military Runway Object Free Area (ROFA)
- Military Runway Protection Zone (RPZ)
- AIP-Eligible Runway Safety Area (RSA)
- AIP-Eligible Runway Object Free Area (ROFA)
- AIP-Eligible Runway Protection Zone (RPZ)
- Runway Obstacle Free Zone (ROFZ)
- Precision Obstacle Free Zone (POFZ)
- Runway Visibility Zone (RVZ)
- Localizer Critical Area
- Glideslope Critical Area
- Property to be Acquired
- Property to be Acquired/Easement
- High Energy Area
- Ultimate Airfield Pavement
- Pavement to be Removed

Note: Acreages depicted are approximate.

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protect their safety areas. Approximately 11.2 acres of property are proposed to be acquired near the extended Runway 30 end to control the RSA, ROFA, and ROFZ in this area. Relocation of perimeter fencing would also be necessary at each end of Runway 12-30.

Additionally, the uncontrolled portion of each runway's RPZ is also proposed to be acquired, in fee or controlled through easement. This includes approximately 27.4 acres within the Runway 8 RPZ and 29.0 acres of the Runway 26 RPZ. For Runway 12-30, this includes approximately 12.4 acres within each RPZ; this property is proposed to be controlled through fee simple acquisition or easement.

8. Reroute Elevenmile Road. With the extension to Runway 12, this road would need to be rerouted outside of the safety areas, including the RPZ, associated with this runway. The exhibit depicts a conceptual rendering of this proposed project; engineering design undertaken at a later date would determine the placement and configuration of the rerouted road.

9. Removal of vegetation that obstructs the ROFA and ROFZ associated with Runway 8-26 and Runway 12-30.

10. Installation of REILs on each end of Runways 8-26 and 12-30.

AIRSIDE SUMMARY

The sections above outline four planning considerations for the airfield at Sierra Vista Municipal Airport-Libby Army Airfield. These options primarily include projects that may be eligible for AIP funding assistance. The central issues on the airside are evaluating runway extension options for Runway 12-30 and addressing non-standard taxiway geometry. The runway extension considerations will likely be the most impactful to both the public and the aviation community, both general aviation and military. For this reason, it is vital that the FAA, Fort Huachuca, the PAC, airport and city management, and the public offer feedback so that the best course of action is selected.

LANDSIDE CONSIDERATIONS

Generally, landside issues are related to those facilities necessary or desired for the safe and efficient parking and storage of aircraft, movement of pilots and passengers to and from aircraft, airport support facilities, and overall revenue support functions. To maximize airport efficiency, it is important to locate facilities together when they are intended to serve similar functions. The best approach to landside facility planning is to consider the development like a community in which land use planning is the guide. For airports, the land use guide in the terminal area should generally be dictated by aviation activity levels. Consideration should also be given to non-aviation uses that can provide additional revenue support to the airport and contribute to economic development for the region.

Landside planning considerations are summarized below and will focus on strategies that follow a philosophy of separating activity levels. Potential landside facility development at Sierra Vista Municipal Airport is focused solely on the north side of the airfield, where existing municipal facilities (terminal,

hangars, etc.) are already located. Additionally, consideration will be given to a parcel of property farther to the north, beyond the airport's current boundary, that has development potential for both aeronautical and non-aeronautical use.

Landside Planning Considerations
1. Increase aircraft storage capacity
2. Expand/reconfigure aircraft parking apron and add additional marked aircraft and helicopter parking
3. Consider appropriate aeronautical and non-aeronautical uses for the future development of vacant property, including opportunities for property acquisition to expand facilities

Consideration #1 – Hangars

Hangar occupancy at FHU is at 100 percent and several people are on a waiting list for hangar space, as of early 2024. With clear demand for additional hangar capacity at the airport, the landside alternatives will consider areas for the development of various hangar styles, including small aircraft facilities and executive/conventional hangars. These areas are further defined below.

- **Small aircraft facilities** typically consist of T-hangars, linear box hangars, or shade hangars. These facilities often experience lower levels of activity and can be located away from the primary apron areas in more remote locations on the airport. Limited utility services are needed for these areas. The airport currently has approximately 87,300 square feet (sf) of linear box hangar storage space, with an additional 9,600 sf projected to be needed by the end of the 20-year planning period.

