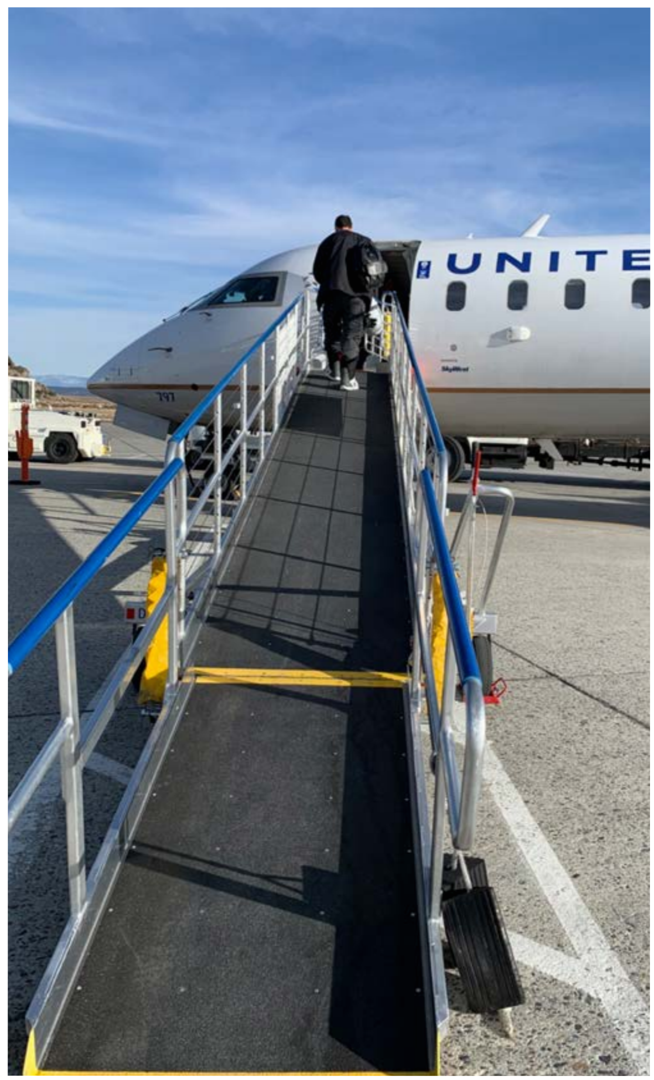
Las Cruces International Airport

Master Plan 2023

LAS CRUCES
INTERNATIONAL
AIRPORT



AIRPORT MASTER PLAN

for

LAS CRUCES INTERNATIONAL AIRPORT

Las Cruces, New Mexico

August 2023

Prepared by

DuBois & King inc.

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Vision and Purpose of Plan

A Vision for Las Cruces International Airport (LRU)

The Las Cruces Master Plan process is built on eight guiding ideas that have been used to develop the overall vision for what LRU will be in the next ten years. Through the implementation of this plan, LRU will be:

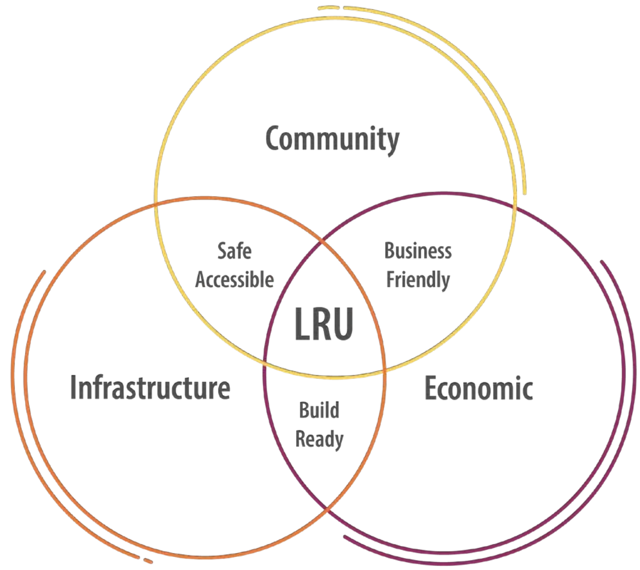
- Safe for all users
- Welcoming and supportive of business
- A hub for regional, national, and international tourism
- A center of education and job development
- Supported by the City
- In position to be an economic development engine
- Supportive of Aviation and Commercial Aerospace
- Important to the people of the Las Cruces region

LRU Vision

"Las Cruces International Airport is a thriving well-connected aviation and commercial aerospace gateway to the City of Las Cruces, the region and beyond, providing access and economic opportunity."

These guiding principles are distilled into a core vision statement that, at its heart, sees LRU as having a key role in the community, providing the infrastructure that airport users and businesses need to grow, and to be an important part of the local and regional economy.

Las Cruces International Airport is in a strong position to achieve this vision. It lies in a central geographic location that serves the city, the region, and a wide range of users. There are opportunities to grow these connections to include commercial air service. The growth of the Commercial Aerospace Industry, driven regionally by the presence of Spaceport America and its tenants, presents an opportunity for LRU to actively encourage economic growth in and around the airfield which will benefit the community and the region.



Master Plan Purpose

Broadly, this Master Plan will serve as a tool to implement the Plan's vision. Through a process of analysis and assessment, the Plan has several recommended improvements, actions, and policy changes that (when implemented) will move LRU toward the vision. Essential to Plan implementation is understanding the level of need, potential costs and impacts so that the City can adequately plan for future investments.

The Federal Aviation Administration (FAA) anticipates that an Airport Master Plan, the Aviation Forecast, and mandatory Airport Layout Plan clearly outline planned infrastructure investments over a ten- to twenty-year period. These investments are incorporated into the Airport's Capital Improvement Plan and are used to apply for funding for improvements from the FAA. To ensure appropriate access to FAA funding, this Plan includes the required components per the FAA for an Airport Master Plan.

The Master Plan objectives are to:

- Provide an effective graphic representation of the development of the airport and the anticipated land uses in the vicinity of the airport;
- Provide the necessary Airport Layout Plan (ALP) drawing set;
- Identify and document the strengths, opportunities, weaknesses, and threats that the proposed development will improve, correct, or mitigate;

- Support proposed development with technical, economic, and environmental investigation of conceptual layouts and alternatives;
- Propose a realistic, integrated schedule for the implementation of the short-term development proposed;
- Provide sufficient project scope and detail for future environmental evaluations that may be required before the project is approved;
- Provide a plan that addresses the issues and satisfies local, state, and federal regulations;
- Document policies and future aeronautical demand to support municipal or local deliberations on land use controls, spending, debt, and other policies necessary to preserve the integrity of the airport and its surroundings;
- Establish the framework for continued planning.

Relationship to Other Plans

If LRU is to be a place that serves the city and the region, it is vital that the Master Plan be considered in the context of the many other planning initiatives that have taken place in the City and the Region. Of relevance are the Elevate Las Cruces Comprehensive Plan (2020), which focuses on a "place based" approach to future growth that is built on community health, prosperity and livability, and the Las Cruces Innovation and Industrial Park Master Plan (2021), which lays out a framework for developing the area immediately adjacent to LRU.

Throughout this document, these plans have been considered and, in areas where there are clear connections between the Airport Master Plan, these connections have been clearly called out.

Chapter One: Introduction

1-1 Introduction

An Airport Master Plan is a comprehensive study of an airport that describes short-, medium-, and long-term development plans to meet future aviation demand. The elements of the master planning process will vary in the level of detail and complexity depending upon the size, function, and problems of the individual airport. The LRU MP guides and reinforces the continued modernization and expansion of the Airport and presents a framework to cost-effectively satisfy aviation demand while considering the potential environmental and socioeconomic impacts. The Federal Aviation Administration (FAA) does not approve Master Plans, rather they accept them. However, the FAA does approve aviation forecasts and airport layout plans once they find them acceptable. The LRU MP will deliver an updated aviation forecast and an Airport Layout Plan. The Aviation forecast was submitted to the FAA approval prior to the development of Chapter Four, Facility Needs. The Airport Layout Plan was reviewed by the FAA as part of the master planning process and uploaded into the FAA Obstruction Evaluation / Airport Airspace Analysis (OE/AAA) system. Once conditionally approved, projects identified will be eligible for FAA funding and may be constructed after proper environmental review.

1-2 Purpose and Need

The purpose and need statements set the stage for the identification and evaluation of reasonable project alternatives and ultimately the selection of preferred alternatives. In addition to the vision and goals of this Plan, purpose and needs statements are essential to the process of identifying future investments at LRU.

1-2-1 Purpose

The purpose of the Las Cruces International Airport Master Plan (LRU MP) is to recognize the significant accomplishments and changes that have taken place since the 2017 Airport Action Plan and develop a Master Plan that provides a clear path for making investments that further the Vision of LRU. To accomplish this, a detailed study will be completed that identifies, evaluates, and documents specific areas in need of improvement at the airport. Areas identified through the update process will then be addressed through proposed development plans.

1-2-2 Need

LRU is uniquely located among, and is home to, some private and government sponsored aviation and aerospace activities. The Airport is also located between restricted airspace and along a major interstate, I-10, that stretches from the east coast to the west coast of the US. It is critical that investments be made to the infrastructure, facilities, and runways at LRU to achieve the City's goals of providing commercial air service out of LRU; attracting commercial aviation and aerospace businesses; supporting existing tenants; being the airport of choice for NMSU, locals, visitors, the Spaceport, and others; and providing additional economic development to the City of Las Cruces.

1-3 Changes Since the 2017 Airport Action Plan

The implementation plan of the 2017 Airport Action Plan outlined projects to be accomplished and provided guidance on how to implement the preferred development recommendations from the Plan. Each project was sequenced to balance demand, schedule, other projects, environmental/agency approval, funding, and financial constraints. The project plan is designed to allow for flexibility as changes may occur over time to react to changing conditions so that the airport can reprioritize projects based on actual demand. The implementation plan was divided into three phases with projects to be completed between 2017 and 2036. Out of the 26 projects identified, 10 have been completed and an additional 8 are moving forward at present. This Plan will evaluate the remaining projects and determine their status based on the direction provided.

1-3-1 Air Service

Air carrier service at LRU dates to 1948 when the first service was provided by Pioneer Airlines with flights to Amarillo and El Paso. However, the availability and extent of scheduled air carrier and commuter service has been sporadic for many years, and currently LRU does not have scheduled air service. Las Cruces City Council has expressed the desire to reestablish air service stating that by 2022 "the airport terminal will be renovated to accommodate 20,000 enplanements per year". To achieve this goal, the airport began a concerted and strategic approach to reestablishing commercial passenger air service. As of January 2023 air service from LRU to ABQ is provided by Advance Air.

1-3-2 Commercial Aerospace

With 13 licensed Spaceports, 21 launch licenses in the US, and the growing commercial aerospace industry there exists unique opportunities for LRU to be an airport of multiple uses including the aerospace industry and its supporting businesses. LRU is in a prime location nestled between Spaceport America to the north (which houses Virgin Galactic, Up Aerospace, Exos Aerospace and others), Blue Origins to the southeast and the Midland Spaceport to the east. In addition to the private commercial aerospace industry, White Sands Missile Range, NASA, Holloman Air Force Base, and Fort Bliss are all located within approximately 60 miles of LRU. Their restricted airspace drives most of the air traffic in the southern part of the region over or near LRU attracting businesses and experts to the area.

Commercial Aerospace Development

The primary objective of commercial aerospace development at LRU is to increase Las Cruces's attractiveness as a home base for commercial aerospace companies. The metric of success is how many companies in the commercial aerospace industry relocate to, start up in, or are retained in the Las Cruces area and generate jobs, business activity, and tax revenue. Based on others' experience, the ability of aerospace developers and operators to locate research and development activities on or near a flight line; conduct gradual and iterative test operations on site or in proximity; and have access to passenger air service are major factors in location decisions. This Master Plan will examine what measures might be taken to enable these capabilities and what the triggers are to activate the sequential elements (termed Phases in this document) of the Concept of Operations (ConOps) as discussed in the next section.

Spaceport America

The development of Spaceport America, an FAA-licensed spaceport located 45 miles north of Las Cruces, has made LRU a key element in considering how future international (and perhaps intergalactic) travelers will access future low earth orbit flights from the spaceport. When traffic to this futuristic facility reaches expectations, there will be a significant number of travelers and spaceport staff flying into the region prior to boarding spacecraft at the Spaceport. This anticipated future makes planning for the future of LRU facilities and the resumption of air service at this airport particularly important.

1-3-3 Las Cruces Innovation and Industrial Park (LCIIP)

The Las Cruces Innovation and Industrial Park (LCIIP) is located adjacent to the airport to the south. Originally established in 1982, the Park comprises 1,820 acres with 1,418 acres undeveloped. Approximately 900 city-owned acres are available for sale or lease as of this writing. Zoned predominantly for manufacturing, warehousing, distribution, aerospace, aviation and defense, there are 19 businesses currently operating within the Park.

On July 19, 2021, the Las Cruces City Council unanimously adopted an updated master plan for the marketing and development of the City's Innovation and Industrial Park (LCIIP). Based on the strengths, opportunities, weaknesses, and constraints discovered as part of the LCIIP master planning process, a developed Strategic Goal is to integrate the LCIIP with the Airport. To do so, a high priority industry would be targeted for future development and that includes Aviation, Aerospace, and Defense (primarily Unmanned Aerial Systems (UAS).

1-3-4 New Mexico State University

New Mexico State University (NMSU) is a public land-grant research university with its main campus in Las Cruces. Many of the 5,000 staff members travel on behalf of the University. Through its wide range of programs, including a highly respected Aerospace Engineering program, there are over 20,000 students enrolled with a high percentage of out of state students. NMSU brings significant potential for economic development. The ability to offer air service and have runways adequate to allow for larger aircraft, will encourage further use of the airport, allow for PSL and other businesses to grow, and allow for team athletics to fly into and out of LRU as noted below.

Physcial Science Lab

Physical Science Lab (PSL) was the first of only 7 recognized Unmanned Aerial Test Site (UAS) Locations in the US designated by the FAA. PSL has a 15,000 square foot hangar at LRU and often tests their UAVs at the airport. Founded in 1946, PSL is a unique national resource that supports the development and application of new and existing technologies. This multidisciplined organization provides expertise in suborbital platforms, information modeling for predictive decision making, specialized intelligence community support, advanced NASA scientific exploration and experimentation, homeland security sensing and detection technologies, and advanced weapons and countermeasures development and testing designed to strengthen our national security. PSL will provide additional economic development by attracting companies to work with the community.

Athletics

According to NMSU, it is not uncommon for NMSU teams to drive and park at the airport, board ground transportation such as a bus to El Paso for an away game, and then return to Las Cruces via a chartered aircraft. This is due to the current runway lengths at LRU. Longer runways will enable NMSU to operate fully loaded charter aircraft without limitations. NMSU also stated that ultimately, scheduled commercial air service would be preferred allowing for competing players and the fan base to travel to and from Las Cruces without limitations.

1-4 Regional Public Participation/ Engagement

Public input is highly encouraged during the Master Plan process and has its greatest impact during the early stages of the planning process. The LRU MP included a robust public involvement program which was given serious consideration during the program development. To be as transparent and effective as possible, public involvement included numerous parties such as aircraft owners, hangar tenants, staff of the airport and businesses on airport property, public officials, governmental agencies, and the public.

Public involvement program was facilitated by DuBois & King in close consultation with the LRU Airport Advisory Board. The program included multiple strategies, such as forming the LRU MP Coordination Committee (CC) of key stakeholders, local citizens, and decision makers. The CC provided insight and input into issues that arose throughout the process, as well as provided general information.

Additional public input has been collected as part of the Air Alliance, a coalition of nonprofit and business organizations that is focused on bringing intra and interstate air service development to LRU. Organizations involved include the Greater Las Cruces Chambers of Commerce, MVEDA, Virgin Galactic, NMSU, and other members of the local business community.

Other public involvement elements that were utilized included public meetings and workshops, a project website, and various written materials. These elements were used to inform the public about the status of the airport and the planning process and gather ideas about the future of the airport. To date, local, county and state government, state and federal lawmakers, airport and civilian businesses, educational institutions, and the Federal Aviation Administration (FAA) have met with the Airport and discussed the prospects of the Master Plan Update.

1-5 LRU Master Plan Elements

The required contents of this Master Plan are set out in FAA Advisory Circular 150/5070-6B, Airport Master Plans. Effective airport plans are based on the analysis of significant quantities of data and narrative that explains key study results. The LRU Master Plan is organized as follows:

Chapter One – Introduction: Overview, purpose, and need for the Master Plan.

Chapter Two – Inventory of Existing Facilities: Provides an inventory of facilities and conditions that currently exist at LRU. These baseline conditions allow evaluation of existing facility performance against anticipated future needs.

Chapter Three - Aviation Forecasts: Analyzes current and future airport activity at LRU. Forecasting provides an airport with a realistic estimate of future changes; fluctuations in activity anticipated over the forecast period; and the basis to determine existing and planned future facility needs.

Chapter Four – Facility Requirements: Identifies airside and landside facility requirements anticipated through the planning horizon based on industry standards and FAA guidelines. The capacity of existing facilities is assessed against aviation demand projections developed under Chapter Three. Supplemental analysis will include current and future Aerospace facilities.

Chapter Five – Alternatives: Process of developing alternative layouts for airside and landside facilities to meet growth projections and address Master Plan goals. The layouts are assessed for expected aeronautical utility, fiscal feasibility, and operational performance. A preferred alternative will be chosen during the development of this Chapter.

Chapter Six – Airport Layout Plan (ALP): Presents a selected alternative in a graphic format, essential to receiving FAA approval in accordance with the Fort Worth Region ALP checklist directives and uploaded into the OE/AAA system. The ALP set contains the following sheets:

1. **Cover Sheet -** Listing of sheets that comprise the ALP set, location and vicinity maps, and City of Las Cruces, FAA and NMDOT project numbers.

2. **Existing Airport Layout -** A drawing depicting the current airport layout.

3. **Ultimate Airport Layout Plan -** Depicts the recommended development identified in Chapter Five and all pertinent data blocks.

4. **Terminal Area Plan -** Indicates existing conditions that support the current airport uses.

5. **Airport Airspace Plan -** Plan for all FAA Part 77 imaginary surfaces, including approach slopes and any height or slope protection established by local zoning ordinance.

6. **Inner Portion of the Approach Surface Drawing -** An inner approach surface and runway protection zone control including a plan and profile of the ultimate runway protection zones and inner approach surface areas showing the controlling obstructions therein, top elevations, and proposed disposition.

Chapter Seven – Financial/Implementation Plan: Capital and implementation plan that identifies potential funding sources and outlines the timing and cost of implementation.

Chapter Two: Inventory of Existing Conditions

2-1 General

This Chapter describes existing facilities of the Las Cruces International Airport. This information will be used as a baseline for the development of the Master Plan.

2-1-1 Location and Setting

Constructed in 1942, the Las Cruces International Airport (LRU) is located on a mesa overlooking the Mesilla Valley eight (8) miles west of Las Cruces, New Mexico. The Airport sits on approximately 3,470 acres with an additional 1,120 acres of City-owned land as a buffer on the Airport's northwest corner. LRU is adjacent to various classifications of airspace. The Contiguous United States Air Defense Identification Zone (ADIZ) resides 30 nautical miles to the south. The White Sands Missile Range (WSMR) is located south, east, and northeast of the Airport along with numerous, embedded Military Operating Areas (MOA) to the east and north.

2-1-2 Climate

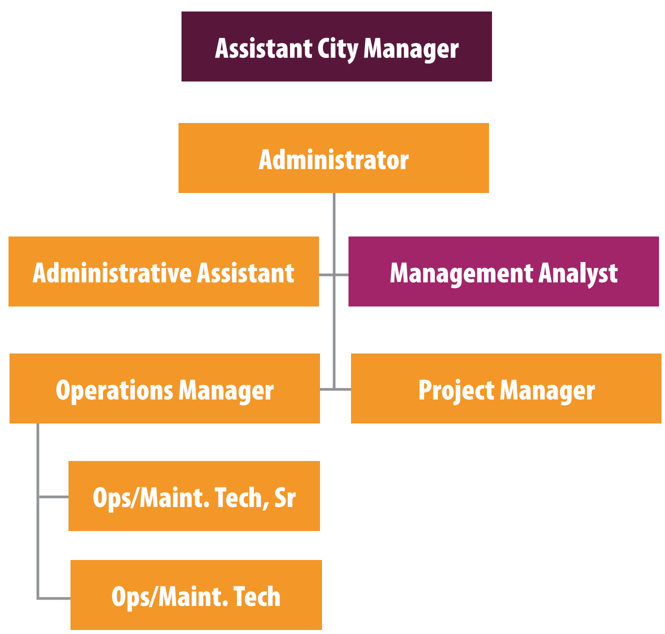
LRU is on the north edge of the Chihuahuan Desert with an Airport elevation of 4,457 feet. The climate of Las Cruces is characteristic of an arid desert climate, with large diurnal (day-night) and moderate annual temperature ranges, variable precipitation (42 days/year), low relative humidity, and abundant sunshine (294 days/year, more than 80% of an average year). With only 42 days of annual precipitation, LRU predominantly operates under Visual Flight Rules (VFR) conditions.

In the winter the weather is moderate with temperatures in the winter months (December to February) ranging from a monthly average low of 29°F to a monthly average high of 59°F. Temperatures can fall below 0°F. The Airport experiences freezing conditions approximately 84 days per year creating conditions conducive to frost on air foils. During the summer the weather is hot and partly cloudy with an average temperature in July of 95°F and rarely above 103°F.

Humidity in Las Cruces is generally quite low and comfortable, and there are a few days during the summer where humidity is close to 57%. The rainiest season is summer when it rains 41% of the time and thunderstorms occur throughout the area. July and August are the rainiest months with each averaging more than 8 days of rain. Spring is the driest season with only a 13% chance of rain. April is the driest month with only 1.5 rainy days. Las Cruces does not see any significant snowfall and averages only 2.2 inches of snow annually.

The predominant average hourly wind direction in Las Cruces varies throughout the year. Wind is most often from the south from June 25 to July 17 and for 2.6 weeks, from September 17 to October 5, with a peak percentage of 34% on July 10. The wind is most often from the east for 2.0 months, from July 18 to September 16, with a peak percentage of 39% on August 25. The wind is most often from the west for 8.7 months, from October 5 to June 25, with a peak percentage of 35% on January 1.

2-1-3 Airport Administration



LRU is owned and operated by the City of Las Cruces. The Airport Administrator reports to the Assistant City Manager and is responsible for the operation, maintenance, safety, and ongoing training of airport staff. In addition, the Airport Administrator ensures that airfield-based business employees and private airport users operate in compliance with airport rules and regulations and the minimum standards for commercial operators, as applicable.

An Airport Administrative Assistant is based in the Airport administrative offices and is responsible for handling of high level financial and administrative duties.
In 2021, the Airport Administrator (Airport Manager) hired an Operations Manager. This Manager will direct the Airport Operations and Maintenance Section and enable the Administrator to focus on the Airport's medium and long-term strategic goals and objectives.

The Airport Operations and Maintenance Section is responsible for maintaining the airside facilities on the airport to include airfield lighting, pavement maintenance, and vegetation control. Currently, the Airport has an acting Senior Ops and Maintenance Technician. An Airport Ops and Maintenance Technician position is currently vacant.

In fiscal year 2023, the City Council approved a new position, Project Manager. This Manager will oversee all capital projects including design and construction.
The Part 139 Airport Certification Manual (ACM) was reviewed as part of the Master Plan. In accordance with 14 CFR Part 139, Section 201(b)(1), the ACM shall be kept up to date at all times. In the absence of the Airport Manager of LRU, the line of succession for airport operational responsibilities is as follows.

The Part 139 Airport Certification Manual (ACM) was reviewed as part of the Master Plan. In accordance with 14 CFR Part 139, Section 201(b)(1), the ACM shall be kept up to date at all times. In the absence of the Airport Manager of LRU, the line of succession for airport operational responsibilities is as follows.

2-2 Airport System Planning Role

2-2-1 Federal Airport Planning

LRU is included in the FAA's National Plan of Integrated Airport System (NPIAS) as a Local asset, Public use GA airport and maintains a Class IV, 14 CFR Part 139 Certificate. Based on FAA formulas, LRU receives $150,000 of Non-Primary Entitlement (NPE) funding each year to support the Airport's Capital Improvement Plan (CIP). With only $150,000 of annual federal funding the Airport needs to be very strategic when considering capital improvement projects. Many projects require multi-year delays to allow for NPE funding to be accumulated to an adequate amount to fund a project. NPE grants can roll over for up to four years, meaning an airport can potentially bank up to $600,000. Unused money is redirected to the FAA. The FAA does offer another funding source—discretionary funding. This funding source is competitive and FAA funding priorities make receiving discretionary funds a challenge.

2-2-2 State Airport Planning

New Mexico Department of Transportation-Aviation Division (NMDOT-A) classifies LRU as a Regional GA Airport. LRU is considered an International Airport which can receive international passengers through the support of United States Customs and Border Protection (USCBP). The Las Cruces Border Patrol Station oversees approximately 3,943 square miles and has two Patrol Inspectors. The Patrol Inspectors and support personnel serve LRU on an on-call basis. On average, USCBP responds to approximately 0 calls per year from the airport.

U.S. Customs and Border Protection

2-2-3 Local Airport Planning

As LRU is currently listed as a GA airport, the City Council set a goal that by 2022, the airport terminal will be renovated to accommodate 20,000 enplanements per year. The Airport intends to develop passenger air service to and from LRU. The reader should note that once the airport reaches a sustained level of 10,000 annual enplanements the FAA will change the airport's funding status from Non-Primary to Primary. This status change would directly increase the airport's available annual federal funding for capital projects from $150,000 (NPE) to Primary Entitlement level of $1,000,000. To achieve the goal the Airport commissioned an air service development plan in 2020 and currently is executing the plan to bring Intra and Inter-State Air Service to LRU.

