CHAPTER THREE – FACILITY REQUIREMENTS & DEVELOPMENT ALTERNATIVES

As detailed in previous chapters, an airport contains both airside and landside facilities. Airside facilities consist of the runways, taxiways, approach and departure facilities, navigational aids, lighting, markings, and signage that assist in the ground movement of aircraft. Landside facilities provide the interface between air and ground transportation and include the terminal building, hangars and tiedowns, aircraft parking aprons, automobile parking, and airport support facilities.

Cost-effective, safe, efficient, and orderly development of an airport should rely more on actual demand than on a time-based forecast figure. In order to develop a plan that is demand-based, rather than time-based, a series of planning horizon milestones has been established. These milestones take into consideration the reasonable range of aviation demand projections.

It is important to consider that the actual activity at the airport may be higher or lower over time than what the annualized forecast portrays. By planning according to activity milestones, the resultant plan can accommodate unexpected shifts or changes in the area's aviation demand. It is important to plan for these milestones so airport officials can respond to unanticipated changes in a timely fashion. As a result, these milestones provide flexibility while potentially extending this plan's useful life if aviation trends slow over the period.

The most important reason for utilizing milestones is to allow the airport to develop facilities according to needs generated by actual demand levels. The demand-based schedule provides flexibility in development, as the schedule can be slowed or expedited according to actual demand at any given time over the planning period. The resultant plan provides airport officials with a financially responsible and needs-based program.

The milestones utilized in the study are:

- Short Term: 0-5 Years
- Intermediate Term: 6-10 Years
- Long Term: 11-20+ Years

AIRSIDE FACILITY REQUIREMENTS

Airside facilities include those related to the arrival, departure, and ground movement of aircraft. Airside facility requirements are based primarily upon the runway design code (RDC) for each runway. Analysis in Chapter Two identified the existing RDC for primary Runway 13-31 as B-II-5000, and the ultimate RDC as C-II-5000. For crosswind Runway 17-35, the existing/ultimate RDC is A/B-I-VIS. Runways 3-21 and 8-26 are in the process of being decommissioned and are therefore excluded from this analysis.

RUNWAY SAFETY AREAS

The Federal Aviation Administration (FAA) has established several imaginary surfaces to protect aircraft operational areas and keep them free from obstructions that could affect the safe operation of aircraft. These surfaces include the runway safety area (RSA), runway object free area (ROFA), runway obstacle free zone (ROFZ), and runway protection zone (RPZ).

It is important that the RSA, ROFA, and ROFZ remain under direct ownership of the airport sponsor to ensure these areas remain free of obstacles and can be readily accessed by maintenance and safety personnel. The airport should also own or maintain sufficient land use control over RPZ lands to ensure these areas are free of obstacles and have compatible land uses. Alternatives to owning RPZs include maintaining positive control through avigation easements or ensuring proper zoning measures are taken to maintain compatible land use. Existing and ultimate safety areas for Runways 13-31 and 17-35 at Cameron County Airport (PIL) are depicted on **Exhibit 3A** and described in the following sections. As Runways 8-26 and 3-21 are planned to be decommissioned, their safety areas will not be evaluated.

Runway Safety Area (RSA)

The RSA is an established surface that surrounds a runway and is designed to increase safety and decrease potential damage if an aircraft undershoots, overshoots, or makes an excursion from the runway. The RSA is centered on the runway centerline, and its dimensions are based on the established runway design code (RDC). The FAA states within Advisory Circular (AC) 150/5300-13B, Change 1 that the RSA must be cleared and graded and cannot contain hazardous surface variations. In addition, the RSA must be drained by grading or storm sewers. It must also be capable of supporting snow removal operations, aircraft rescue and firefighting (ARFF) equipment, and the occasional passage of aircraft without causing damage. The RSA must remain free of obstacles, other than those considered fixed by function, such as runway lights.

The FAA has placed high significance on maintaining adequate RSA at all airports. The FAA established the Runway Safety Area Program under Order 5200.8 (effective October 1, 1999). The Order states: “The objective of the Runway Safety Area Program is that all RSAs at federally obligated airports…shall conform to the standards contained in Advisory Circular 150/5300-13B, *Airport Design*, Change 1 to the extent practicable.” Each Regional Airports Division of the FAA is obligated to collect and maintain data on the RSAs for all runways at each airport and perform airport inspections.

Table 3A summarizes the standard RSA dimensions in the existing and ultimate conditions and whether these standards are met in each scenario.

TABLE 3A | RSA Standards

	Runway 13-31		Runway 17-35
	Existing RDC B-II-5000	Ultimate RDC C-II-5000	Existing/Ultimate RDC A/B-I-VIS
RSA Dimensions	300’ beyond runway x 150’ wide	1,000' beyond runway[1] x 500' wide	240' beyond runway x 120' wide
Meets Standard?	Yes[2]	Yes[2]	Yes[2]

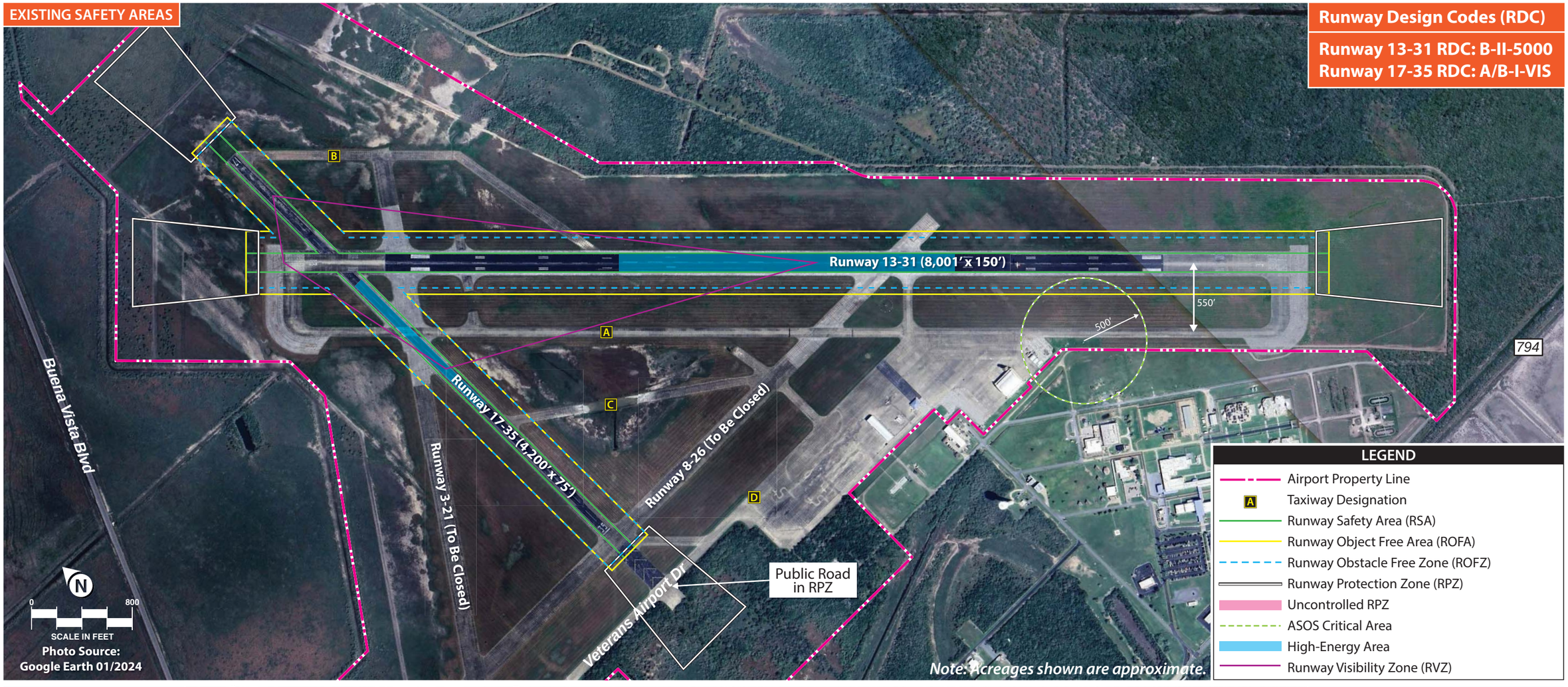
[1] RSA length is 1,000' beyond the departure end of the runway, but only a 600' length is needed prior to the threshold
[2] RSA evaluation based on Google Earth imagery dated 1/8/2024

Sources: FAA AC 150/5300-13B, Change 1, Airport Design; Coffman Associates analysis

EXISTING SAFETY AREAS

Runway Design Codes (RDC)

Runway 13-31 RDC: B-II-5000
Runway 17-35 RDC: A/B-I-VIS



Note: Acreages shown are approximate.

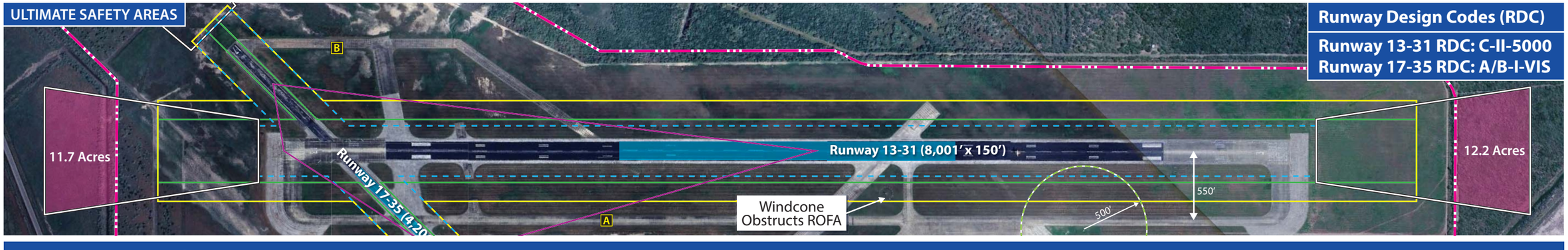
LEGEND

- Airport Property Line
- A — Taxiway Designation
- Runway Safety Area (RSA)
- Runway Object Free Area (ROFA)
- Runway Obstacle Free Zone (ROFZ)
- Runway Protection Zone (RPZ)
- Uncontrolled RPZ
- ASOS Critical Area
- High-Energy Area
- Runway Visibility Zone (RVZ)

ULTIMATE SAFETY AREAS

Runway Design Codes (RDC)

Runway 13-31 RDC: C-II-5000
Runway 17-35 RDC: A/B-I-VIS



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Runway Object Free Area (ROFA)

The ROFA can be described as a two-dimensional surface area that surrounds all airfield runways. This area must remain clear of obstructions, with the exception of those that are fixed by function, such as runway lighting systems. This safety area does not have to be level or graded like the RSA; however, the ROFA must be clear of any penetrations of the RSA's lateral elevation. Like the RSA, the ROFA is centered on the runway centerline, and its size is determined based on the established RDC.

Table 3B summarizes the standard ROFA dimensions in the existing and ultimate conditions, and whether these standards are met in each scenario.

TABLE 3B | ROFA Standards

	Runway 13-31		Runway 17-35
	Existing RDC B-II-5000	Ultimate RDC C-II-5000	Existing/Ultimate RDC A/B-I-VIS
ROFA Dimensions	300' beyond runway x 500' wide	1,000' beyond runway[1] x 500' wide	240' beyond runway x 120' wide
Meets Standard?	Yes[2]	No[2] The airport's wind cone is located within the ROFA	Yes[2]

[1] ROFA length is 1,000' beyond the departure end of the runway, but only a 600' length is needed prior to the threshold
[2] ROFA evaluation based on Google Earth imagery dated 1/8/2024

Sources: FAA AC 150/5300-13B, Change 1, Airport Design; Coffman Associates analysis

Obstacle Free Zones (OFZ)

The runway obstacle free zone (ROFZ) can be defined as a portion of airspace centered on the runway, with an elevation at any point equal to that of the closest point on the runway centerline. The function of the ROFZ is to ensure the safety of aircraft operations by preventing object penetrations to this portion of airspace, including penetrations by taxiing or parked aircraft. Any obstructions within this portion of airspace must be mounted on frangible couplings and be fixed in their positions by function.

Table 3C summarizes the standard ROFZ dimensions in the existing and ultimate conditions, and whether these standards are met in each scenario.

TABLE 3C | ROFZ Standards

	Runway 13-31		Runway 17-35
	Existing RDC B-II-5000	Ultimate RDC C-II-5000	Existing/Ultimate RDC A/B-I-VIS
ROFZ Dimensions	200' beyond runway x 400' wide	200' beyond runway x 400' wide	200' beyond runway x 400' wide
Meets Standard?	Yes[2]	Yes[2]	Yes[2]

[1] ROFA length is 1,000' beyond the departure end of the runway, but only a 600' length is needed prior to the threshold
[2] ROFZ evaluation based on Google Earth imagery dated 1/8/2024

Sources: FAA AC 150/5300-13B, Change 1, Airport Design; Coffman Associates analysis

Runway Protection Zone (RPZ)

An RPZ is a trapezoidal area centered on the extended runway centerline, beginning 200 feet from the end of the runway. This safety area has been established to protect the end of the runway from airspace penetrations and incompatible land uses. The RPZ dimensions are based on the established RDC and approach visibility minimums serving the runway. While the RPZ is intended to be clear of incompatible objects or land uses, some uses are permitted with conditions, and other land uses are prohibited. According to AC 150/5300-13B, Change 1, the following land uses are permissible within the RPZ:

- Farming that meets the minimum buffer requirements
- Irrigation channels, as long as they do not attract birds
- Airport service roads, as long as they are not public roads and are directly controlled by the airport operator
- Underground facilities, as long as they meet other applicable design criteria (e.g., RSA requirements)
- Unstaffed navigational aids (NAVAIDs) and airport equipment facilities that are fixed by function in regard to the RPZ
- Aboveground fuel tanks associated with backup generators for unstaffed NAVAIDs

In September 2022, the FAA published AC 150/5190-4B, *Airport Land Use Compatibility Planning*, which states that airport owner control over RPZs is preferred. Airport owner control over RPZs may be achieved through:

- Ownership of the RPZ property in fee simple;
- Possessing sufficient interest in the RPZ property through easements, deed restrictions, etc.;
- Possessing sufficient land use control authority to regulate land use in the jurisdiction that contains the RPZ;
- Possessing and exercising the power of eminent domain over the property; or
- Possessing and exercising permitting authority over proponents of development within the RPZ (e.g., where the sponsor is a state).