- **Executive/conventional hangars** consist primarily of clear span hangars with no interior supporting structure. Executive hangars are typically less than 10,000 sf and can accommodate small aviation businesses, one larger aircraft, or multiple smaller aircraft, while conventional hangars can range in size from 10,000 sf to 20,000 sf. Both of these hangar types typically require all utilities and segregated roadway access. Sierra Vista Municipal Airport has one executive hangar that measures approximately 5,000 sf in size. An additional 42,800 sf of executive/conventional hangar capacity is estimated to be needed by the end of the planning period.

The alternatives to follow will depict several hangar layout options for the City of Sierra Vista to consider. In each case, the total capacity exceeds the projected long-term need for aircraft storage at the airport, which is intended to provide the airport sponsor the flexibility to determine which development scenarios will best meet the needs of the airport and community over the next 20 years and beyond. Hangar development is assumed to be funded by private developers through ground lease agreements with the sponsor. For this reason, and due to the fluid nature of landside development alternatives, development costs for the landside alternatives have not been prepared. Once a recommended development concept has been defined, cost estimates for landside features (excluding hangars) will be formulated.

Consideration #2 – Aprons and Marked Aircraft Parking

Sierra Vista Municipal Airport has approximately 66,900 square yards (sy) of apron space for aircraft parking and circulation, approximately 14,500 sy of which is used exclusively for aircraft parking (i.e., marked tiedowns). There are 41 marked parking positions for fixed-wing aircraft. Based on projected growth in based aircraft and transient operations, additional marked parking may be needed over the next 20 years. This could be accomplished through the construction of new apron pavement or by reconfiguring or adding new tiedowns to the existing apron areas. Because apron space is typically co-located with hangar facilities, the landside alternatives assume areas of hangar development will also include apron space. The alternatives to follow will depict additional parking for both fixed-wing aircraft and helicopters.

Consideration #3 – Land Development

The landside alternatives present development areas on the airport for aeronautical use, considering highest and best use potential. Aviation-related uses are typically reserved for property with direct access to the airfield. In cases where vacant property is segregated from the airfield, the airport could consider non-aviation-related development, following coordination with the FAA; however, there is limited development potential (approximately 10 acres) within the airport's current boundary. This area, which is immediately northwest of the terminal building, has been identified as a potential location for spaceport facilities. City staff members are currently working to acquire a Launch and Re-entry License through the FAA,[3] which would allow for spaceport-related operations.

The city has also expressed an interest in acquiring a parcel of land directly north of the existing Sierra Vista Municipal Airport boundary. This approximately 203-acre parcel has been discussed as potential land acquisition from Fort Huachuca in the past, and while it would significantly expand the footprint of the airport and increase its ability to accommodate additional landside development, potential for both aeronautical and non-aeronautical development would require significant infrastructure expansion in the form of access roads and utilities. The airport's on-call engineer, C&S Companies, has provided preliminary engineering analyses for this parcel and its potential development alternatives, which will be included with each alternative.

The following sections detail three landside alternatives as they relate to the considerations detailed above. It should be noted that the alternatives presented are not the only reasonable options for development. In some cases, a portion of one alternative could be intermixed with another, or some development concepts could be replaced with others. The overall intent of this exercise is to outline basic development concepts to spur collaboration for a final recommended plan. The final recommended plan serves as a guide for the airport, which will aid the City of Sierra Vista in the strategic planning of airport property. Airport operators often change their plans to meet the needs of specific users. The goal in analyzing landside development alternatives is to focus future development so that airport property can be maximized and aviation activity can be protected.

[3] Refer to Title 14 Code of Federal Regulations (CFR) Part 450.

LANDSIDE ALTERNATIVE 1

Landside Alternative 1 is depicted on **Exhibit 4E** and reflects a preliminary plan that was previously developed through coordination with City of Sierra Vista personnel. This option primarily focuses on the potential acquisition and development of the 203-acre parcel north of the existing landside facilities, with a 6.3-acre area within the airport's currently property boundary reserved for spaceport development.

As shown on the exhibit, the proposed layout includes an extension of Taxiway D north of the terminal apron to access the land proposed for acquisition. The west side of this property is proposed for apron/hangar development, with extended Taxiway D providing access from the airside and an extension of Airport Avenue providing vehicular access from the landside. Approximately 10.5 acres of property north of the proposed development is reserved for future aeronautical use, should demand warrant development of additional hangar facilities or other aviation-related facilities.