2-3 Current Airport Activities

2-3-1 Based Aircraft

LRU is a medium-activity airport with 106-based aircraft. The based aircraft are housed in hangars or sunshade spaces. The fleet mix of aircraft based at LRU are noted in the table below.

LRU Based Aircraft	
Single Engine Airplanes	82
Multi Engine Airplanes	10
Gliders	4
Military Aircraft	4
Helicopters	3
Jet Airplanes	2
Ultralights	1
Based Aircraft	**106**

2-3-2 Annual Aircraft Operations

According to the current 5010 Master Record aircraft operations are reported to be 101 per day or an estimated 36,825 annually. The breakdown of aircraft operations is noted in the table below. The overall operations estimate is average when considering the generally accepted industry standard of 300-450 operations per based aircraft. With passenger air service, Spaceport America, and commercial aerospace activity ramping up operations, it is anticipated that LRU operations will increase significantly

LRU Annual Aircraft Operations		
Type	Operations	% Total Ops
General Aviation Local	12,180	33%
General Aviation Itinerant	10,658	29%
Military	10,353	28%
Air Taxi	3,634	10%
Annual Operations	36,825	

2-4 Airport Users

The airport is currently home to fifteen (15), for-profit businesses employing approximately 60 full-time workers. These businesses include two (2) Part 91 flight schools, aircraft maintenance and repair shops, aircraft fabrication and assembly, aircraft upholstery, firefighting, aircraft storage, and several other aviation-related enterprises. In addition, LRU is home to nonprofit organizations including the Civil Air Patrol Las Cruces Composite Squadron, Experimental Aircraft Association Chapter 555, Las Cruces Aviators (507(c) 7 flying club), and New Mexico State University Physical Science Lab.

2-4-1 Fixed Base Operators

A Fixed Base Operator (FBO) is an organization granted the right by the airport to operate at the airport and provide aeronautical services such as line service (fueling aircraft), tie-down and parking, aircraft rental, aircraft maintenance, flight instruction, hangaring, and similar services. In common practice, an FBO is the primary provider of support services to GA operators at a public-use airport and is on land leased from the airport.

The Airport currently has two FBOs: Francis Aviation and Southwest Aviation. Both are limited service FBOs, providing aircraft line service and fuel sales. Flight instruction and aircraft maintenance are not provided by either FBO but are provided by other businesses on the field. Each FBO owns a fleet of fuel trucks. There is no current agreement between the FBOs regarding who fuels transient aircraft. At this point, airport users choose their FBO. A general description of each FBO is as follows.

Francis Aviation

Francis Aviation offers amenities that include aviation fuel, aircraft ground handling and parking (ramp or tiedown), hangars, ground power unit and power cart, a common area passenger terminal that is shared with the airport administration in Building 8990, a lounge area, food catering, rental cars, a courtesy car for pilots to use in the local area, and crew rest room. Francis leases a portion of the terminal building 8990. The FBO is open 7 days per week from 7 a.m. to 6 p.m., after which, service is provided on a call-out basis.

In 2014, the City of Las Cruces constructed a new fuel farm consisting of one (1) 12,000-gallon aboveground tank for the storage of 100LL aviation fuel and one (1) 12,000-gallon aboveground tank for the storage of Jet A fuel. The City leases this fuel farm to Francis Aviation. Current fuel flowage fees are $.08/per gallon.

An interview with the manager of Francis Aviation revealed further insights into current operations. Francis Aviation uses Avfuel as a fuel vendor. There are no restrictions on the FBO regarding refueling or cathodic test requirements beyond what the FBO conducts themselves, which include daily, monthly, quarterly, and annual checks on hoses, tanks and related equipment applied per industry standards.

When asked regarding Francis Aviation's thoughts on increased demands on fuel due to resumptions of air service, they did not foresee any issues. Francis Aviation, on average (basis 2016–2018), sells approximately 284,000 gallons of Jet A and 100LL combined. Jet A equates to approximately 85 percent of their total annual sales. Francis indicated that plans to develop additional facilities were discussed in concept during this interview, however Francis Aviation management indicated that level of planning for the future is still to be determined.

Southwest Aviation

Southwest Aviation has served LRU for over 48 years. Southwest Aviation provides aviation fuel, aircraft ground handling and parking (ramp or tiedown), hangars, ground power unit and power cart, a common area passenger terminal, aviation accessories / pilot supplies, aircraft sales / leasing / brokerage, catering, rental cars, courtesy / ground transportation, a pilot's lounge and crew rest room, public telephone, computerized weather, internet access, and restrooms. Southwest is open 7 days per week from 8am to 6pm.

Southwest Aviation owns and operates a fuel farm that consists of one (1) 12,000-gallon above ground tank for the storage of 100LL aviation fuel and one (1) 12,000-gallon above ground tank for the storage of Jet A fuel. The City leases land to Southwest Aviation on which the fuel farm sits. Current fuel flowage fees are $.05/per gallon.
An interview with the owners of Southwest Aviation revealed further insights into the operations. This FBO utilizes Phillips 66 as their fuel vendor. The FBO conducts normal daily, monthly, quarterly, and annual fuel farm inspections with regards to hoses, tanks and related equipment applied per industry standards.

When asked regarding their thoughts on increased demands on fuel due to resumptions of air service, this FBO did not see any issues with supplying additional fuel as needed. Southwest Aviation, on average (basis 2016–2018), sells approximately 130,000 gallons of Jet A and 100LL combined. According to Airport management, Southwest Aviation does not report to the Airport the number of gallons sold annually per fuel type; therefore, the percentage of Jet A fuel sold each year could not be determined.

2-4-2 Military Users

The New Mexico Army National (NMARNG) operates four (4) UH-72 Lakota helicopters that are assigned to C Company, 3rd Battalion, 140th Aviation Regiment. In 2021, a dedicated, 35,000-sq-ft Army National Guard readiness center was completed west of the airport to provide more space for the 140th AVN REG, as well as help augment the aerial training the NMARNG performs on behalf of the State of New Mexico. Other US military assets utilize the airport. These assets include the US Army (UH-60 Blackhawk, AH-64 Apache, C-12 King Air), the US Marine Corps (MV-22 Osprey), the US Navy (T-6 Texas II), and the US Air Force. Most of the US Army assets originate at Fort Bliss - Biggs Army AirField (AAF).
Air Charter Operators

The charter operators who seasonally and annually fly to and from LRU provide service to a unique customer base not found at many other airports in the United States. When football season is in full swing from late August to December for New Mexico State University, Sun Country Airlines charter service provides the safest and easiest way for the players, coaches, and support staff to travel as a team. Sun Country utilizes a Boeing 737-700 capable of carrying 176 passengers and 964 cubic feet of cargo and a Boeing 737-800 capable of carrying 183 passengers. Sun Country charter operations are greatly impacted by the current runway lengths.

Business charter companies such as Elite, Flexjet, and Netjets utilize LRU weekly, year-round. These air taxi operators make up an estimated 15% of the airport's annual traffic. Lastly, Virgin Galactic charters a CRJ 200 to transport research and development teams between Mohave, CA and LRU on a weekly basis.

2-4-3 Air Cargo

Air cargo operators provide time critical air service for various cargo partners such as FedEx and UPS. The ability to have next day air delivery is important to many municipalities. Currently, LRU does not have this service. With the adjoining Las Cruces Innovation and Industrial Park (LCIIP), it would be possible to construct an air cargo facility within the LCIIP and then attract an operator.

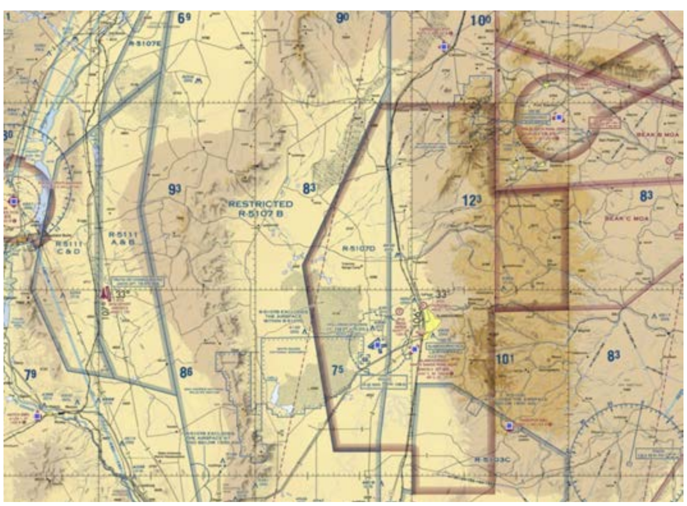
Currently, all local air cargo/freight is being flown in and out of Doña Ana County International Jetport (DNA) which is 27 miles to the southeast of Las Cruces or 49 miles via Interstate 10. The airport may benefit from considering next day air cargo services and this will be discussed more in the Facility Requirements and Alternatives chapters of the Master Plan.

2-5 Airspace

From the ground surface to 700-ft AGL is Class "G" airspace. Class G airspace is an "uncontrolled airspace" where the pilot of an aircraft is responsible for seeing and avoiding other aircraft. From 700-ft AGL to 17,999-ft MSL is Class E airspace. Class E airspace is considered "controlled airspace" but a pilot doesn't need Air Traffic control (ATC) clearance to fly in it. The pilot of an aircraft in Class E airspace is still responsible to see and avoid other aircraft sharing the airspace.

2-5-1 White Sands Missile Range (WSMR)

White Sands Missile Range is a military testing area operated by the United State Army. The range was originally established as the White Sands Proving Ground. WSMR is the Department of Defense's largest, fully instrumented, open air missile range with 2.2 million acres (approximately 137-nm x 89-nm) of restricted airspace (R-5103A-C, R-5107A-K). Embedded in this airspace is Spaceport America. LRU is located only 13 nm west of WSMR.



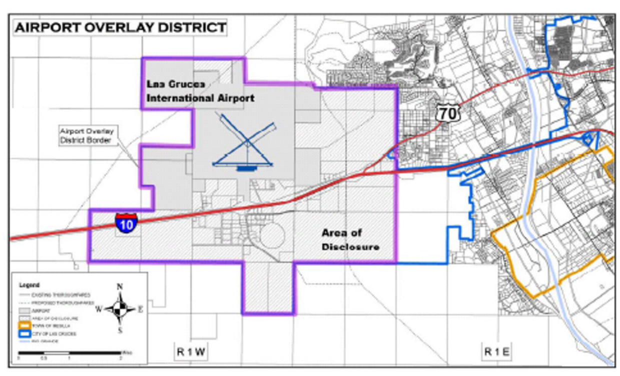
Restricted areas, such as WSMR, contain airspace identified by an area on the surface of the earth within which the flight of aircraft, while not wholly prohibited, is subject to restrictions. Restricted areas denote the existence of unusual, often invisible, hazards to aircraft such as artillery firing, aerial gunnery, or guided missiles. Penetration of restricted areas without authorization from the using or controlling agency may be extremely hazardous to the aircraft and its occupants.
Military Operating Area (MOA)

MOAs consist of airspace of defined vertical and lateral limits established for the purpose of separating certain military training activities from IFR (Instrument Flight Rules) traffic. Whenever a MOA is being used, nonparticipating IFR traffic may be cleared through a MOA if IFR separation can be provided by Air Traffic Control (ATC). Otherwise, ATC will reroute or restrict nonparticipating IFR traffic.

Holloman Air Force Base is also embedded within WSMR and BEAK Military Operating Area. In addition to hosting several combat wings, Holloman supports the nearby White Sands Missile Range and currently hosts the Royal Air Force Remotely Piloted Aircraft Systems and Formal Training Unit.

2-5-2 Airport Overlay Zone District

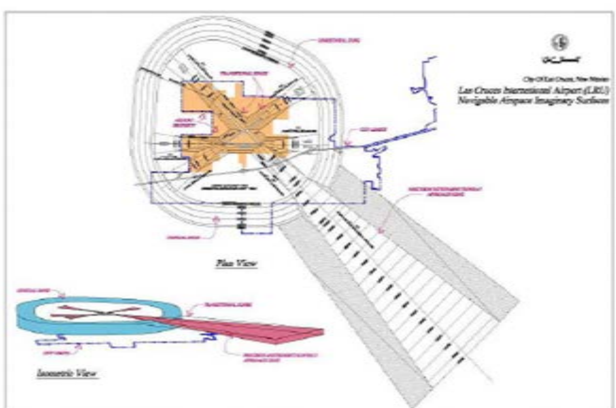
Chapter 38, Zoning, of the City of Las Cruces Land Development Code, sub-section 46.1, is titled Las Cruces International Airport Operations Overlay Zone District (AOD). The purpose of the AOD is to protect the operations of LRU from encroachment of land uses that could inhibit or restrict present airport operations or negatively affect the future growth and operation of the airport. Since the boundaries associated with this district are dependent upon the physical boundaries of specific airport features, the boundaries shall change as necessary with respect to any changes in these features. Sec 38-46.1 outlines the area of disclosure, the delineation of airport operations overlay zoning district boundary, restrictions to development, a submittal and review process, and an appeals process.



Map 1 – Las Cruces International Airport Overlay District (AOD)

The area of disclosure is defined as all lands within the Las Cruces City Limits and its boundaries, in which development restrictions are employed, are depicted on Map 1.

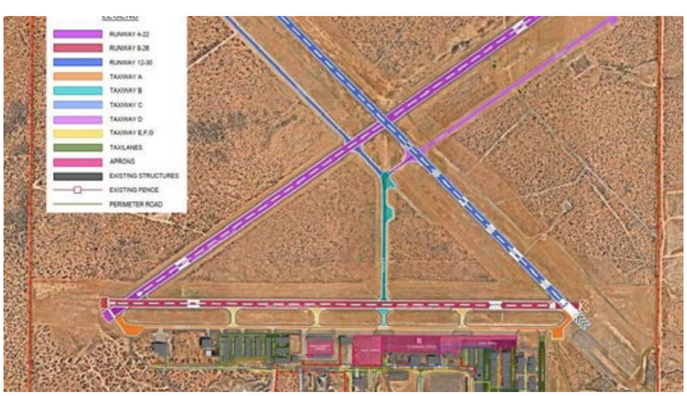
Map 2 depicts the delineation of airport operations zones and is tied to 14 CFR Part 77. Map 2 clearly defines Part 77 surfaces for Instrument Landing System (ILS) for Runway 30. As instrument approach procedures are developed for other runway ends, this document should be updated. It should be noted that the FAA no longer recognizes FAR, which are now Federal Accounting Regulations. In lieu of FAR 77, it is more appropriate to describe the regulation as 14 Code of Federal Regulations (CFR) Part 77.



Map 2 – Delineation of Airport Operations Zones and FAR 77 Navigable Airspace Imaginary Surfaces

2-6 Current Airport Layout

The current Airport Layout Plan (ALP) was approved as part of the Airport Action Plan completed in 2017. The current ALP will be assessed and updated as part of this planning study and is presented in full in this Master Plan Study. The graphic below shows the existing airport layout and associated facilities. The following sections will describe in detail the individual design aspects and facilities.



2-6-1 Wind Coverage

Sitting in a mesa, LRU is subjected to varied wind velocity and direction. As the potential for air service is evaluated it is important to not only review the supporting infrastructure such as runway length and runway/taxiway width, but also the meteorological factors associated with the airport. There are airports in the United States that are situated well geographically, however, struggle with the harsh meteorological conditions, minimize success rates of landing aircraft.

Wind patterns and runway crosswind conditions are important meteorological factors in assessing runway utilization and determining runway design requirements in accordance with FAA aircraft category standards. Crosswind coverage is the component of wind speed and relative direction acting at right angles to the runway—the greater the angle, the more difficult the landing. The FAA desirable threshold for adequate crosswind coverage is 95 percent minimum.

The FAA Airport Design Advisory Circular 150-5300-13B recommends that when the primary runway orientation provides less than 95.0 percent wind coverage for the aircraft used at the airport regularly, a crosswind runway may be required. The 95.0 percent wind coverage is computed based on the crosswind component not exceeding the allowable value as shown below in **Table 2-1**. The wind analysis was conducted for Runway Design Group A, B, and C, and those design standards will be followed as described in the 150-5300-13B-Airport Design Advisory Circular.

Table 2-1– Allowable Crosswind Component per Runway Design Code (RDC)

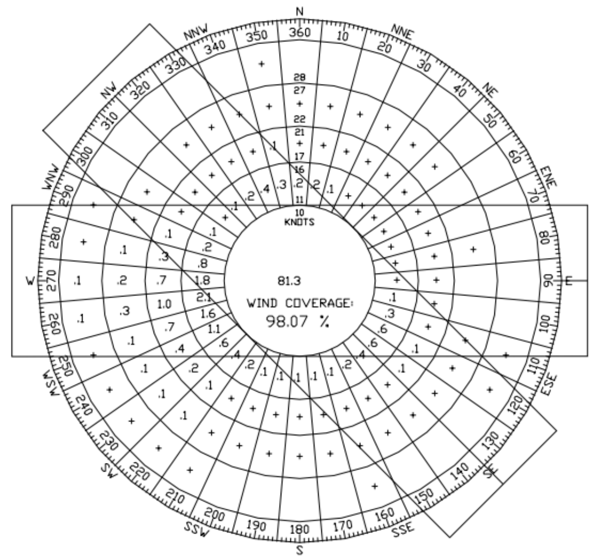
Runway Design Code (RDC)	Allowable Crosswind Component
A-I and B-I including small aircraft	10.5 knots
A-II and B-II	13 knots
A-III, B-III, C-I through C-III D-I through D-III	16 knots
A-IV and B-IV, C-IV through C-VI D-IV through D-VI	20 knots
E-I through E-VI	20 knots

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

A wind analysis was conducted to affirm the results of previous studies. FAA Advisory Circular (AC) 150/5300-13B specifies the maximum allowable crosswind component for Aircraft Approach Category A-C. As part of the wind analysis, all three runways at LRU were analyzed independently.

The Airport Improvement Program Handbook, FAA Order 5100.38D states that per FAA policy, the ADO can only fund a single runway at an airport unless the ADO has made a specific determination that one or more crosswind or secondary runways are justified. Crosswind justification was discussed earlier and is determined by providing 95% wind coverage. Secondary runways are justified when the primary runway has less than 95% wind coverage, is operating at 60% of its annual capacity, or the FAA office of APP-400 has made a specific determination that an additional runway is required for the operation of the airfield.

It was determined that Runway 8/26 provides adequate wind coverage during all weather conditions for crosswind components of 10.5 knots, 13 knots and 16 knots. Runway 8/26 does not meet the 95% coverage requirement for Instrument operations. Runway 4/22 has the next highest percentage of wind coverage followed by Runway 12/30. However, neither of these runways meet the 95% wind coverage requirement at 10.5 knots. To achieve in excess of 95% wind coverage at 10.5 knots during all weather, VFR and IFR operations the FAA should continue funding a crosswind runway. When Runway 8/26 is combined with Runway 12/30 the combined wind coverage at 10.5 knots is above 95% in all weather, VFR, and IFR conditions. This study recommends focusing on continued FAA funding of these two runways while consideration should be given to funding Runway 4/22 with alternative funding sources.



2-7 Airport Facilities

The airfield consists of features and facilities required to accommodate safe and efficient current aircraft operations. The airside facilities include three (3) runways, seven (7) taxiways, fifteen (15) taxilanes, three (3) aircraft parking aprons, several aircraft storage “T”, conventional, and shade hangars, one (1) terminal facility and two (2) fixed base operators. These features and facilities are further described in this chapter.

Table 2-2– Runway Wind Coverage

Meteorological Condition	Observations	Runway	Wind Coverage Crosswind Component (Knots)		
			10.5	13	16
All-Weather	257,218	12/30	89.00%	93.17%	96.90%
		8/26	96.16%	98.04%	99.45%
	100%	4/22	94.24%	97.10%	99.30%
Visual Meteorological Conditions (VMC)	255,298	12/30	88.99%	93.18%	96.93%
		8/26	96.18%	98.06%	99.46%
	99%	4/22	94.27%	97.13%	99.32%
Instrument Meteorological Conditions (IMC)	1,730	12/30	89.89%	91.12%	92.80%
		8/26	92.81%	95.18%	97.32%
	1.00%	4/22	90.56%	93.57%	96.91%

Source: “722695 LAS CRUCES INTL AIRPORT ANNUAL PERIOD RECORD 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020”
NOTE: Magnetic Declination of 8* East

2-7-1 Critical Design Aircraft

To ensure safe and efficient operations, the FAA has developed design standards that apply to airports that have a Critical Aircraft or group of aircraft with similar characteristics that meet substantial use thresholds. Substantial use is defined as 500 annual operations. The design standards are outlined in FAA Advisory Circular 150-5300-13b, Airport Design, and consist of the Aircraft Approach Category (AAC), the Aircraft Design Group (ADG), and Taxiway Design Group (TDG).

Aircraft Approach Category

Aircraft Approach Category (AAC). As specified in 14 CFR Section 97.3, AAC is a category of aircraft based on an approach speed of 1.3 times their stall speed in their landing configuration at the certificated maximum flap setting and maximum landing weight at standard atmospheric conditions. The categories are as follows:

Aircraft Approach Category (AAC)	
Category	Approach Speed
A	< 91 knots
B	91 knots - < 121 knots
C	120 knots - < 141 knots
D	141 knots - < 166 knots
E	166 knots and greater

Note: LRU's critical design aircraft is currently Category C.

Airplane Design Group

Airplane Design Group (ADG). A grouping of aircraft based on wingspan and tail height. When the aircraft wingspan and tail height fall into different groups, the higher group is used. The groups are as follows:

Airplane Design Group (ADG)		
Group #	Tail Height	Wingspan
I	< 20-ft	< 49-ft
II	20-ft - < 30-ft	49-ft - < 79-ft
III	30-ft - < 45-ft	79-ft - < 118-ft
IV	45-ft - < 60-ft	118-ft - < 170-ft
V	60-ft - < 66-ft	171-ft - < 213-ft

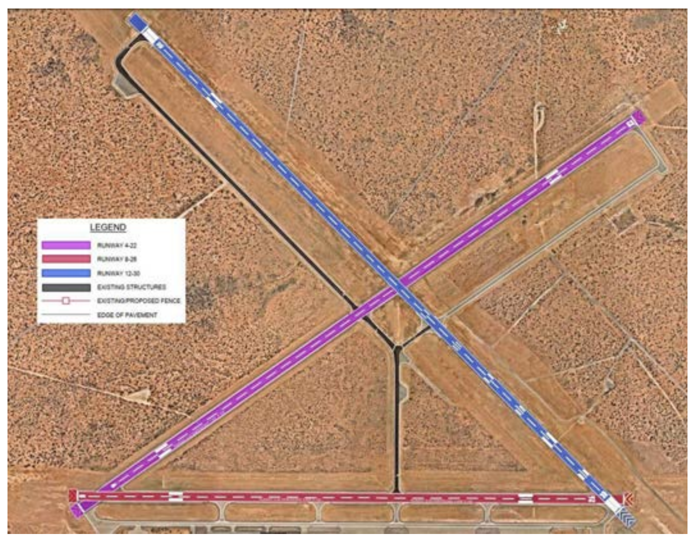
Note: LRU's critical design aircraft is currently a Group II.

Runway Design Code

Runway Design Code (RDC) is analogous to the Airport Reference Code (ARC), when an airport has more than one runway, and at least one runway is intended to serve a fleet of aircraft that is different from another runway (Ex. Runway 12/30 and Runway 4/22), each runway is designated by an RDC. The RDC signifies the design standards to which the runway is to be built. The current approved design aircraft as determined in the 2017 Airport Action Plan is the Hawker 800 which is designated as C-II. All three runways at LRU have a Runway Design Code of C-II.

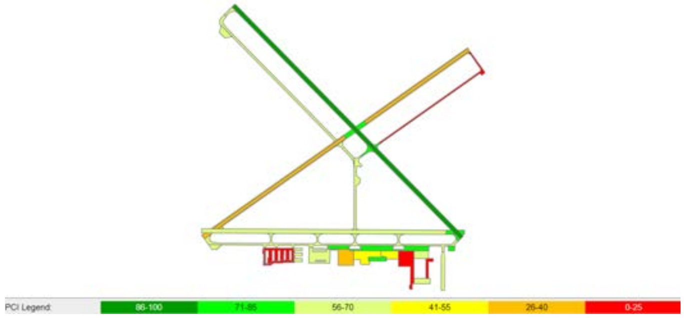
Runways

Las Cruces International Airport has three runways. The following summary provides overall runway elements including runway design code (RDC), runway length, runway width, surface condition, weight bearing capacity, pavement condition index, pavement classification number, lighting, and marking. Additional information such as design standards for runway centerline to apron separation and runway magnetic heading information are included.



Pavement Condition Index

The Pavement Condition Index (PCI) is a numerical index between 0 and 100, which is used to indicate the general condition of a pavement section. Aircraft schedulers and dispatchers as well as airport users will consider PCI when considering the use of the airport. If the conditions of the runway surface are designated as very poor, the pilot may consider another destination. The PCI shown on the following graphic is from the most recent PCI conducted in 2016 by NMDOT.



Pavement Classification Number

The Aircraft Classification Number (ACN) expresses the relative effect of an aircraft on the runway pavement for a specified standard subgrade category. The Pavement Classification Number (PCN) is a number that expresses the load-carrying capacity of a pavement for unrestricted operations. An aircraft that has an ACN equal to or less than the PCN of a given pavement can operate without restriction on the pavement. If PCN is lower than the ACN, the aircraft will not be able to operate on the runway and the airport will need to consider a full depth reconstruction. LRU provides the public with the PCN information through FAA Form 5010.

Taxiway Design Group

Taxiway Design Group (TDG) is a grouping of airplanes based on overall main gear width (MGW) and cockpit to main gear (CMG) distance.

Taxiway Safety Area

Taxiway Safety Area (TSA) is a defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an aircraft deviating from the taxiway. The following is a summary of the various elements for each runway at LRU and a description of each.