AC 150/5190-4B further states that "control is preferably exercised through acquisition of sufficient property interest and includes clearing RPZ areas (and keeping them clear) of objects and activities that would impact the safety of people and property on the ground." The FAA recognizes that land ownership, environmental factors, geography, and other considerations can complicate land use compatibility within RPZs. Regardless, airport sponsors must comply with FAA grant assurances, including (but not limited to) Grant Assurance 21, *Compatible Land Use*. Sponsors are expected to take appropriate measures to "protect against, remove, or mitigate land uses that introduce incompatible development within RPZs." For a proposed project that would shift an RPZ into an area with existing incompatible land uses, such as a runway extension or the construction of a new runway, the sponsor is expected to have or to secure sufficient control of the RPZ, ideally through fee simple ownership.

Where existing incompatible land uses are present, the FAA expects sponsors to "seek all possible opportunities to eliminate, reduce, or mitigate existing incompatible land uses" through measures such as acquisition, land exchanges, right of first refusal to purchase, agreements with property owners regarding land uses, and easements. These efforts should be revisited during master plan or airport layout plan (ALP) updates, and periodically thereafter, and they should be documented to demonstrate compliance with FAA grant assurances. If new or proposed incompatible land uses impact an RPZ, the FAA expects the airport to take the above actions to control the property within the RPZ and adopt a strong public stance opposing the incompatible land uses.

For new incompatible land uses that result from a sponsor-proposed action (e.g., an airfield project such as a runway extension, a change in the critical aircraft that increases the RPZ dimension, or lower minimums that increase the RPZ dimension), the airport sponsor is expected to conduct an alternatives evaluation. The intent of the alternatives evaluation is to "proactively identify a full range of alternatives and prepare a sufficient evaluation to be able to draw a conclusion about what is 'appropriate and reasonable.'" For incompatible development off-airport, the sponsor should coordinate with the FAA Airports District Office (ADO) as soon as the sponsor learns of the development. Subsequently, the alternatives evaluation should be conducted within 30 days of becoming aware of the development within the RPZ. The following items are typically necessary in an alternatives evaluation:

- Sponsor's statement of the purpose and need of the proposed action (airport project, land use change, or development)
- Identification of any other interested parties and proponents
- Identification of any federal, state, and/or local transportation agencies involved
- Analysis of sponsor control of the land within the RPZ
- Summary of all alternatives considered, including:
    - Alternatives that preclude introducing the incompatible land use within the RPZ (e.g., zoning action, purchase, and design alternatives, such as implementation of declared distances, displaced thresholds, runway shift or shortening, raising minimums, etc.)
    - Alternatives that minimize the impact of the land use in the RPZ (e.g., rerouting a new roadway to pass through less of the RPZ, etc.)
    - Alternatives that mitigate risk to people and property on the ground (e.g., tunnelling, depressing, and/or protecting a roadway through the RPZ; implementing operational measures to mitigate any risks; etc.)
- Narrative discussion and exhibits or figures depicting the alternative
- Rough order-of-magnitude cost estimates associated with each alternative, regardless of potential funding sources
- Practicability assessment based on the feasibility of the alternative in terms of cost, constructability, operational impacts, and other factors

Once the alternatives evaluation has been submitted to the ADO, the FAA will determine whether the sponsor has made an adequate effort to pursue and fully consider appropriate and reasonable alternatives. **The FAA will not approve or disapprove the airport sponsor's preferred alternative. The FAA will only evaluate whether an acceptable level of alternatives analysis has been completed before the sponsor makes the decision to allow or disallow the proposed land use within the RPZ.**

In summary, the RPZ guidance published in September 2022 shifts the responsibility of protecting the RPZ from the FAA to the airport sponsor. The airport sponsor is expected to take action to control the RPZ or to demonstrate that appropriate actions have been taken. It is ultimately up to the airport sponsor to permit or disallow existing or new incompatible land uses within an RPZ, with the understanding that the sponsor still has grant assurance obligations, and that the FAA retains the authority to review and approve or disapprove portions of the ALP that would adversely impact the safety of people and property within the RPZ.

RPZs include both approach and departure RPZs. The approach RPZ is a function of the aircraft approach category (AAC) and the approach visibility minimums associated with the approach runway end. The departure RPZ is a function of the AAC and the departure procedures associated with the runway. For a particular runway end, the more stringent RPZ requirements (usually associated with the approach RPZ) will govern the property interests and clearing requirements the airport sponsor should pursue. None of the runways at Cameron County Airport have displaced thresholds, so the approach and departure RPZs on each runway occur in the same location 200 feet from the end of each runway. For planning purposes, the approach RPZ was used to create the most restrictive condition. The existing RPZs at Cameron County Airport are presented on **Exhibit 3A** and detailed further in **Table 3D**.

TABLE 3D | Runway Protection Zones (RPZ) Summary

Runway	Visibility Minimums	RPZ Dimensions	Uncontrolled RPZ	Notes/Potential Incompatibilities
RUNWAY 13-31 EXISTING RDC B-II-5000				
Runway 13	1¼ -mile	1,000' length 500' inner width 700' outer width	N/A	The Runway 13 RPZ is on airport property and does not contain any incompatible uses.
Runway 31	Visual	1,000' length 500' inner width 700' outer width	N/A	The Runway 31 RPZ is on airport property and does not contain any incompatible uses.
RUNWAY 13-31 ULTIMATE RDC C-II-5000				
Runway 13	1¼ -mile	1,700' length 500' inner width 1,010' outer width	11.7 acres	Approximately 11.7 acres within the Runway 13 RPZ are uncontrolled. There are no incompatible land uses within the RPZ.
Runway 31	Visual	1,700' length 500' inner width 1,010' outer width	12.2 acres	Approximately 12.2 acres within the Runway 31 RPZ are uncontrolled. There are no incompatible land uses within the RPZ.
RUNWAY 17-35 EXISTING/ULTIMATE RDC A/B-I-VIS				
Runway 17	Visual	1,000' length 500' inner width 700' outer width	N/A	The Runway 17 RPZ is on airport property and does not contain any incompatible uses.
Runway 35	Visual	1,000' length 500' inner width 700' outer width	N/A	The Runway 35 RPZ is on airport property, but Veterans Airport Drive traverses the RPZ, which may be considered an incompatible use.

Note: Acreages are approximate.

Source: Coffman Associates analysis

Runway Visibility Zone (RVZ)

The runway visibility zone (RVZ) is an area formed by imaginary lines connecting the line-of-sight points of intersecting runways. The purpose of the RVZ is to facilitate coordination among aircraft and between aircraft and vehicles that are operating on active runways. Having a clear line of sight allows departing and arriving aircraft to verify the locations and actions of other aircraft and vehicles on the ground that could create a conflict. Within the RVZ, any point five feet above the runway centerline must be mutually visible with any other point five feet above the centerline of the crossing runway. These standards apply to airports without airport traffic control towers (ATCTs) or with part-time ATCT operations. The RVZ at PIL is depicted on **Exhibit 3A**. Based on available data and imagery, the RVZ at Cameron County Airport is unobstructed.

RUNWAY ORIENTATION

A runway's designation is based on its magnetic headings, which are determined by the magnetic declination for the area. The magnetic declination in the area of Cameron County Airport is 2° 58'E. Runway 13-31 has a true heading of 135°/315°, while Runway 17-35 has a true heading of 180°/360°. Adjusting for the magnetic declination, the current magnetic heading of Runway 13-31 is 132°/312°, and the current magnetic heading of Runway 17-35 is 177°/357°. Based on this information, the runway designation for Runway 13-31 should be maintained, and the runway designation for Runway 17-35 should be changed to 18-36. Any re-designation should be coordinated with the Texas Department of Transportation (TxDOT) and the FAA to ensure its necessity and that all appropriate publications are updated accordingly. If it is confirmed that the runway should be re-designated, new runway end designation markings can be incorporated concurrently with a future pavement rehabilitation project.

FAA AC 150/5300-13B, *Airport Design,* Change 1 recommends that a crosswind runway be made available when the primary runway orientation provides for less than 95 percent wind coverage for specific crosswind components. The 95 percent wind coverage is computed on the basis of not exceeding a 10.5-knot (12 miles per hour [mph]) component for airport reference code (ARC) A-I and B-I; a 13-knot (15 mph) component for ARC A-II and B-II; a 16-knot (18 mph) component for ARC A-III, B-III, C-I through C-III, and D-I through D-III; and a 20-knot (23) component for ARC A-IV through E-VI.

Exhibit 1C, presented previously, details the associated wind coverage at Cameron County Airport. In all-weather conditions, the orientation of primary Runway 13-31 provides 92.16 percent coverage for the 10.5-knot component, and greater than 95 percent coverage for 13-, 16-, and 20-knot components in all-weather conditions. In instrument flight rules (IFR) conditions, Runway 13-31 provides greater than 95 percent coverage for all crosswind components. Based on this information, a crosswind runway at PIL is eligible for grant consideration, with specific FAA justification analysis needed for federal funding assistance. Additional runways, however, are ineligible and would not be justified for federal funding assistance.

As noted previously, Runways 8-26 and 3-21 are planned to be decommissioned; however, consideration was given to the potential for either of these runways to remain and serve as the airport's crosswind runway, rather than Runway 17-35. Each runway was examined in relation to primary Runway 13-31 to determine the best combined crosswind coverage of a two-runway system. **Table 3E** details the results of

this analysis for all-weather and IFR conditions. Based on these findings, the best combined coverage during all-weather conditions is provided by Runways 13-31 and 17-35, which is consistent with previous analysis and the plan to decommission Runways 3-21 and 8-26. The airside and landside alternatives to follow will consider a future airport environment that includes the continued maintenance of primary Runway 13-31 and crosswind Runway 17-35.

TABLE 3E | Dual Runway Wind Coverage

	ALL-WEATHER WIND COVERAGE				IFR WIND COVERAGE			
	10.5 Knots	13 Knots	16 Knots	20 Knots	10.5 Knots	13 Knots	16 Knots	20 Knots
Runways 13-31 & 17-35								
Combined Coverage	97.92%	99.35%	99.89%	99.97%	98.67%	99.41%	99.74%	99.89%
Runways 13-31 & 8-26								
Combined Coverage	94.65%	97.67%	99.27%	99.89%	94.98%	97.36%	98.91%	99.76%
Runways 13-31 & 3-21								
Combined Coverage	97.55%	99.54%	99.93%	100.00%	98.10%	99.49%	99.88%	99.99%

RUNWAY LENGTH

AC 150/5325-4B, *Runway Length Requirements for Airport Design*, provides guidance for determining runway length needs. The determination of runway length requirements for the airport is based on five primary factors:

- Mean maximum temperature of the hottest month
- Airport elevation
- Runway gradient
- Critical aircraft type expected to use the runway
- Stage length of the longest nonstop destination (specific to larger aircraft)

The mean maximum daily temperature of the hottest month for Cameron County Airport is 93.4 degrees Fahrenheit (°F), which occurs in August. The airport elevation is 18.6 feet mean sea level (MSL). Primary Runway 13-31 has a longitudinal gradient of 0.06 percent.

Airplanes operate on a wide variety of available runway lengths. Many factors govern the sustainability of runway lengths for aircraft, such as elevation, temperature, wind, aircraft weight, wing flap settings, runway condition (wet or dry), runway gradient, vicinity airspace obstructions, and any special operating procedures. Airport operators can pursue policies that maximize the sustainability of the runway length, such as area zoning and height and hazard restrictions. Airport ownership (fee simple or easement) of land leading to the runway ends reduces the possibility of natural growth or human-made obstructions. Runway planning should include an evaluation of the aircraft types that are expected to use the airport now and in the future. Future planning should be realistic, supported by the FAA-approved forecasts, and based on the critical aircraft (or family of aircraft).

General Aviation (GA) Aircraft

Most operations at Cameron County Airport are conducted using smaller GA aircraft that weigh less than 12,500 pounds. FAA AC 150/5325-4B, *Runway Length Requirements for Airport Design*, recommends that airports be designed to serve at least 95 percent of small airplanes. The advisory circular further defines the fleet categories as follows:

- *95 Percent of Small Airplane Fleet* | This category applies to airports that are primarily intended to serve medium-population communities with a diversity of usage and greater potential for increased aviation activities. This category also includes airports that are primarily intended to serve low-activity locations, small-population communities, and remote recreational areas.

- *100 Percent of Small Airplane Fleet* | This type of airport is primarily intended to serve communities located on the fringes of metropolitan areas, or relatively large population communities that are remote from metropolitan areas.

The airport is also utilized by aircraft that weigh more than 12,500 pounds, including small- to medium-sized business jet aircraft. Runway length requirements for business jets that weigh less than 60,000 pounds have also been calculated. These calculations take into consideration the runway gradient and landing length requirements for contaminated (wet) runways; business jets tend to need greater runway length when landing on wet surfaces because of their increased approach speeds. AC 150/5325-4B stipulates that runway length determination for business jets must consider a grouping of airplanes with similar operating characteristics. The AC provides separate family groupings of airplanes, each of which is based on its representative percentage of aircraft in the national fleet. The first grouping is those business jets that comprise 75 percent of the national fleet, and the second grouping is those that comprise 100 percent of the national fleet. **Table 3F** presents a partial list of common aircraft in each aircraft grouping. A third grouping considers business jets that weigh more than 60,000 pounds. Runway length determination for these aircraft must be based on the performance characteristics of the individual aircraft.

TABLE 3F | Business Jet Categories for Runway Length Determination

Aircraft	MTOW (lbs.)
75 Percent of the National Fleet	
Lear 35	20,350
Lear 45	20,500
Cessna 550	14,100
Cessna 560XL	20,000
Cessna 650 (VII)	22,000
IAI Westwind	23,500
Beechjet 400	15,800
Falcon 50	18,500
75-100 Percent of the National Fleet	
Lear 55	21,500
Lear 60	23,500
Hawker 800XP	28,000
Hawker 1000	31,000
Cessna 650 (III/IV)	22,000
Cessna 750 (X)	36,100
Challenger 604	47,600
IAI Astra	23,500
Greater than 60,000 Pounds	
Gulfstream II	65,500
Gulfstream IV	73,200
Gulfstream V	90,500
Global Express	98,000
Gulfstream 650	99,600

MTOW = maximum takeoff weight

Source: FAA AC 150/5325-4B, Runway Length Requirements for Airport Design

Table 3G summarizes the recommended runway lengths for different aircraft types that utilize PIL. It should be noted that utilization of the 90 percent category for runway length determination for large airplanes that weigh less than 60,000 pounds is generally not considered by the FAA unless there is a demonstrated need at an airport (i.e., a business jet operator that flies out frequently with heavy loads).