The area to the west (shaded in pink) is considered for potential non-aeronautical development. As pictured, this could include the development of several facilities, which would be accessible from Airport Avenue and a new loop road. In terms of development, it is paramount that any facilities/land uses in this area are compatible with airport activity. This concept considers an industrial park with varying lot sizes.

Landside Alternative 1 proposes approximately 247,500 total sf of new hangar facilities, all in the form of conventional box hangars. The engineering analysis to follow includes additional information about infrastructure needs and the overall feasibility of this alternative. The reverse side of each exhibit details the utility line placement.

LANDSIDE ALTERNATIVE 2

Landside Alternative 2 is shown on **Exhibit 4F**. This option considers a different build-out scenario for additional hangars at Sierra Vista Municipal Airport, as well as a sizable area for potential non-aeronautical development. Areas are also reserved for potential spaceport development, as well as relocation of U.S. Forest Service (USFS) and U.S. Customs and Border Protection (CBP) facilities.

Rather than extending Taxiway D to access the 203-acre parcel to the north, a new taxiway is proposed to extend from a central location on the terminal apron. This would allow access to property east of the wash area, which would offer a larger area for future aviation development. As pictured on the exhibit, the proposed taxiway would turn to the east to front new apron areas for conventional and linear box hangars. From the landside, these facilities would be accessible from Airport Avenue.

Aviation facilities are proposed west of the wash area, including helicopter facilities and a vertiport. While rotorcraft facilities are commonly sited alongside facilities that serve fixed-wing aircraft, segregating these operations can be beneficial. Intermixing fixed-wing aircraft with rotorcraft and unmanned aircraft (UAS) comes with inherent risk due to operational differences (i.e., flight characteristics, arrival/departure procedures, wake turbulence, etc.), so there is an added safety enhancement in separating these activities/facilities.

LEGEND

- Sierra Vista Municipal Airport Property Line
- Sierra Vista Municipal Airport Ultimate Property Line
- Libby Army Airfield Property Line (Joint Use)
- A — Taxiway Designator
- Ultimate Buildings
- Ultimate Airfield Pavement
- Ultimate Roads/Parking
- Pavement to be Removed
- Future Spaceport Reserve
- Future Non-Aeronautical Reserve
- Future Aeronautical Reserve

*Acreage is approximate and intended for planning uses only.

N

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SCALE IN FEET

Photo: NV5 10/22/2023

Wash Area (Not Suitable for Development)

Conventional Hangars (150' x 150')'

10.5 Acres*

110'

6.3 Acres*

Ultimate Closure of Runway 3-21

Runway 3-21 (4,285' x 75')

Runway 12-30 (5,366' x 100')