Runway 12/30

Designated a Runway Design Code (RDC) C-II, Runway 12/30 is LRU's primary runway and is 7,506 feet long by 100 feet wide. The full-length runway surface type is concrete and is grooved to aid in reducing aircraft stopping distance. The LRU Part 139 Airport Certification Manual, identifies Runway 12/30 as an air carrier runway. The runway has a single wheel and double wheel weight bearing capacity of 70,000 pounds and 120,000 pounds, respectively. According to the 2014 New Mexico Department of Transportation (NMDOT) Pavement Condition Index (PCI) study, it was determined that Runway 12/30 has a PCI of 100 (scale 0-100), and the FAA Form 5010 Master Record reports the Pavement Condition Number (PCN) as 41.

Lighting and approach aids include high-intensity runway lighting (HIRL), with Non-Precision Instrument (Runway 12) and Precision Instrument (Runway 30) markings. Runway 12 has Runway End Identifier Lights (REIL) while Runway 30 is equipped with Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR) and non-precision markings. The MALSR and REILS are owned, maintained, and operated by the FAA.

FAA Order 826019G, Flight Procedures and Airspace, dated 7/14/2015 provides the necessary guidance for the designation of runway numbers. The National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), and the National Geodetic Survey (NGS), for all areas of the United States and its territories for application to navigation charts and maps, is the source for magnetic variation (MV) information and tools for establishing magnetic variation. Changing values for MV are tabulated and published on a 5-year epoch basis; e.g., 00, 05, 10, 15, 20, etc. To assist in stabilizing the National Airspace System (NAS), a fixed value of MV is assigned to each airport as the Magnetic Variation of Record. This value is applied to true directions to obtain the magnetic values for radials, courses, bearings, and headings published in instrument flight procedures. Periodic updating of the MV assigned to navigation facilities is required to maintain reasonable proximity of alignment with the earth's ever-changing magnetic field.

Runway 12/20 has a magnetic azimuth of 127°/307°, this would warrant the need to redesignate the Runway to 13/31. This is inline with FAA Order 8260.19F which dictates that the indicated magnetic runway designation markings are within 3° of the true heading.

Runway 8/26

Designated a Runway Design Code (RDC) C-II, Runway 8/26 is considered a visual approach, crosswind runway and is 6,069 feet long by 100 feet wide. The runway surface type is asphalt. According to the 2019 Airport Master Record (5010), the asphalt is in good condition and the LRU Part 139 ACM, identifies Runway 12/30 as an air carrier runway. Take Off Distance Available (TODA) and Landing Distance Available (LDA) are both the full length of the runway at 6,069 feet. The runway has a single wheel and double wheel weight bearing capacity of 70,000 pounds and 120,000 pounds, respectively. According to the 2014 NMDOT PCI study, it was determined that Runway 8/26 has a PCI of 76 (scale 0 - 100), however, the FAA Form 5010 reports the PCN as 25.

Lighting and approach aids include Medium Intensity Runway Lights (MIRL) with basic runway markings that are in good condition. Runway 8 and Runway 26 both have 4-box, Precision Approach Path Indicators (PAPI) providing a 3.0 degree glide path with a threshold crossing height of 50 feet. The PAPI is owned, operated, and maintained by the City. No approach lights or runway end indicator lights are installed on this runway.

Runway 8/26 is not served by an instrument approach procedure. When the FAA develops an instrument approach procedure for 8/26, if the visibility minimum is published as ¾ mile or greater, the current runway centerline to aircraft parking area separation of 400-ft will meet FAA standards. When the FAA develops an instrument approach procedure for 8/26, if the visibility minima is published as lower than ¾ mile, such as the Runway 30 ILS at ½ mile, the current runway centerline to aircraft parking area separation will need to increase to 500 ft and will not meet FAA standards.

At the time of this document (January 2022), an environmental assessment is underway to evaluate the environmental impacts of decoupling the approach end of Runways 26 and 30 as well as extending the runway westerly. Currently, the design standards being considered are for an Airport Reference Code (ARC) of C-II. If the approved forecast of this document changes the ARC to a C-III (Ex. aircraft: Airbus-319 and Boeing 737), then the current location of Runway 8/26 will be too close to the terminal apron. This will require the airport to either apply for and receive a Modification of Standards from the Federal Aviation Administration (FAA) or consideration should be given now to shifting Runway 8/26 to the north to allow for more room within the terminal apron. This will be further discussed in the Facility Requirements Chapter. There are no documented obstructions for either runway end.

If it is the Airport's intent to extend Runway 8/26 to enable larger aircraft to utilize the airport, the Airport should also consider the development of instrument approach procedures. Currently, Runway 8/26 is visual only.

Runway 4/22

Designated a Runway Design Code (RDC) C-II, Runway 4/22 is considered a visual approach, crosswind runway and is 7,501 feet long by 105 feet wide. The runway surface type is asphalt. According to the LRU Airport Certification Manual, Runway 4/22 is not identified as an Air Carrier Movement area, therefore, may not be utilized for Air Carrier Operations. According to the 2019 Airport Master Record (5010) the asphalt is in poor condition with cracked slabs, open 1/8th inch, and spalling sealant failure in multiple joints. The runway has a single wheel and double wheel weight bearing capacity of 30,000 lbs. According to the 2014 NMDOT Pavement Condition Index (PCI) study, it was determined that Runway 4/22 has a PCI of 57 (scale 0 - 100), however, the FAA Form 5010 reports the Pavement Condition Number (PCN) as 3.

Lighting and approach aids include MIRLs with basic runway markings that are in fair condition. Runway 22 has a 4-box, Visual Approach Slope Indicator (VASI) providing a 3.0 degree glide path with a threshold crossing height of 64 feet. The VASI is owned, operated, and maintained by the FAA. No approach lights or runway end indicator lights are available.

Runway 4/22 is not served by an instrument approach procedure. At the time of this document (January 2020), there are no documented obstructions for either runway end.

Runway 4/22 has a magnetic azimuth of 47°/227°, this would warrant the need to redesignate the Runway to 5/23. This is inline with FAA Order 8260.19F which dictates that the indicated magnetic runway designation markings are within 3° of the true heading.

LRU Runway Data

Runway	12/30	8/26	4/22
Runway Design Code (RDC)	C-II	C-II	C-II
Length (ft)	7,501	6,069	7,506
Width (ft)	100	100	100
Surface / Condition	Concrete	Asphalt	Asphalt
Weight Bearing Single/ Double Wheel (lbs)	70K/120K	70K/120K	30K/30K
PCI (2014)	100	76	57
PCN (2019)	41	25	3
Lighting	HIRL	MIRL	MIRL
Marking	NPI/PIR	Basic	Basic
Runway CL to Apron Separation (ft)	-	400	-
Runway Compass Heading (Mag Az Degrees)	127/307	82/262	47/227

2-7-2 Taxiways

There are seven (7) taxiways at LRU, Taxiways A through G. Each of these taxiways have been identified as Airport Operations Ares. Each taxiway has a single-wheel and double-wheel weight bearing capacity of 70,000 pounds and 120,000 pounds, respectively. The table below depicts relevant data for each of the LRU Taxiways.

As air service is developed, it will be important that the turn radius for proposed air carriers are evaluated to verify the critical Airplane Design Group will have adequate room to maneuver the aircraft.

2-7-3 Taxilanes

A taxilane is in essence a taxiway designed for low-speed and precise taxiing. Taxilanes are usually, but not always, located outside of the movement area and provide access from taxiways to aircraft parking positions and other terminal areas. In the case of LRU, there are fifteen (15) taxilanes, Taxilanes 1 through 15.

For TDG I aircraft, the standard taxilane object free area (TLOFA) width is 79 feet, and for TDG II the width is 115 feet. Existing taxilanes at LRU are located primarily on the west side of the 'West Hangar Apron' and around the hangars south of the 'East Apron' and are utilized by both ADG I and II aircraft (See Figure 3-8). As indicated earlier in this Chapter, some of the taxilanes in the hangar areas do not meet the TLOFA standards for Group I aircraft and some do not meet them for Group II. Aircraft move slowly in these areas and in some cases, no Group II aircraft may enter the areas as design standards are not met.

Each of these taxilanes has been identified as Airport Operations Areas. Each taxilane has a single-wheel and double-wheel weight bearing capacity of 70,000 pounds and 120,000 pounds, respectively. The table on the following page depicts relevant data for each of the LRU taxilanes.

LRU Taxiway Data

TWY	Length	Width	Surface	Strength	Airplane Design Group (ADG)	TWY Safety Area (TSA)
A	6,200 ft	35 ft	Asphalt	70S 120D	II	79 ft
B	2,300 ft	50 ft	Asphalt	70S 120D	III	118 ft
C	4,500 ft	50 ft	Asphalt	70S 120D	III	118 ft
D	300 ft	35 ft	Asphalt	70S 120D	II	79 ft
E	200 ft	35 ft	Asphalt	70S 120D	II	79 ft
F	200 ft	35 ft	Asphalt	70S 120D	II	79 ft
G	200 ft	35 ft	Asphalt	70S 120D	II	79 ft

LRU Taxilane Data					
Taxilane	Location	Pavement Width	TDG	TLOFA	Status
1	East	Varies 50 to 90 ft	II	115 ft	Unrestricted TDG II
2	East	60 ft	II	115 ft	Unrestricted TDG II
3	East	120 ft	II	115 ft	Unrestricted TDG II
4	East	80 ft	II	115 ft	Hangar Door outrigger on the WAM hangar penetrates TOFA.
5	East	80 ft	I	79 ft	Unrestricted TDG I
7	West	50 ft	I	79 ft	Unrestricted TDG I
8	West	75 ft	I	79 ft	TOFA is deficit by 4-ft
9	West	75 ft	I	79 ft	TOFA is deficit by 4-ft
10	West	75 ft	I	79 ft	TOFA is deficit by 4-ft
11	West	80 ft	I	79 ft	Unrestricted TDG 1
12	West	80 ft	I	79 ft	Unrestricted TDG 1
13	West	80 ft	I	79 ft	Unrestricted TDG 1
14	West	80 ft	I	79 ft	Unrestricted TDG 1
15	West	50 ft	I	79 ft	TOFA is encumbered by vegetation and vehicular parking for hangar adjacent to the west

2-8 Airport Lighting/Navigational Aids

2-8-1 Runway Lights

Runway edge lighting is used to outline the edges of runways during periods of darkness or restricted visibility conditions. These light systems are classified according to the intensity they are capable of producing and include:

- High-intensity runway lights (HIRL)
- Medium-intensity runway lights (MIRL)
- Low-intensity runway lights (LIRL)

Runway 12/30

Lighting and approach aids include high-intensity runway lighting (HIRL), with Non-Precision Instrument (Runway 12) and Precision Instrument (Runway 30) markings. Runway 12 has Runway End Identifier Lights (REIL) while Runway 30 is equipped with Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR). The MALSR are owned, operated, and maintained by the FAA, while the REILS are owned and operated by the Airport for Runway 12.

Runway 8/26

Light and approach aids include Medium Intensity Runway lighting (MIRL). Both Runways 8 and 26 have a Precision Approach Path Indicator (PAPI) providing a 3.0 degree glide path with a threshold crossing height of 50 feet.

Runway 4/22

Lighting and approach aids include a Medium Intensity Runway Lighting (MIRL). Runway 22 has a 4-box, Visual Approach Slope Indicator (VASI) providing a 3.0 degree glide path with a threshold crossing height of 64 feet. The VASI is owned, operated, and maintained by the FAA.

2-8-2 Taxiway Lights

Taxiway edge lights are used to outline the edges of taxiways during periods of darkness or restricted visibility conditions. These fixtures emit blue light. At LRU, Taxiways Alpha, Echo, Foxtrot, and Gulf are equipped with base mounted, medium-intensity lights (MITL) with blue colored globes. Taxiway Bravo and Charlie, Delta (between Runway 12/30 and Taxiway Bravo) are equipped with stake mounted medium intensity lights with blue colored globes. Taxiway Delta between Runway 12/30 and Runway 22 is equipped with elevated edge taxiway retroreflective markers (blue/yellow).

2-8-3 MALSR
A Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR) is a medium approach intensity lighting system (ALS) installed in airport runway approach zones along the extended centerline of the runway. The MALSR, consisting of a combination of threshold lamps, steady burning light bars, and flashers, provides visual information to pilots on runway alignment, height perception, roll guidance, and horizontal references for Category I Precision Approaches. Runway 30 is equipped with a MALSR. The MALSR and REILS are owned, maintained, and operated by the FAA for Runway 12.

2-8-4 Airport Beacon
A rotating beacon produces alternate clear and green flashes of light with a flash rate of 24-30 flashes per minute. The main purpose of the beacon is to indicate the location of a lighted airport, and a rotating beacon is an integral part of an airfield lighting system. LRU's rotating beacon is located 1,365 ft south and mid-field of Runway 8/26, is enclosed within a 60-ft x 80-ft fenced area, and is mounted atop a steel, four legged tower.

2-8-5 Wind Indicators and Segmented Circle
The wind cone, also called the 'windsock' is a colorful tool at each airport that offers relevant information to pilots, allowing them to quickly and easily determine the approximate wind speed and direction before taking off or landing. LRU has five wind indicators, conveniently installed around the field to aid pilots in deciding which runway to use. The main wind indicator (also the largest) is located in the middle of the Segmented Circle, positioned on the west edge of Taxiway Bravo and the north edge of Runway 8/26. Additional wind indicators can be found on the approach end of Runways 8, 12, 22, and 26. All of the wind indicators are lighted for night use and each runway uses a standard left traffic pattern.

2-8-6 ADS-B
As part of the FAA's NextGen program to enhance how aircraft navigate, new technologies, such as the automatic dependent surveillance-broadcast (ADS-B), have been deployed. ADS-B provides in-flight information from an aircraft, including airspeed and location, to air traffic control and to nearby aircraft that are equipped with receivers, through a system of satellites and ground stations. Ultimately, this system will replace expensive ground radar and will include complete coverage of New Mexico. Presently, there are 13 ADS-B ground stations within New Mexico, 11 of which are located at system airports. Las Cruces International Airport is one of the airports in which the ground station has been installed. ADS-B ground stations are owned, operated, and maintained by the FAA at no expense to the airport. This provides great value to the airport as it increases safety through improved situational awareness and visibility for pilots of GA and commercial aircraft operators when utilizing LRU during all weather conditions. In addition, LRU's ADS-B capability will increase efficiencies through traffic capacity improvements ultimately reducing environmental impacts.

2-9 Instrument Approach Procedures

2-9-1 Instrument Approaches
In aviation, an instrument approach procedure (IAP) is a series of predetermined maneuvers for the orderly transfer of an aircraft operating under instrument flight rules (IFR) from the beginning of the initial approach to a landing or to a point from which a landing may be made visually. The FAA designs and publishes instrument approaches in the United States. There are three categories of instrument approach procedures: precision approach (PA), approach with vertical guidance (APV), and non-precision approach (NPA). A precision approach, such as an Instrument Landing System (ILS), uses ground-based equipment and a navigation system on board the aircraft to provide course and glide path guidance to the pilot. Runway 12/30 is the only runway at Las Cruces that is served by both precision and non-precision instrument approach procedures. These procedures, as of January 2022, are as follows:

ILS or LOC Runway 30
Installed in 1992, and upgraded in 2019, the Instrument Landing System (ILS) provides the pilot with both runway lateral alignment through the ground-based Localizer antenna as well as vertical glideslope alignment through the ground-based Glide Slope antenna. The FAA owns and operates the ILS. The airport protects and maintains Localizer and Glide Slope critical areas on the airport property.

The straight-in ILS altitude and visibility minimums for this approach are 200 feet and ½ mile, respectively. According to the December 2018, Airport Master Record (5010), Runway 30 has no reported obstructions.
Since the completion of the 2014 LRU Action Plan, the notable changes to the ILS or LOC Runway 30 Precision Instrument approach procedure include:

- Declared distances reducing usable runway length from 7,506 ft to 7,499 ft. Non-impactful.
- Restricted Airspace R-5107B, northeast of LRU, no longer considered. Non-impactful.
- Distance Measuring Equipment (DME) is now required for the full procedure.

2-9-2 RNAV (GPS) Runway 30

This procedure is a localizer performance with vertical guidance (LPV) approach that uses the Wide Area Augmentation System (WAAS) and has very precise GPS capabilities to attain an airplane's position.

The straight-in RNAV (GPS) decision altitude and visibility minimums for this approach are 200 feet and ½ mile, respectively.

According to the December 2018, Airport Master Record (5010), Runway 30 has no reported obstructions.

Since the completion of the 2014 LRU Action Plan, the notable changes to the RNAV (GPS) Runway 30 Non-Precision Instrument approach procedure include:

- Declared distances reducing usable runway length from 7,506 ft to 7,499 ft. Non-impactful.
- Restricted Airspace R-5107B, northeast of LRU, no longer considered. Non-impactful.
- A 50 feet reduction in the decision altitude (DA) from 4,694 ft MSL to 4,644 ft MSL.
- A reduction in the glide path angle from 3.05 degrees to 3.00 degrees.

2-9-3 RNAV (GPS) Runway 12

This procedure is a localizer performance with vertical guidance (LPV) approach that uses the WAAS and has very precise GPS capabilities to attain an airplane's position.

The straight-in RNAV (GPS) decision altitude and visibility minimums for this approach are 250 feet and ¾ mile, respectively.

According to the December 2018, Airport Master Record (5010), Runway 12 has no reported obstructions.

Since completion of the 2017 LRU Action Plan, the notable changes to the RNAV (GPS) Runway 12 Non-Precision Instrument approach procedure include:

- Declared distances reducing usable runway length from 7,506 ft to 7,499 ft. Non-impactful.

2-9-4 Visual Only Runway 8/26

Currently Runway 8/26 is a visual only runway and is not served by an instrument approach procedure.

2-9-5 Visual Only Runway 4/22

Currently Runway 4/22 is a visual only runway and is not served by an instrument approach procedure.

2-10 Weather Facilities

Automated Weather Observation System (AWOS) LRU's Automated Weather Observation System (AWOS-III) is equipped to provide pilots with the date, time, wind, visibility, ceiling, temperature, dew point, altimeter, and other critical data such as density altitude, gust indication, precipitation identification, and intensity, thunderstorm and local-area lightning tracking. This non-federal AWOS is owned and maintained by the airport and was installed/upgraded in 2010. The AWOS-III transmits the weather on two (2) discrete frequencies and is also available via landline telephone (575-526-4831). The ground-to-ground/air frequency (119.025 MHz) enables pilots to listen to the repeated weather data that is collected by the AWOS-III system. The AWOS-III system simultaneously transmits the weather data on a separate ground-to-ground UHF frequency to the weather base station at the airport. From here, the data is transmitted through the secure FAA system through the National Airspace Data Interchange Network (NADIN) allowing local and remote pilots to access the Meteorological Aerodrome Report (METAR).

2-10-1 Terminal Area Forecast (TAF)

Terminal Aerodrome Forecasts (TAFs) are concise statements of the expected meteorological conditions within a 5 SM radius from the center of the airport's runway complex. TAFs complement and use similar encoding to METAR reports. They are produced by a human forecaster based on the ground and for this reason, there are considerably fewer TAF locations than there are airports for which METARs are available.

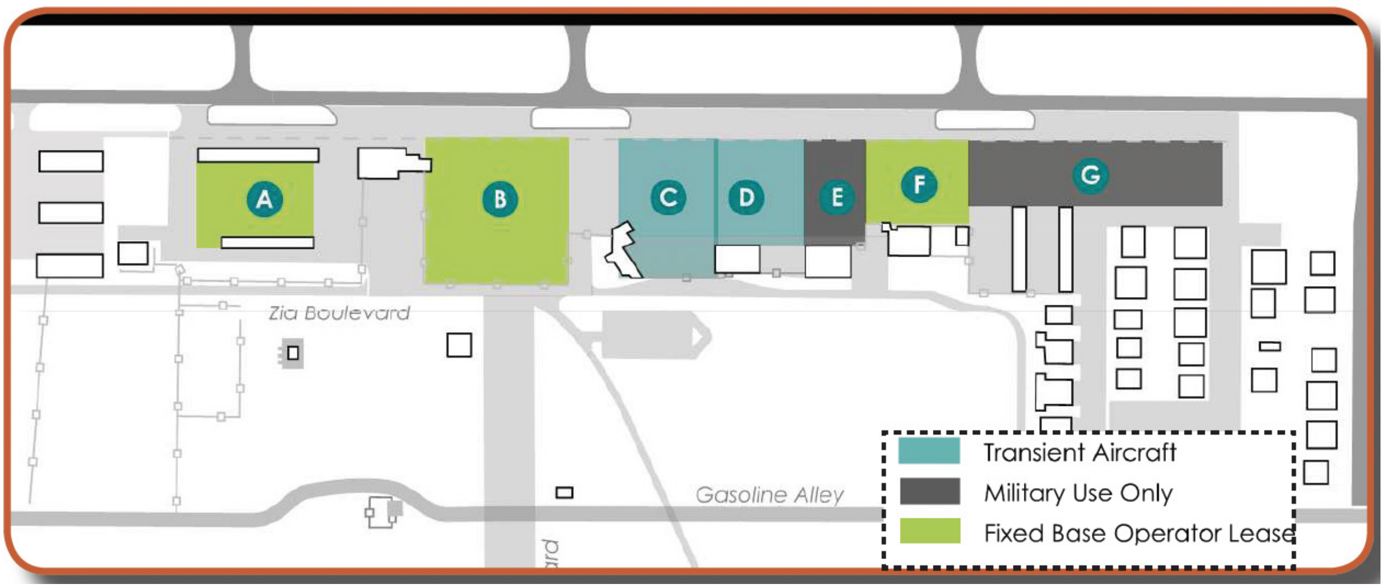
LRU has a Terminal Aerodrome Forecast (TAF). The TAF is issued four times a day and complements the METAR report. TAFs are generated by a human forecaster and are an important report for commercial pilots flying to LRU.

2-10-2 Terminal Area Facilities Aprons

LRU apron is the area on the airside of the airport where aircraft are parked, unloaded or loaded, refueled, boarded, or maintained. LRU has three classifications of aprons designated fixed-base operation, general-use transient, and military use. Military aprons serve the New Mexico National Guard which is based at the airport, although their lease is ending soon and the Army Guard helicopter unit will move to their newly constructed facility on the west side of the airport. Periodically, the U.S. Navy conducts training activities as well as the U.S. Army and Marines. There are other private-use aprons such as that used by the New Mexico State University and for private hangar activities.

Five of the seven aprons at LRU are utilized for GA aircraft. FAA AC 150-5300-13B Appendix 5, General Aviation Aprons and Hangars provides design standards for based and transient tie downs on GA aprons. The design standards include tie down layouts. LRU's Aprons have been previously designated A through G and are depicted on the graphic below. Although not official designations, they will be utilized again for purposes of identification in this document.

It has been determined as part of this study that there are a total of 100 apron tie downs on all aprons. Southwest Aviation has 31 tie downs in its leasehold, while the City maintains or leases the remaining 69 tie downs that are available for transient aircraft use.



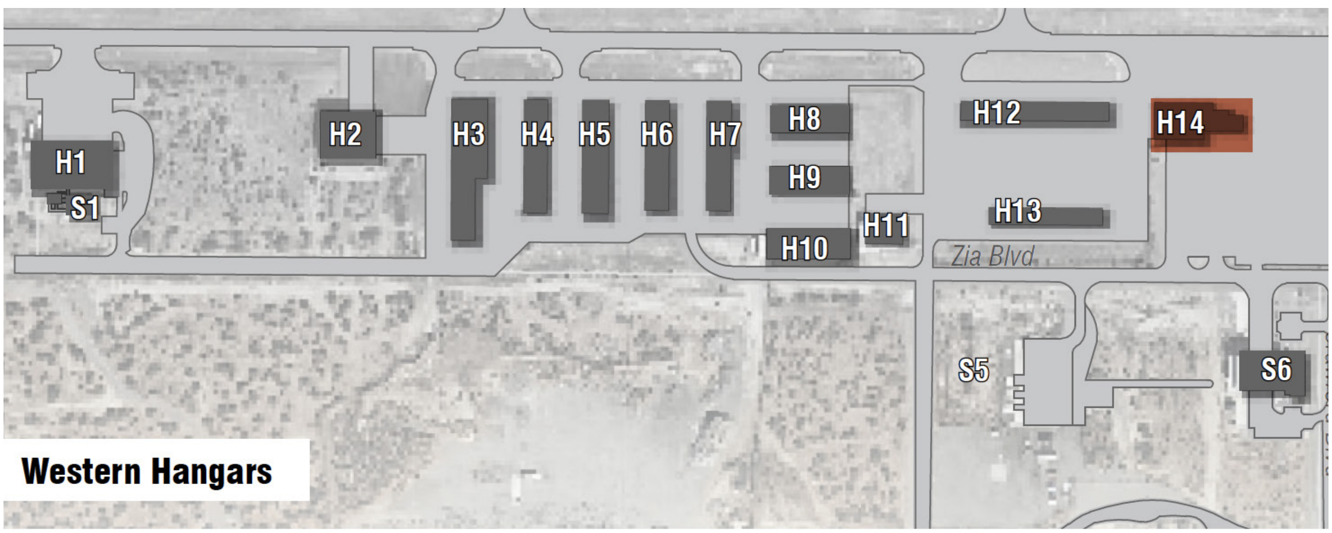
LRU Aircraft Tie Downs			
Apron	Lease Holder	Tie Downs	Apron Sq Ft
A	Southwest	0	7,000
B	Southwest	31	16,000
C	City	26	11,000
D	City	10	7,000
E	City	6	5,500
F	Southwest	0	5,000
G	City	27	10,500

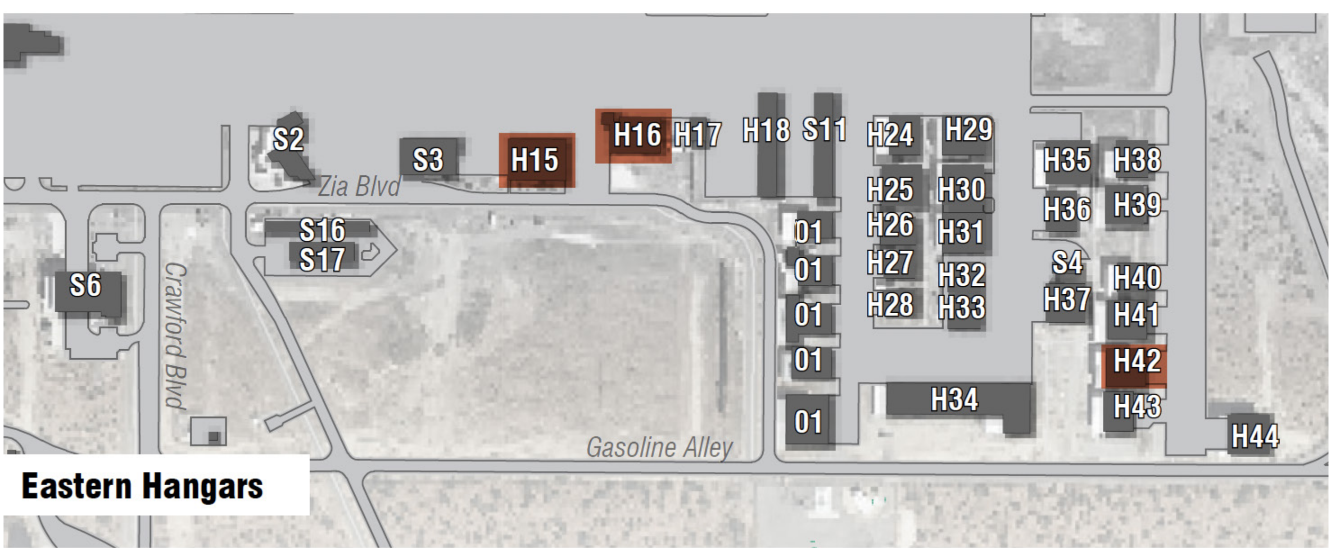
2-10-3 Aircraft Hangars

Hangars are used to protect aircraft from the weather, direct sunlight and for maintenance, repair, manufacture, assembly, and storage. Most aircraft hangars are owned and operated privately although the City owns two hangars. Predominantly, aircraft hangars are sized for GA use. With some exceptions, most of the hangars constructed on the airport are only capable of storing smaller turbine, multi-engine, and single-engine aircraft. These hangars are constructed on what can be described generally as western and eastern hangars. The general layout of the airport hangars is shown in the graphic below.