TABLE 3G | General Aviation Runway Length Recommendations

RUNWAY LENGTHS RECOMMENDED FOR AIRPORT DESIGN	
Small airplanes with fewer than 10 passenger seats	
95 percent of these small airplanes	3,100'
100 percent of these small airplanes	3,700'
Small airplanes with 10 or more passenger seats	4,200'
Large airplanes that weigh 60,000 pounds or less	
75 percent of these large airplanes at 60 percent useful load	5,400'
100 percent of these large airplanes at 60 percent useful load	5,600'
75 percent of these large airplanes at 90 percent useful load	7,000'
100 percent of these large airplanes at 90 percent useful load	8,900'

Source: FAA AC 150/5325-4B, Runway Length Requirements for Airport Design

Another method to determine runway length requirements for aircraft at Cameron County Airport is to examine aircraft flight planning manuals under conditions specific to the airport. **Table 3H** provides a detailed runway length analysis for several of the most common turbine aircraft in the national fleet. These data were obtained from UltraNav software, which computes operational parameters for specific aircraft based on flight manual data. The analysis includes the MTOW allowable and the percent useful load from 60 percent to 100 percent.

The analysis shows that each business jet evaluated can operate at PIL at 100 percent useful load during the hottest days of the summer, with the exception of the Gulfstream 200, which is brake limited beyond 90 percent useful load.

TABLE 3H | Business Aircraft Takeoff Length Requirements

Aircraft Name	MTOW	TAKEOFF LENGTH REQUIREMENTS (FEET)				
		Useful Load				
		60%	70%	80%	90%	100%
Challenger 300	38,850	4,185	4,579	4,989	5,413	5,854
Gulfstream III	69,700	4,136	4,572	5,024	5,490	5,968
Citation X	35,700	4,316	4,676	5,120	5,584	6,055
Gulfstream 450	74,600	4,277	4,698	5,155	5,651	6,192
Falcon 900EX[A]	49,200	3,960	4,440	5,060	5,700	6,290
Falcon 2000[B]	35,800	4,561	4,938	5,322	5,769	6,484
Challenger 604/605	48,200	4,636	5,111	5,642	6,206	6,782
Lear 60	23,500	4,826	5,274	5,809	6,323	6,857
Gulfstream 650	99,600	4,675	5,163	5,667	6,274	6,919
Gulfstream 550	91,000	4,429	5,029	5,674	6,301	7,026
Gulfstream 200	35,450	5,159	5,776	6,452	7,183	Brake Limited

Green figures are less than or equal to the longest runway length available at Cameron County Airport; orange figures are greater than that length (8,001')
MTOW = maximum takeoff weight

Source: Ultranav software

Table 3J presents the runway length required for landing under three operational categories: Title 14 Code of Federal Regulations (CFR) Part 91, CFR Part 135, and CFR Part 91k. CFR Part 91 operations are those conducted by private individuals or companies that own their aircraft. CFR Part 135 applies to all for-hire charter operations, including most fractional ownership programs. CFR Part 91k includes

operations in fractional ownership that utilize their own aircraft under the direction of pilots specifically assigned to said aircraft. Part 91k and Part 135 rules regarding landing operations require an operator to land at the destination airport within 60 percent of the effective runway length. An additional rule allows for an operator to land within 80 percent of the effective runway length if the operator has an approved destination airport analysis in the aircraft's program operating manual. The landing length analysis conducted accounts for both scenarios.

The landing length analysis shows that each of the aircraft analyzed can land on the available runway length at Cameron County Airport during dry runway conditions when operating under any category. In wet runway conditions, all the evaluated aircraft can land when operating under Part 91 and Parts 135 and 91k when using the 80 percent rule, and approximately half of the aircraft can land when operating under the 60 percent rule.

TABLE 3J | Turbine Aircraft Landing Length Requirements

Aircraft Name	MLW	LANDING LENGTH REQUIREMENTS (FEET)					
		Dry Runway Condition			Wet Runway Condition		
		Part 91	80% Rule	60% Rule	Part 91	80% Rule	60% Rule
Falcon 2000	33,000	3,125	3,906	5,208	3,594	4,493	5,990
Gulfstream 200	30,000	3,472	4,340	5,787	3,993	4,991	6,655
Falcon 900EX	44,500	3,668	4,585	6,113	4,219	5,274	7,032
Challenger 604/605	38,000	2,782	3,478	4,637	4,290	5,363	7,150
Lear 60	19,500	3,577	4,471	5,962	4,798	5,998	7,997
Gulfstream 550	75,300	2,773	3,466	4,622	4,848	6,060	8,080
Gulfstream 650	83,500	3,766	4,708	6,277	4,939	6,174	8,232
Challenger 300	33,750	2,607	3,259	4,345	4,997	6,246	8,328
Citation X	31,800	3,683	4,604	6,138	5,191	6,489	8,652
Gulfstream 450	66,000	3,260	4,075	5,433	5,484	6,855	9,140
Gulfstream III	58,500	3,179	3,974	5,298	6,093	7,616	10,155

Green figures are less than or equal to the longest runway length available at Cameron County Airport; orange figures are greater than that length (8,001').
MLW = maximum landing weight

Source: Ultranav software

Runway Length Summary

Many factors are considered when determining appropriate runway length for safe and efficient operations of aircraft at Cameron County Airport. The airport should strive to accommodate business jets and turboprop aircraft to the greatest extent possible, as demand dictates. Primary Runway 13-31 is the longest runway available at 8,001 feet long, and it can accommodate all small aircraft, as well as many of the more common business jets and turboprops, even with higher payloads and during hot weather. In fact, the length of Runway 13-31 exceeds the FAA's recommended runway length of 5,600 feet to accommodate 100 percent of the larger aircraft fleet at 60 percent useful load, as well as most of the aircraft analyzed using UltraNav software. Longer runway lengths are necessary for aircraft taking on greater useful loads, but as mentioned, the FAA will not typically support the 90 percent useful load category unless there is a documented need for an operator to regularly depart with higher payloads. As such, the alternatives shown in the next section will consider a reduction in length on Runway 13-31, as TxDOT/FAA will not continue to fund maintenance of the 8,001 feet that exists today.

Crosswind Runway 17-35, at 4,200 feet long, is capable of serving all small aircraft when wind conditions dictate the use of this runway, as well as some of the smaller turbine aircraft in the fleet. This length is considered sufficient for the types of aircraft that regularly utilize this runway.

RUNWAY WIDTH

Runway width design standards are based primarily on the airport's critical aircraft, but they can also be influenced by the visibility minimums of published instrument approach procedures. For primary Runway 13-31, existing RDC B-II-5000 design criteria stipulate a runway width of 75 feet, while ultimate RDC C-II-5000 standards call for a width of 100 feet. Runway 13-31 is currently 150 feet wide, which exceeds both the existing and ultimate design standards. A reduction in the width of Runway 13-31 to 100 feet to meet ultimate C-II-5000 standards should be considered during planning, as TxDOT/FAA will not continue to fund the full 150-foot width that exists today. If Cameron County wishes to maintain Runway 13-31 at 150 feet wide, it should be with the understanding that local funding mechanisms will be necessary to maintain the additional 50-foot width that extends beyond the standard.

Crosswind Runway 17-35 is 75 feet wide, which exceeds existing/ultimate A/B-I-VIS design standards which call for a 60-foot-wide runway. Similar to the primary runway, Runway 17-35 should be narrowed to 60 feet wide, unless the county wishes to self-fund the additional width that exceeds the standard.

RUNWAY PAVEMENT STRENGTH

Airport pavements must be able to withstand repeated operations by aircraft of significant weight; therefore, the strength rating of a runway is an important consideration in facility planning. While each runway is assigned a specific strength rating, aircraft that weigh more than the published strength rating are not precluded from using the runway. All federally obligated airports must remain open to the public, and it is typically up to the pilot of an aircraft to determine if a runway can support the aircraft safely. An airport sponsor cannot restrict an aircraft from using a runway simply because its weight exceeds the published strength rating. On the other hand, the airport sponsor has an obligation to properly maintain the runway and protect its useful life (typically for 20 years). According to the FAA publication *Airport/Facility Directory*, "Runway strength rating is not intended as a maximum allowable weight or as an operating limitation. Many airport pavements are capable of supporting limited operations with gross weights in excess of the published figures." The directory also states that operators of aircraft that exceed an airport's pavement strength rating should contact the airport sponsor for permission to operate at the airport.

The current runway strength rating on primary Runway 13-31 is reported at 105,000 pounds single wheel loading (S), 135,000 pounds dual wheel (D), and 230,000 pounds dual tandem wheel (2D). Crosswind Runway 17-35 has a reported pavement strength of 30,000 pounds S, 45,000 pounds D, and 90,000 pounds 2D. These pavement strengths are sufficient to accommodate the aircraft that currently operate at the airport and likely exceed what is necessary. When full-depth runway reconstruction projects are necessary, the runway pavement strengths should be planned to accommodate the heaviest aircraft operating on each runway on a regular basis. For Runway 13-31, the heaviest aircraft in the C-II family has a maximum takeoff weight of 75,000 pounds on a dual landing gear configuration. For Runway 17-35, the heaviest aircraft in the A/B-I family have a maximum takeoff weight approaching 20,000 pounds on both single and dual landing gear configurations.

TAXIWAYS

The design standards associated with taxiways are determined by the taxiway design group (TDG) or the airplane design group (ADG) of the critical design aircraft. As determined previously, the applicable ADG for Runway 13-31 is ADG II in the existing and ultimate conditions, and ADG I for Runway 17-35 in the existing and ultimate conditions. **Table 3K** presents the various taxiway design standards related to ADG I and II, respectively. The table also shows the taxiway design standards related to TDG; these are based on the main gear width (MGW) and cockpit to main gear (CMG) distance of the critical design aircraft expected to use those taxiways. Different taxiway and taxilane pavements can and should be planned to the most appropriate TDG design standards, based on usage.

TABLE 3K | Taxiway Dimensions and Standards

STANDARDS BASED ON WINGSPAN	ADG I	ADG II
Taxiway and Taxilane Protection		
Taxiway Safety Area (TSA) Width	49'	79'
Taxiway Object Free Area (TOFA) Width	89'	124'
Taxilane Object Free Area (TLOFA) Width	79'	110'
Taxiway and Taxilane Separation		
Taxiway Centerline to Parallel Taxiway Centerline	70'	101.5'
Taxiway Centerline to Fixed or Moveable Object	44.5'	62'
Taxilane Centerline to Parallel Taxilane Centerline	64'	94.5'
Taxilane Centerline to Fixed or Moveable Object	39.5'	55'
Wingtip Clearance		
Taxiway Wingtip Clearance	20'	22.5'
Taxilane Wingtip Clearance	15'	15.5'
STANDARDS BASED ON TDG	**TDG 1A/1B**	**TDG 2A/2B**
Taxiway Width Standard	25'	35'
Taxiway Edge Safety Margin	5'	7.5'
Taxiway Shoulder Width	10'	15'

Note: All dimensions are in feet.
ADG = airplane design group
TDG = taxiway design group

Source: FAA AC 150/5300-13B, Airport Design, Change 1

The current design for taxiways serving Runway 13-31 is TDG 2A, based on the King Air 200/300/350, which dictates a width of 35 feet. The design for taxiways serving Runway 17-35 is TDG 1A, which has a width standard of 25 feet. All taxiways at PIL are 75 feet wide. Consideration should be given to reducing the width of Taxiway A to 35 feet wide, in accordance with TDG 2A standards. Taxiway B, which provides access to Runway 17, should be reduced to 25 feet wide during the next pavement maintenance project. Any new taxiway construction projects should be designed to meet these standards.

At Cameron County Airport, the taxiway object free area (TOFA) for taxiways serving Runway 13-31 is 124 feet wide, while the TOFA for taxiways serving Runway 17-35 is 89 feet wide, based on the applicable ADG standards detailed above. The TOFA should be cleared of objects except those needed for air navigation or aircraft ground maneuvering purposes. The TOFAs associated with the airfield taxiways are clear of obstructions.

The taxilane object free area (TLOFA) is similar to the TOFA in that it should be clear of objects; however, the width of the TLOFA varies depending on the type(s) of aircraft using the taxilane. Taxilanes can be designed based on the types of aircraft using that pavement, with TLOFA dimensions based on the largest

wingspan of the aircraft based in these hangars. Future projects, such as hangar construction or pavement markings on the apron, should be designed to ensure the TLOFA remains clear of obstructions.

Taxiway and Taxilane Design Considerations

FAA AC 150/5300-13B, Change 1, *Airport Design*, provides guidance on recommended taxiway and taxilane layouts to enhance safety by avoiding runway incursions. A runway incursion is defined as "any occurrence at an airport involving the incorrect presence of an aircraft, vehicle, or person on the protected area of a surface designated for the landing and takeoff of aircraft." The following is a list of the taxiway design guidelines and the basic rationale behind each recommendation included in the current AC, as well as previous FAA safety and design recommendations.

1. **Taxiing Method**: Taxiways are designed for cockpit-over-centerline taxiing, with pavement that is sufficiently wide to allow a certain amount of wander. On turns, sufficient pavement should be provided to maintain the edge safety margin from the landing gear. When constructing new taxiways, existing intersections should be upgraded to eliminate judgmental oversteering, which is when a pilot must intentionally steer the cockpit outside the marked centerline to ensure the aircraft remains on the taxiway pavement.

2. **Curve Design**: Taxiways should be designed so the nose gear steering angle is no more than 50 degrees, which is the generally accepted value to prevent excessive tire scrubbing.

3. **Three-Path Concept**: To maintain pilot situational awareness, taxiway intersections should provide a pilot with a maximum of three choices of travel. Ideally, these are right, left, and a continuation straight ahead.

4. **Channelized Taxiing**: To support visibility of airfield signage, taxiway intersections should be designed to meet standard taxiway width and fillet geometry.

5. **Designated Hot Spots and Runway Incursion Mitigation (RIM) Locations**: A hot spot is a location on the airfield with elevated risk of a collision or runway incursion. For areas the FAA designates as hot spots or RIM locations, mitigation measures should be prioritized.

6. **Intersection Angles**: Turns should be designed to be 90 degrees, wherever possible. For acute-angle intersections, standard angles of 30, 45, 60, 120, 135, and 150 degrees are preferred.

7. **Runway Incursions**: Taxiways should be designed to reduce the probability of runway incursions.

    - *Increase Pilot Situational Awareness*: A pilot who knows where he/she is on the airport is less likely to enter a runway improperly. Complexity leads to confusion. Taxiway systems should be kept simple using the three-path concept.

    - *Avoid Wide Expanses of Pavement*: Wide pavements require placement of signs far from a pilot's eye. This is especially critical at runway entrance points. Where a wide expanse of pavement is necessary, direct access to a runway should be avoided.