Airport Ave

90

K

D

J

J

G

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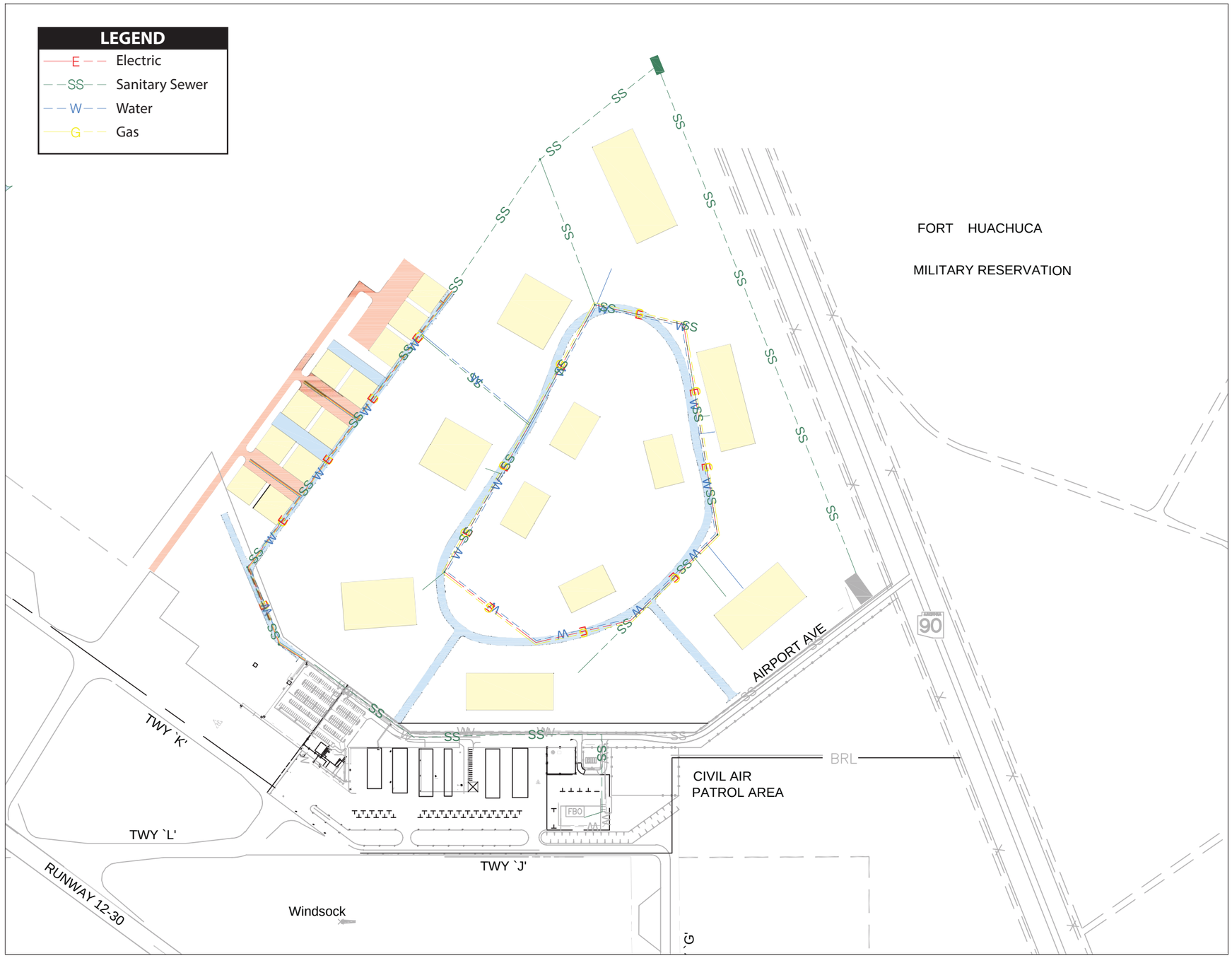

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ALT 1

INSET 1

Executive Box Hangars (60′ x 60′)

J

1″ = 100′

INSET 2

Runway 3-21 (4,235′ x 75′)

1″ = 200′

Wash Area (Not Suitable for Development)

Vertiport

Helicopter Facilities

2

6.2 Acres*

4.6 Acres*

14.9 Acres*

4.8 Acres*

5.4 Acres*

3.3 Acres*

3.7 Acres*

7.0 Acres*

6.3 Acres*

3.9 Acres*

8.1 Acres*

15.2 Acres*

USFS/CBP Facilities

4.8 Acres*

6.8 Acres*

Ultimate Closure of Runway 3-21

K

D

Runway 12-30 (5,366′ x 100′)

J

J

G

Conventional Hangars (150′ x 150′)

1

Conventional Hangars (120′ x 120′)

Linear Box Hangars (90′ x 360′)

Airport Ave

90

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Photo: NV5 10/22/2023

LEGEND

- Sierra Vista Municipal Airport Property Line
- Sierra Vista Municipal Airport Ultimate Property Line
- Libby Army Airfield Property Line (Joint Use)
- A — Taxiway Designator
- Ultimate Buildings
- Ultimate Airfield Pavement
- Ultimate Roads/Parking
- Pavement to be Removed
- Future Spaceport Reserve
- Future Aeronautical Reserve
- Future Non-Aeronautical Reserve
- TLOF (Touchdown and Liftoff)
- FATO (Final Approach and Takeoff area
- Safety Area

*Acreage is approximate and intended for planning uses only.