Airport administration intends to expand existing infrastructure to meet the growing demand for additional hangars. Efforts are currently underway to survey new parcels and allow private aircraft owners to construct hangars. One area under consideration is the general location of the current fuel farms that are owned by the City and Southwest Aviation. The fuel farms will need to be relocated to enable the construction of the proposed hangars.

In addition, it is the desire of the Airport users to have the space to construct not only GA hangars but also larger commercial sized hangars. This desire is based on the need to improve the economic impact of the Airport through the development of more commercial aeronautical businesses. As the aviation forecast is developed, it is anticipated that the need for more hangars will be discovered and will be further defined in the Facility Requirements Chapter.





2-10-4 Terminal Facilities

The existing terminal, Building 8990, was built in 1975 and remodeled in 1984. The 4,400-SF building was previously used to accommodate commercial passengers; however, commercial flights are not currently available to or from LRU. Building 8990 houses airport management, restrooms, and an FBO (Francis Aviation).

Phase I of the City of Las Cruces air service development plan is currently underway and includes the establishment of scheduled Intra-State air service to Albuquerque. In December 2021, the City of Las Cruces solicited and received proposals to provide the Intra-State service. Building 8990, although limited in space, will temporarily house the new airline operations. 8990 will be retrofitted to include ticket counters, baggage handling, and rental cars. The service to ABQ will not require TSA.

Phase II of the City of Las Cruces air service development plan includes the establishment of Inter-State air service to Dallas. In December 2021, the City issued a notice to proceed to begin the design of a medium-term terminal facility. This new facility will provide space for TSA passenger and baggage screening, restrooms, and a 105 passenger holding area. This will limit Inter-State air service to smaller airlines, operating aircraft such as the CRJ-700, a 75-seat, C-II aircraft. Ticket counters will be in an adjoining structure, Building 8960. It should be noted that this new facility is planned to be constructed within the General Aviation Terminal Area. The introduction of scheduled air service will create capacity issues within the terminal area including GA aircraft parking.

Phase III of the City of Las Cruces air service development plan includes long-term sustainable Intra and Inter-State air service with multiple daily flights to multiple destinations. To accommodate this level of air service the airport will need to forecast and justify a larger terminal to include adequate apron space. A Terminal Area Development Plan will need to be developed and approved by the FAA if the airport intends to pursue federal funding.

2-10-5 Airport Roads

Exit 132 off Interstate 10 provides direct access to Crawford Boulevard and LRU parking, hangars, and terminals. Access is also possible on frontage road which parallels the interstate. Circulation within the Airport and to various buildings and hangars is served by Zia Road.

Additional roads exist at the airport outside of the secured area such as Gasoline Alley which is one of the primary entrances to the secured area of the Airport via gate 4 and Rocket Road which exists outside of the secured area but has little to no use at this time. Harry Burrell runs along the power lines and connects the frontage road to Gasoline Alley and Zia. Wingspan is located along the eastern edge of the unsecured area of the Airport.

The need for planning and consideration of connecting roads, adding additional roads, or other such considerations will be considered for the growth of both airside and non-airside opportunities. To attract businesses, an understanding of the roads, availability of utilities, and access to highways and the airport are critical for the anticipated growth.

2-10-6 Vehicular Parking

Terminal Building parking is located south of Zia Boulevard, with approximately 30,000 SF of dedicated parking space. All 46 covered parking spaces are owned by the City of Las Cruces, which includes two disabled spaces. Approximately 25 percent, 11 parking spaces, are utilized by day users of the terminal. This leaves 35 vehicular parking spaces for transient use. As scheduled Intra and Inter-State air service commences, vehicular parking will need to be evaluated to meet the need. In 2021, the City of Las Cruces installed solar panels affixed on the roof of the vehicular parking sunshade. This array will assist the airport in generating photovoltaic energy, aimed at reducing operating costs.

Airport tenants such as Southwest Aviation have additional parking areas available next to their buildings.

2-11 Perimeter Fencing and Security

The Airport holds and maintains a Class IV, 14 CFR Part 139 Certificate with sufficient apparatus to provide Index A, Airport Rescue and Fire Fighting (ARFF) services. NMDOT-A classifies LRU as a Regional GA Airport.

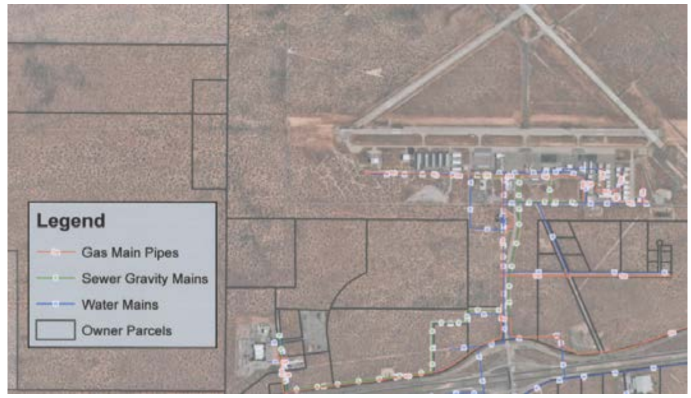
Historically, GA airports have not been subject to federal rules regarding airport security. Prior to September 11, 2001, the federal government's role in airport security focused exclusively on those airports serving scheduled operations. Although LRU is certificated as a Part 139 airport, it does not currently have scheduled air service. TSA must, however, examine all aspects of the transportation system for vulnerabilities to terrorist activities. It is the intent of the LRU Airport Administrator to proactively implement basic security measures such as the review of fencing and access control devices for vehicle and pedestrian gates, daily airfield inspections of airport infrastructure and facilities, landside and airfield signage, and public awareness programs for educating the aviation community as well as the general public on the safe and secure use of the airport.

In 2021, the Airport fully enclosed its perimeter with an 8-ft chain link fence with barbed wire which is adequate to provide effective deterrence. The chain link fence has been enhanced with the installation of a 2-ft fence skirt buried along the outside of the fence to prevent animals from burrowing under the fence. An airport perimeter road is located along the length of the fence.

Vehicle access to the field is carefully monitored and controlled by key card readers and key codes. The card readers are linked to a data system that logs the location, time, and cardholder. The Airport Administrator is responsible for issuing the key cards and codes, which can be activated and deactivated electronically.

2-12 Utilities and Drainage

The lack of existing infrastructure and utilities at the Airport makes it less attractive to new businesses, hotels, and commercial and private hangar developers. During stakeholder interviews, this challenge was specifically highlighted. In addition, internet access was discussed as a major issue, specifically, businesses located at the Airport complained about the lack of fast, reliable internet.



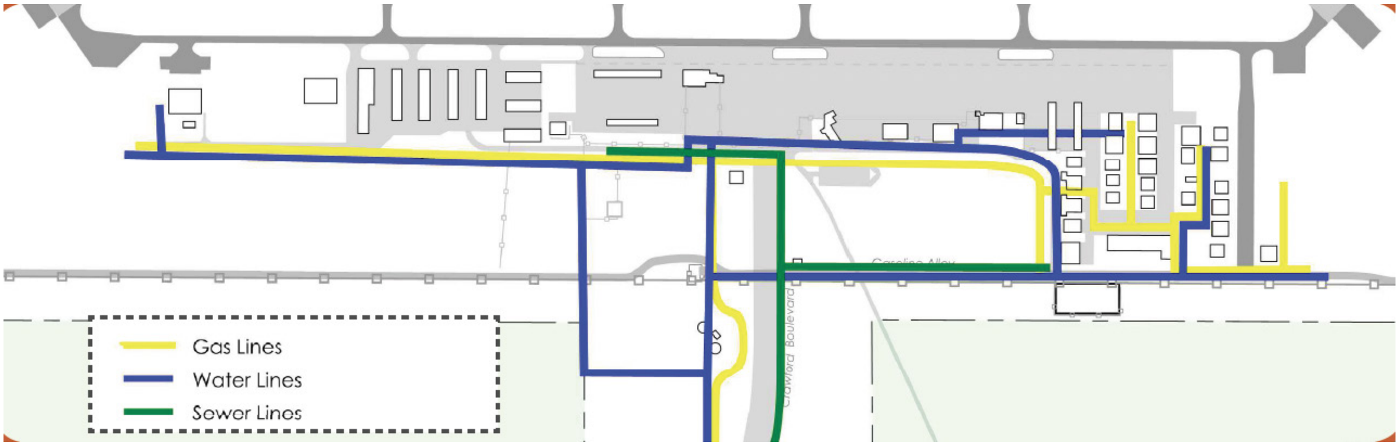
2-12-1 Utilities

Electrical Power

El Paso Electric (EPE) provides the electrical service to the Airport, the LCIIP, and all businesses and hangars at the Airport. Electrical Power is available throughout the entire airport, south of Runway 8/26. Electric Power Utility Service for the Airport is provided with an excess capacity of 1 MW available for new industries and aeronautical businesses. The substation, owned by El Paso Electric, was installed in 1997 and can be expanded as necessary to meet the needs of the Airport and LCIIP.

Internet

Fastwave provides internet access at the Airport. This service has been described by stakeholders as slow and difficult to utilize by businesses. Century Link has fiber optic lines through much of Las Cruces Innovation and Industrial Park providing internet speeds of up to 100 Mbps, depending on the level of service contracted for by the specific business. The fiber lines are connected to utility boxes (hand holes) located throughout the LCIIP, however, given the distance of the utility boxes a connection by airport tenants is cost prohibitive. In order to attract business and promote future growth at the Airport, reliable internet, whether it be fiber optic lines or other means, needs to be brought closer to the Airport's existing and future growth areas.



Natural Gas

The Rio Grande Natural Gas Association provides natural gas to the Airport and is managed by the City of Las Cruces Utilities Department. The feeder main to the Airport is an 8-in steel, high-pressure line connected to a 31-in interstate pipeline. Natural gas is available throughout the entire airport, south of Runway 8/26. NG locations are well defined and can be accessed when constructing new hangars on the West, Terminal Area, and East side of the Airport. Parcels are served by minimum 2- to 4-in low-pressure gas lines with 30- to 60-PSI operating pressure.

Sanitary Sewer

LRU has a sewer system in portions of the terminal area and a septic system for many of the hangars on the east and west ends of the Airport. The sewer system is connected to the City sewer system and operated through an on-site aerated lagoon located in the southeast corner of the LCIIP. The lagoon has a capacity of 400,000 GPD. According to the Airport Administrator, much of the sewer capacity is utilized by the current LCIIP tenants. Wastewater mains ranging in size from 8 in to 18 in serve most sites with gravity flow to the lagoon. The Airport is in need of additional sewer service.

Telephone

Century Link provides the telephone service. All businesses and hangars have the option to use this service.

Water

The City of Las Cruces provides water to the businesses at the Airport. The Airport has excellent water infrastructure with good pressure, ample capacity, and good water quality for current tenants. Most of the Airport is serviced by 12-in water lines with a static pressure of 60 to 115 PSI (8,000 GPM) with distribution lines extended to many parcels. The current sustained capacity is 2,100 GPM with available expansion. Existing production for the water system is in excess of one million gallons per day. Adequate quantities of City water are available to Airport users.

The Airport is supported by an elevated on-site water storage with two ground tanks holding a capacity of 4,500,000 gallons and 500,000 gallons.

Solid Waste

Utility service to the Airport for solid waste is undertaken by the City Solid Waste Collections line of business for the Utilities Department. Regular commercial pick-up is scheduled based on the frequency of need and volume requirements. The Regional Landfill is located six miles west of the Airport and has an anticipated capacity of approximately 85 years. For hazardous waste disposal, there are a number of available vendors serving the El Paso and Las Cruces areas.

2-13 Airport Rescue and Firefighting (ARFF)

2-13-1 ARFF Facilities

The Airport is served by the Las Cruces Fire Department from Fire Station No. 7, located on the corner of Crawford and Zia Boulevards. The proximity of the fire station enables the Airport to provide adequate ARFF Index A response for unscheduled air carrier operations and minimizes the airport's operational costs. Fire Station No. 7, constructed in 2014, is a 30,000-SF building. This 3-bay facility is dimensionally adequate to support an ARFF Index B vehicle.

2-13-2 Airport Rescue and Firefighting (ARFF) Equipment

Under existing rules, the FAA issues two types of airport operating certificates depending on the type of air carrier operations an airport serves. Operators of airports that serve scheduled operations of large air carrier aircraft are issued an Airport Operating Certificate (AOC), commonly referred to as a "full" certificate. As these airport operators regularly serve large air carrier operations, they must fully comply with all Part 139 requirements.

The Las Cruces International Airport holds a Limited Airport Operating Certificate (LAOC), known as a "limited" certificate. LRU does not currently maintain scheduled air carrier aircraft service. The Airport is considered a Class IV airport. Class IV airports are those airports that serve only unscheduled operations of large air carrier aircraft. Unscheduled air carrier operations are so infrequent at LRU that the FAA only requires the Airport to comply with certain Part 139 requirements.

According to the Las Cruces International Airport Certification Manual (Page F-1, FAA Dated MAR 30, 2018), the Airport's Index for aircraft firefighting and rescue is Index A. Rescue and firefighting equipment is provided by pre-arrangement at least 48 hours in advance of an air carrier operation. Upon notification by the Airport Manager of an air carrier operation, the City of Las Cruces Fire Department will station vehicles and personnel at the Airport or at Fire Station 7. At least one of the Fire Department personnel will be an ARFF-trained firefighter, as well as one licensed Emergency Medical Technician (EMT).

2-13-3 ARFF Index

14 CFR 139.315 provides LRU with guidance to determine the aircraft rescue and firefighting Index (ARFF). The Index is determined by a combination of the length of air carrier aircraft and the average daily departures of the longest air carrier aircraft. For the purpose of Index determination, air carrier aircraft lengths are grouped as follows:

ARFF Index Determination

Index	Aircraft Length Specifications
A	Aircraft less than 90 ft in length.
B	Aircraft at least 90 ft but less than 126 ft in length.
C	Aircraft at least 126 ft but less than 159 ft in length.
D	Aircraft at least 159 ft but less than 200 ft in length.
E	Aircraft at least 200 ft in length.

If there are five or more average daily departures of air carrier aircraft in a single Index group serving that airport, the longest aircraft with an average of five or more daily departures determines the Index required for the airport. When there are fewer than five average daily departures of the longest air carrier aircraft serving the airport, the Index required for the airport will be the next lower Index group than the Index group prescribed for the longest aircraft.

2-13-4 ARFF Equipment and Agents

14 CFR 139.317 provides LRU with the guidance to determine what firefighting equipment and agents are minimally required for the ARFF Indexes referred to in 14 CFR 139.315 above. For the purposes of equipment and agent determination, the ARFF Indexes are grouped as shown in the following table.

ARFF Index Determination		
Index	**Vehicle(s)**	**Agent(s)**
A	One (1) Vehicle carrying at least:	500 lbs. Of sodium-based dry chemical, halon 1211, or clean agent; or
		450 lbs. Of potassium-based dry chemical and water with a commensurate quantity of AFFF to total 100 gallons for simultaneous dry chemical and AFFF application.
B	One (1) Vehicle carrying at least:	500 lbs. Of sodium-based dry chemical, halon 1211, or clean agent and 1,500 gallons of water and the commensurate quantity of AFFF for foam production.
	Or	
B	Two (2) Vehicles with One (1) Vehicle carrying the extinguishing agents; and	Outlined under ARFF Index A
	One (1) Vehicle carrying	An amount of water and the commensurate quantity of AFFF so the total quantity of water for foam production carried by both vehicles is at least 1,500 gallons.
C	Three (3) Vehicles	Carrying extinguishing agents, water and commensurate quantity of AFFF so the total quantity of water for foam production carried by all three vehicles is at least 3,000 gallons.
D	Reference 14 CFR 139.317	
E	Reference 14 CFR 139.317	

Each vehicle and its systems are maintained in an operational condition during all airport carrier operations by the Las Cruces Fire Department and the City of Las Cruces Fleet Section. In the event a required vehicle becomes inoperative, it shall be replaced immediately by the backup Class A Pumper, Vehicle 2. If replacement equipment is not available immediately, the Airport Administrator shall notify the FAA Airports Division Manager through the Airport Certification Safety Inspector, and deny any request for an air carrier operation. As depicted below, when LRU begins Intra-State air service, it is highly likely the scheduled service will require the Airport to transition from ARFF Index A to Index B. At this point, the Airport will need to acquire new ARFF equipment to meet the need. A summary of the current LRU ARFF equipment follows:

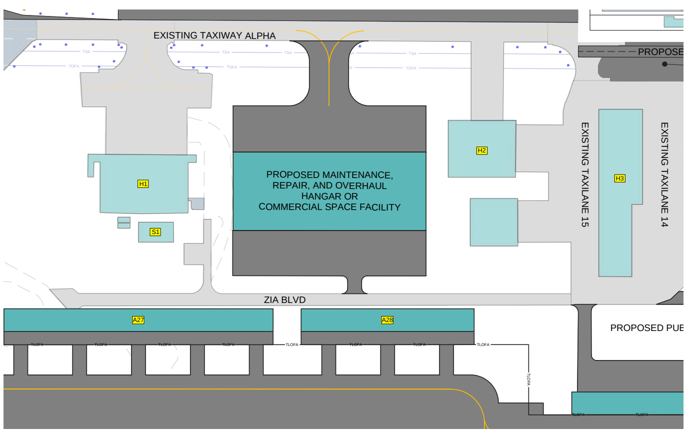
LRU ARFF Equipment on-hand				
Vehicle	**Description**	**Agents**		
1 - Primary Unit	2007 Rosenbauer "Panther" 4x4 ARFF Vehicle	1. Dry Chemical Capacity: 450 lbs potassium bicarbonate	2. AFFF Capacity: 200 gallons foam	3. Water Capacity: 1,500 gallons
2 - Secondary Unit	2016 Spartan Class A Pumper	1. AFFF Capacity: 30 gallons Class A and 30 gallons Class B	2. Water Capacity: 500 gallons	

LRU ARFF Equipment Capabilities	
Vehicle 1 - Rosenbauer "Panther"	Primary Unit **meets** the FAA equipment requirements for ARFF Index A.
Vehicle 2 - Spartan Class A Pumper	Secondary Unit **does not meet** the FAA equipment requirements for ARFF Index A.
Vehicles 1 & 2 (Combined)	**Do not meet** the FAA equipment requirements for ARFF Index B, C, D & E.

2-14 Airport Support Facilities

Airport Maintenance Facility

Having a central, secure location where equipment can be stored, service and fueled is a basic necessity for any airport. Keeping the airport's valuable and oftentimes expensive assets in an enclosed building will extend the useful life of the equipment. The form and function of an enclosed facility also aid in the ability to store the things that keep the airport and its equipment in operation like tools, oils, grease, floor jacks, spare mowing blades, spare tires, lighting inventory, box sign inventory, surface paint, and glass beads. This facility is the "home base" for the airport Maintenance Technicians and it can double as a classroom for new employee training and recurring annual training for the veteran staff.



All of the mowing equipment is stored on the asphalt apron south of taxiway Alpha and east of taxiway Echo. This offers no protection from meteorologic conditions like sun, wind, rain, and the hot summer temperature. Therefore, a place to store the equipment is needed. In addition, a climate-controlled facility where the Airport Maintenance Technicians could service equipment protected by the elements on a poured concrete floor would allow for more efficient and year-round maintenance at the airport.

2-14-1 Equipment Fueling Facilities

In January of 2022, a new 250-gallon diesel storage tank was installed within the aviation fuel farm compound, however this tank was not constructed in compliance and was removed. Airport staff fills unleaded gas at the Utility Compound on Motel Blvd. Future plans should consider a diesel storage tank adjacent to the maintenance facility. The storage tank will provide a more efficient way for fueling the various pieces of airport equipment. The diesel fuel is supplied by delivery on-demand by the City's Fleet department.

For equipment that uses unleaded fuel, Airport Maintenance Technicians are required to leave the Airport property and travel to a nearby gas station where they will fill up gas cans to bring back to the Airport.

2-14-2 Lodging

The City of Las Cruces is eight miles east of the Airport. Current Airport users need to find ground transportation from the Airport to their hotel of choice within the City. The LCIIP also has a myriad of businesses. During a Site Selector meeting, held at the Airport in July 2021, it was noted that the Airport is critical in supporting current and future business needs.

There are numerous hotels to choose from. In addition, the Las Cruces Convention Center on University Avenue offers multiple exhibit halls, two (2) ballrooms, and ten (10) meeting rooms to host events.

Future Airport users enjoying Las Cruces tourism opportunities, Virgin Galactic patrons and spectators, or business executives utilizing Intra and Inter-State air service expect ground transportation and travel arrangements to be as convenient as possible. Master Planning stakeholders discussed the potential and benefits of constructing a Hotel at the Airport. This Hotel would enable travelers to conveniently connect to ground transportation as well as schedule flights to various destinations. Currently, the Airport does not have a Hotel and this will be discussed more in Chapter 4: Facility Requirements.

2-15 Airport Support Equipment

The equipment that is used at an airport is purpose oriented. Every job or task that needs to be performed on a daily, weekly, monthly, annually, or in the event of an emergency at an airport, is most often accomplished with a piece of equipment designed to aid that job. Pick-up trucks can double as vehicles used by Airport Operations for daily inspections and then be used to fix deficiencies found the inspection by Airport Maintenance Technicians. The mowing tractors' purpose is to uphold the vegetation controls outlined in the Airport Certification Manual and the Wildlife Hazard Management Plan. One of the most expensive assets at any airport is the Airport Rescue and Firefighting (ARFF) vehicle. However, if there was ever an emergency where seconds made the difference between saving lives or losing them, the ARFF vehicle properly matched to meet the airport's ARFF Index would make that difference.

2-15-1 Mowing Equipment

To meet the expectations outlined in FAA's AC 150/5200-33 Hazardous Wildlife Attractants on or near Airports the Maintenance Technicians employ the use of an ALAMO Falcon 15 rotary mower pulled behind a 4WD Kubota M110XDTC tractor. An interview with the LRU maintenance manager was conducted. Based on the equipment the Airport currently has on hand, it was determined that it takes 22 days to mow the Airport. The Airport should evaluate the areas they are mowing and the frequency in which this is done. The Airport Committee members were also interviewed. It was their opinion that the airport is mowed at too high of a frequency and in fact so frequently that vegetation is not able to establish itself, therefore, leaving large areas of sand and desert conditions. A list of the airport's maintenance equipment follows.

Current Eqipment Inventory
1999 JOHN DEERE 310SE BACKHOE 4X
2004 YAMAHA YFM35FAS (ATV)
2006 TYMCO/ISUZU MDL. 435 SWEEPER
ALLMAND NLP-LIGHT TOWER
2016 FORD EXPLORER
2018 FORD F150
2020 POLARIS RANGER
2019 FORD F-250 EXTENDED CAB 4X4
TORO PROFORCE DEBRIS BLOWER
7x14 DUMP TRAILER
KUBOTA TRACTOR M110XDTC 4WD CAB
CARRY ON (ATV Trailer)
LIGHTED RUNWAY CLOSURE MARKER X (x4 Tow-behind trailers)
ALAMO FALCON15 ROTARY MOWER

2-15-2 Snow Removal Equipment

As a Class IV Part 139 certificated airport, Las Cruces International Airport does not currently have scheduled air service. When the Airport begins scheduled air service with aircraft greater than nine (9) seats, the FAA will require a Certificate change from Class IV to Class I.

Historically, Las Cruces, NM, receives approximately 2.2 inches of annual snowfall. As determined by the FAA Administrator, each certificate holder whose airport is located where snow and icing conditions occur must prepare, maintain, and carry out a snow and ice control plan in a manner authorized by the Administrator. The FAA's determination for this Region of the United States is that unless the airport receives greater than 6 inches of annual snowfall, then a snow and ice control plan is not required nor is the need to have snow and ice control equipment.