- *Limit Runway Crossings*: The taxiway layout can reduce the opportunity for human error. The benefits are twofold: a reduction in the number of occurrences and in air traffic controller workload.
- *Avoid High-Energy Intersections*: These are intersections in the middle third of a runway. By limiting runway crossings to the first and last thirds of the runway, the portion of the runway where a pilot can least maneuver to avoid a collision is kept clear.
- *Increase Visibility*: Right-angle intersections between both taxiways and runways provide the best visibility. Acute-angle runway exits provide greater efficiency in runway usage but should not be used as runway entrance or crossing points. A right-angle turn at the end of a parallel taxiway is a clear indication of approaching a runway.
- *Avoid Dual-Purpose Pavements*: Runways used as taxiways and taxiways used as runways can lead to confusion. A runway should always be clearly identified as a runway and only a runway.
- *Direct Access*: Do not design taxiways to lead directly from an apron to a runway. Such configurations can lead to confusion in areas where a pilot typically expects to encounter a parallel taxiway.
- *Hot Spots*: Confusing intersections near runways are more likely to contribute to runway incursions. These intersections must be redesigned when the associated runway is subject to reconstruction or rehabilitation. Other hot spots should be corrected as soon as practicable.

8. **Runway/Taxiway Intersections**:

- *Right Angle*: Right-angle intersections are the standard for all runway/taxiway intersections, except where there is a need for an acute-angled exit. Right-angle taxiways provide the best visual perspective to a pilot approaching an intersection with the runway to observe aircraft in both the left and right directions. Right angles also provide optimal orientation of the runway holding position signs so they are visible to pilots.
- *Acute Angle*: Acute angles should not be larger than 45 degrees from the runway centerline. A 30-degree taxiway layout should be reserved for high-speed exits. The use of multiple intersecting taxiways with acute angles creates pilot confusion and improper positioning of taxiway signage. The construction of high-speed exits is typically only justified for runways that experience regular use by jet aircraft in approach categories C and above.
- *Large Expanses of Pavement*: Taxiways must never coincide with the intersection of two runways. Taxiway configurations with multiple taxiway and runway intersections in a single area create large expanses of pavement, making it difficult to provide proper signage, marking, and lighting.

9. **Taxiway/Runway/Apron Incursion Prevention**: Apron locations that allow direct access to a runway should be avoided. Increase pilot situational awareness by designing taxiways in a manner that forces pilots to consciously make turns. Taxiways originating from aprons and forming straight lines across runways at mid-span should be avoided.

- *Wide-Throat Taxiways*: Wide-throat taxiway entrances should be avoided. Such large expanses of pavement may cause pilot confusion and make lighting and marking more difficult.
- *Direct Access from Apron to Runway*: Avoid taxiway connectors that cross over a parallel taxiway and directly onto a runway. Consider a staggered taxiway layout or no-taxi island that forces pilots to make a conscious decision to turn.
- *Apron to Parallel Taxiway End*: Avoid direct connection from an apron to a parallel taxiway at the end of a runway.

The taxiway system at Cameron County Airport consists of a full-length parallel taxiway (Taxiway A) serving Runway 13-31 and an access taxiway (Taxiway B) to Runway 17. Access to Runway 35 is available via Runway 8-26, which is in the process of being decommissioned. Taxiway D is adjacent to the terminal apron and provides access to the terminal and other landside facilities. Taxiway C, the portion of Taxiway B east of Runway 21, and the portion of Taxiway D that connects to the intersection of Runways 17-35 and 8-26 are abandoned or not in use. As such, these taxiways are excluded from this taxiway design evaluation. While there are no FAA-determined hot spots on the airfield, there are several non-standard taxiway geometry conditions, as detailed below and on **Exhibit 3B**.

- There is direct access to Runway 13-31 from the terminal/FBO apron.
- Runway 17 is not served by a taxiway, so pilots must back-taxi to utilize this runway. This results in a dual-use pavement condition, where the runway is used as taxiway.
- Taxiway A crosses Runway 17-35 through the high-energy area.

The alternatives section of this chapter will present potential solutions to these non-standard conditions. The alternatives analysis will also consider improvements that could be implemented on the airfield to minimize runway incursion potential, improve efficiency, and conform to FAA standards for taxiway design.

SEPARATION STANDARDS

Runway/Taxiway Separation

The design standard for the separation between runways and parallel taxiways is a function of the critical aircraft and the instrument approach visibility minimum. The separation standard for Runway 13-31 in the existing RDC B-II-5000 condition is 240 feet from the runway centerline to the parallel taxiway centerline, and 300 feet in the ultimate C-II-5000 environment. As shown on **Exhibit 3A**, parallel Taxiway A is separated from the runway by 550 feet, which meets the design standard. This taxiway should be maintained in its current location.

Runway 17-35 is not served by a parallel taxiway. Access to the Runway 17 threshold is provided via Taxiway B, while pilots departing Runway 35 utilize Runway 8-26 to access the Runway 35 threshold. The alternatives in the next section will evaluate various options to provide additional/improved taxiway access to Runway 17-35, including the potential for a full or partial parallel taxiway.

Runway Design Codes (RDC)

Runway 13-31 RDC: C-II-5000
Runway 17-35 RDC: A/B-I-VIS

Dual-Use Pavement

Runway 13-31 (8,001' x 150')

550'

High-Energy Area Crossing

Runway 17-35 (4,200' x 75')

Runway 3-21 (To Be Closed)

Runway 8-26 (To Be Closed)

Direct Access

Veterans Airport Dr

N

0 600

SCALE IN FEET

Photo Source: Google Earth 01/2024

Note: Acreages shown are approximate.

LEGEND

- Airport Property Line
- A — Taxiway Designation
- Runway Object Free Area (ROFA)
- Runway Obstacle Free Zone (ROFZ)
- Runway Visibility Zone (RVZ)
- ADG I Taxiway Object Free Area (TOFA - 89' Wide)
- ADG II Taxiway Object Free Area (TOFA - 124' Wide)
- High Energy Area
- Abandoned Taxiway Pavement

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Holding Position Separation

Holding position markings are placed on taxiways leading to runways. When approaching the runway, pilots should stop short of the holding position marking line. FAA design standards call for hold lines to be 200 feet from the runway centerline for B-II runways with approach minimums no lower than ¾-mile, and 250 feet from the runway centerline for C-II runways. These standards apply to Runway 13-31 in the existing and ultimate conditions, respectively. For A/B-I runways, such as Runway 17-35, the separation standard is 200 feet. The FAA also recommends that hold lines be parallel with the runway so that a pilot is fully perpendicular to the runway with a clear, unobstructed view of the entire runway length. If a 90-degree angle intersection with the runway is not practicable, a margin of +/-15 degrees is allowable.

At Cameron County Airport, all hold lines on connector taxiways leading to Runway 13-31 are 250 feet from the runway centerline and are parallel to the runway centerline, meeting FAA design standards in the existing and ultimate conditions. The hold line on the threshold connector to Runway 13 is faded to the point that it is no longer visible, based on the most current imagery available. Future planning should include pavement repairs and re-marking of hold lines on taxiways serving Runway 13-31 at a 250-foot separation from the runway centerline, in accordance with ultimate C-II design standards.

For Runway 17-35, the only taxiway marked with holding positions is Taxiway A, at the point where it intersects with the runway. These holding positions are approximately 280 feet from the Runway 17-35 centerline, which meets the separation standard, but they are positioned at an angle due to the runway/taxiway geometry in this area. Taxiway B, which provides access to Runway 17, is not equipped with a holding position marking. Access to Runway 35 is achieved via Runway 8-26, so no such marking exists. The alternatives in the next section will evaluate options to correct non-standard holding positions, as well as taxiway geometry, for taxiways leading to Runway 17-35.

Aircraft Parking Area Separation

According to FAA AC 150/5300-13B, Change 1, aircraft parking positions should be located to ensure aircraft components (wings, tail, and fuselage) do not do either of the following:

1. Conflict with the object free area for the adjacent runway or taxiways:

    a. Runway object free area (ROFA)
    b. Taxiway object free area (TOFA)
    c. Taxilane object free area (TLOFA)

2. Violate any of the following aeronautical surfaces and areas:

    a. Runway approach or departure surface
    b. Runway visibility zone (RVZ)
    c. Runway obstacle free zone (ROFZ)
    d. Navigational aid equipment critical areas

There are 10 marked aircraft parking positions at Cameron County Airport, located on the terminal apron. These aircraft parking areas, all intended for fixed wing aircraft, are clear of the object-free areas and aeronautical surfaces detailed above, as shown on **Exhibit 3B**. Future aircraft parking areas depicted on alternatives later in this chapter will allow for clear ADG II object-free areas, at a minimum.

NAVIGATIONAL AND APPROACH AIDS

Navigational aids are devices that provide pilots with guidance and position information when utilizing the runway system. Electronic and visual guidance to arriving aircraft enhance the safety and capacity of the airfield. Such facilities are vital to the success of an airport and provide additional safety to pilots and passengers using the air transportation system. While instrument approach aids are especially helpful during poor weather, they are often used by pilots conducting flight training and operating larger aircraft when visibility is good.

Instrument Approach Aids

Cameron County Airport has two published instrument approach procedures (IAP), as detailed previously on Exhibit 1E. These include a localizer performance with vertical guidance (LPV) global positioning system (GPS) approach to Runway 13 with visibility minimums of 1¼-mile and a very high frequency omnidirectional range (VOR-A) circling approach (daytime use only) with 1-mile visibility minimums.

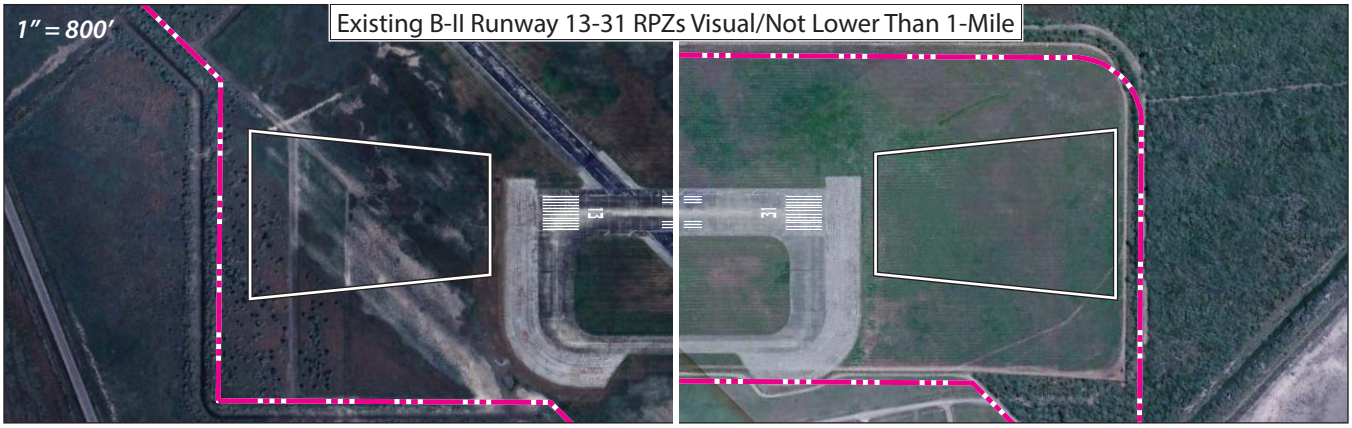
Wind data collected during IFR conditions indicate the following regarding the preferred runway during IFR conditions:

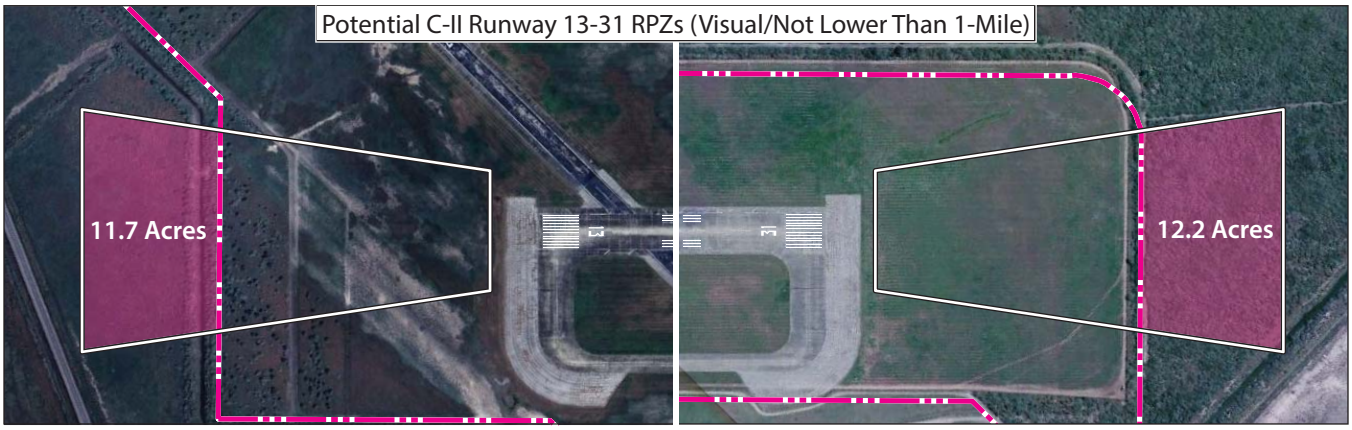
- Runway 13 – 33.53 percent
- Runway 31 – 28.55 percent
- Runway 17 – 12.76 percent
- Runway 35 – 17.32 percent
- Calm winds – 7.83 percent

Consideration should be given to enhancing instrument approach capabilities at the airport, including the potential for approaches to runways not previously equipped with IAPs. No ground-based equipment is necessary to achieve an approach with ¾-mile minimums and above; however, as mentioned in the *Runway Protection Zone (RPZ)* section earlier in this chapter, lower approach minimums can increase the size of the RPZ, resulting in additional unprotected RPZ land and/or causing new incompatible land uses to be introduced.

Exhibit 3C depicts the RPZs for Runways 13-31 and 17-35 as they exist today, along with a comparison of the larger RPZs that would be associated with Runways 13 and 31 in the ultimate C-II condition, and if minimums were reduced below 1-mile. For Runway 17-35, the size of each RPZ remains the same for a visual approach runway and a runway equipped with an IAP with 1-mile visibility minimums.

For planning purposes, the alternatives to follow will depict options for improved instrument approach capability at the airport, including an approach with not lower than ¾-mile minimums to Runways 13 and 31. It should be noted that coordination with the FAA through its Instrument Flight Procedures (IFP)


1" = 800'
Existing B-II Runway 13-31 RPZs Visual/Not Lower Than 1-Mile
13
31


Potential C-II Runway 13-31 RPZs (Visual/Not Lower Than 1-Mile)
11.7 Acres
12.2 Acres
13
31


Potential C-II Runway 13-31 RPZs (3/4-Mile)
18.9 Acres
19.9 Acres
13
31


Existing Runway 17-35 RPZs (Visual)*
17
35
Note: Acreages shown are approximate.
*An instrument approach procedure with 1-mile or higher visibility minimums will not increase the size of the RPZ.

Information Gateway will be necessary before new approaches are implemented; an updated aeronautical survey[1] may also be required.