Source: FAA AC 150/5390-2D, Heliport Design

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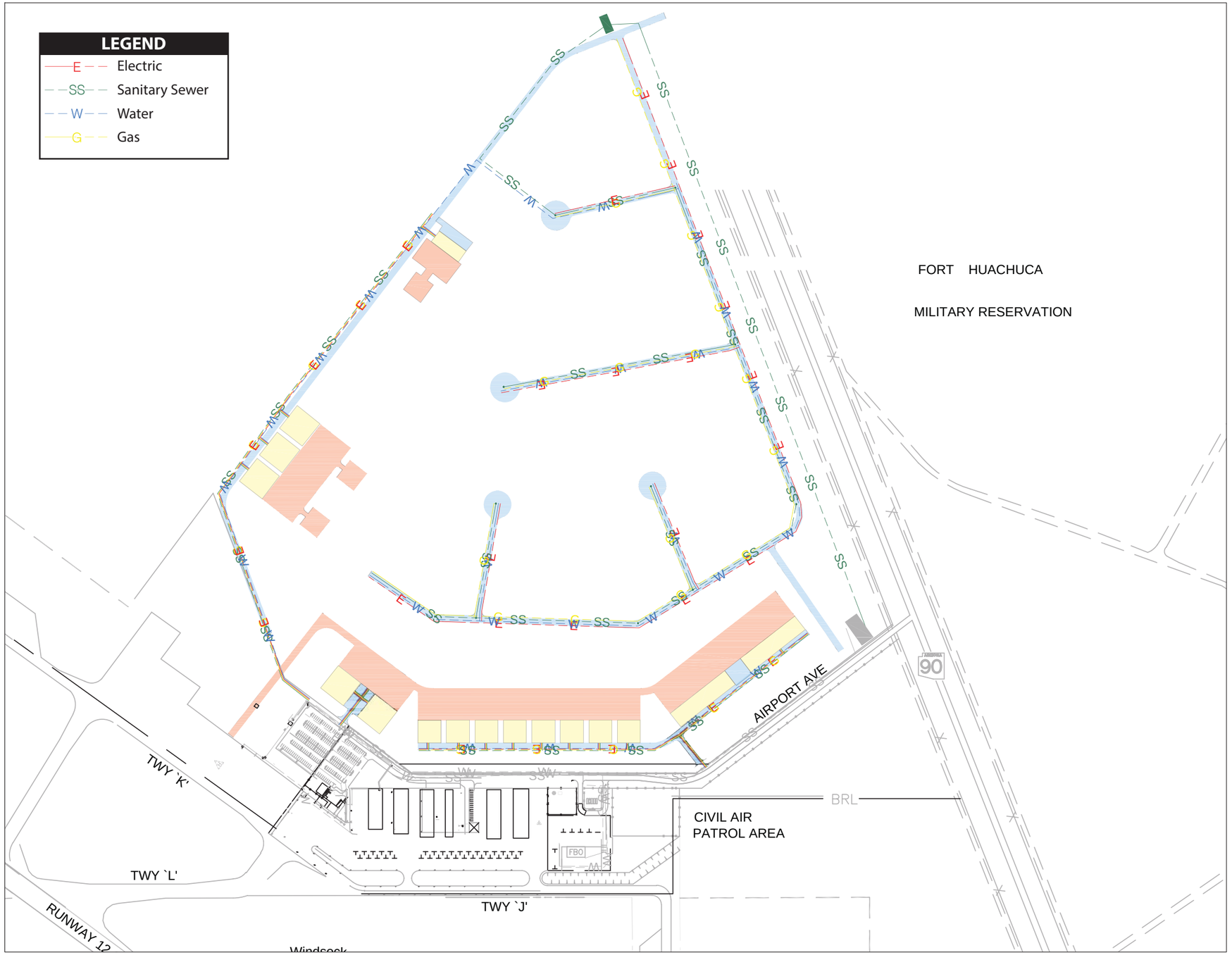

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ALT 2

The central portion of the 203-acre parcel is proposed for compatible non-aeronautical development. As presented, the concept includes parcels that range in size from 3.3 acres to nearly 15 acres, with access roads extending from Airport Avenue to the south and State Highway 90 to the east. Interior access roads are also proposed.

In terms of existing airport property, a portion of land near the Civil Air Patrol hangar is proposed to be developed. Immediately south of this hangar, a new apron/hangar area is proposed, with a taxilane connecting the development to Taxiway J. A 6.8-acre parcel has also been set aside adjacent to the terminal apron, with the intention of it being developed for spaceport activity. Lastly, a 4.8-acre parcel of land owned by Libby Army Airfield is proposed to be used for USFS/CBP facility development. Fort Huachuca personnel have indicated a desire to relocate existing USFS/CBP facilities on the south side of the airport to the north side to segregate them from the military-use area south of the airfield.

Landside Alternative 2 proposes approximately 303,300 total sf of new hangar facilities, including 64,800 sf in the form of linear box hangars and 238,500 sf of executive and conventional style hangars for both fixed-wing and rotorcraft.