2-16 Environmental Inventory

2-16-1 Air Quality

The U.S. Environmental Protection Agency (EPA) has established two primary laws that apply to air quality: the Clean Air Act (CAA) and the National Environmental Policy Act (NEPA).

2-16-2 Clean Air Act

Pursuant to the CAA, parts of Doña Ana County are designated as non-attainment areas for two of the six criteria pollutants for which National Ambient Air Quality Standards (NAAQS) have been established: ozone and PM-10 (particulate matter). According to the New Mexico Environment Department, the high levels of PM-10 are largely due to dust storms in the County caused by natural events such as wind and dry conditions. Las Cruces International Airport is within Doña Ana County but is not located in either of these two non-attainment areas; therefore development at the Airport is not subject to further demonstrating general conformity with the New Mexico State Implementation Plan (SIP) in order to be eligible for federal funding and approval.

2-16-3 National Environmental Policy Act (NEPA)

NEPA requires consideration of air quality impacts for reasonable alternatives throughout the planning period. According to the FAA Air Quality Handbook, NAAQS analysis would be required at GA airports with more than 180,000 annual GA operations. For the base year, 2022, the number of annual operations at LRU was 36,800.

Forecasted operations at LRU are discussed in the next Chapter and are below the NEPA threshold; therefore no further NAAQS analysis would be required for future Airport projects.

2-16-4 Coastal Resources

Federal activities involving or affecting coastal resources are governed by the Coastal Barriers Resources Act (CBRA), the Coastal Zone Management Act (CZMA), and Environmental Order (E.O.) 13089, Coral Reef Protection. New Mexico is a land-locked state and does not have protected coastal areas; therefore, future development on the Airport is not anticipated to affect federally or state-protected coastal areas.

2-16-5 Compatible Land Use

Land Use: Public Safety and Noise Compatibility

The Airport is zoned M-3C, Heavy Industry with Conditional Use, and to the immediate south is LCIIP-MWD, the Las Cruces Innovation and Industrial Park Overlay zone. Much of the additional lands around LRU are reserved as part of the Bureau of Land Management. The land uses on and around the Airport are generally considered to be compatible with Airport operations. Aside from the small pockets of commercial and residential land use to the southeast and the northeast, lands are vacant.

The Runway Protection Zone (RPZ) off the end of each runway has passive land uses and there are no public gathering spaces within the airport vicinity. The property within the existing RPZs for each of the four runway ends at LRU is entirely on Airport or City property, which satisfies FAA preference for airport owner control over RPZs.

Land Use: Operational Safety

Wildlife and bird attractants, such as wetlands, bodies of open water, waste disposal sites, and certain crops, can cause safety hazards at airports. FAA guidance recommends that airports serving turbine-powered aircraft, such as LRU, maintain a separation distance of 10,000 feet from the edge of the Air Operations Area (AOA) and any hazardous wildlife attractant. There are no known wetlands, bodies of water, or landfills on or within 10,000 feet of the AOA at Las Cruces International.

Structures such as cell towers, wind turbines, vegetation, terrain, and tall buildings can inhibit airport operations and pose a safety concern. The City of Las Cruces Development Code includes an Airport Operations Overlay Zone District (AOD) and the ETZ Ordinances have an Airport Operations District (AOD) which protects the 14 CFR Part 77 surfaces. These ordinances also restrict uses that may interfere with navigational signals or radio communication for pilots, impair pilot visibility, create bird strike hazards or otherwise interfere with air operations. The Airport, City, and County staff should continue to coordinate regularly with each other to ensure these ordinances protect up-to-date airspace surfaces.

Future Land Use

The Elevate Las Cruces Comprehensive Plan is an extensive series of documents that clearly outline a vision for the future of the city. Included in Volume I is a Future Development Map which defines places based on a future development scenario. Las Cruces International is designated as Civic/Institutional, and the lands within Las Cruces that surround the airport are largely Business Park Industrial. The Civic/Institutional land place type is defined by large public or private facilities and complexes, such as LRU. The surrounding lands, which include the Las Cruces Innovation and Industrial Park are reserved for concentrations of warehousing, transportation, R&D, manufacturing, industrial uses, etc.

The Doña Ana County, One Valley, One Vision 2040 Comprehensive Plan was adopted in 2012. While the Plan does not have a formal land use map, it does identify development density patterns for areas outside of the Airport and the industrial parks.

It is recommended that land use planning in the area be a regional effort in order to discourage the encroachment of incompatible land uses, such as residential, on and around the Airport as growth and development continue to expand east of the Airport.

2-16-6 Construction Impacts

Airport construction may cause various environmental effects primarily due to dust, aircraft, and heavy equipment emissions, stormwater runoff containing sediment, and/or spilled or leaking petroleum products, among other impacts. Significant construction impacts would most likely occur when unusual circumstances exist (e.g., excavating environmentally sensitive areas, construction-induced traffic congestion that would substantially degrade air quality). A significant impact would occur when the severity of construction impacts cannot be mitigated below FAA's threshold levels for the affected resource (air quality, water quality, etc.). The anticipated construction impacts of the proposed development must be considered during each project's environmental review.

2-16-7 Department of Transportation Act: Section 4(f)

There are federal lands on all sides of the Airport property, most of which are owned by the Bureau of Land Management. The United States Fish and Wildlife Service (USFWS) lists nine national wildlife refuges in New Mexico. The closest to LRU is San Andres National Wildlife Refuge located east of Las Cruces in the San Andres Mountains, approximately 35 miles "as the crow flies" from the Airport. Aguirre Springs National Recreation Area is located east of the Organ Mountains, over 20 miles "as the crow flies" from the Airport. The Picacho Hills Country Club is situated approximately three miles northeast of the Airport. The proposed Airport development is anticipated to be located on Airport property and there are no plans to use these or any other federal lands.

A Class III cultural resources survey was conducted on Airport property in 2015 and a subsequent cultural resources survey was conducted in 2021 for a planned runway extension. The survey reports recommended several resources as eligible for listing on the National Register of Historic Places (NRHP); the 2015 report also recommended that a significant area to the southwest of the Airport property be avoided completely as there is a high likelihood of cultural resources throughout this area. Section 4(f) does apply to archaeological sites which are eligible for listing on the NRHP and which warrant preservation in place. In 2015, the New Mexico Department of Cultural Affairs, Historic Preservation Division, concurred with the recommendations in the survey report.

Any future development at the Airport would likely also have to avoid the remaining sites found to be eligible for listing on the NHRP; alternatively, additional analysis and testing of the areas must be conducted before any construction could occur there.

2-16-8 Farmlands

The Farmland Protection Policy Act (FPPA) of 1984 regulates federal actions that have the potential to convert farmland to non-agricultural uses. A biological evaluation conducted in December 2014 concluded that no prime farmland exists within the project area. Therefore no future coordination with the US Department of Agriculture (USDA) would be necessary for any development proposed within this area.

2-16-9 Fish, Wildlife, and Plants

Section 7 of the Endangered Species Act requires federal agencies to ensure that any proposed action does not jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of associated habitat.

A biological evaluation was conducted in December 2014 as part of the Action Plan Process within the established 774-acre action area; the action area extends 100 ft from the planning area boundary to account for potential adjacent bird nests and drainage. The report concluded that no federally listed threatened, endangered, or proposed species are likely to occur within the project area, and, no federal candidate species or their habitats are likely to occur within the project area. Two state-listed species protected under the New Mexico Wildlife Conservation Act (the Common ground dove and the Peregrine falcon) and two state-listed rare plants and their habitats (the Sand prickly pear and the Night blooming cereus) have the potential to occur within or near the project area, as suitable habitat was identified during the biological evaluation. Therefore, future development could have temporary impacts on these four species, if they are found to be present in the project area.

The report notes that any future construction is not likely to adversely impact any plant community given the monotypic and expansive nature of the vegetation in the project area; likewise, the report concludes that future construction is not likely to significantly impact mammal, bird and reptile species since widely available habitat exists adjacent to the project area. However, if construction takes place during the migratory bird breeding and nesting season (April through August), direct impacts on nesting birds could be incurred.

2-16-10 Floodplains

Floodplains are the lowlands and relatively flat areas that are prone to a 100-year flood, which is a flood that has a one-percent chance of occurring within a given year. Executive Order 11988 directs federal agencies to take action to reduce the risk of flood loss, minimize the impact of floods on human safety, health, and welfare, and restore and preserve the natural and beneficial values served by floodplains. Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) numbers 35013C0626E, 35013C0625E, and 35013C0650E show that the Airport property and its immediate surroundings are outside of the 100-year floodplain.

2-16-11 Hazardous Materials, Pollution Prevention, and Solid Waste

Airport Property

The Airport is the only known entity located on Airport property that reports to the Environmental Protection Agency (EPA) for water dischargers.

The hazardous substances known to be found at the Airport are aircraft and ground equipment fuel and fire-fighting chemicals. The Airport fuel farm has four fuel storage tanks. Two of these are owned by Southwest Aviation and the other two tanks, owned by the City, were installed in 2014.

Airport Vicinity

A search of the EPA Enviro-mapper database conducted in January of 2022 identified no facilities generating hazardous waste and no hazardous waste clean-up sites within one-half mile of the Airport. Similarly, no Superfund or Brownfield sites are located in the vicinity of the Airport.

The Corralitos Landfill is situated approximately five miles west of the Airport along Interstate 10. Solid waste in Doña Ana County and the City of Las Cruces is managed by the South Central Solid Waste Authority (SCSWA). The solid waste system includes the Corralitos Landfill and a transfer station and recycling center, as well as several County and City drop-off sites for garbage and recyclables. SCSWA offers recycling services to business customers for a fee. The solid waste provider for the airport is the City of Las Cruces. The Airport participates in the City's recycling program.

2-16-12 Historical, Architectural, Archaeological, and Cultural Resources

The National Historic Preservation Act of 1966, as amended, and the Archeological and Historic Preservation Act of 1974 are the two laws that establish the requirements for determining historic, architectural, archaeological, and cultural resource significance within the airport vicinity.

A Class III cultural resources survey was conducted on airport property in February 2015. The survey encountered seven previously recorded sites, three newly discovered sites, and 24 isolated manifestations. All sites are recommended as eligible for inclusion in the National Register of Historic Places (NRHP), with the exception of LA 78981, a rock alignment, which no longer exists. No further treatment was recommended for the 24 isolated occurrences as they are unlikely to be historically significant. Additionally, the survey report recommends that an area to the southwest of the Airport property be avoided completely as there is a high likelihood of cultural resources throughout this area. The New Mexico Department of Cultural Affairs, Historic Preservation Division, concurred with the recommendations in the survey report in April 2015.

In 2021, a Class III cultural resources survey was conducted on Airport property in the area of Runway 8/26. The Survey identified three additional sites, each of which was recommended as eligible for inclusion in the NRHP. Any future development at the Airport would likely also have to avoid the remaining sites found to be eligible for listing on the NHRP, or additional analysis and testing of the areas must be conducted before any construction could occur there.

2-16-13 Light Emissions and Visual Impacts

Airports convey a significant amount of light, including approach lighting systems. Visual impacts are difficult to define because of the subjectivity and may create an annoyance to people in the vicinity or interfere with their normal activities. The Airport property is in a remote, rural location with no residential development in the vicinity. As there are existing lights at this operating Airport, future Airport development is not likely to create significant light emissions and visual impacts. Nevertheless, future development projects involving the installation, replacement, or relocation of airfield lighting should be evaluated for adverse light emissions and visual impacts on the surrounding lands.

Natural Resources, Energy Supply, and Sustainable Design Executive Order 13123 Greening the Government through Efficient Energy Management encourages federal agencies to expand the use of renewable energy within its facilities and in their activities; and to encourage the development of facilities that exemplify the highest standards of design including the principles of sustainability. In addition, any proposed development at LRU should be examined to identify any proposed major changes in stationary facilities or the movement of aircraft and ground vehicles that would have a measurable effect on local supplies of energy or natural resources. According to the FAA, most airport development projects will not produce changes in energy use or other natural resource consumption resulting in significant impacts.

The on-airport electrical vault supplies the electricity needed for airport lighting and operations. A 2015 design effort to install Precision Approach Path Indicators (PAPI) on Runway 8/26 uses Light-Emitting Diode (LED) bulbs. LEDs have several advantages over incandescent bulbs, including lower energy consumption, longer lifetime, and improved physical robustness. Fire Station 7, which services the airport and the West Mesa Industrial Park, is designed for Leadership in Energy and Environmental Design (LEED) certification standards. All Airport lighting has been converted to LED bulbs. Sustainable measures will be further discussed and evaluated in the subsequent chapter about sustainable planning for the Airport.

2-16-14 Noise

Airport development actions that change airport runway configurations, the number of aircraft operations and/or their movements, aircraft types using the airport, or aircraft flight characteristics may affect the existing and future noise levels at the airport. Day/night average sound level (DNL) is the FAA-prescribed metric for determining cumulative noise energy. Generally, the FAA considers DNL 75 and higher to be incompatible with most land uses, while below DNL 65 is compatible with most land uses. Above 65 DNL, noise-sensitive land uses (such as residential, schools, churches, and hospitals) are typically discouraged. A significant noise impact would occur if a proposed project would cause noise-sensitive areas to experience an increase in noise of DNL 1.5 decibels (dB) or more at or above DNL 65 dB noise exposure.

LRU is located in a remote area with no noise-sensitive land uses in its vicinity. Therefore, noise impacts from future development are not anticipated. However, the noise contours for the Preferred Alternative selected in this Airport Action Plan may need to be generated during an environmental analysis to ascertain their extent.

2-16-15 Secondary (Induced) Impacts

Major development proposals can involve the potential for induced or secondary impacts on surrounding communities. Examples include shifts in patterns of population movement and growth; public service demands; and changes in business and economic activity to the extent influenced by airport development. Any proposed development should be assessed for potential secondary (induced) impacts.

2-16-16 Socioeconomic Impacts, Environmental Justice, and Children's Environmental Health and Safety Risks

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, and the accompanying Presidential Memorandum, and Order DOT 5610.2, Environmental Justice, require FAA to provide for meaningful public involvement by minority and low-income populations and analysis that identifies and addresses potential impacts on these populations which may be disproportionately high and adverse. Additionally, pursuant to E.O. 13045, Protection of Children from Environmental Health Risks and Safety Risks, Federal agencies are directed as appropriate to prioritize environmental health risks that may disproportionately affect children. Any proposed development at LRU must be analyzed to assess impacts on low-income or minority populations or on children's health and safety.

There are no schools or residences in the immediate vicinity of the Airport, therefore significant impacts from any future development are not anticipated.

2022 data from the U.S. Census American Community Survey (ACS) was consulted for demographic information about the City of Las Cruces. Sixty percent (60%) of the population of Las Cruces is Hispanic or Latino; twenty-two percent (22%) of residents earn an income that classifies them as below the poverty line. As there is no residential development in the immediate vicinity of Airport property, any future development is unlikely to affect this population.

2-16-17 Water Quality

The Clean Water Act (CWA) provides the authority to establish water quality standards, control discharges, develop waste treatment management plans and practices, and prevent or minimize the loss of wetlands. Section 404 of the CWA regulates Waters of the United States (WOUS) and is administered by the United States Army Corps of Engineers (USACE). Section 401 of the CWA regulates water quality and is administered by the Surface Water Quality Bureau of the New Mexico Environment Department. Water quality regulations and the issuance of permits before construction projects at LRU will normally identify any deficiencies in the proposed development with regard to water quality or any additional information necessary to make judgments on the significance of impacts.

There are no perennial surface water bodies within or adjacent to the project area. Stormwater runoff generally flows east toward the Mesilla Valley and the Rio Grande River. However, according to the Biological Evaluation conducted as part of this planning effort, no drainages were observed in the project area that could potentially reach the Rio Grande River.

A water detention structure is located in the western portion of the airport property which collects stormwater runoff from airfield pavements. This structure is grassy and does not possess indicators of wetlands, according to the on-airport biological evaluation conducted in December 2014.

The biological evaluation also concluded that no drainages or Waters of the United States (WOUS) are present within the project area.

The obtaining of the appropriate permits and the use of Best Management Practices (BMP) during construction will help to mitigate any water quality impacts of future development.

2-16-18 Wetlands

USFWS National Wetlands Inventory (NWI) data consulted in February 2015 indicates that one Freshwater Forested/Shrub Wetland patch is present within the project area, near the Runway 30 end; however, during field verification in December 2014, the feature was confirmed not to exist. The field survey confirmed that no wetlands or wetland indicators (hydrophytic vegetation or wetland hydrology) are present within the project area. A water detention feature is located in the western portion of the airport property. No water was noted in the feature during the field visit.

2-16-19 Wild and Scenic Rivers

Select rivers can be classified by Congress as National Wild and Scenic Rivers in order to protect them from development that could substantially affect their nature or health. There are four federally-listed Wild and Scenic rivers in New Mexico: the Rio Grande, the Rio Chama, the Pecos, and the east fork of the Jemez River. None of these is located near the airport. Projects at LRU will not impact any Wild and Scenic rivers or other federally listed river segments; therefore there is no cause for notification of federal agency or for further environmental review.

2-17 Socioeconomics

2-17-1 Regional Setting and Land Use

Las Cruces International Airport is located immediately north of US Interstate 10, on the mesa about 8 miles west of downtown Las Cruces. The Airport's 2,193 acres are publicly owned by the City of Las Cruces.

Within 50 miles of LRU are four public-use National Plan of Integrated Airport Systems (NPIAS) airports, one military airport, and three airports not classified in the NPIAS. The public-use airports include Hatch Municipal Airport (E05), Doña Ana County International Jetport (DNA), El Paso International Airport (ELP), and Bigg's Army Airfield at Fort Bliss (BIF). The closest scheduled passenger air service is located at El Paso International Airport, a 45-minute drive south of Las Cruces.

The Airport is home to two Fixed Base Operators (FBO), airport administrator, airport staff, the Experimental Aircraft Association Chapter 555, Civil Air Patrol Las Cruces Composite Squadron, NM State University, Mesilla Valley Aviation, and staff, among other commercial and private tenants.

The City of Las Cruces is part of the Mesilla Valley MPO, which provides regional planning services for Las Cruces, Mesilla, and part of Doña Ana County. Regional airport planning is funded, in part, by the NMDOT-A and the FAA.

2-17-2 Land Use and Zoning

Land surrounding the Airport is largely undeveloped desert land. The Airport itself sits upon a peninsula of private land eight miles west of downtown Las Cruces. This portion was annexed from Doña Ana County in 1990 and is connected with Las Cruces only along the I-10 corridor. The airport and the Las Cruces Innovation and Industrial Park (LCIIP) make up a majority of these private properties within the western peninsula of Las Cruces. These properties are bordered on all sides by the Bureau of Land Management properties, dotted with New Mexico State inholdings.

The land outside the Airport is governed by the Las Cruces Extra-Territorial Zone (ETZ) which covers five miles outside of the City limits. Beyond those areas lies Doña Ana County which is governed by the county's performance district zoning. The Airport itself is zoned M-3C, which is a heavy industry with conditional use. The adjacent LCIIP has a special overlay zoning designation. Private parcels outside the Airport and industrial park are zoned Holding Conditional (HC), and small parcels are zoned commercial adjacent to I-10. Generally speaking, land uses and zoning surrounding LRU does not pose any concerns with continued and planned operations. Growth and development within the lands around the Airport are protected around the perimeter of the Airport. It is critical that LRU protect aeronautical operations from encroachment that could inhibit the growth of the Airport. The City has developed an AOD and the Airport Operations Overlay Zone District within the Extra-Territorial Zone (ETZ). The AOD affects existing land uses and zoning around the Airport, ensuring that future development will be compatible with Airport operations.

2-17-3 Demographics

Driveshed

The term "driveshed" describes the areas surrounding a location that can be reached in a certain amount of time traveling posted speed limits on public roads. The 30-minute driveshed from LRU reaches central Doña Ana County, all of Las Cruces, the Mesilla Valley, and New Mexico State University.

By extending the drive time to 60 minutes, the Airport can reach Luna County, the majority of Doña Ana County, and portions of the El Paso metro area, including El Paso International and related commercial services. At this distance, there are regional GA airports to the north, east, and south.

Demographics and Local Economy

The populations of central Doña Ana County and Las Cruces have experienced moderate growth in recent decades, increasing the population at a rate of 14.1 percent from 2010–2020 according to the 2020 census. This brings a community with approximately 97,618 residents in 2010 to that of 111,385 residents in 2020. The population of Las Cruces is predicted to grow over the next 25 years at a rate of about 1.2% per year.

The most recent data available for unemployment points to a 5.1% unemployment rate. Since 2010, unemployment has generally ranged from 7.3% to 8.5%, with the exception of 2020, when unemployment jumped to a high of 12.8% largely due to the impacts of COVID-19.

It should be noted that LRU is located within a federally designated Opportunity Zone. The Qualified Opportunity Zones (QOZ) established by the Tax Cuts and Jobs Act is an economic development tool to incentivize long-term private sector investment in low-income communities. QOZ provides a tax incentive for investors to re-invest their unrealized capital gains into Opportunity Funds that are dedicated to investing in QOZ. Investment benefits include tax forgiveness on gains on that investment if the investor holds the investment for at least 10 years.

2-18 Space Use Facilities

2-18-1 Existing Space-Unique and Dual-Use (Aviation and Space) Facilities at LRU.

This section describes existing facilities that can support space operations. It includes currently disused facilities that can be returned to use without major construction or engineering effort (e.g., the concrete landing pads used in the Lunar Lander activity in 2006). These facilities are identified as space-unique facilities. Additionally, it discusses existing aviation facilities that can be used in some classes of space research & development, and flight test activities, either as they currently exist, either with or without the use of temporary capabilities brought in on an as-needed campaign basis, or with modifications including physical changes or additions to airport fixed infrastructure. All existing aviation facilities and capabilities that might be used for one or more classes of space activity, as is or with relatively minor modification, are identified as dual-use facilities.

Existing Space-Unique Facilities at LRU

The primary set of space-unique facilities are the three concrete pads located at the west end of the Airport fenced area.

These were used in low-level test flights and landings of rocket-powered Lunar Lander prototypes, made by several contestants in the 2006 X-Prize Lunar Landing Challenge. These are circular concrete pads 32-ft diameter and 6 inches thick. Visual inspection undertaken by contractor personnel in September 2021 revealed basically sound condition on all three, with no visible cracking or erosion. A civil engineering inspection would be needed to determine the pads' suitability for a rocket engine or vehicle testing and what amount and type of renovation might be needed or desired for any given purpose. As a wide variety of systems are currently in development by the private sector, it would not be possible to further evaluate the suitability or needs of these pads until the characteristics of the system contemplating their use are known in detail.

However, one aspect of the pads' history lends them value regardless of the amount of work needed to put them back into service. As they are "disturbed earth" in environmental terminology, and have already been used for their intended purpose in the recent past, the environmental documentation and review needed to return them to service should be less burdensome than if the activity were to be undertaken de novo.

Existing Dual-Use Facilities at LRU

This section deals almost entirely with horizontal-launched and/or aircraft-carried and air-launched spacecraft and launch vehicles, and the dual-use facilities that will be described have for the most part been designed and built with no regard for ultimate space launch use. Some adaptations would be needed in several cases, but the adaptations are in most cases ordinary airport engineering that is well understood, and there are no known engineering concerns that would prevent LRU from choosing to implement them if so desired. Some existing launch systems currently in service could use LRU with very little adaptation, others would require substantial engineering, primarily the lengthening and widening of runways, and the expansion of current hangars or the construction of newer, larger ones.

In general, the facilities needed to serve larger jet-engine aircraft are those that will serve the carrier aircraft that all current runway-using spacecraft use to initiate their missions. Some dual-use services such as fueling, weather, radio, air traffic control, and emergency services (fire and rescue) will also consist primarily of existing aviation facilities, but with expanded training and in some cases infrastructure. For instance, fuel storage will have to take into account new fuel types with unique requirements, which may require physical distancing from existing fuels. Additionally, some launch vehicle fuel types are incompatible with others, so storage for each type may have to be isolated. (Fortunately, the highly toxic and corrosive fuels and oxidizers of the early Missile Race days, which many people still associate with the term "rocket fuel," are no longer used in modern commercial rocketry.) Oxidizer storage may eventually be developed with its own safety requirements.

It should be emphasized here that there is no current proposal for basing any of these four systems at LRU. They are being discussed to illustrate that the definition of "dual-use" is system-specific and that the degree of adaptation to bring a dual-use facility to operational status differs according to the characteristics of the system under consideration. Included in the discussion of LRU's dual-use potential are assets such as its available expansion land, and current lack of encroachment or obstruction, compared to other air and spaceport locations. These factors would make an adaptation of existing runways and other facilities relatively easier and less costly, so long as planning makes such contingent adaptation a criterion in future layout and construction decisions.

Chapter Three: Aviation Activity Forecasts

3-1 Overview

This chapter presents projections of aviation activity that will be used as the basis for facility planning at the Las Cruces International Airport (LRU). Aviation forecasts should be realistic, based upon the latest available data, and supported by the information presented in the study. In addition, forecasts of aviation activity provide the basis for evaluating the adequacy of existing airport facilities and their capability to handle increased traffic levels or different types of traffic. Aviation Activity Forecasts are the foundation for effective decisions in airport planning, including if or when improvements are needed, the level of anticipated capital improvements, and the timing of the necessary investments. Therefore, the forecast should be adjusted periodically based on actual aviation activity and after any significant change in a driver of aviation activity.