Visual Approach Aids

In most instances, the landing phase of any flight must be conducted in visual conditions. Electronic visual approach aids are commonly utilized at airports to provide pilots with visual guidance information during landings to runways. Both ends of Runway 13-31 are equipped with two-box precision approach path indicators (PAPI-2), which are visual approach aids that provide pilots with indications of their positions above, below, or on the correct descent glidepath. Consideration should be given to upgrading the PAPI-2 system to a four-box PAPI system (PAPI-4) at such a time that increased jet traffic warrants an upgrade. Runway 17-35 is not equipped with PAPIs, but consideration should be given to installing PAPI-2s on each end of this runway to assist pilots in maintaining a safe altitude over objects.[2]

Runway end identification lights (REILs) are flashing lights located at the runway threshold that facilitate rapid identification of the runway end at night and during poor visibility conditions. REILs provide pilots with the ability to identify the runway threshold and distinguish runway end lighting from other lighting on the airport and in the approach areas. Runway 13-31 is equipped with REILs; however, FAA records as of January 2025 indicate that the REILs are out of service. The airport sponsor should coordinate with TxDOT/FAA to ensure the REILs are functional and are reported in the appropriate publications. Once operational, the REILs should be maintained throughout the planning period. Runway 17-35 is not equipped with REILs, and consideration should be given to installing REILs on each runway end.

AIRFIELD MARKING, LIGHTING, AND SIGNAGE

Runway 13-31 has precision markings, including designation and threshold markings, side stripes, aiming points, and touchdown zone markings. As this runway does not have a precision instrument approach and one is not planned, the runway should be painted with non-precision markings during the next pavement maintenance project. These would include all of the markings described above, except for the touchdown zone markings and side stripes. Runway 17-35 has basic markings, including designation markings. If an instrument approach to this runway is provided, these should be upgraded to non-precision markings.

Runway and taxiway lighting systems serve as the primary means of navigation in reduced visibility and nighttime operations. Currently, Runway 13-31 is equipped with medium intensity runway lighting (MIRL), which is a common runway lighting system that can be activated via a pilot-controlled system. MIRL should be maintained through the planning period; however, the current lighting equipment has reached the end of its useful lifespan and should be replaced. Runway 17-35 does not have edge lighting;

[1] An aeronautical survey in accordance with AC 150/5300-18B, *General Guidance and Specifications for Submission of Aeronautical Surveys to NGS: Field Data Collection and Geographic Information System (GIS) Standards*, is not being conducted as part of this planning process. The airport sponsor should coordinate with the FAA/TxDOT to determine if an aeronautical survey is necessary to achieve new/improved IAPs.

[2] Visual glideslope indicators (VGSI), such as PAPIs, are suitable for visual and non-precision runways with runway edge lights, or when obstacle mitigation is necessary in the runway approach. Runway 17-35 is not currently equipped with runway edge lights; this will be discussed in a later section.

consideration should be given to equipping this runway with edge lighting to enhance safety on the airfield. The taxiways at PIL are equipped with green taxiway centerline reflectors. Consideration should be given to installing medium intensity taxiway lighting (MITL) on all taxiways.

Airfield signage serves as another means of navigation for pilots. Airfield signage informs pilots of their locations on the airport and directs them to major airport facilities, such as runways, taxiways, and aprons. Lighted directional signs are installed on the airfield. This signage should be maintained, and consideration should be given to upgrading to light-emitting diode (LED) bulbs for all signage and other airfield lighting.

WEATHER FACILITIES

Cameron County Airport is equipped with a lighted wind cone and segmented circle. The wind cone provides pilots with information about wind conditions, while the segmented circle provides traffic pattern information to pilots. As mentioned previously, this equipment is located within the ultimate C-II ROFA associated with Runway 13-31 and should be relocated to ensure it does not obstruct any safety or object free areas.

The airfield is also equipped with an automated surface observing system (ASOS). The ASOS transmits on-site weather condition information to pilots and should be maintained in its existing location. It should be noted that the ASOS has a critical area that must be kept free of obstructions that could interfere with its sensors. This includes a 500-foot critical area (shown on **Exhibit 3A**), which requires all obstructions to be 15 feet lower than the height of the wind sensor and at least 10 feet lower than the height of the sensor between 500 and 1,000 feet.[3] There are structures (storage facilities east of the FBO and unknown structures associated with the Port Isabel Detention Center) within the 500-foot critical area, and additional structures on- and off-airport are located within the 1,000-foot critical area; however, none of these structures are known to be obstructions that may cause signal interference. Future planning should ensure that new structures are sited outside the critical area or at a height that meets the siting requirements detailed above.

AIRSIDE FACILITY REQUIREMENTS SUMMARY

The intent of this section has been to outline the airside facilities required to meet potential aviation demands projected for Cameron County Airport through the long-term planning period. A summary of the airside requirements is included on **Exhibit 3D**.

AIRSIDE DEVELOPMENT ALTERNATIVES

This section identifies and evaluates various airside development factors at Cameron County Airport to meet the requirements set forth in the previous section. Airside facilities are, by nature, the focal point of an airport complex. Because of their primary role and the fact that they physically dominate airport land use, airfield facility needs are often the most critical factor in the determination of viable

[3] Refer to FAA Order JO 6560.20C for additional AWOS/ASOS siting criteria. (https://www.faa.gov/documentLibrary/media/Order/6560_20c_ord.pdf)

development options. Each functional area interrelates and affects the development potential of the others; therefore, all areas are examined individually and then coordinated as a whole to ensure the final plan is functional, efficient, and cost-effective. The total impact of all these factors on the airport must be evaluated to determine if the investment in PIL will meet the aviation needs of Cameron County and the region, both during and beyond the 20-year planning period.

The alternatives to follow will examine airside improvement opportunities to meet ultimate airfield design standards. The primary airside planning issues to be considered in this alternatives analysis are:

- Meeting ultimate RDC C-II-5000 design standards on Runway 13-31 and existing/ultimate RDC A/B-I-VIS design standards on Runway 17-35;
- Decommissioning Runways 3-21 and 8-26;
- Reduced length and width on Runway 13-31 to align with ultimate design standards and "right-size" the runway for the most frequent operators;
- Reduced width on Runway 17-35 to align with existing/ultimate design standards
- Obstruction mitigation in ultimate safety areas and incompatibility analysis in RPZs;
- Corrective measures for non-standard taxiway geometry and design;
- Added/upgraded airfield navigation and lighting equipment; and
- New and/or improved instrument approach capability.

AIRSIDE ALTERNATIVE 1

Airside Alternative 1 is depicted on **Exhibit 3E** and considers several airfield upgrades to meet ultimate airfield design standards and enhance safety at Cameron County Airport. Primary actions proposed with this alternative include the following:

- Reduce the length and width of primary Runway 13-31. Previous analysis determined that a length of 5,600 feet would accommodate 100 percent of the business jet fleet (less than 60,000 pounds) at 60 percent useful load. This alternative illustrates an option that reflects this recommended length for Runway 13-31 with the removal of 2,401 feet of runway pavement from the east end. The Runway 13 threshold is proposed to remain in its current location. This reduction in length shifts the Runway 31 RPZ fully onto airport property, eliminating the potential need for Cameron County to purchase the uncontrolled portion of the ultimate RPZ (see **Exhibit 3A**). Runway 13-31 is also proposed to be narrowed from 150 feet to 100 feet, in accordance with ultimate C-II-5000 design standards. Other actions connected to the reduction in runway length include removal of Taxiway A pavement and construction of a new threshold connector to Runway 31. The PAPIs, REILs, and MIRL on Runway 31 are also proposed to be relocated.
- Reduce the width of crosswind Runway 17-35 to 60 feet, in accordance with A/B-I design standards.
- Relocate the wind cone and segmented circle outside the ultimate Runway 13-31 ROFA. The proposed site for the relocated equipment is midfield, south of Taxiway A.

	EXISTING Runway 13-31	ULTIMATE Runway 13-31	EXISTING Runway 17-35	ULTIMATE Runway 18-36
Runways				
Runway Design Code (RDC)	B-II-5000	C-II-5000	A/B-I-VIS	Same
Dimensions	8,001' x 150'	Consider length reduction options; reduce width to 100'	4,200' x 75'	Maintain length; reduce width to 60'
Pavement Strength	105,000 lbs S 135,000 lbs D 230,000 lb 2D	Maintain until reconstruction is necessary, then plan to accommodate heaviest aircraft operating regularly	30,000 lbs S 45,000 lbs D 90,000 lbs 2D	Maintain until reconstruction is necessary, then plan to accommodate heaviest aircraft operating regularly
Safety Areas				
Runway Safety Area (RSA)	Standard RSA	Maintain	Standard RSA	Maintain
Runway Object Free Area (ROFA)	Standard ROFA	Relocate wind cone outside ultimate ROFA	Standard ROFA	Maintain
Runway Obstacle Free Zone (ROFZ)	Standard ROFZ	Maintain	Standard ROFZ	Maintain
Runway Protection Zone (RPZ)	Standard RPZs	Portion of RPZs uncontrolled; consider mitigation	RPZs fully controlled by airport; Runway 35 contains public roadway	Consider mitigation options for road in Runway 35 RPZ
Taxiways				
Design Group	2A	Maintain	1A	Maintain
Parallel Taxiway	Taxiway A	Maintain	N/A	Consider taxiway options
Parallel Taxiway Separation from Runway	550'	Maintain	N/A	
Widths	75'	Reduce width to 35'	75' (Taxiway B)	Reduce width to 25'
Holding Position Separation	250'	Maintain	280'	200'
Notable Conditions	Direct access from apron; dual-use pavement; high-energy crossing (Runway 17-35)	Consider corrective measures		
Navigational and Weather Aids				
Instrument Approaches	LPV GPS (13); VOR-A	Maintain existing; consider new/improved approaches	Visual only	Consider 1-mile GPS approaches
Weather Aids	ASOS, wind cone, segmented circle, rotating beacon	Maintain equipment; upgrade to LED		
Approach Aids	PAPI-2 (13,31) & REILS (13, 31)	Consider upgrade to PAPI-4; ensure REILs are operational	None	Consider PAPI-2 & REILs for each runway
Lighting and Marking				
Runway Lighting	MIRL	Maintain	None	Install lighting system
Runway Marking	Precision	Non-Precision	Basic	Maintain or upgrade to non-precision if instrument approach added
Taxiway Lighting	Reflectors	Install MITL	Reflectors	Install MITL

KEY

ASOS - Automated Surface Observation Station
D - Dual Wheel Load
D2 - Double Dual Wheel Load
GPS - Global Positioning System
LPV - Localizer Performance with Vertical Guidance
MIRL - Medium Intensity Runway Lighting
MITL - Medium Intensity Taxiway Lighting
PAPI - Precision Approach Path Indicator
RDC - Runway Design Code
REIL - Runway End Identification Lights
ROFZ - Runway Obstacle Free Zone
RPZ - Runway Protection Zone
RSA - Runway Safety Area
S - Single Wheel Load
VOR - Very High Frequency Omni-Directional Range

Runway Design Codes (RDC)

Runway 13-31 RDC: C-II-5000
Runway 17-35 RDC: A/B-I-VIS

N

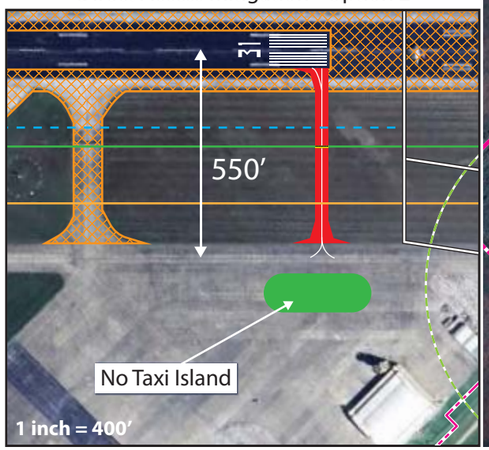
0 800

SCALE IN FEET

Photo Source: Google Earth 01/2024

Install REILs
Install PAPI-2
Install PAPI-4
Visual/Not Lower than 1-Mile RPZ
Visual/Not Lower than 1-Mile RPZ
0.6 Acres
Reduce Runway Length by 2,401'; Reduce Width to 100'
225'
300'
Ultimate Runway 13-31 (5,600' x 100')
550'
500'
11.7 Acres
Visual/Not Lower than 1-Mile RPZ
Narrow Taxiway A to 35'
Install PAPI-4
0.3 Acres
3/4-Mile RPZ
Ultimate Runway 17-35 (4,200' x 60')
Reduce Runway Width to 60'
Install MITL on All Taxiways
Relocated Wind Cone/Segmented Circle
794
Buena Vista Blvd
Runway 3-21 (To Be Closed)
Runway 8-26 (To Be Closed)
Install MIRL
Install PAPI-2
Install REILs
Veterans Airport Dr
Visual/Not Lower than 1-Mile RPZ
Reroute Road Around RPZ

Direct Access Mitigation - Option 2



Note: Acreages shown are approximate.

LEGEND

- Airport Property Line
- A Taxiway Designation
- Runway Safety Area (RSA)
- Runway Object Free Area (ROFA)
- Runway Obstacle Free Zone (ROFZ)
- Runway Protection Zone (RPZ)
- Uncontrolled RPZ
- ASOS Critical Area
- High-Energy Area
- Runway Visibility Zone (RVZ)
- Pavement to be Removed
- Ultimate Airfield Pavement
- Ultimate Road

- Improve instrument approach capability. This includes the potential for an improved GPS approach to Runway 31 with visibility minimums of not lower than ¾-mile. If implemented, the RPZ associated with Runway 31 would increase in size, as shown on **Exhibit 3E**. Given the relocated Runway 31 threshold, the existing RPZ would be located entirely on airport property. If lower minimums were achieved, the RPZ size would increase, and a small portion would extend beyond the property line, including 0.6 uncontrolled acres on the north side and 0.3 uncontrolled acres on the south side. The airport should coordinate with the adjacent property owners to acquire an avigation easement to limit vertical development in this area. It should be noted that land bordering the airport's west, north, and east sides is owned and operated by the U.S. Fish & Wildlife Service (USFWS) as part of the Laguna Atascosa National Wildlife Refuge. Where existing or ultimate RPZs extend over USFWS land, acquisition of this property or obtaining an avigation easement is unlikely. However, as this land is protected as part of a National Wildlife Refuge, development that would be considered incompatible inside an RPZ is also unlikely. As such, none of the alternatives will propose acquisition of non-airport controlled land that is part of the Wildlife Refuge.

  Airside Alternative 1 also includes the possibility of implementing instrument approach procedures with minimums not lower than 1-mile to each end of Runway 17-35. As previously described, the RPZs would not change in size if this type of approach were implemented; however, the FAA may require Veterans Memorial Drive to be rerouted around the Runway 35 RPZ, which is shown for conceptual planning purposes only, before an instrument approach procedure is implemented. Environmental considerations and a cost-benefit analysis must be considered prior to any modification to this roadway.