LANDSIDE ALTERNATIVE 3

Landside Alternative 3 is depicted on **Exhibit 4G** and evaluates a different approach to development of existing airport property. Under this option, existing property is considered exclusively for hangar development potential and the 203-acre parcel primarily is reserved for non-aeronautical development, spaceport facilities, and relocation of USFS and CBP facilities.

As shown on the exhibit, the 10 acres of developable property north of the terminal apron are considered for box hangar development. A mix of executive box and larger conventional hangars is shown, along with new taxilane and apron pavement to access these facilities from the airside. Vehicle access and dedicated parking areas are also proposed to segregate aircraft and vehicle movements. A helicopter operations area is considered south of the Civil Air Patrol facilities. As pictured, this includes a hangar and apron area with two helicopter parking areas. A taxilane connects this area to Taxiway J.

The 203-acre parcel of land north of the airport is proposed to be developed for a mix of activities and land uses. The southwest side of the parcel is proposed to be reserved for USFS/CBP facilities and spaceport development (approximately 11.2 acres total), accessible via an extension of Taxiway D. A vehicle access road is also proposed for these facilities, with an extension from Airport Avenue. Farther to the north, approximately 10.4 acres of land on the northwest side of the parcel is reserved for potential aeronautical development, should demand for new aviation facilities arise. This property could also be absorbed into USFS/CBP or spaceport facilities if additional property is needed for the development of these facilities.

Like the previous alternatives, the central portion of the 203-acre parcel is proposed for compatible non-aeronautical development. As presented, the concept includes parcels that range in size from 7.1 acres to 21.1 acres, with access roads extending from Airport Avenue to the south and State Highway 90 to the east. Interior access roads are also proposed.

Landside Alternative 3 proposes approximately 127,200 total sf of new hangar facilities in the form of executive and conventional style hangars for both fixed-wing and rotorcraft.

ENGINEERING ANALYSIS

Feasibility

The master plan for the development of the Sierra Vista Airport includes additional airfield pavement, future spaceport reserve, aeronautical reserve, non-aeronautical reserve, USFS and CBP facilities, roads, and parking. The proposed development includes the following utility services: domestic water, fire suppression, sewer, gas, communication, and electric. The primary limitations for this development area from a utility standpoint are going to be supplying water and sewer to the proposed buildings.

Sewer

There is an existing eight-inch gravity sewer line along the airport entrance road that services the existing terminal, hangars, Civil Air Patrol and FBO. However, because the 200-acre site is naturally sloping northeast toward State Highway 90, this line cannot be gravity-fed from any of the new buildings. Instead, in all three alternatives, gravity-fed sewer lines will collect sewage from the entire development area and transport it to a new lift station near the northernmost point of the property, adjacent to AZ State Route 90. The gravity sewer lines would consist of six-inch PVC SDR-35 main lines along the access roads of the development, outfalling at the lift station. From the lift station, a two-inch force main line will be installed that connects the new lift station to the existing lift station near the entrance to the airport. This existing lift station should have enough capacity to accommodate the future development.

Domestic Water and Fire

The existing well adjacent to the terminal parking lot has a pump that is rated at approximately 35 gallons per minute (gpm), but the well itself may have a capacity closer to 500gpm with the installation of a larger pump. According to hydrant test results along the airport entrance road, the existing water system is capable of providing 1,000-1,300gpm of fire flow, which may be sufficient for the new development, but testing on the well has not been performed recently. A more in-depth water study should be performed to understand the current capacity with the anticipated combined future demand and whether another well needs to be drilled to supplement the existing well and support the rest of the 200-acre development. A six-inch PVC main is anticipated to provide domestic and fire flow for the site in a looped system that generally follows the new access roads and ties back to the existing water main.

Alternatives Analysis

The entire airport sits at the foot of the Huachuca Mountains, which generate substantial surface runoff across the airfield. Existing detention basins and large culvert crossings help manage this runoff, directing it toward natural outfall locations north of the airport property. As the 200-acre development area is planned, similar drainage and stormwater management measures will be crucial. The land naturally

INSET 1

Helicopter Parking

J

1″ = 100′

Wash Area
(Not Suitable for Development)

10.4 Acres*

16.3 Acres*

5.6 Acres*

9.2 Acres*

7.1 Acres*

12.6 Acres*

14.7 Acres*

11.1 Acres*

21.1 Acres*

13.0 Acres*

15.8 Acres*

Executive Box Hangar
(75′ x 75′)

Ultimate Closure of
Runway 3-21

110′

Executive Box Hangar
(100′ x 100′)

K

D

Conventional Hangar
(150′ x 150′)

Runway 3-21 (4,285′ x 75′)

Runway 12-30 (5,366′ x 100′)

J

J

1

G

90

Airport Ave.