The most recent forecast for LRU was published in 2014 as part of the Airport Action Plan. As of the creation of this forecast, it is understood that the COVID-19 pandemic has been a lead driver of change in aviation activity throughout the US and the world. The effects of the COVID-19 pandemic are still unfolding and have dramatically impacted worldwide aviation operations. Since March of 2020, all sectors of aviation including commercial operations and GA operations have been in fluctuation. Given the changes in the national economy and the aviation industry, as well as economic development occurring in Las Cruces, the existing aviation forecasts will be reassessed. The assumptions and conclusions in this chapter are based on a variety of data sources including but not limited to the following:

- Airport Action Plan developed in 2014
- Historical data
- FAA Terminal Area Forecast
- FAA Aerospace Forecast FY 2022-2042
- Traffic Flow Management System Counts (TFMSC)
- Available ADS-B data
- The New Mexico Airport System Plan Update released in 2017
- New Mexico Air Service Marketing Strategy
- Air Service Development/Marketing Indicatives
- Interviews with Airport management and local tenants

Airport forecasts are typically based on historical data and broadly accepted industry and governmental estimates of aviation activity, as well as the primary socio-economic drivers of aviation activity. The standard planning period for an airport master plan is 20 years. This Study uses base information from 2021, forecasts are presented for 2026, 2031, and 2041 as the key planning periods are generally considered at the five, ten, and twenty-year horizons.

Forecasts were developed for the following elements:

- Based Aircraft
- Business/General Aviation Operations
- Commercial Aviation Operations
- Commercial Aviation Enplanements
- Critical Design Aircraft

3-2 Review of National Trends

A review of national trends in the aviation industry can provide valuable insight when producing aviation activity forecasts. It is with the understanding that each individual airport has a distinct operating environment, demographic, and unique set of challenges. Although conditions in 2021 are still in recovery mode, there has been a remarkable recovery since the onset of the COVID-19 pandemic in 2019. One thing that the previous 20 years in the aviation industry has shown us, is that the industry is resilient. Since the turn of the century the aviation industry has suffered through the terrorist attacks of 9/11, the threat of pandemic outbreaks such as Ebola and Severe Acute Respiratory Syndrome (SARS), dramatic spikes in fuel prices, as well as the 2008–2009 worldwide economic crisis. Mainline air carriers have undergone significant restructuring and downsizing while low-cost carriers have experienced growth. The industry has responded to these challenging times and the results have been impressive. As highlighted in the FAA Aerospace Forecast FY 2022–2023, 2019 marked the eleventh consecutive year of profitability for the US airline industry.

The onset of the COVID-19 pandemic in 2019 once again challenged the aviation industry globally resulting in a significant impact on aviation. Commercial air traffic was hit hardest by the pandemic while cargo operations emerged as a surge of activity. At the same time, consumers, while under quarantine, purchased goods online and local businesses suffered due to staff shortages while aviation cargo numbers increased. GA continues to survive through business travel and personal flight training. New private and commercial pilots are entering the GA pilot population which is a shining light for the future pilot population to support the commercial pilot shortage.

By mid-2021 the outlook had become brighter with the introduction of vaccines. People started returning to their way of life, and leisure travel began to rise. Some airports "recorded traffic levels higher than in 2019" (FAA Aerospace Forecast FY 2022–2023). The second half of the year was hit with COVID-19 variants which tapped the brakes on economic recovery but did not have a reverse effect. The FAA states that by the third quarter of 2021, industry profitability was nearing the breakeven point.

During the beginning of 2022, demand recovery was uneven across markets and population segments. Further triggering events hit the industry with the Russian invasion of Ukraine and the ongoing war. As this is an ongoing situation, the effects the war will have on aviation are still unfolding. Flights that usually traverse Russian and Ukrainian airspace are rerouting. Fuel prices have spiked as some countries halt importing oil from Russia. Induced effects have included higher food and utility costs for the general population. Las Cruces is no stranger to the challenges these triggering events have on the industry and it is important to assess the effects this has on individual airports.

According to the FAA, domestic leisure and business travel is expected to gain momentum in 2022. The 2022 FAA forecast calls for the US domestic passenger growth over the planning period to average 4.7%. This includes double-digit growth in 2022 and 2023 as recovery continues. Post-2023 recovery trends show an average annual growth rate of 2.6% for the planning period. The GA active fleet is forecast to increase by 0.1% between 2022 and 2042, essentially unchanged from the 2019 level.

3-3 Previous Forecasts

Historical aviation activity is one tool that can be used to identify trends that have taken place at an individual airport in the past to assist with determining what could be anticipated to happen in the future. Historical data can be found in a variety of sources including the previous 2014 Action Plan forecasts, FAA TAF publications, past airport 5010 inspections, past and present State Aviation System Plans, and airport logs or records. All historical data is important when establishing a baseline and conducting a forecast of aviation demand for an airport. The forecasts are detailed below.

3-3-1 2017 Airport Action Plan Forecast

The forecasts presented in the 2017 Airport Action Plan addressed based aircraft, aircraft operations and touched briefly on special operations specific to New Mexico State University (NMSU)and sporting events.

The forecasts used FAA national growth rates and then modified them as appropriate to account for the regional demographic and market data noted above. The forecasts used the following growth rates:

- 3% national growth rate was used for the Based Aircraft forecast.
- 1% national growth rate was used for Aircraft Operations
- 0.3% national growth rate was used for Instrument Operations.
- The local/itinerant operational aircraft mix was 15%/85%

One focus of the 2017 Airport Action Plan was to assess extensions of Runways 12/30 and 8/26 based on turboprop and jet aircraft use. The Action Plan also obtained support letters from New Mexico State University, which discussed their use and activity of the airport. NMSU indicated that their chartered use of Boeing 737 aircraft could not operate all the time due to the existing runway's length, especially during high density altitude. This continues to be an issue today.

Expecting turboprop and jet activity to grow in the future, the analysis noted that corporate and air taxi activity would grow faster than that associated with recreational use. As a result, forecasts for itinerant corporate and air taxi activity were projected to double in the first five-year period and then grow at 10% annually from there.

Table 3-1 presents the data from the 2014 Airport Action Plan.

Table 3-1 - 2014 Action Plan Forcast				
Forecast	Existing (2014)	Short Term	Intermediate Term	Long Term
Based Aircraft	160	164	169	178
Total Ops.	79,880	81,896	83,958	88,241
Local Ops.	12,000	12,284	12,595	13,240
Itinerant Ops.	66,120	69,612	71,363	75,001

Source: 2014 Action Plan

The current Airport Reference Code (ARC) is C-II and the current designated critical aircraft is the Challenger 600. Based on the Airport Action Plan's analysis of local business use of the airport and various support letters that were obtained for the study, it was concluded that the larger corporate turboprop and jet activity would grow over the planning period. The Action Plan concluded that the future critical aircraft would continue to be a jet aircraft in the 20,000 lbs. range and the Challenger 600 was selected for planning purposes. This critical aircraft designation maintains the ARC C-II for airport design requirements in the planning future.

3-3-2 FAA Terminal Area Forecast (TAF) 2021

The FAA develops an annual forecast of activity for each airport in the National Plan of Integrated Airport System (NPIAS). The TAF uses historical data from the FAA's Airport Master Record (Form 5010), which is typically utilized to provide an estimate of activity. These estimates at uncontrolled airports have historically come from airport management and may not represent actual operations counts. Based aircraft are verified through the FAA database and reported through basedaircraft.com.

In many cases forecasts for non-towered GA airports show no growth. The FAA TAF for Las Cruces International Airport is presented in **Table 3-2.**

As shown in this table, the base year for the Airport's TAF is 2021, all subsequent data represents forecast estimates. The TAF reports operational data for the entire airport. This data includes GA activity broken into based aircraft and total operations. Operations data is further broken

Table 3-2 - FAA Terminal Area Forcast for Las Cruces International Airport													
	Enplanements			Itinerant Operations					Local Operations			Totals	
Years	Air Carrier	Commuter	Total	Air Carrier	Air Taxi & Commuter	GA	Military	Total	Civil	Military	Total	Total	Based Aircraft
2011	0	0	0	0	4,072	22,500	2,486	29,058	16,582	0	16,582	45,640	131
2012	122	2	124	4	4,072	10,000	45,396	59,472	9,300	0	9,300	68,772	139
2013	0	0	0	0	4,322	9,995	45,598	59,915	9,293	0	9,293	69,208	146
2014	0	0	0	0	4,683	10,500	54,660	69,843	12,000	0	12,000	81,843	152
2015	0	0	0	0	3,580	10,500	53,800	67,880	12,000	0	12,000	79,880	163
2016	246	0	246	0	3,580	10,500	53,800	67,880	12,000	0	12,000	79,880	162
2017	283	41	324	0	3,580	10,500	53,800	67,880	12,000	0	12,000	79,880	154
2018	100	0	100	0	3,580	10,500	53,800	67,880	12,000	0	12,000	79,880	136
2019	306	6	312	0	3,580	10,500	10,200	24,280	12,000	0	12,000	36,280	128
2020	28	0	28	0	3,634	10,658	10,353	24,645	12,180	0	12,180	36,825	106
2021	0	0	0	0	3,634	10,658	10,353	24,645	12,180	0	12,180	36,825	107
2026 (F)	0	0	0	0	3,634	10,658	10,353	24,645	12,180	0	12,180	36,825	107
2031 (F)	0	0	0	0	3,634	10,658	10,353	24,645	12,180	0	12,180	36,825	107
2041 (F)	0	0	0	0	3,634	10,658	10,353	24,645	12,180	0	12,180	36,825	107

Source: FAA TAF

down by itinerant versus local traffic as well as civil versus military. Commercial aviation activity is also included in the TAF. Commercial activity is broken out into air carrier and air taxi or commuter operations and enplanements. The 2021 TAF for Las Cruces shows fluctuation in total operations, based aircraft and enplanements. With regard to GA operations and based aircraft it shows static levels for 7-10 years before the numbers are updated and then held static for another 7-10 years. This would correlate with planning studies and updated aviation forecasts. The commercial enplanement numbers seem to correlate with historic passenger service. Based on the 2014 Action Plan approved forecasts, operations numbers were adjusted in 2015 to hold static at 79,880 and remain unchanged until 2019 at which time a noticeable change was made to the operational data: a decrease from 79,800 to current operations of 36,825. At uncontrolled airports such as LRU, the operations are still a byproduct of educated estimates and forecasting. This change in operations equates primarily to the release of the Action Plan and associated updates in reported information. Another primary influence on this significant change is the implementation of the General Audio Recording Device (G.A.R.D.) system at LRU combined with FAA implementation of ADS-B creating a more accurate method of accounting for operations.

Based aircraft numbers have fluctuated throughout the years. As part of this study, to satisfy the FAA's requirement of airports to certify their based aircraft annually, the baseline-based aircraft count in 2021 has decreased from 129 based aircraft reported in 2019 to 106 verified aircraft in 2022. However, the TAF is showing static operations and based aircraft in the forecast years.

Scheduled commercial operations are on track to commence January 2023. Along with non-scheduled charter operations and continued demand for air carrier service, future commercial service will have a significant impact on LRU's aviation activity forecast. The demand and potential for future commercial aviation activity will be described in the following sections.

In summary, the FAA forecasted a flat, no-growth scenario over the forecast period (2021 through 2045). The forecast is not deemed valid, as it is unrealistic given the growth that has occurred at the Airport since 2014. That growth is discussed in the following sections.

3-3-3 New Mexico Airport System Plan Update 2017

The New Mexico Airport System Plan Update (NMASPU) from 2017 classified Las Cruces International Airport (LRU) as a "Regional General Aviation" airport due to LRU exceeding the following requirements:

- Jet or Turboprop Operations (More than 300)
- Based Aircraft (More than 33, including at least one jet OR more than 100 total based aircraft)
- Percentage of New Mexico Population Covered by 30-Minute Drive Time Analysis (More than 2%)

As stated in the 2017 NMASPU, the jet and turboprop operations were sampled from the FAA's Air Traffic Airspace Lab's Traffic Flow Management System from the 2014 calendar year. The count did not include commercial airline, air cargo, or military operations. It was estimated that the total jet and turboprop operations for LRU were 1,876.

Based aircraft totals were collected using the FAA's National Based Aircraft Inventory Program and FAA 5010 Airport Master Records. LRU had 118 single-engine aircraft, 16 multi-engine aircraft, 5 helicopters, 4 gliders, 4 military aircraft, and 11 ultra-light aircraft for a combined total of 158 aircraft (2017).

The data used to find the percentage of the New Mexico population covered by a 30-minute drive time was collected from the 2010 Census Bureau. That data showed that 141,494 people, 6.87% of the State's population live within 30 minutes of the Airport. The 4th highest population behind Albuquerque International Sunport, Double Eagle II Airport, and Doña Ana County Jetport at Santa Teresa.

Direct economic impacts from LRU include employment, payroll, and output for public agencies and private firms located on Airport property. This would include Airport Rescue and Fire Fighting (ARFF), fixed-based operator (FBO), charter facilities, maintenance facilities, flight schools, aircraft storage, and car rental agencies. LRU had a direct economic impact of $22,058,000 and a secondary economic impact of $6,596,000 for a combined total of $28,654,000.

3-4 Existing Aviation Activity

This section summarizes the activity for Las Cruces International Airport. The Airport is active and has a unique mix of aircraft, including corporate turboprop and jet aircraft that use the Airport for business as well as recreation. This unique mix of aircraft has shaped the Airport such that Las Cruces International Airport is not a typical GA airport. The Airport holds a Class IV, Part 139 Commercial Operating Certificate supported by a terminal building that provides a small passenger waiting area combined with a pilot's lounge and a small administration office area. This Terminal building is able to handle small numbers of commercial passengers and the Airport has designed an alternate passenger terminal to support future commercial passenger service.

3-4-1 Based Aircraft

Historical based aircraft have been recorded in the FAA TAF and are shown in **Table 3-2.** A trend analysis was conducted and documented in **Table 3-3** and it was determined that since 1990, the average number of based aircraft is 140. As part of this study, current-based aircraft were surveyed and verified through Basedaircraft.com. The number of based aircraft estimated in the 2022 FAA TAF was 107. As of January 2022, this number has been verified to be 106 total based aircraft and this number will be used as a baseline for this study.

Table 3-3 - Historical Based Aircraft Count	
Year	Based Aircraft
1990	184
1995	175
2000	107
2005	132
2010	131
2015	163
2020	128
2021	106
2022	106
Historical Average	140

Source: FAA TAF (2022), Basecraft.com

The different types of aircraft based at the Airport are referred to as the Fleet mix. The current based aircraft fleet mix is shown in **Table 3-4.**

Table 3-4 - 2021 Based Aircraft	
Single Engine	82
Multi-Engine	10
Turbo-Jet	2
Rotor (Civil)	3
Rotor (Military)	4
Glider	4
Ultralight	1
Total:	106

Source: FAA TAF (2022), Basecraft.com

3-4-2 Operations

As the Airport does not have a tower, only an estimate of annual operations is provided. Based on discussions with the Airport Administrator, the Airport's on-site G.A.R.D. system installed in 2020, the FAA Traffic Flow Management System Counts (TFMSC) and the latest data obtained from the FAA Airport Master Record (Form 5010) determined the annual operations estimate is 36,825 operations and will be used as the baseline for this study. Operations can be broken down into local and itinerant operations. Itinerant operations can be further broken into subcategories. Detailed operations data is presented in **Table 3-5.** Aircraft activity includes a mix of GA aircraft, air taxi, and military activity. Previous Action Plan reported 79,880 operations as the baseline. The installation of the G.A.R.D. system as well as the onset of the COVID-19 pandemic in 2020 may be contributing factors to this reduction in operations. As shown in the table, historical averages over the past 25 years are significantly higher than what we are seeing today and indicates that the Airport is currently rebounding to prior operational activity.

Table 3-5 - Historical Operations Summary							
Years	Local	Itinerant					Total Operations
		Air Carrier	Air Taxi & Commuter	GA	Military	Total	
1995	41,842	20	5,158	21,000	2,784	28,962	70,804
2000	40,000	2,700	2,500	21,000	3,000	29,200	69,200
2005	40,000	0	3,200	24,000	26,308	53,508	93,508
2010	16,582	0	4,072	22,500	2,486	29,058	45,640
2011	16,582	0	4,072	22,500	2,486	29,058	45,640
2012	9,300	4	4,072	10,000	45,396	59,472	68,772
2013	9,293	0	4,322	9,995	45,598	59,915	69,208
2014	12,000	0	4,683	10,500	54,660	69,843	81,843
2015	12,000	0	3,580	10,500	53,800	67,880	79,880
2016	12,000	0	3,580	10,500	53,800	67,880	79,880
2017	12,000	0	3,580	10,500	53,800	67,880	79,880
2018	12,000	0	3,580	10,500	53,800	67,880	79,880
2019	12,000	0	3,580	10,500	10,200	24,280	36,280
2020	12,180	0	3,634	10,658	10,353	24,645	36,825*
2021	12,180	0	3,634	10,658	10,353	24,645	36,825
Historical Average	17,997	-	3,816	14,354	28,588	46,940	66,946
Percentage (2021)	33%	0%	10%	29%	28%	67%	100%

* G.A.R.D. system installed to more accurately count operations
Source - FAA TAF and DuBois & King

Table 3-6 compares the local/itinerant operations split derived from discussions with the Airport (Administrator, FBOs, Users), the 2014 Action Plan, historical data from 1995 to 2021, and the FAA 2021–2041 TAF. The Airport indicated that the split between local to itinerant operations is estimated to be 43% local and 57% itinerant. A 15% local and 85% itinerant split was presented in the 2014 Action Plan. The FAA 2021-2041 TAF provided a split of 33% local and 67% itinerant. The total averages equal the FAA TAF at 33% local and 67% itinerant and will be used for this study.

Table 3-6 - Local/Itinerant Operations Split		
Source	Local	Itinerant
2014 Action Plan	15%	85%
Airport	43%	57%
Historical 1995-2020	40%	60%
FAA TAF	33%	67%
Average	33%	67%

Source: DuBois & King Interpolative Data, 2022

The current 36,825 baseline operations can be further defined by Aircraft type and Aircraft Design Group. **Table 3-7** depicts aircraft type and the number of aircraft operations by type (also referred to as Fleet Mix) and the percentage of total operations.

Table 3-7 - 2021 LRU Operations Fleet Mix		
Aircraft Type	Operations	Percent Total Operations
Single-Engine	23,752	64.5%
Multi-Engine	1,620	4.4%
Turbo-Prop	5,137	14%
Turbo-Jet	1,215	3.3%
Rotorcraft	5,064	13.8%
Glider	37	0.1%
Light Sport	0	0.0%
Total	36,825	

Source: DuBois & King Analysis, 2022

3-4-3 Operational Breakdown by Aircraft Approach Category (AAC) and Aircraft Design Group (ADG)

Airport design standards are dictated by aircraft characteristics such as aircraft approach speed, wingspan, and tail height. The Aircraft Approach Category (AAC) is a grouping of aircraft related to aircraft approach speed as shown in table below. The Airplane Design Group (ADG) is a grouping of aircraft related to aircraft wingspan or tail height, whichever is most restrictive.

AAC	Vref/Approach Speed
A	Approach speed less than 91 knots
B	Approach speed 91 knots or more but less than 121 knots
C	Approach speed 121 knots or more but less than 141 knots
D	Approach speed 141 knots or more but less than 166 knots
E	Approach speed 166 knots or more

Group #	Tail Height	Wingspan
I	< 20 ft (<6.1 m)	< 49 ft (<14.9 m)
II	20 ft ≤ 30 ft (6.1 m ≤ 9.1 m)	49 ft ≤ 79 ft (14.9 m ≤ 24.1 m)
III	30 ft ≤ 45 ft (9.1 m ≤ 13.7 m)	79 ft ≤ 118 ft (24.1 m ≤ 36 m)
IV	45 ft ≤ 60 ft (13.7 m ≤ 18.3 m)	118 ft ≤ 171 ft (36 m ≤ 52 m)
V	60 ft ≤ 66 ft (18.3 m ≤ 20.1 m)	171 ft ≤ 214 ft (52 m ≤ 65 m)
VI	66 ft ≤ 80 ft (20.1 m ≤ 24.4 m)	214 ft ≤ 262 ft (65 m ≤ 80 m)

FAA Traffic Flow Management System Counts (TFMSC) data reflects 120 operations of C-II aircraft for the 12 month period of 2021. TFMSC data is often not all-inclusive as this reflects only flights operating with an Instrument Meteorological Conditions (IMC) flight plan. LRU is unique for several reasons. First, the weather analysis shows that LRU is Visual Meteorological Conditions (VMC) over 90% of the year making it unnecessary to file a flight plan. Another factor is the proximity of the White Sands Missile Range (WSMR). When speaking with FBOs on the field, many flights will depart and enter LRU airspace under Visual Flight Rules (VFR) and pick up Instrument Flight Rules (IFR) clearances prior to entering or just after exiting Class A airspace Flight Level (FL) 180.

GARD ADS-B data supports a total of 119 C-II operations from January-July (7 months) of 2021. The GARD system was inoperative for the remaining 5 months of 2021. With 119 operations during a 7-month period, flight operations of C-II aircraft average 17 operations per month. This would account for 85 additional operations for 2021 totaling 204. As with TFMSC data, there are factors that prevent the GARD-ADS-B system from accounting for every operation at an airport. These include data errors and aircraft not equipped with ADS-B. According to AOPA, during the baseline period for LRU, only 47% of aircraft were equipped with ADS-B equipment. This number is higher on turbine traffic.

An additional factor that was not taken into account was the Virgin Galactic charter flights from Mojave to Las Cruces. VG charters CRJ 200 and 700 aircraft an average of three times per week to shuttle Research and Development personnel to their campus at Spaceport America. Fuel flowage records collected from the two FBOs located on the field, Southwest Aviation and Francis Aviation show a 25% increase in Jet A fuel sales since Virgin Galactic started charters in 2019. These charters add an estimated additional 312 C-II operations per year. However, when the ADS-B data was analyzed for CRJ 200/700 aircraft there were only 70 included. Accordingly, 242 operations of C-II are not reflected in the total annual operations count. When these additional 242 C-II operations are added to the initial 204 C-II operations the new total C-II operations for 2021 equals 446.

Table 3-8 depicts the breakdown of operations by ADG.

Table 3-8 - 2021 LRU Operations by Aircraft Design Group Using GARD Data

	A-I	A-II	B-I	B-II	B-III	B-IV	C-I	C-II	C-III	C-IV	Total
Single Engine	23,740	0	0	0	0	0	0	0	0	0	23,740
Multi-Engine	1,099	30	403	66	22	0	0	0	0	0	1,620
Turbo-Prop	121	1,504	39	3,346	81	0	37	0	0	9	5,137
Turbo-Jet	22	0	134	469	8	3	111	446	22	0	1,215
Rotorcraft	4,837	227	0	0	0	0	0	0	0	0	5,064
Glider	0	37	0	0	0	0	0	0	0	0	37
Light Sport	12	0	0	0	0	0	0	0	0	0	12
Totals	29,831	1,798	576	3,881	111	3	148	446	22	9	36,825

Source: GARD ADS-b Data, Dubois & King

3-4-4 Critical Aircraft

The critical design aircraft is defined as an individual aircraft or group of aircraft that exhibits substantial use defined as 500 annual operations. LRU is currently designated as a C-II airport and each runway, taxiway, taxilane and apron are designed with this in mind.

This study notes that current levels of CII operations are within 54 operations of the required 500 yearly operations. As the Airport is recovering from the effects of the pandemic as well as ongoing development and the addition of commercial passenger service, with this baseline of aviation activity the Master Plan affirms that the Airport's current design group C-II is representative of the Airport's traffic. The Challenger 600, continues to be the most demanding aircraft within the C-II fleet mix and is still considered the critical aircraft for LRU.

3-4-5 Summary of Baseline Activity at Las Cruces International Airport

3-5 Aviation Activity Forecasts

The forecasts developed for the 2014 Action Plan used a base year of 2015. As presented earlier, there has been significant development in the region in the past year and more development is expected over the next few years. This development will have an effect on future activity at the Airport with the attraction of residents to fill new jobs, companies that will require aviation to support their operations, potential R&D for SpacePort America and the development of Intra and inter-state air service.

As a result of this new development, this forecast shows the basic forecast in section 3-6 followed by a set of revised forecasts were created to understand the potential growth that is expected with new activity and also to determine if the forecasts completed in 2015 are applicable. The forecast of aviation activity has been divided into two key focus areas, GA and Commercial Aviation. The process to develop new forecasts is discussed below.

Table 3-9 - Summary of 2021 Baseline Data

		Itinerant Operations				
	Local	Air Carrier	Air Taxi & Commuter	GA	Military	Total
Historical Operations (Table 3-3)	12.180	0	3,634	10,658	10,353	36,825
Operations by Aircraft Type (Table 3-4)	Operations			% Total Operations		
Single Engine	23,740			64.50%		
Multi-Engine	1,620			4.40%		
Turbo-Prop	5,137			13.95%		
Turbo-Jet	1,215			3.30%		
Rotorcraft	5,064			13.75%		
Glider	37			0.10%		
Light Sport	12			0.001%		
Local / Itinerant Operations Split (Table 3-6)				33%		67%
	100LL (Gallons)		JetA (Gallons)		Annual Growth Rate	
2021 Fuels Sales (Tables 3-2)	75,743		385,083		8.9%	
Based Aircraft (Table 3-2)	106					

3-6 General Aviation Forecast

3-6-1 Base Year Data

The existing aviation activity data for 2021 provided earlier will be used as a baseline for the aviation forecast. As stated earlier, there is no air traffic control tower to verify aircraft operations and the data collected via the GARD system was incomplete. The fleet mix for local and itinerant operations were developed based upon data retrieved from the FAA TFMSC, GARD ADS-B, 2014 Action Plan, interviews with the Airport, and the FAA's TAF. For purposes of this report, the total based aircraft is 106 and the annual operations number for 2021 will be 36,825 operations. The local/itinerant split will be 33% local, 67% itinerant.

3-6-2 Based Aircraft Forecast

The forecast of based aircraft was developed using a market share approach and trend line analysis. The FAA 2021–2041 FAA Aerospace Forecast Summary provides a forecast of the total GA fleet.

2014 Action Plan Based Aircraft Growth Rates- The 2014 Action Plan utilized the FAA's overall aircraft growth rate of 0.5%. This was applied to the 2014 baseline based aircraft count for LRU.

Trend Line Analysis- Historical data from the FAA TAF for based aircraft was collected between 1995 and 2021. These data provide a view of based aircraft over that period.