- Remove pavement associated with Runways 3-21 and 8-26, the Runway 35 blast pad, Taxiway B, Taxiway C, and Taxiway D where it extends to the west beyond the apron. A portion of apron pavement north of the FBO hangar is also proposed for removal to eliminate the direct access that would result from the apron to the relocated Runway 31 threshold. An alternate option for mitigating direct access is shown on the inset in the lower left corner of the exhibit. This option involves marking the apron with a no-taxi island. A no-taxi island is an option to mitigate direct access from the apron to the runway. The intent of a no-taxi island is to force pilots to make a conscious turn prior to entering an active runway, thereby improving situational awareness and decreasing the risk of a runway incursion.

- Construct new taxiways to serve Runway 17-35. New taxiway pavement is proposed to extend from the apron and then turn west to access Runway 35. A northeast extension is also planned from the apron to connect to Runway 13-31, providing a midfield exit for pilots landing on Runways 13 or 31. Access to Runway 17 is planned via a proposed taxiway that would extend northeast from Taxiway A, cross Runway 13-31, and then turn north toward Runway 17. An offset taxiway is proposed for this runway end to allow aircraft to hold perpendicular to the runway. All proposed taxiway pavement serving Runway 13-31 is planned to be 35 feet wide, while proposed taxiways serving Runway 17-35 are planned to be 25 feet wide.

- Reduce the width of Taxiway A to 35 feet, in accordance with TDG 2A standards.

- Install runway edge lights on Runway 17-35.

- Install PAPI-2s and REILs on Runway 17-35.

- Upgrade PAPI-2s on Runway 13-31 to PAPI-4s.
- Re-mark Runway 17-35 with non-precision markings (threshold and designation) and implement a non-precision instrument approach to each runway.
- Install MITL. Currently, there is no taxiway lighting at PIL; taxiways are identifiable in low visibility with reflectors. MITL is proposed on all existing and new taxiways to enhance safety.

AIRSIDE ALTERNATIVE 2

Airside Alternative 2, as depicted on **Exhibit 3F**, illustrates a second option to meet ultimate airfield design standards and improve safety at the airport. Several components of this alternative, such as the installation of visual approach aids and airfield lighting, are similar to the first alternative; however, there are some key differences. Proposed actions include the following:

- Reduce the length and width of primary Runway 13-31. Airside Alternative 2 illustrates a 2,001-foot reduction in runway length from the west to bring the ultimate runway length to 6,000 feet. While this exceeds the recommended length to accommodate business jets at 60 percent useful load, the added length would allow for greater payloads and provide an added safety margin for aircraft operations. Under this scenario, the Runway 31 threshold is proposed to remain in its current location with the Runway 13 threshold shifting to the east to decouple the runways. The existing 1¼-mile Runway 13 RPZ is shifted fully onto airport property, as preferred by FAA. (Note: Consideration was given to removal of pavement on each end of Runway 13-31 to bring the existing RPZs onto airport property; however, this resulted in an overlapping RSA scenario in which the Runway 13 threshold was located too close to Runway 17-35 and did not provide sufficient space for designing entrance taxiways or associated markings and signage; thus, this option was not considered further.)

  Like the previous alternative, Runway 13-31 is proposed to be narrowed from 150 feet to 100 feet, in accordance with ultimate C-II-5000 design standards. Other actions connected to the reduction in runway length include removal of Taxiway A pavement and construction of a new threshold connector to Runway 13. The PAPIs, REILs, and MIRL on Runway 13 are proposed to be relocated.
- Reduce the width of crosswind Runway 17-35 to 60 feet, in accordance with existing/ultimate A/B-I design standards.
- Relocate the wind cone and segmented circle outside the ultimate Runway 13-31 ROFA. The proposed site for the relocated equipment is midfield, south of Taxiway A.
- Improve instrument approach capability. This includes the potential for an improved GPS approach to Runway 13 with visibility minimums of not lower than ¾-mile. If implemented, the RPZ associated with Runway 13 would increase in size, as shown on **Exhibit 3F**. Given the relocated Runway 13 threshold, both the existing 1¼-mile RPZ and a ¾-mile RPZ would remain on airport property. Like Airside Alternative 1, Airside Alternative 2 includes the possibility of implementing instrument approach procedures with minimums not lower than 1-mile to each end of Runway 17-35. If implemented, the FAA may require Veterans Memorial Drive to be rerouted around the Runway 35 RPZ, which is shown for conceptual planning purposes only, before an instrument

Runway Design Codes (RDC)

Runway 13-31 RDC: C-II-5000
Runway 17-35 RDC: A/B-I-VIS

Visual/Not Lower than 1-Mile RPZ

Install REILs

Reduce Runway Length by 2,001'; Reduce Width to 100'

3/4-Mile RPZ

Install PAPI-4

Blast Pad

225'

Visual/Not Lower than 1-Mile RPZ

Ultimate Runway 13-31 (6,000' x 100')

Relocated Wind Cone/Segmented Circle

Narrow Taxiway A to 35'

Ultimate Runway 17-35 (4,200' x 60')

Runway 8-26 (To Be Closed)

Runway 3-21 (To Be Closed)

Reduce Runway Width to 60'

Install MIRL

Visual/Not Lower than 1-Mile RPZ

Install REILs

Veterans Airport Dr

Buena Vista Blvd

Install PAPI-2

Reroute Road Around RPZ

500'

550'

Install PAPI-4

No Taxi Island

Install MITL on All Taxiways

Visual/Not Lower than 1-Mile RPZ

12.9 Acres

794

N

0 800

SCALE IN FEET

Photo Source: Google Earth 01/2024

Note: Acreages shown are approximate.

LEGEND

- Airport Property Line
- A — Taxiway Designation
- Runway Safety Area (RSA)
- Runway Object Free Area (ROFA)
- Runway Obstacle Free Zone (ROFZ)
- Runway Protection Zone (RPZ)
- Uncontrolled RPZ
- ASOS Critical Area
- High-Energy Area
- Pavement to be Removed
- Ultimate Airfield Pavement
- Ultimate Road

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approach procedure is implemented. Environmental considerations and a cost-benefit analysis must be considered prior to any modification to this roadway. In this alternative, the road is rerouted farther to the south along the airport's property boundary, which provides additional space for potential landside development in this area (to be discussed).

- Remove pavement associated with Runways 3-21 and 8-26, the Runway 35 blast pad, Taxiway B, Taxiway C, and Taxiway D where it extends to the west beyond the apron.
- Mark the apron with a no-taxi island at the entrance to Taxiway D where it leads to Runway 13-31.
- Construct a new parallel taxiway to serve Runway 17-35. To facilitate this, new taxiway pavement is proposed to extend north from the west side of the apron and then turn west to access Runway 35. A full-length parallel taxiway is proposed on the east side of Runway 17-35, along with an offset for the Runway 17 end to allow aircraft to hold perpendicular to the runway. All proposed taxiway pavement is planned to be 25 feet wide.
- Reduce the width of Taxiway A to 35 feet, in accordance with TDG 2A standards.
- Install runway edge lights on Runway 17-35.
- Install PAPI-2s and REILs on Runway 17-35.
- Upgrade PAPI-2s on Runway 13-31 to PAPI-4s.
- Re-mark Runway 17-35 with non-precision markings (threshold and designation) when/if a non-precision instrument approach is implemented to either runway.
- Install MITL. Currently, there is no taxiway lighting at PIL; taxiways are identifiable in low visibility with reflectors. MITL is proposed on all existing and new taxiways to enhance safety.

AIRSIDE ALTERNATIVE 3

Airside Alternative 3 is shown on **Exhibit 3G**. This option is very similar to Airside Alternative 1, with two main exceptions: primary Runway 13-31 is proposed to be maintained at 7,000 feet in length and a longer partial-parallel taxiway is proposed on the north side of Runway 13-31. These proposed actions and the others shown on the exhibit are detailed below.

- Reduce the length and width of primary Runway 13-31. Airside Alternative 3 proposes a 1,001-foot reduction in runway length from the east to bring the ultimate runway length to 7,000 feet, which is the FAA-recommended length to accommodate 75 percent of business jets (less than 60,000 pounds) at 90 percent useful load. As previously described, the FAA will not typically consider the 90 percent category unless an operator (or operators) that regularly takes off requires the additional length; this need must be documented and demonstrated to the FAA to justify the additional runway length. Under this scenario, the Runway 13 threshold is proposed to remain in its current location, with the Runway 31 threshold shifting to the west. The existing visual Runway 31 RPZ is shifted fully onto airport property.

  Like the previous alternative, Runway 13-31 is proposed to be narrowed from 150 feet to 100 feet, in accordance with ultimate C-II-5000 design standards. Other actions connected to the reduction in runway length include removal of Taxiway A pavement on the east end and

construction of a new threshold connector to Runway 31. The PAPIs, REILs, and MIRL on Runway 31 are proposed to be relocated.

- Reduce the width of crosswind Runway 17-35 to 60 feet, in accordance with A/B-I design standards.
- Relocate the wind cone and segmented circle outside the ultimate Runway 13-31 ROFA. The proposed site for the relocated equipment is south of Taxiway A, near the intersection of Runway 17-35 and Taxiway A.
- Improve instrument approach capability. This includes the potential for an improved GPS approach to Runway 31 with visibility minimums of not lower than ¾-mile. If implemented, the RPZ associated with Runway 31 would increase in size, as shown on **Exhibit 3G**. Given the relocated Runway 31 threshold, the majority of the RPZ would remain on airport property; a small portion (0.9 acres) would extend beyond the airport's boundary. Airside Alternative 3 also includes the possibility of implementing instrument approach procedures with minimums not lower than 1-mile to each end of Runway 17-35, with Veterans Memorial Drive rerouted around the Runway 35 RPZ, pending the results of an environmental study and cost-benefit analysis.
- Remove pavement associated with Runways 3-21 and 8-26, the Runway 35 blast pad, Taxiway B, Taxiway C, and Taxiway D where it extends to the west beyond the apron.
- Remove connector Taxiway D where it leads to Runway 13-31 to eliminate direct access from the apron.
- Construct new taxiways to serve Runway 17-35. New taxiway pavement is proposed to extend north from the west side of the apron and then turn west to access Runway 35. Access to Runway 17 is planned via a proposed partial-parallel taxiway that would extend northeast from Runway 13-31 and then turn north toward Runway 17. An offset taxiway is proposed for this runway end to allow aircraft to hold perpendicular to the runway. All proposed taxiway pavement serving Runway 13-31 is planned to be 35 feet wide, while proposed taxiways serving Runway 17-35 are planned to be 25 feet wide.
- Reduce the width of Taxiway A to 35 feet, in accordance with TDG 2A standards.
- Install runway edge lights on Runway 17-35.
- Install PAPI-2s and REILs on Runway 17-35.
- Upgrade PAPI-2s on Runway 13-31 to PAPI-4s.
- Re-mark Runway 17-35 with non-precision markings (threshold and designation) if/when a non-precision instrument approach is implemented to either runway.
- Install MITL. Currently, there is no taxiway lighting at PIL; taxiways are identifiable in low visibility with reflectors. MITL is proposed on all existing and new taxiways to enhance safety.

LANDSIDE FACILITY REQUIREMENTS

Elements included within this section include general aviation terminal facilities, aircraft hangars and tiedowns, aircraft parking aprons, automobile parking, and airport support facilities.

Runway Design Codes (RDC)

Runway 13-31 RDC: C-II-5000
Runway 17-35 RDC: A/B-I-VIS

Install REILs
Install PAPI-2
Install PAPI-4
Visual/Not Lower than 1-Mile RPZ
Reduce Runway Length by 1,001'; Reduce Width to 100'
Visual/Not Lower than 1-Mile RPZ
0.9 Acres
11.7 Acres
Visual/Not Lower than 1-Mile RPZ
Relocated Wind Cone/Segmented Circle
Narrow Taxiway A to 35'
Install PAPI-4
3/4-Mile RPZ
794
Install MITL on All Taxiways
Reduce Runway Width to 60'
Install MIRL
Install PAPI-2
Install REILs
Visual/Not Lower than 1-Mile RPZ
Reroute Road Around RPZ

Ultimate Runway 13-31 (7,000' x 100')
Ultimate Runway 17-35 (4,200' x 60')
Runway 8-26 (To Be Closed)
Runway 3-21 (To Be Closed)
Veterans Airport Dr
Buena Vista Blvd
300'
550'
500'
B
A
C
D

N
0 800
SCALE IN FEET

Photo Source:
Google Earth 01/2024

Note: Acreages shown are approximate.

LEGEND

- Airport Property Line
- A Taxiway Designation
- Runway Safety Area (RSA)
- Runway Object Free Area (ROFA)
- Runway Obstacle Free Zone (ROFZ)
- Runway Protection Zone (RPZ)
- Uncontrolled RPZ
- ASOS Critical Area
- High-Energy Area
- Runway Visibility Zone (RVZ)
- Pavement to be Removed
- Ultimate Airfield Pavement
- Ultimate Road

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TERMINAL BUILDING AND VEHICLE PARKING REQUIREMENTS

The terminal facilities provide space for a variety of activities and pilot services. The GA terminal building at Cameron County Airport provides approximately 2,600 square feet (sf) of space, including a lobby, a pilots' lounge, a flight planning room, a conference room, an office/administrative area, restrooms, and vending machines.

The number of itinerant passengers expected to use terminal services during the design hour is taken into consideration to estimate terminal facility needs. These requirements are based on a range of designated square feet per design hour passenger (typically between 90 and 125 sf). For this study, a planning standard of 125 sf was used to estimate the space required. To determine the number of design hour passengers, the number of itinerant design hour operations is multiplied by the number of passengers expected on the aircraft. Design hour itinerant operations have been estimated at 15 percent of the design day itinerant operations occurring at the airport. Because most of the aircraft operating at PIL allow for multiple passengers, a multiplier of 2.5 was established for the short term, growing to 4.2 by the long term. This is a reasonable multiplier, as the airport regularly accommodates itinerant operations by aircraft with seating capacities of four to 10 passengers – a trend that is expected to continue throughout the planning period.

Table 3L details current and projected terminal building requirements over the planning period. As shown, the existing terminal building may become constrained in size as early as the short-term period (0-5 years); nearly 9,000 sf is estimated to be needed by the end of the planning period. Consideration should be given to expanding the terminal building if/when the need for additional space arises.

Vehicle parking spaces for airport users have also been evaluated. Currently, the only marked vehicle parking spaces are located in front of the terminal building, with seven spaces available. There are no dedicated parking areas for airport tenants. Parking space requirements were based on estimated existing and future itinerant traffic, as well as based aircraft at the airport. Although some based aircraft owners prefer to park their vehicles in their hangars, safety can be compromised when automobile and aircraft movements are intermixed. This planning study assumes 30 percent of based aircraft will require vehicle parking spaces. **Table 3L** details vehicle parking requirements for the airport. By the long term, 85 marked vehicle parking spaces are estimated to be needed to accommodate local and transient airport users.