LEGEND

- Sierra Vista Municipal Airport Property Line
- Sierra Vista Municipal Airport Ultimate Property Line
- Libby Army Airfield Property Line (Joint Use)
- A — Taxiway Designator
- Ultimate Buildings
- Ultimate Airfield Pavement
- Ultimate Roads/Parking
- Pavement to be Removed
- Future Spaceport Reserve
- Future Aeronautical Reserve
- Future Non-Aeronautical Reserve
- USFS/CBP Facilities

*Acreage is approximate and intended for planning uses only.

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SCALE IN FEET

Photo: NV5 10/22/2023

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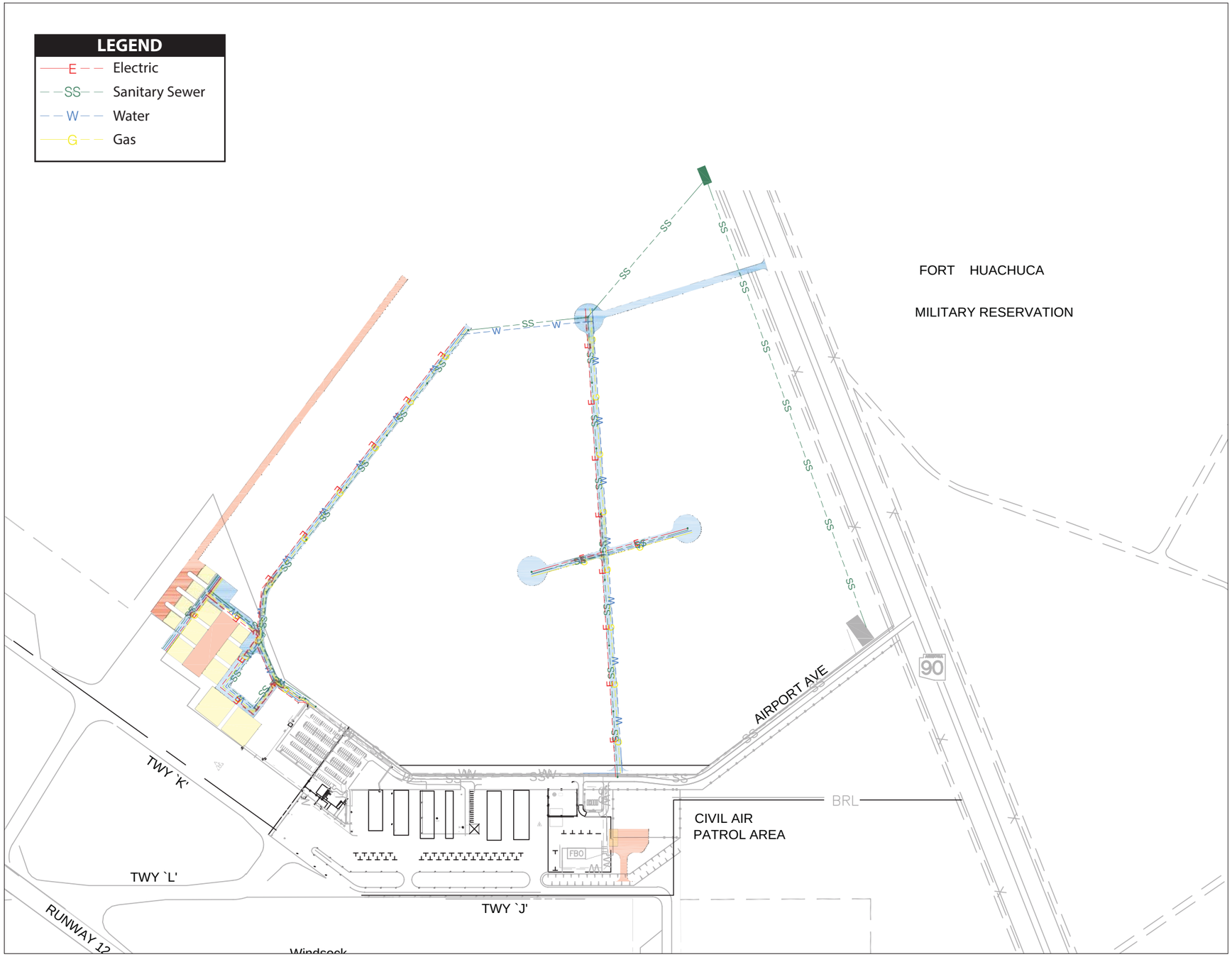