FAA Growth Rates- Growth rates were extrapolated from two sources of FAA forecasts; the FAA 2021–2041 Aerospace Forecasts and the FAA 2020–2045 Terminal Area Forecast summary.

Combining the market share projections and fleet mix assumptions derived from the FAA Aerospace Forecasts, **Table 3-10** provides the forecast of based aircraft and fleet mix for Las Cruces International Airport. The table utilizes data from the 2021-2041 FAA Aerospace Forecast to depict annual growth rates for aircraft type. According to the FAA Aerospace Forecasts, decreases in annual growth rates are expected for single-engine (-0.9%), multi-engine (-0.4%), while increases in annual growth rates are expected for turbo-prop (0.6%), turbo-jet (2.3%), rotorcraft (1.4%), glider (2.4%), and light sport (4.0%). LRU turbo-prop, turbo-jet and helicopter based aircraft equal approximately 10% of the overall based fleet mix. Emerging automated solutions with electric-powered aircraft are currently in the R&D stage. The Airport would be remiss if they did not consider this emerging technology and therefore a low yield growth rate (0.18%) was considered in the based aircraft forecast.

Table 3-10 - Forecast Fleet Mix Based Aircraft

	2021	2026	2031	2041
Single Engine	82	78	74	68
Multi-Engine	6	6	6	6
Turbo-Prop	4	5	5	6
Turbo-Jet	2	2	3	3
Rotorcraft	7	7	7	8
Glider	4	5	5	7
Light Sport	1	1	1	2
Electric	0	1	3	3
Total	106	105	104	103

3-6-3 Forecast of Aviation Operations

Statistical methodologies are typically used to forecast operations based on available historical information. For purposes of this forecasting effort, the following statistical methodologies were considered:

- Application of 2014 Action Plan Growth Rates.
- Trend Line analysis is done using historical data and identifying trends in the data and how it pertains to activity at an airport.
- Growth rates extrapolated from 2021–2041 FAA Aerospace Forecast.
- The 2020–2045 FAA Terminal Area Forecast.

2014 Action Plan Growth Rates- For purposes of this analysis, the growth rate of 0.5% was applied to the 2014 operations for Las Cruces International Airport. The growth rate was based on FAA national growth trends.

Trend Line Analysis- Historical data used in this study included operations, based aircraft and fuel sales (in gallons) of 100LL Avgas and Jet A. Historical data for operations was collected between 1995 and 2020. Historical data for fuel sales was collected between 2016 and 2021. These data sources provide a view of activity over that period.

Growth rates extrapolated from the previously forecasted operations data showed that reported operations have decreased 48.8% between 1995 and 2021 however, it is noted that operations are now being more accurately counted through the use of the GARD system. Further evaluation of the trends between 1995 and 2018 show 11.4% increase over that period. The drop in operations between 2018 and 2019 is likely a result of increased accuracy in the method of counting operations rather than a downward trend of actual activity. 2020 shows a slight decrease in activity, likely caused by the COVID-19 pandemic, but more recent numbers show an increase in operations as LRU and the rest of the nation recover.

Annual Growth rates extrapolated from the fuel sales data showed that Avgas has grown at a rate of 2.3% and JetA fuel has grown at a rate of 10.2% for Jet A fuel. Average annual fuel sales growth rate for all fuels is 8.9%. This high growth rate since 2019 is due to increased Virgin Galactic charter operations shuttling personnel from Mojave to Spaceport America via LRU. Additional higher than normal fuel sales occurred during the July 11, 2021 Spaceport America launch. A conservative annual fuel sales growth rate of 1.22% was derived from a percentage of the recent LRU average growth rate and the FAA fuel consumption.

Table 3-11 - Forecast Fleet Mix Based Aircraft

Year	100LL	Jet-A	Total*
2016	66,442	337,744	404,187
2017	70,204	328,200	398,404
2018	58,681	381,151	439,832
2019	65,068	326,727	391,795
2020	55,729	392,702	448,431
2021	75,743	543,973	619,716
Average	64,978	385,083	450,061
Annual Growth	2.30%	10.20%	8.90%

* SWA does not provide the separated number of gallons during annual reporting and it is estimated 82.4% Jet A and 17.6% 100LL

Source: DuBois & King Calculations

FAA Growth Rates- Growth rates were extrapolated from two sources of FAA forecasts; the FAA 2021–2041 Aerospace Forecasts and the FAA 2020–2045 Terminal Area Forecast summary. The extrapolated growth rates are shown below:

FAA 2021–2041 Aerospace Forecasts

- GA Fleet Growth= 0.1%
- FAA Active Aircraft= 0.43%
- FAA Fuel Consumption= 2.7%

Notes

1. 0.43% is an average Active Aircraft growth rate for the planning period of 2021–2041.
2. 2.7% is an average Fuel Consumption growth rate for the planning period of 2021–2041.

FAA 2020–2045 Terminal Area Forecast

- National Forecast Trends for Itinerant General Aviation = 1.1%
- National Forecast Trends for Local General Aviation = 0.7%

Operations Per Based Aircraft (OPBA) – The OPBA method is a ratio of based aircraft to annual operations. A general guideline for the ratio is provided in FAA Order 5090.3C - Field Formulation Of The National Plan Of Integrated Airport Systems (NPIAS). The guidelines presented in this document suggest:

- 250 operations per based aircraft for rural GA airports with little itinerant traffic
- 350 operations per based aircraft for busier GA airports with more itinerant traffic, and
- 450 operations per based aircraft for busy reliever airports.

Using the 2021 baseline operational (36,825) and based aircraft (106) data, the OPBA for Las Cruces International Airport is 348 OPBA. This is consistent with the second bullet above and a good comparison to Las Cruces International Airport today.

Given that various methodologies generated similar projections, a number of forecasts were eliminated from further analysis. The remaining three forecasts (FAA GA Fleet Growth, FAA Active GA Growth and National Trend) use regional and local data and represent a more accurate range of activity over the twenty-year planning period. The forecasts were defined as the low, moderate and high growth scenarios for the Airport.

Of these three scenarios, the high growth rate National Trend was selected as the most reasonable forecast and will be used as the selected forecast moving forward. The recommended projection of activity for Las Cruces

International Airport is shown in **Table 3-12**. The forecasts in **Table 3-12** represent unadjusted forecasts that represent national, regional and local growth rates for GA with no adjustment for the potential activity associated with the local economic and Air Service development. These adjustments will be discussed in the following sections.

Table 3-12 - Range of Aviation Operations Forecasts				
	2021	2026	2031	2041
Low Growth FAA GA Fleet Growth	36,825	37,009	37,195	37,569
Moderate Growth FAA Active GA Growth	36,825	37,624	38,439	40,125
High Growth* National Trend	36,825	38,644	40,557	44,682

* Selected Forecast Source: DuBois & King

3-7 Considerations Affecting Existing and Future Aviation Activity

The following sections describe additional considerations that could affect future aviation activity at Las Cruces. It is anticipated that the following considerations will influence design standards, facility expansions, and Capital Improvement Plans moving forward throughout the period of this study. Possible impacts to aviation activity are discussed below and tables of additional operations and based aircraft are provided and will be considered further in the facilities requirements and development chapters. Areas that will be discussed are listed below:

- Socioeconomic Activity
- Las Cruces Innovation and Industrial Park, Foreign Trade and Opportunity Zone
- Tourism and Spaceport America
- FBO Services and Facilities
- Hangar development
- Runway Extension
- Aviation Sales, Rentals, and Service Development
- Commercial Space

3-7-1 Socioeconomic Activity

LRU serves the southwest quadrant of New Mexico. Business and industry include extensive agricultural lands, recreational facilities, unique culinary experiences and a vibrant culture. As Las Cruces is the second largest city in New Mexico, second to Albuquerque, tourism is a large component of the activity that occurs in this part of the state. Socioeconomic indicators such as population, employment, and per capita income are evaluated at the county, state, and national level to identify potential trends for sustaining growth in aviation activity at an airport over the planning period. Data was obtained from the National Census Bureau. The historical and forecast socioeconomic characteristics for Doña Ana County, New Mexico, and the United States are summarized in the following sections.

Though this part of the state is rural in nature, the urban sprawl of the City of Las Cruces is prevalent. The following tables show increasing trends in current population, employment, employment by industry, and mean household income surrounding Las Cruces.

Table 3-13 - Total Population

Year	Doña Ana County	% Increase	New Mexico	% Increase	United States	% Increase
2011	213,598	-	2,082,224	-	311,591,919	-
2016	214,207	0.29%	2,081,015	-0.06%	323,127,515	3.70%
2021	221,508	3.41%	2,115,877	1.68%	331,893,745	2.71%

Source: National Census Bureau

Table 3-14 - Total Employment

Year	Doña Ana County	% Increase	New Mexico	% Increase	United States	% Increase
2011	42,641	-	869,773	-	140,399,548	-
2016	43,938	3.04%	880,676	1.25%	152,571,041	8.67%
2021	48,537	10.47%	878,606	-0.24%	156,380,433	2.50%

Source: National Census Bureau

Table 3-15 - Employment By Industry	
Agriculture, forestry, fishing and hunting, and mining	34,482
Construction	63,040
Manufacturing	34,904
Wholesale trade	15,884
Retail trade	91,606
Transportation and warehousing, and utilities	45,778
Information	10,809
Finance and insurance, and real estate and rental and leasing	41,529
Professional, scientific, and management, and administrative and waste management services	118,736
Educational services, and health care and social assistance	227,048
Arts, entertainment, and recreation, and accommodation and food services	81,181
Other services, except public administration	39,531
Public administration	74,078

Source: National Census Bureau

The socioeconomic data shows a rise in population, household income and total employment. A drastic rise in professional, scientific and management and administrative and waste management services. This is likely due in part to the increase in aerospace development and the New Mexico State University Physical Science Lab, all based on the field at LRU.

3-7-2 Las Cruces Innovation and Industrial Park, Foreign Trade and Opportunity Zone

The Elevate Las Cruces Comprehensive Plan, adopted in 2020, establishes a framework for future development, and the LCIIP is identified as an area of focus. The LCIIP is located adjacent to LRU and is home to 19 businesses. It occupies 811,000 SF of building space south of the Interstate 10 entrance at Crawford Blvd. These existing tenants are located on 27 parcels totaling approximately 340 acres. The current business mix ranges from warehousing, manufacturing, agriculture, research and development to drone and aerospace development.

Doña Ana County has established a county-wide Foreign Trade Zone (FTZ) designation. The designation allows all new and existing companies that are located within Doña Ana County to secure FTZ status for warehousing and distribution operations. Goods entering an FTZ are not subject to duties until they leave the zone, which allows companies to postpone or even eliminate duties. FTZ also empowers companies to keep more of their manufacturing on U.S. soil without the effective penalty of inverted tariffs.

The LCIIP is also located within an Opportunity Zone (OZ) that provides benefits for companies that locate here. The OZ program was created by the Tax Cuts and Jobs Act of 2017 to incentivize investment in underserved communities.

Interviews were held with the City of Las Cruces Director of Economic Development and with owners of businesses located within the LCIIP. It was estimated that approximately 550 visits were made to the industrial park by business owners and customers, many using El Paso for air service. However, the majority used LRU via charter aircraft that are in the B-II- C-III design category. With 19 current businesses residing within LCIIP, it was deduced that currently, each business utilizes the Airport 30 times per year. The Park's identity is envisioned to embody the different focus areas of value-added Agriculture, Manufacturing, Aerospace, Aviation and Defense. It's envisioned as a center of innovation, manufacturing and

Table 3-16 - Total Employment

Year	Doña Ana County	% Increase	New Mexico	% Increase	United States	% Increase
2011	$50,797	-	$59,314	-	$69,821	-
2016	$52,944	4.23%	$64,515	8.77%	$81,346	16.51%
2021	$64,036	20.95%	$76,989	19.34%	$97,962	20.43%

Source: National Census Bureau

testing with close ties to the LRU, Spaceport, White Sands National Monument and New Mexico State University. It is anticipated that LRU will realize increases in aircraft operations associated with business development within the LCIIP, FTZ, and OZ. Given the most recent interest in the park, the City of Las Cruces projects eight more businesses will locate within the Park in the next five years with two additional businesses each five years thereafter. In the 2022–2042 planning period, the total number of new businesses equates to 14, bringing the total number of LCIIP businesses to 33. Gains from operations related to LCIIP businesses are outlined in **Table A.1**

Table A.1 - Forecast Adjustment # 1 - Based Aircraft/Operational Gains - LCIIP

	2021 (Baseline)	2026	2031	2041
Number of Businesses located in LCIIP Forecast	19	27	29	33
LRU Annual Operations	570	810	870	990
Annual Operations Forecast Adjustment	0	240	300	420
LRU Based Aircraft Adjustment	0	1	1	2

*Based on average of 30 operations per year per business

3-7-3 Tourism and Spaceport America

Spaceport America conducts its commercial space operations 60 miles to the north LRU. Given its proximity and the LCIIP, there is potential for Spaceport to relocate its research related activities to Las Cruces. Virgin Galactic is currently using LRU to transport its R&D scientists from Mojave to LRU as discussed earlier. In addition, as Spaceport America ramps up its launches, it is anticipated that LRU will realize increased growth in tourism associated with the City of Las Cruces and Spaceport America. The July 11, 2021, Virgin Galactic launch event realized a 4.3% increase in Jet A fuel sales, $483,000 in visitor spending, $2.5 billion in media impressions, over $23.0 million in ad value mentioning Virgin Galactic and Las Cruces, and $22,000 in direct local wages paid for special event staff. This single event created a capacity issue on the GA apron with 45 jet aircraft parked and the Airport documented a total of 140 jet operations over this four-day period. FAA Traffic Flow Management System Counts show that out of these 140 operations, 11 were conducted by C-II aircraft. It is assumed that as launches become more frequent, C-II and C-III aircraft will increase in numbers. Virgin Galactic is anticipating beginning regular space launches in 2023. A very moderate adjustment was accounted for in anticipation of these launches and we project 1 Virgin Galactic launch per year in the first five years, two launches per year in the second five years, and three launches each five years thereafter. Gains from jet operations related to Virgin Galactic launches are outlined in **Table A.2**

Table A.2 - Forecast Adjustment # 2 - Operational Gains - Virgin Galactic

	2021 (Baseline)	2026	2031	2041
Annual Virgin Galactic Launches	0	1	2	3
Annual Forecast Adjustment	0	140	280	420

3-7-4 FBO Services and Facilities

Contributors and stakeholders of this Master Plan noted that the FBO services and facilities at LRU need enhancements. Francis Aviation shares the limited space Building 8990 with multiple businesses and Airport administration. It was observed that Southwest Aviation facilities are dated and in need of modernization. Airport users place a high value in facilities that they utilize at an airport such as Las Cruces International Airport. It is anticipated that improvements to FBO services and facilities offered at Las Cruces International Airport would increase the annual operations from Charter and GA users. The City is actively engaged with vendors that are interested in improving the FBO and discussions are underway. These discussions are in their infancy stage and therefore adjustments to the forecast were not done although it is anticipated that a newer FBO and associated facilities will result in increased airport operations.

3-7-5 Hangar Development

Contributors and stakeholders of the Master Plan noted that there is a waiting list for aircraft owners to build hangars. The Airport is currently developing plans to construct additional GA hangars on the East Side Hangar Development Area. The development would require the relocation of both the Southwest Aviation and the City-owned fuel farm facilities. It is reasonable to assume that with additional hangars, the Airport will realize more based aircraft and the associated operations. Parcels 53 through 62 in the East Side Development Area will allow for the construction of five conventional hangars as well as five 10-unit T-Hangars. Conservatively, it is anticipated that these hangars will increase based aircraft by 55 and 50% of this number was used to calculate an adjustment to the forecast. Hangar construction would be phased and therefore it is forecasted that two conventional and two T-hangars would be built by year 5.3 more T-hangars would be built by year 10. The remaining three conventional hangars would be built by year 20. Gains to single-engine and multi-engine aircraft related to this hangar development is outlined in **Table A.3** LRU is realizing 350 annual operations per based aircraft. **Table A.3** reflects the additional operations that can be expected due to the increase of based aircraft.

Table A.3 - Forecast Adjustment # 3 - Based Aircraft/ Operational Gains - Hangar Development

	2021 (Baseline)	2026	2031	2041
Additional Based Aircraft Housed in East Side Hangars	0	22	52	55
Annual Operations Forecast	0	7,700	18,200	19,250

3-7-6 Runway extensions

The previous 2014 Action Plan recommended a runway extension to accommodate unrestricted operations of C-II design aircraft. This has not changed since the last planning study. A runway extension would support additional operations of C-II and C-III aircraft used for business aviation. Additionally, NMSU holds over 98 sporting events, with 43 home and 55 away games. Due to LRU's current runway lengths, NMSU is forced to transport their teams to El Paso to travel via chartered B-737-800s, a D-III aircraft. Operations gained from NMSU charters through an extension of both Runways 12/30 and 8/26 were therefore estimated. These runway extensions are within the 5-year CIP and will be built by 2027.

A conservative estimate revealed 196 gains in annual operations for transporting team members should be added to the baseline forecast. An interview with NMSU revealed that families and fans travel to and from these games therefore, in addition to the gains in annual operations for transporting team members, a low volume estimate was developed, and it was estimated that an additional 100 annual operations could be added to the baseline forecast. 296 total gains in annual operations were conservatively forecasted for the entire planning period with a limited annual increase beyond 2026 and is outlined in **Table A.4**

Table A.4 - Forecast Adjustment # 4 - Operational Gains - Runway Extension

	2021 (Baseline)	2026	2031	2041
Annual Jet* Forecast Adjustment	0	296	305	55375

*Note: Jet operations are forecasted to be C-II- C-III aircraft such as the Challenger 600 and B-737

3-7-7 Aviation Sales, Rentals, and Service Development

Additional aviation service development at LRU will shape and impact the forecast of aviation activity.

Aviation College Programs

Aviation colleges that include 14 CFR Part 141 flight schools as well as the development of a technical center to include an Aircraft Maintenance Technician Schools (AMTS) under 14 CFR Part 145 with A&P and Avionics training. There is interest in developing such a training center. Should this come to fruition, it is reasonable to anticipate an increase and gain from flight operations.

Aircraft Service Centers

Aircraft service centers include aircraft maintenance in a highly regulated field in which FAA certified technicians perform scheduled or preventive servicing, inspection, testing, repair, and overhaul or modification activities. The Airport is positioned to provide adequate area for the development of such service centers, and it is reasonable to anticipate an increase and gain from flight operations for arriving and departing aircraft maintenance events.

3-7-8 Commercial Space

For the purposes of this Plan, which is explicitly examining the establishment of a facility oriented primarily toward research and development activity in the private commercial space industry, this section will forecast three categories of developmental events. These are:

Low-level testing. These are tests of a space launch system, or components thereof, that are performed outside of the company's facility, but on airport premises, and which, if they leave the ground, do not exceed 500 feet altitude during the test. Such tests do not require licensing under either FAA AVR (aviation) or FAA AST (space launch) regimes. The air and space port would not require Part 420 licensing for such activities in and of themselves. These tests are useful to forecast because in some ways they serve as a better proxy for overall level of developmental activity than higher-altitude tests alone, and they use many of the capabilities of an air and space port, including propellant stores, safety and environmental services, and premises security and personnel control. Some examples of events in this category include static engine testing, pressure testing of pressure vessels, and low-level flight testing. The Lunar Landing X-Prize trials in 2006 would fall into this category, demonstrating that LRU has already hosted some such events.

Flight Testing Within the Atmosphere. This activity consists of flight tests of space launch systems or components thereof above 500 feet but below 100,000 feet. The test articles flown may be licensed as experimental aircraft or as space launch systems, depending on its characteristics and its flight regime. The FAA has not yet made a final determination as to when one form or the other must be required. However, one of the two forms of licensing must be complied with in US airspace. The SpaceShipTwo developmental article lost in 2014, for example, was registered as an experimental aircraft and its loss was investigated as such.

Different technical approaches typically require different testing regimes. Winged craft often undergo extensive unpowered flight tests, dropped from a carrier aircraft, as was the case with SpaceShipTwo. Vertical take-off rockets were historically expendable and self-evidently fired only once for each iteration of the prototype. However, with the advent of reusable vertical take- off/vertical landing launch vehicles such as SpaceX's Falcon 9 and Blue Origin's New Shepard, numerous test flights were undertaken before revenue service, particularly with revenue service with human flight participants.

Endoatmospheric testing of this nature is also becoming more familiar to the public because of SpaceX'S series of test flights for the development of its Starship/SuperHeavy booster/spaceship combination. These fights, known by the serial numbers of the test articles (prosaically known as "SN-xx") flew to approximately 10,000 feet, demonstrating engines, controls, and various portions of the flight regime, including a soft, thrust-braked landing. Several of the test articles achieved their test goals but were damaged or destroyed by relatively minor technical issues readily addressed in subsequent flights. By not catastrophizing incidents that do not affect the main line of development, SpaceX demonstrated the proper conduct of test flights in a development effort and has helped set the standard of conduct for the commercial, entrepreneurial side of the industry.

Test flights to space. These are flights above 100,000 feet. Some systems using substantial aerodynamic lift, like SpaceShipTwo, might conduct some tests up to approximately 60 miles under experimental aircraft licensing, but most can be expected to fly under an FAA/AST space launch license. As discussed in Chapters One and Two, the Plan does not assume that a test to orbit from LRU could be performed under current regulations and technologies, except in the limited and specialized case of air-launch systems that transit to ocean areas for orbital launch. Once prototypes have advanced in their development program to the point where they can be placed in revenue service, it is the expectation of the Plan that such systems would be shifted to Spaceport America or another operational facility.

The three phases previously discussed will be conducted throughout the planning period where Phase One (2023 through 2028), Phase Two (2029 through 2034) and Phase Three (2035 through 2044) will include test flights to different altitudes. These flights and their associated operations are outlined in **Table A.5**

Table A.5 - Forecast Adjustment # 5 - Based Aircraft/Operational Gains - Commercial Space

	2022 (Baseline)	2027	2032	2042
Space Flight Test Operations	0	3	9	20
500-ft to 100,000-ft Flight Test Operations	0	36	120	500
Under 500-ft Flight Test Operations	0	600	1200	2500
Annual Commercial Space Operations Forecast Adjustment	0	639	1,329	3,020
Based Aircraft Forecast Adjustment	0	2	4	9

3-7-9 Commercial Passenger Service

A commercial service forecast conducted as part of this study is included in the following sections. Additional forecast adjustments will be shown following the Commercial forecast section.

3-7-11 Summary of Forecast Adjustments

Forecast adjustments 1 through 5 depict a total increase in annual operations that equate to 13,640. It its noted that Adjustment # 4 - Runway Extension increases the number of C-III aircraft operations by 375 within the 20-year planning period. **Table A.6** outlines the adjustments that are recommended to be applied to the overall preferred forecast.

3-7-10 Summary of Adjusted General Aviation Forecast

Ongoing and future development in the region will have an effect on future activity at the Airport. As such, the forecasts were adjusted for activity associated with this development. A breakdown of aircraft operations by aircraft type is presented. The results of the adjusted forecasts are presented in **Table 3-17.**

Table A.6 - Based Aircraft Forecast Adjustment Summary

Adjustment	2021 (Baseline)	2026	2031	2041
#1 - Las Cruces Innovation and Industrial Park (Table A.1)	0	1	1	2
#2 - Virgin Galactic (Table A.2)	0	0	0	0
#3 - East Side Hangars (Table A.3)	0	22	52	55
#4 - Runway Extension (Table A.4) (C-III Aircraft)	0	0	0	0
#5 - Commercial Space (Table A.5)	0	2	4	9
Total Annual Forecast Adjustment	0	25	57	66

Table A.7 - Operations Forecast Adjustment Summary

Adjustment	2021 (Baseline)	2026	2031	2041
#1 - Las Cruces Innovation and Industrial Park (Table A.1)	0	240	300	420
#2 - Virgin Galactic (Table A.2)	0	140	280	420
#3 - East Side Hangars (Table A.3)	0	7,700	18,200	19,250
#4 - Runway Extension (Table A.4) (C-III Aircraft)	0	296	305	375
#5 - Commercial Space (Table A.5)	0	639	1,329	3,020
#6 - Commercial Passenger Service (Refer to section 3-8)	0	-	-	-
Total Annual Forecast Adjustment	0	9,015	20,414	23,485

Table 3-17 - Adjusted Based Aircraft/ Operations Forecast				
	2021	2026	2031	2041
Based Aircraft				
Single-Engine	82	78	74	68
Multi-Engine	6	6	6	6
TurboProp	5	5	5	6
Turbo-Jet	2	2	3	3
Rotorcraft	3	3	3	4
Glider	4	5	5	7
Light Sport	0	1	1	2
Military	4	4	4	4
Electric	0	1	2	4
Total	106	130	161	169
Operations				
Itinerant	24,673	31,932	40,851	45,672
Local	12,152	15,727	20,120	22,495
Total	36,825	47,659	60,971	68,167

Although an accurate breakdown of aircraft operations by Aircraft Design Group is not realistic, given the increase in expected operations, C-II aircraft operations are expected to continue to increase throughout the forecasting period. Considering the baseline data shows 446 operations for C-II aircraft in 2021, it is reasonable to expect that solely based on the GA forecast, C-II operations will continue to serve to represent the critical aircraft for LRU for the immediate future.

3-8 Commercial Aviation Forecast

The Las Cruces International Airport (LRU) has had a long history of commercial airline service. Unfortunately, the volatility of the airline industry has had a turbulent effect on reliable long term commitments from airline operators. Because of this turbulent history of past commercial air service, many of the traditional forecasting approaches to projecting commercial operational and passenger growth were regarded as not being appropriate for the current situation evolving at LRU. The historical data has warranted a closer look into the factors that affect continued air carrier service triggering a tailored approach to LRU's commercial aviation forecast.