TABLE 3L | GA Terminal Services Requirements

	Available	Short Term	Intermediate Term	Long Term
Design Hour Itinerant Operations	13	14	15	17
Multiplier	–	2.5	3.0	4.2
Design Hour Itinerant Passengers	–	35	45	71
Total Building Space (sf)	**2,600**	**4,400**	**5,600**	**8,900**
Marked Vehicle Parking Spaces	**7**	**44**	**55**	**85**

Source: Coffman Associates analysis

AIRCRAFT STORAGE HANGARS AND APRON REQUIREMENTS

Utilization of hangar space varies as a function of local climate, security, and owner preferences. The trend in general aviation aircraft, whether single- or multi-engine, is toward more sophisticated (and, consequently, more expensive) aircraft; therefore, many aircraft owners prefer enclosed hangar space to outside tiedowns.

The demand for aircraft storage hangars is dependent on the number and type(s) of aircraft expected to be based at the airport in the future. For planning purposes, it is necessary to estimate hangar requirements based on forecast operational activity; however, actual hangar construction should be based on actual demand trends and financial investment conditions.

A variety of aircraft storage options are typically available at an airport, including shade hangars, T-hangars, linear box hangars, executive/box hangars, and bulk storage conventional hangars. Shade hangars are the most basic form of aircraft protection and are common in warmer climates. These structures provide a roof covering, but no walls or doors. There are no shade hangars at PIL.

T-hangars are intended to accommodate individual small single-engine piston aircraft or, in some cases, individual multi-engine piston aircraft. T-hangars are so named because they are constructed in the shape of a “T,” providing a space for the aircraft nose and wings, but no space for turning the aircraft within the hangar. Essentially, the aircraft can be parked in only one position. T-hangars are commonly “nested” with several individual storage units to maximize hangar space. In these cases, taxiway access is needed on both sides of the nested T-hangar facility. T-hangars are popular among aircraft owners with tighter budgets, as they tend to be the least expensive enclosed hangar space to build and lease. There are 8 individual T-hangar units at Cameron County Airport, or approximately 12,400 sf of T-hangar storage space.

Executive hangars are another hangar type commonly used for GA aircraft storage. These hangars provide additional storage space, usually with a footprint between 2,500 and 10,000 sf. Spaces this size allow for increased aircraft maneuverability, and they can provide for the storage of multiple aircraft within one hangar. Some executive hangars also have space for a small office. There are no executive hangars at Cameron County Airport.

Conventional hangars are large, clear span hangars that are typically located facing the main aircraft apron at an airport. These hangars provide for bulk aircraft storage and are often utilized by airport businesses, such as an FBO. Cameron County Airport has one conventional hangar, which offers approximately 28,200 sf of storage space. For planning purposes, executive and conventional hangars have been grouped together to develop an overall total for future capacity needs.

Planning for future aircraft storage needs is based on typical owner preferences and standard sizes for hangar space. For determining future aircraft storage needs, planning standards of 1,200 square feet per single-engine piston aircraft and 1,500 sf per multi-engine piston aircraft are utilized for T-hangars. For executive/conventional hangars, a planning standard of 3,000 sf is utilized for turboprop aircraft storage needs; 5,000 sf for business jet aircraft storage needs; and 1,500 sf for helicopter storage needs.

In total, there is approximately 40,600 sf of aircraft storage capacity at Cameron County Airport. With 24 aircraft currently based at the facility and more anticipated to base at the airport by the end of the

planning period, expansion of hangar facilities should be planned. **Table 3M** details the estimated hangar space requirements over the planning period. Over the long term, an additional 77,700 sf of hangar space is estimated to be needed, with more capacity for each storage type. Options to include these additional facilities will be explored in the next section. Construction of new hangars should be phased to meet existing demand, rather than tied to a particular date or timeframe. Construction can be undertaken by either the airport sponsor or a private developer.

TABLE 3M | Aircraft Storage Requirements

	Current	Short Term	Intermediate Term	Long Term
Based Aircraft	24	29	34	45
T-hangar Area (sf)	12,400	17,200	20,200	32,300
Executive/Conventional Hangar Area (sf)	28,200	57,200	71,500	86,000
Total Aircraft Storage (sf)	**40,600**	**74,400**	**91,700**	**118,300**

Source: Coffman Associates analysis

Parking apron and parking position requirements have also been calculated. Parking aprons should provide space for locally based aircraft that are not in storage hangars, as well as itinerant aircraft and aircraft that are used for training and air taxi operations. Industry planning standards were applied to determine required aircraft apron space. These standards call for 650 square yards (sy) per local aircraft, 800 sy per itinerant aircraft, and 1,600 sy per large turboprop/jet aircraft. Aircraft parking position requirements have been calculated at five percent of based aircraft for local operations and 10 percent of busy day itinerant operations for transient GA operations in the short term, increasing to 20 percent in the long-term. As jet operations are anticipated to increase over the planning period, there may be demand for more turbine aircraft parking positions.

Table 3N details parking apron and position requirements over the planning period. Cameron County Airport currently has approximately 108,000 sy of available aircraft parking apron, including ten marked parking positions on the terminal apron. As detailed in the table, the available apron area is sufficient throughout the planning period; however, additional marked aircraft parking, including that for business jets and helicopters, may be needed.

TABLE 3N | Aircraft Apron and Parking Requirements

	Current	Short Term	Intermediate Term	Long Term
AIRCRAFT PARKING				
Local Positions	–	1	2	2
Transient GA Positions	–	12	19	28
Corporate Jet Positions	–	1	2	5
Helicopter Positions	–	1	2	2
Total Aircraft Parking Positions	**10**	**15**	**25**	**37**
Total Apron Area (sy)	**108,000**	**12,800**	**20,800**	**33,200**

Source: Coffman Associates analysis

AIRCRAFT RESCUE AND FIREFIGHTING (ARFF)

Cameron County Airport does not have an aircraft rescue and firefighting (ARFF) building or equipment located on the airfield. Because PIL is a GA airport, the FAA does not require ARFF services to be provided. The airport is anticipated to remain a GA airport through the planning period, so on-site ARFF facilities are not planned.

AVIATION FUEL STORAGE

Fuel at Cameron County Airport is stored in two county-owned fuel tanks: one 15,000-gallon tank for 100LL fuel and one 15,000-gallon tank for Jet A fuel. The county also owns two fuel trucks – one for 100LL and one for Jet A – and each has a 2,000-gallon capacity. Based on historical fuel flowage records from 2021 through 2023, the airport pumped an average of 11,357 gallons of Jet A and 13,709 gallons of 100LL annually. Dividing the total fuel flowage by the total number of operations provides a ratio of fuel flowage per operation. Between 2021 and 2023, the airport pumped approximately 0.39 gallons of Jet A per turbine operation and 0.47 gallons of 100LL per piston operation.

Maintaining a 14-day fuel supply would allow the airport to limit the impact of a disruption to fuel delivery. The airport currently has enough static fuel storage to meet the 14-day supply criteria for both Jet A and 100LL fuel. Based on these usage assumptions and projected design day operations, no additional storage for either fuel type is projected to be needed. **Table 3P** summarizes the forecasted fuel storage requirements through the planning period.

TABLE 3P | Fuel Storage Requirements

			PLANNING HORIZON		
	Available	Current Need*	Short Term	Intermediate Term	Long Term
Jet A					
14-Day Supply (gal.)	15,000	529	572	610	691
Annual Usage (gal.)	–	13,800	14,900	15,900	18,000
100LL					
14-Day Supply (gal.)	15,000	639	691	737	834
Annual Usage (gal.)	–	16,600	18,000	19,200	21,700

*Current need reflects the average of the last three years' fuel flowage.

Sources: Historic fuel flowage data provided by the airport; fuel supply projections prepared by Coffman Associates.

Planning should also consider the addition of a tank to store unleaded aviation fuel (100UL). The FAA has recently approved the use of 100UL in piston-powered aircraft, although unknowns regarding infrastructure and distribution remain; nevertheless, the alternatives will include placeholders for these facilities.

UTILITIES

The availability and capacity of the utilities serving the airport are important factors in determining the development potential of the airport property, as well as the land immediately adjacent to the facility. Ultimately, the availability of water, gas, sewer, and power sources are of primary concern when assessing available utilities. Given the forecast potential for future landside facility growth, the utility infrastructure serving the airport may need to be expanded to serve future development.

PERIMETER FENCING AND GATES

Perimeter fencing is used at airports primarily to secure the aircraft operational area and reduce wildlife incursions. The physical barrier of perimeter fencing:

- Gives notice of the legal boundary of the outermost limits of a facility or security-sensitive area;
- Assists in controlling and screening authorized entries into a secured area by deterring entry elsewhere along the boundary;
- Supports surveillance, detection, assessment, and other security functions by providing a zone for installing intrusion-detection equipment and closed-circuit television (CCTV);
- Deters casual intruders from penetrating a secured area by presenting a barrier that requires an overt action to enter;
- Demonstrates the intent of an intruder by their overt action of gaining entry;
- Causes a delay to obtain access to a facility, thereby increasing the possibility of detection;
- Creates a psychological deterrent;
- Optimizes the use of security personnel, while enhancing the capabilities for detection and apprehension of unauthorized individuals;
- Demonstrates a corporate concern for facility security; and
- Limits inadvertent access to the aircraft operations area by wildlife.

Cameron County Airport is fully enclosed by fencing, with one motorized gate and several manual gates providing access to the airfield for authorized users. All fencing and gates should be maintained throughout the planning period.

LANDSIDE FACILITY REQUIREMENTS SUMMARY

A summary of the landside facilities projected to be needed at Cameron County Airport is presented on **Exhibit 3H**.

LANDSIDE DEVELOPMENT ALTERNATIVES

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; and overall revenue support functions, including airport support facilities. 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, for which land use planning is the guide. For airports, the land use guidance in the terminal area should generally be dictated by aviation activity levels. Consideration will also be given to non-aviation uses that can provide additional revenue to the airport and support economic development for the region.

LANDSIDE ALTERNATIVE 1

Depicted on **Exhibit 3J**, Landside Alternative 1 focuses primarily on expansion of aircraft storage facilities in existing hangar areas. Consideration has been given to the construction of a new vehicle access road and dedicated parking for tenants and visitors to segregate vehicle and aircraft movements as much as possible.

	Available	Short Term	Intermediate Term	Long Term
Aircraft Storage Hangar Requirements				
Aircraft to be Hangared	24	28	32	43
T-Hangar Area (sf)	12,400	17,200	20,200	32,300
Executive/Conventional Hangar Area (sf)	28,200	57,200	71,500	86,000
Total Hangar Storage Area (sf)	40,600	74,400	91,700	118,300

Aircraft Parking Apron				
Aircraft Parking Positions	10	15	25	37
Total Public Apron Area (sy)	108,000	12,800	20,800	33,200

General Aviation Terminal Facilities and Parking				
Building Space (sf)	2,600	4,400	5,600	8,900
Terminal and Tenant Vehicle Parking	7	44	55	85

Fuel Storage*				
14-Day Fuel Storage - 100LL (gal)	15,000	691	737	834
14-Day Fuel Storage - Jet A (gal)	15,000	572	610	691

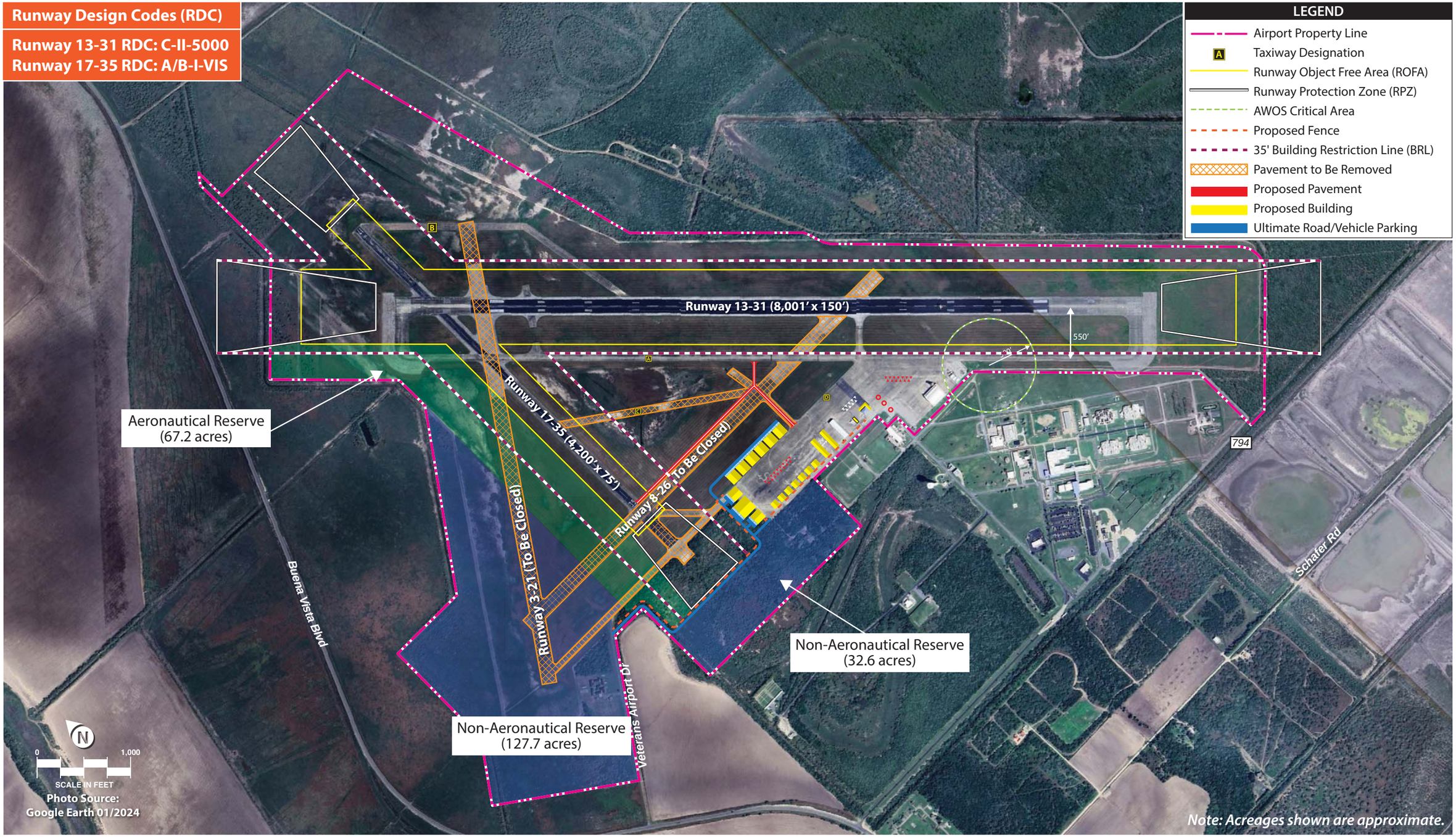
*Consider additional tank for unleaded aviation fuel.