ALT 3

slopes toward the northeasternmost point, where the existing outfall is located, and the new stormwater system must efficiently direct runoff from both aeronautical and non-aeronautical areas toward this point. Detention basins will be necessary to regulate flow rates, ensuring that post-construction runoff matches pre-construction levels. These basins will slow the discharge of stormwater, reducing the risk of downstream flooding, and allow for sediment to settle, improving water quality before it reaches the outfall. Proper grading, the use of permeable surfaces, and strategically placed storm drains will also be key components in managing water efficiently across the site.

The grading and slopes associated with the proposed taxiway in Alternatives 1 and 3, and the apron in Alternative 2, will have a significant impact on the feasibility of hangar developments. In Alternatives 1 and 3, where a 35-foot elevation drop occurs along the taxiway, extensive earthwork, including cut and fill operations, will be needed to create level areas for hangar construction. This will likely increase construction costs and may require additional stabilization measures, such as retaining walls, to ensure long-term safety. The steeper slopes may also limit hangar layout options, as some areas may not be suitable for large structures due to the extensive grading required.

In Alternative 2, the 20-foot elevation change across the apron presents a more moderate challenge, but grading will still be required to create level building sites for hangars. While the earthwork involved may be less extensive than in Alternatives 1 and 3, proper drainage and leveling are still essential to prevent flooding and erosion around the hangar foundations. Poorly managed drainage could compromise the structural integrity of the hangars, increasing maintenance costs and operational risks over time. Therefore, the grading and slope of the taxiway and apron will not only influence the cost and complexity of hangar construction but also the long-term functionality and safety of the development.

In evaluating the three alternatives, the amount of land reserved for aeronautical development is another key consideration. Alternative 2, with 21.4 acres reserved for aeronautical use, provides more flexibility for future expansion, such as additional hangars, taxiways, or maintenance facilities. This could be beneficial if the airport anticipates increased demand for aeronautical services. However, it reduces the available land for non-aeronautical uses, which could be more profitable in the short term. Alternatives 1 and 3, each reserving approximately 10 acres for aeronautical development, limit future aeronautical expansion but leave more space for non-aeronautical projects, potentially lowering immediate development costs and maximizing revenue opportunities. Balancing long-term aeronautical needs with short-term financial and land-use goals will be crucial in determining the best alternative for the site's development.

LANDSIDE SUMMARY

The landside alternatives presented are intended to accommodate an array of aviation activities that either currently occur or could be expected to occur at Sierra Vista Municipal Airport in the future. There is current demand for new facilities at the airport, and airport and city management will need to determine how to develop the property in an organized and thoughtful way. It is beneficial to provide a long-term vision for the airport for future generations, and each development option considers a long-term vision that would, in some cases, extend beyond the 20-year scope of this master plan.

SUMMARY

This chapter is intended to present an analysis of various options that may be considered for specific airport elements. The need for alternatives is typically spurred by projections of aviation demand growth and/or by the need to resolve non-standard airport elements. FAA design standards are frequently updated with the intent of improving the safety and efficiency of aircraft movements on and around airports, which can lead to pavement geometries that previously qualified as standard becoming classified as non-standard.

Several development alternatives related to both the airside and the landside have been presented. For the airside, the alternatives focused mainly on AIP-eligible improvements that would fall under the purview of the FAA, ADOT, and the City of Sierra Vista; however, military planning standards have also been taken into consideration. Major proposed improvements include the potential for an extension to Runway 12-30 and addressing non-standard taxiway geometry. On the landside, alternatives were presented to consider additional aviation development on a limited amount of airport property, with the possibility of property acquisition and development north of the existing GA landside facilities.

The next step in the master plan development process is to arrive at a recommended development concept. The participation of the PAC and the public will be important considerations. Additional consultation with the FAA and Fort Huachuca/Libby Army Airfield may also be required. Once a consolidated development plan is identified, a 20-year capital improvement program, including a list of prioritized projects tied to aviation demand and/or necessity, will be presented. Finally, a financial analysis will be presented to identify potential funding sources and show airport/city management what local funds will be necessary to implement the plan.