Runway Design Codes (RDC)

Runway 13-31 RDC: C-II-5000
Runway 17-35 RDC: A/B-I-VIS

Runway Design Codes (RDC)

Runway 13-31 RDC: C-II-5000
Runway 17-35 RDC: A/B-I-VIS



A 35-foot building restriction line (BRL), based on each runway's existing and ultimate instrument approach capability, is also shown. The BRL is the product of Title 14 CFR Part 77 transitional surface clearance requirements. These requirements stipulate that no object may be located in the primary surface. For Cameron County Airport, the primary surface is currently and is planned to remain at 500 feet wide, centered on the runway, for both runways. If Runway 13-31 were ever to be equipped with an instrument approach procedure with visibility minimums down to ¾-mile, the width of the primary surface would increase to 1,000 feet. From the primary surface, the transitional surface extends outward at a slope of one vertical foot to every seven horizontal feet. The location of the BRL is dependent on structure height. **It should be noted that the BRL is not a standard; rather, it is a guideline to use when planning vertical infrastructure on the airport.** The FAA may require structures inside the BRL to be equipped with obstruction lights.

Landside Alternative 1 proposes the following:

1. Construction of a new airport access road (Veterans Airport Drive) around the Runway 35 RPZ. Relocation of the existing perimeter fencing and installation of a motorized gate to control access onto the airfield are also proposed.
2. Hangar construction on the existing apron. This includes a variety of hangar sizes, ranging from 75' by 75' executive hangars to a 175' by 175' conventional hangar, which could support an aviation-related business. Two 8-unit T-hangars are also proposed adjacent to the existing T-hangars.
3. Inclusion of vehicle parking lots for the larger hangars that are proposed on the north and west sides of the apron.
4. Expansion of the airport terminal building. The facility requirements indicated a potential need for approximately 9,000 sf of terminal facility space. This alternative considers a 5,000-sf expansion of the existing terminal building to the north and east.
5. Expansion of the fuel farm to include an additional tank for unleaded (UL) Avgas.
6. Additional parking for both fixed wing aircraft and helicopters. Tiedowns for fixed wing aircraft are proposed on the FBO and west aprons, with adequate spacing to allow for an ADG II taxilane, at a minimum, around the parking area. Three helicopter parking positions are proposed for the west side of the FBO apron to accommodate a projected increase in this type of transient activity.
7. Consider the potential for future aeronautical and non-aeronautical development. Once the closure of Runways 8-26 and 3-21 has been finalized, a significant portion of airport property will become available for development opportunities. As shown on the second page of **Exhibit 3J**, Landside Alternative 1 depicts the potential for future aeronautical development of areas that have aviation potential, including the 67.2 acres to the west of Runway 17-35, which are currently undeveloped. As this area is located along the flightline of Runway 17-35, with a portion extending west near the Runway 13 threshold, it should be reserved for the potential development of aeronautical facilities. Two areas proposed for potential non-aeronautical development are also shown. This includes a 127.7-acre parcel and a 32.6-acre parcel, both located on the south side of airport property in the vicinity of Veterans Airport Drive.

LANDSIDE ALTERNATIVE 2

Landside Alternative 2 is depicted on **Exhibit 3K**. This alternative considers a different hangar layout, with a greater focus on larger hangars to support larger aircraft storage or aviation businesses. Like Landside Alternative 1, a 35-foot BRL, based on each runway's existing and ultimate instrument approach capability, is shown on the second page of the exhibit.

Landside Alternative 2 proposes the following:

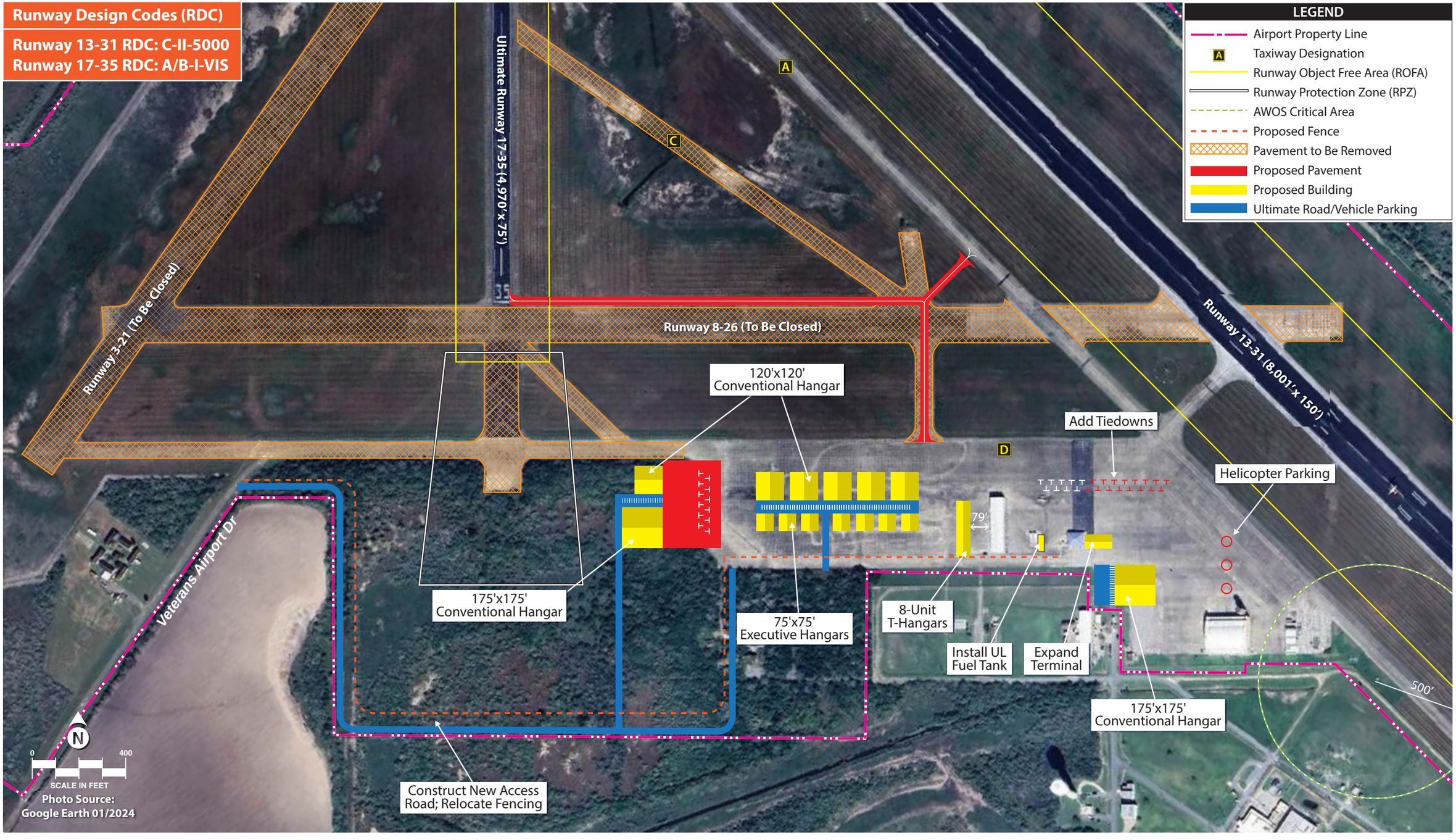
1. Construction of a new airport access road (Veterans Airport Drive). In this scenario, the new road is located on the south edge of the property line. Relocation of the existing perimeter fencing and installation of a motorized gate to control access onto the airfield are also proposed.
2. Hangar construction on the existing apron. This includes box hangars ranging in size from 75' by 75' executive hangars to 120' by 120' conventional hangars on the west apron. These hangars are proposed for the central portion of the west apron, with a vehicle access road and a parking area to segregate vehicle and aircraft movements. One 8-unit T-hangar is also proposed adjacent to the existing T-hangars. Farther to the east, near the FBO hangar, a larger 175' by 175' conventional hangar is proposed.
3. Construction of a new apron area to support additional conventional hangars. This area is planned to extend west from the existing apron, with the potential for additional aviation development farther to the south if the need arises, as shown on the second page of **Exhibit 3K**. Along with hangar development, this apron is also proposed to be equipped with additional parking for fixed wing aircraft.
4. Expansion of the airport terminal building. The facility requirements indicated a potential need for approximately 9,000 sf of terminal facility space. This alternative considers a 6,500-sf expansion of the existing terminal building to the east.
5. Expansion of the fuel farm to include an additional tank for unleaded (UL) Avgas.
6. Additional parking for both fixed wing aircraft and helicopters. Additional tiedowns for fixed wing aircraft are proposed on the terminal apron, as well as on the proposed west apron expansion. The tiedowns would be configured to allow for ADG II taxilanes, at a minimum. Helicopter parking positions are proposed north of the FBO hangar.
7. Consider the potential for future aeronautical and non-aeronautical development. As shown on the second page of **Exhibit 3K**, this alternative depicts the potential for future aeronautical development on areas that have aviation potential, including 67.2 acres west of Runway 17-35 and south of Runway 13. Two areas proposed for potential non-aeronautical development are also shown. This includes a 127.7-acre parcel and a 32.6-acre parcel, both located on the south side of airport property.

LANDSIDE SUMMARY

The landside alternatives consider various options to accommodate an array of aviation activities that either currently occur or could be expected to occur at Cameron County Airport in the future. There is demand for new facilities at the airport now, and the county will need to determine how to develop the

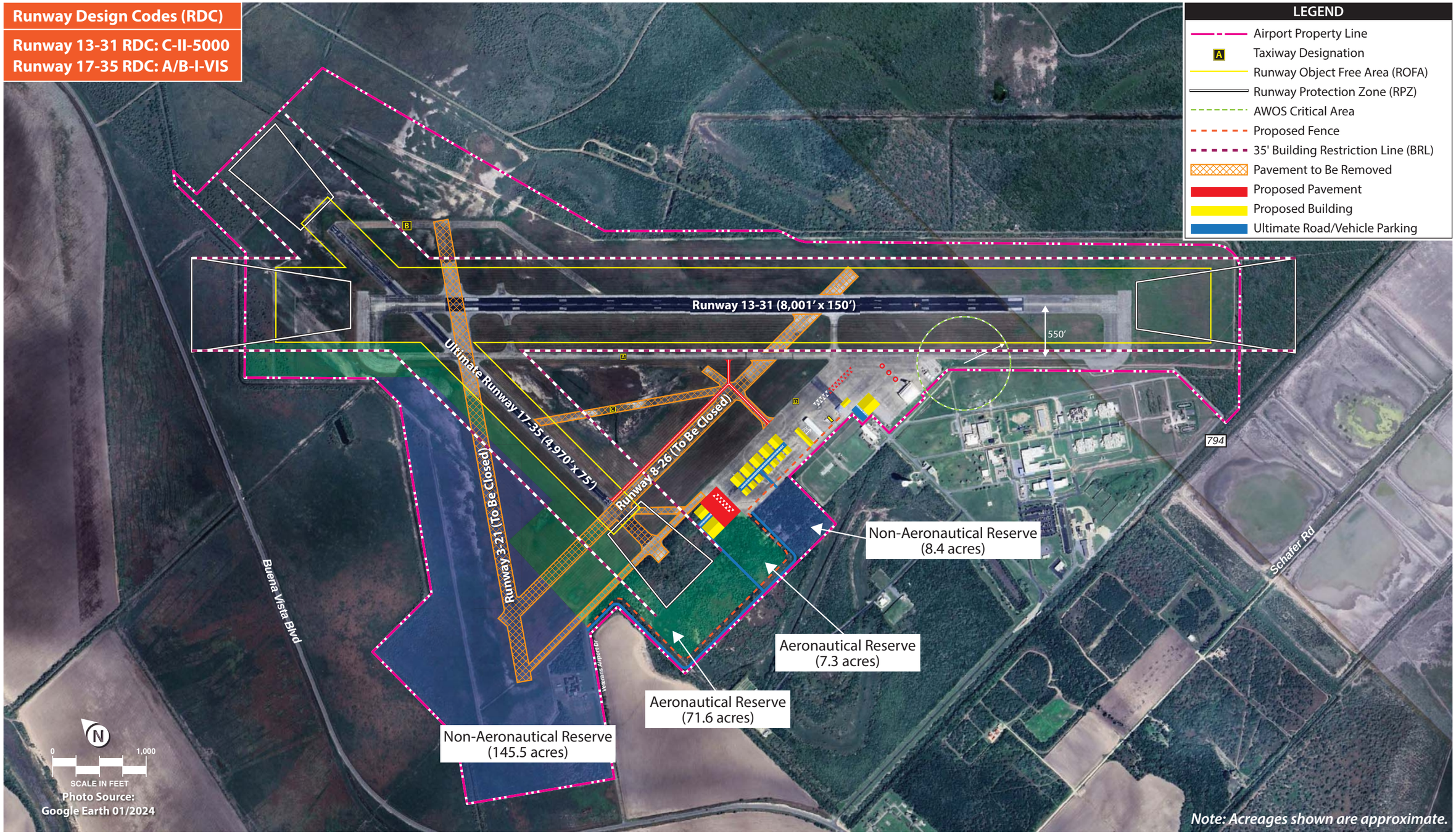
Runway Design Codes (RDC)

Runway 13-31 RDC: C-II-5000
Runway 17-35 RDC: A/B-I-VIS



Runway Design Codes (RDC)

Runway 13-31 RDC: C-II-5000
Runway 17-35 RDC: A/B-I-VIS



property in an organized and thoughtful way. It is beneficial to provide a long-term vision for the airport for future generations, and each of the development options considers a long-term vision that would, in some cases, extend beyond the 20-year scope of this master plan. **Table 3Q** summarizes the various capacities of landside facilities proposed in each alternative.

TABLE 3Q | Landside Alternatives – Added Facility Capacities

	Landside Alternative 1	Landside Alternative 2
T-Hangar (sf)	24,800 sf	12,400 sf
Executive/Conventional Hangars (sf)	185,200 sf	187,025 sf
Apron (sy)	0 sy	10,300 sy
Aircraft Parking (Including Helicopter)	33	31
Terminal Building (sf)	5,000 sf	6,500 sf

Source: Coffman Associates analysis

SUMMARY

This chapter is intended to present an outline of airside and landside facilities needed at Cameron County Airport and potential alternatives to meet safety requirements and demand. Following review of the proposed development alternatives with Cameron County officials, the planning advisory committee, and TxDOT, the next step in the planning process is to arrive at a recommended development concept. Once a consolidated development plan is identified, a capital improvement program, including a list of prioritized projects tied to aviation demand and/or necessity, will be presented.