It was determined that it would be logical to establish a baseline condition based on national and state trends, referencing the LRU Air Service Market Evaluation study, and applying the possible outcomes of the City of Las Cruces air service development plans, marketing plans, state air service marketing strategy, Las Cruces Innovation and Industrial Park development plans, and the design and construction of a passenger terminal.

With the development of this Master Plan, consideration has been given to the impact additional commercial activity would have on the Airport. Detailed studies into LRU's catchment area, passenger characteristics, regional socioeconomic and travel data, aircraft fleet mix, and historical trends have been undertaken.

Further analysis included engagement with local business, educational institutions, and the business community. This research and analysis have revealed opportunities for development in general aviation, commercial aviation, STEM education, research and development, UAS, and space operations at LRU. Through this careful analysis, forecasts have been prepared for:

- **Enplaned Passengers:** Enplaned passengers are defined as those that are boarding the aircraft at the Airport. The forecasts are used to assess terminal area requirements, program capital improvements, develop assumptions as to the potential future likely aircraft fleet mix, and estimate the number of daily flights to be offered in the future.
- **Airline Operations:** The number of annual operations made by the air carrier is important in determining potential service levels, available passenger seats, assessing potential community impacts (both positive and negative), and other factors.
- **Commercial Operations Fleet Mix:** Based on the number of enplaned passengers forecast, the forecast has made assumptions regarding the size of aircraft likely to be assigned to the market. These assumptions are made using industry information, aircraft availability information and information received from the airlines and other potential operators. The type of aircraft anticipated to be utilized at Las Cruces will be used to help determine the Airport's critical aircraft. The critical aircraft determines FAA design standards and will have a direct effect on runway length requirements, terminal apron needs and aircraft parking and maneuvering requirements.

3-8-1 Future Goals

Although Las Cruces has not seen scheduled commercial flights since 2005, charter flights regularly serve the Airport. In the 2017–2022 City of Las Cruces strategic plan, a goal was identified that LRU would offer daily, regional commercial flights. In addition to this goal, the City had anticipated having a renovated commercial passenger terminal completed by 2022 with a goal of 20,000 annual enplanements. COVID has had a major impact on the enplanement goal and has created delays in the construction/renovation of the passenger terminal. However, commercial service did begin in January 2023 and elected officials and business leaders have kept the goal in place and are focused on keeping air service a priority.

Regional air service development for Las Cruces International Airport is an outlined goal in the **2021 New Mexico Air Service Marketing Strategy** produced by the New Mexico Department of Transportation and the New Mexico Department of Tourism.

Out of Recommendation 2A of the System Plan, a state-funded Capacity Purchase Agreement (CPA) program would be created specifically to help communities that are in need of regional air services. Recommendation 2B is an intra-state CPA program that would contract with a reliable Part 135 carrier that would operate on behalf of the State of New Mexico. Communities served by the program would participate in a state/community risk sharing model where revenue loss/profits would be invoiced or credited.

The New Mexico Air Service Marketing Strategy also recognized Las Cruces's unique opportunity of being the closest major city to Spaceport America. Space tourism is a new global industry and the City of Las Cruces and Las Cruces International Airport will be a part of these journeys to space. The city has a plethora of restaurants, and other amenities to welcome guests visiting and awaiting their trip into space. Virgin Galactic has named Hotel Encanto de Las Cruces the official hotel for Spaceport America. Reestablishing air service to LRU with a major airline connected to network hubs is the most convenient and efficient way for the world to travel to Las Cruces on their way to space.

As an airport included in the National Plan of Integrated Airport Systems (NPIAS), evolving LRU from its status as a GA local asset airport to a primary commercial airport will support the FAA's guiding principle for Federal infrastructure investment, as stated in Executive Order 12893. This Executive Order implies that Federal investments should be cost beneficial as well as to provide support of state and local planning and support for private sector participation. In addition to the above listed principles, commercial service through LRU serving as a spoke to one or more major airline hubs to access the U.S. air transportation system supports the U.S. Department of Transportation's (DOT) Strategic Plan for FY 2022–FY 2063 by providing a safe, efficient, convenient, and competitive transportation system.

3-8-2 Key Drivers of Growth

Regional characterization and development initiatives are considered to be essential factors that are directly supported by future development at LRU. The City of Las Cruces, New Mexico is the economic and geographic center of the Mesilla Valley, the agricultural region of the floodplain of the Rio Grande. This region has an active recreational industry associated with White Sands Missile Range, the Organ Mountains and numerous hiking and biking trails. Spaceport America and Virgin Galactic have corporate offices in Las Cruces. Spaceport America is located 55 miles north of the City.

In 2021, a new $60 million dollar economic development plan was presented to the Secretary of Economic Development in Santa Fe. This development would significantly enhance business and tourism in the Las Cruces area while providing new jobs to the community. The proposed development would provide an estimated 50+ direct new jobs at the Airport and many more across the region once all of the facilities are built, addressing the needs of this economically challenged area. Several of these transformational economic development initiatives include:

- The development of commercial air service would enable 34,000+ annual travelers to visit Las Cruces within five years or 2027.
- Leader in aerospace, UAS/UAV innovation (the "Silicon Valley" of aerospace)
- Location for all Virgin Galactic engineering, R&D, manufacturing, supply chains, arrival and activity base for all future astronauts
- Critical hub for cross-continental logistics and routing
- Living laboratory for City of Las Cruces innovation: solar farms, green infrastructure and water harvesting, desert vegetation management, net-zero carbon airport, other emerging technologies and research
- LRU and LCIIP are open for business - Coalescence of public-private partnerships and incentives
- High Mesa Road to connect LRU and LCIIP with Santa Teresa

3-8-3 Las Cruces International Airport Development

The City of Las Cruces is estimating that approximately $60M will be invested at Las Cruces International Airport over the next 5 years. Facility development includes a transitional terminal for short term commercial air service needs, a new long-term commercial terminal, corporate and FBO hangars, commercial space R&D facilities, a hotel, and significant growth to the LCIIP. FBO improvements will be made, with a robust expansion of services to serve a wider range of aircraft, including corporate turboprop and jet aircraft. The City of Las Cruces has an aggressive marketing campaign to initiate Intra (2023) and Inter-State air service with the Commercial Aviation Forecast to begin in 2022. Aggressive marketing to promote the services of the Airport to the greater regional and national aviation community is a very high priority for the city. The proposed development will also generate 50+ direct jobs, including 30 jobs within the terminal. Job estimates were not developed for the LCIIP. However, many more jobs are expected to be created indirectly.

3-8-4 Existing Transportation Infrastructure

The transportation infrastructure serving the Las Cruces International Airport includes Interstate 10, providing east/west access, along with a north/south rail freight line connecting Mexico and the United States. Combined with the Airport, the region has very good intermodal access to both the U.S. and Mexico.

Other GA airports that offer a paved runway with fuel sales within the region include:

- Deming Municipal Airport (DMN) to the west, which has an 8,018-ft x 75-ft runway
- Grant County Airport (SVC) to the northwest, which has a 6,802-ft x 100-ft runway
- Truth or Consequences (TCS) to the north, which has a 7,202-ft x 75-ft runway
- Doña Ana County International Jetport (DNA) to the south, which has a 9550-ft x 100-ft runway with Customs User Fee access.

LRU's current 7,506-ft primary runway has the ability to accommodate corporate turboprop aircraft and some small and medium sized jet aircraft. The current runway length is especially critical when the runway is wet or when density altitude is high due to hot summer temperatures. In such instances, the operational aircraft runway landing length requirements increase and the users of LRU find themselves limiting their useful load to accommodate for the inadequate runway lengths.

El Paso International Airport, which currently provides commercial air service for this southern portion of the state of New Mexico, is approximately a one-hour drive in good weather conditions and a longer drive during poor weather conditions and when traffic is heavy. Other commercial service airports include Albuquerque, NM (3-hour drive), Silver City, NM (2-hour drive), and Santa Fe, NM (4.25-hour drive).

3-8-5 LRU Situation Analysis

Summarizing the information presented above, the following conclusions were made:

- There is significant development ongoing and planned that will change the character of Las Cruces International Airport and the surrounding area.
- This development will create new jobs, a portion of them higher paying than the existing job base in the region.
- Las Cruces as a destination will be significantly enhanced with this development of year-round recreational options in the City of Las Cruces, companies locating or using the FTZ, attraction of new jobs and services provided by new companies locating in the area, and facilities such as hotels that will support the overall planned development.
- The majority of development will occur within the next five years.
- The Airport already serves business, recreational, military, and personal use for the existing business and recreational facilities in the region. The new development will generate new aviation activity that may tax the current airside and landside development.

3-8-6 LRU Air Service Market Evaluation

Today, the most viable and popular air service option for Doña Ana County residents and visitors is in El Paso, Texas located approximately 1 hour drive time, 60 miles to the southeast. The second closest major commercial airport offering substantial air service is Albuquerque, New Mexico, located 250 miles North, approximately a 3 hour drive time.

There are four airports in the State of New Mexico participating in the Essential Air Service Program (EAS) through the United States Department of Transportation. These airports include Gallup (GUP), Clovis (CNM), Taos (TSM), and Silver City (SVC).

The study further examined the regional GA airports located in the vicinity of LRU. These airports are listed below:

- Doña Ana County International Jetport (DNA): Located one hour to the South in Santa Teresa, New Mexico. The airport is publicly owned and designated as a GA regional asset airport. 1% of all traffic into Doña Ana County International Jetport is air taxi. There were 144 recorded enplanements in 2021.
- Alamogordo—White Sands Regional Airport (ALM): Located four nautical miles southwest of the central business district of Alamogordo, a city in Otero County, New Mexico. The airport is publicly owned and designated as GA local asset airport. Alamogordo does not have commercial service and recorded 0 enplanements in 2021. New Mexico Airlines discontinued service to the airport on April 1, 2012, after the airport lost eligibility for subsidies through the EAS program.
- Truth or Consequences Municipal Airport (TCS): Located six miles north of Truth or Consequences, a town in Sierra County, New Mexico. The airport is publicly owned and designated as GA Basic asset airport. Truth or Consequences Municipal Airport does not have commercial service and recorded 5 annual enplanements in 2021.
- Grant County Airport located in Silver City (SVC): Designated as a commercial service regional asset airport, 20% of traffic at Grant County is commercial and 3% is air taxi. Currently, air service is provided by Advanced Air through the EAS Program. Advanced Air operates King Air 350 and Pilatus aircraft with service to Albuquerque and Phoenix. The airport recorded 5,949 enplanements in 2021.

3-8-7 El Paso International Airport (ELP) and Passenger Traffic

In 2020, the LRU Air Service Market Evaluation study was conducted by RRC Associates to quantify the leakage of passengers arriving or departing the El Paso International Airport (ELP). Research in this report included:

- A regional business mail back survey
- A regional resident telephone survey
- Evaluation of El Paso Airport (ELP) flight volumes and passenger origins
- Evaluation of air travel itineraries of regional residents
- Mobile device tracking data of air travelers

It was determined through this study that leakage from El Paso International Airport would be the catalyst for future commercial service demand for LRU. The El Paso International Airport (ELP) is located approximately a 1 hour drive time (60 miles) to the Southeast. The following tables show key attributes of ELP that were considered in this study.

A total of 14 airports are currently served nonstop from ELP by five major airlines plus two (Ultra Low Cost Carriers) ULCCs:

- Atlanta, GA (ATL) - DL
- Austin, TX (AUS) - AA, WN
- Charlotte, NC (CLT) - AA
- Chicago O'Hare, IL (ORD) - AA, F9, UA
- Dallas Love Field, TX (DAL) - WN
- Dallas/Fort Worth, TX (DFW) - AA
- Denver, CO (DEN) - F9, UA, WN
- Houston Hobby, TX (HOU) - WN
- Houston Bush, TX (IAH) - UA
- Las Vegas, NV (LAS) - G4, F9, WN
- Los Angeles, CA (LAX) - AA, WN
- Orlando, FL (MCO) - F9
- Phoenix, AZ (PHX) - AA, WN
- San Antonio, TX (SAT) - WN
- San Diego, CA (SAN) - G4, WN
- Seattle, WA (SEA) - AS

Top flow origin/destination (O&D) markets by metro area are:

1. Dallas/Fort Worth, TX (DFW/DAL) - 7.9%
2. Los Angeles, CA (LAX/ONT/SNA) - 6.2%
3. Houston, TX (HOU/IAH) - 4.5%
4. Las Vegas, NV (LAS) - 4.1%
5. Las Vegas, NV (PHX) - 4.0%
6. Austin, TX (AUS) - 3.6%
7. Denver, CO (DEN) - 3.6%
8. San Antonio, TX (SAT) - 3.0%
9. San Diego, CA (SAN) - 2.7%
10. Chicago, IL (ORD/MDW) - 2.2%

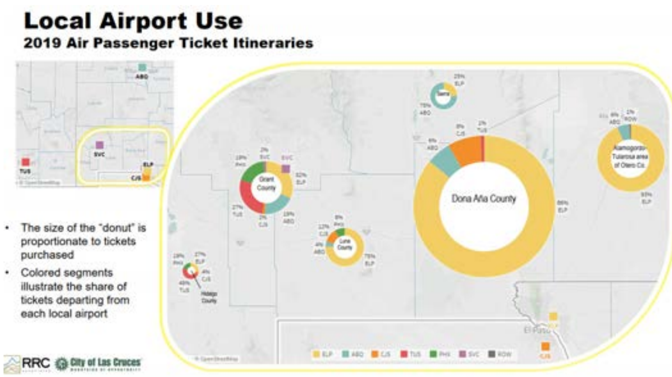
Historical annual enplanements (YE) at ELP grew at a rapid rate from 2015–2019, peaking at 1,759,697 in 2019. Enplanements dropped in 2020, and calendar year 2021 saw a recovery to nearly 80% of 2019 levels:

- YE Dec 2016: 1,398,564
- YE Dec 2017: 1,448,210
- YE Dec 2018: 1,610,598
- YE Dec 2019: 1,759,697
- YE Dec 2020: 722,094
- YE Dec 2021: 1,402,983

According to the September 2022 Monthly Activity Report published by the El Paso International Airport, passenger traffic year to date is running at 102.0% as compared to the period ending 2019, indicating a full regional recovery to pre-pandemic levels.

Since ELP is located in the catchment area of LRU, the 2019 air passenger ticket itineraries were analyzed to determine the number of passengers from each surrounding county and location of destinations from which ELP passengers were traveling to.

Table 3-18 - Local Airport Use from RRC Study

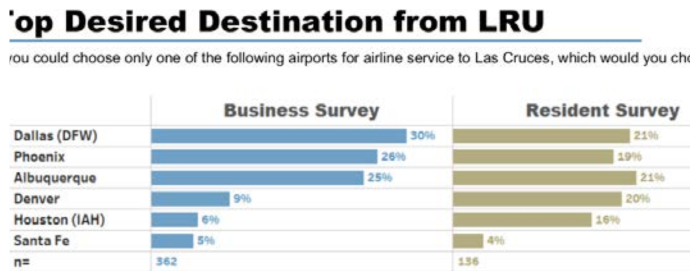


It was determined that there were ~650 daily Las Cruces-area visitors or residents arriving and departing via ELP. Las Cruces area visitors or residents represent ~13.6% of the ELP traffic or ~237,000 annual enplanements. DFW (183 connecting cities on American Airlines) and PHX (83 connecting cities on American Airlines) are the best fit for LRU nonstop service. There is enough passenger demand in the Las Cruces catchment area to have 2-4 daily flights on 50 to 76 seat jet aircraft.

Top Desired Destinations from Las Cruces

The chart below summarizes the top desired destinations from Las Cruces based on a combination of business and residence surveys conducted by RRC Associates in early 2020.

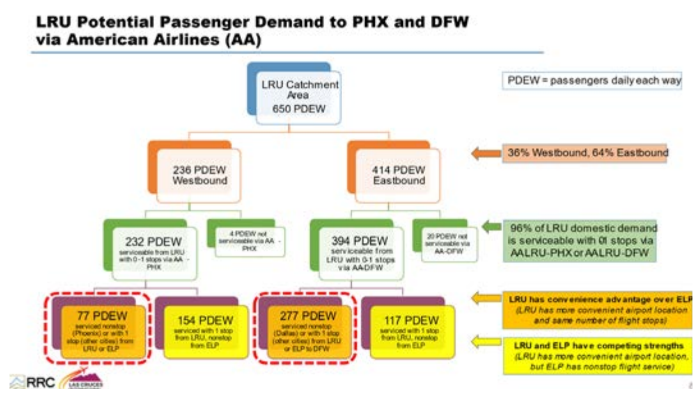
Table 3-19 - Top Desired Destinations from LRU from RRC Study



Estimated Potential Passenger Demand to PHX & DFW

This next chart illustrates the estimated westbound and eastbound demand that exists from the Las Cruces catchment area based on a detailed analysis of existing traffic flows from ELP.

Table 3-20 - Potential Passenger Demand to PHX and DFW



Estimated # of Daily Supported LRU Flights Based on 40% Capture

This chart illustrates the number of daily flights that can be supported from current traffic flows based on 40%, 60% and 80% capture rates of 2019 per day each way (PDEW's). Capture rates refer to the percent of passengers LRU can generate from their catchment area. 40% capture rate is conservative and is a good initial starting point for forecasting.

Table 3-21 - Catchment Area Passengers Per Day Each Way (PDEW's), Calendar Year 2019

	LRU Catchment Area PDEW, CY 2019				
	Total PDEW	80% LRU capture	60% LRU capture	40% LRU capture	Supportable Daily LRU Flights
Primary LRU-DFW market (LRU has convenience advange over ELP)	277	222	166	111	2 - 4
Primary & secondary LRU-DFW market (LRU and ELP have competing advantages)	394	316	237	158	2 - 4
Primary LRU-PHX market (LRU has convenience advange over ELP)	77	62	46	31	1 - 2
Primary & secondary LRU-PHX market (LRU and ELP have competing advantages)	232	185	139	93	1 - 2

PDEW = passengers daily each way

Connecting Hubs (LRU as a spoke)

The spider map below illustrates how broadly Las Cruces could connect to the U.S. transportation system through American Airlines' hubs at DFW and PHX. Also illustrated and highlighted in red are how well LRU would be connected over both DFW & PHX to nine out of ten of ELP's top existing flow markets.

Table 3-22 - Potential AA Connections from LRU over DFW or PHX

3-8-8 Commercial Aviation Forecasts Methodology

Commercial Aviation Forecasts employ a variety of forecasting methodologies often dictated by the availability of relevant data, particularly historic aviation activity. This study utilized four key methods for forecasting aviation demand and activity:

- Trend Analysis - Also referred to as a time series model, utilizes trend extrapolation of existing activity. The LRU Airport 20-year forecast of available seats, passenger traffic and load factor trends are based on experience in working with other smaller airports throughout the state of New Mexico, including Lea County Regional (HOB), Hobbs NM, Roswell Air Center (ROW), Roswell NM, and Santa Fe Municipal Airport (SAF) Santa Fe NM. Each of these airports and respective communities have unique attributes, demographics and distances to alternative airports. The one common characteristic of all these communities/ airports is successful air service to major hub airports using a network carrier(s).

- Market Share Analysis - In 2019, per an independent survey conducted by RRC Associates, there were ~650 daily Las Cruces-area visitors or residents arriving and departing via the EL Paso International Airport (ELP). Las Cruces-area visitors or residents represent ~13.6% of the ELP traffic or ~237,000 annual enplanements. DFW (183 connecting cities on American Airlines) and PHX (83 connecting cities on AA) are the best fit to initiate LRU nonstop service and there is enough passenger demand to and from the Las Cruces area to have 2-4 daily flights on a 76 seat regional jet aircraft.

  On the "Available Seats Heat Map" tab, columns "S and T" track annual passengers and percentages of growth. By 2036, the forecast only captures 30.2% of the 237,000 annual passengers.

- Probability Analysis – The 2019-2020 research study to determine the potential air passenger traffic to/from the Las Cruces catchment area included:
  - » Telephone Survey of Local Residents – 301 surveys were completed from the 5-county LRU catchment area on March 7 – 17, 2020
  - » Las Cruces Area Employer Survey – 410 surveys were completed in February 2020 with a response rate approximately 15.1% (410 responses / 2,712 delivered surveys), the sample includes 139 online surveys and 271 paper surveys.
  - » Local Resident and Air Passenger Visitor Mobile Device Tracking Analysis – Data was pulled the CY 2019 (Jan to Dec).
  - » Airlines Reporting Corporation Traveler Itinerary Analysis.
  - » Benchmarking similar Airports and Markets.

- Relative Population Base vs. Other Smaller New Mexico Community Airports - If you compare Doña Ana County to other smaller airports in the State of New Mexico, it has a substantially larger population.
- 236% larger than Chaves County
- 198% larger than Lea County
- 46% larger than Santa Fe County.

Las Cruces is the second largest city in New Mexico and has a solid economy with companies in higher education, health care, agriculture, space tourism, and defense department/missile testing technology, to name a few.

In developing the commercial aviation forecast for Las Cruces International Airport, there are a number of scenarios that were considered based on recent trends, county initiatives, state initiatives, and city goals for the Airport. Presenting multiple scenarios will allow LRU to see potential opportunities for the Airport and how they will affect the facilities required over the 20-year planning period. There are three scenarios that have been considered and each is described below.

3-8-9 LRU Low-Growth Scenario

The low-growth scenario assumes that current commercial and GA operations will continue at the Airport with growth rates comparable to historical activity and development that is occurring in the region.

While there has been no commercial air service into LRU in 2022, starting in January 2023 it is anticipated that a Part 135 operation between ABQ and LRU will begin. This service is funded in cooperation with the City of Las Cruces and the New Mexico Air Service Enhancement Act. Advanced Air has been selected as the operator.

The low growth scenario also assumes that funding will continue in perpetuity for the next 18 years with no growth or changes. It is acknowledged that this scenario is highly unlikely.

3-8-10 LRU Moderate-Growth Scenario

The moderate-growth scenario represents a far more likely scenario with the introduction of 30-passenger Part 135 scheduled charter operations from Dallas starting mid 2024, while Part 121 operations would not be expected to begin until 2027, which seems realistic in light of the facility and infrastructure requirements.

It is assumed that daily service to ABQ will be provided in a 8-passenger King Air is expected to last for two years based on current funding commitments, after which service would be discontinued in 2025.

The 30-passenger Part 135 operations from Dallas starting mid 2024 could potentially be operated by JSX with Embraer E145s. JSX is an example of an emerging operator who has recently been expanding rapidly into Colorado and New Mexico. Another possible option for service could be Advanced Air with Dornier 328 Jets like those used to fly seasonally between Dallas and Taos, NM. Service could also be operated by SkyWest Charters with 30-passenger configurations of the CRJ200 assuming they receive a Show Cause Order from the U.S. DOT. In any event, the introduction of Part 135 scheduled charter operations initially and for a period of up to two and half years is a plausible consideration in the near term because it can be handled with minimal facility upgrades.

In terms of frequency, the following is contemplated for 30-passenger Part 135 operations beginning mid-2024:

- July–December 2024: Less than daily flights from Dallas only.
- January–December 2025: Daily flights from Dallas plus less than daily from Phoenix.
- January–December 2026: Daily flights from both Dallas and Phoenix.

January 2027 is when Part 135 scheduled charter operations are expected to be replaced with Part 121 operations from American's hubs in DFW & PHX. While service with smaller aircraft initially such as Envoy's 50-passenger E145's or SkyWest's 65-passenger CRJ700's were considered, all 50-passenger RJ's have already been vacated from American's PHX hub and many are now on their way out of DFW. While there are currently 90 CRJ700s flown by SkyWest for American out of both DFW & PHX, they are all 15- to 20 year-old airframes under short-term leases of just one to two years. It is highly unlikely that those CRJ700s will be flying beyond 2027, thus the reason the Embraer E175 is assumed to be the initial launch aircraft for Part 121 operations into LRU.

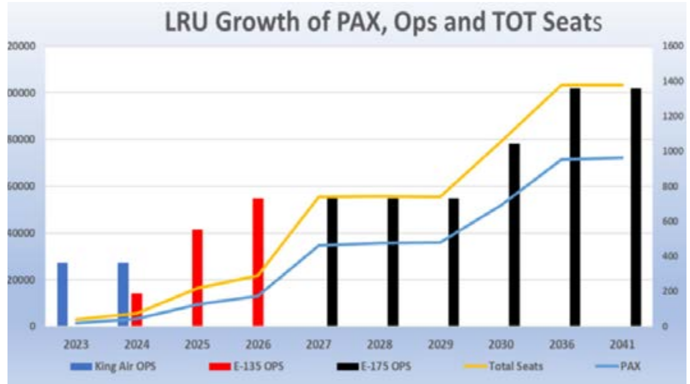
In terms of frequency, the following is contemplated for 76-passenger Part 121 operations beginning 2027 with an Embraer E175:

- Years 2027–2029: One flight daily from both DFW & PHX.
- Years 2030–2035: Two flights daily from DFW (one on Saturdays) plus one flight daily from PHX.
- Years 2036–2041: Two flights daily from both DFW & PHX (one less on Saturdays).

In forecasting the enplanements, assumptions were made regarding growth of load factors from startup to maturity based on experience with similar schedules at both Roswell NM (ROW), Hobbs NM and Santa Fe NM (SAF). Assumptions were also applied based on research from the 2020 RRC Study regarding the expected seasonality of demand.

The startup with Albuquerque (ABQ) service in 2023, it will give the Airport an opportunity to alert the community that commercial air service is available in LRU. It has been our experience that it takes 6 to 18 months to educate and convince passengers the new service is a reality. The ABQ service does not compete with the ELP Airport (there is no ELP- ABQ service) program will keep air service top of mind and aid in making the transition to DFW and PHX service easier.

Most of the growth assumptions in the forecast are based on converting an increasing percentage of the 650 daily (both ways) leisure/business passengers traffic currently using the ELP Airport. 650-daily passengers equals 237,000 annual passengers. Below is a chart displaying the annual passenger (PAX) growth starting in 2025 which is the first year both the DFW and PHX markets are served.



- In 2026, the moderate forecast calls for LRU to capture only 5.5% of 237,000 available passengers
- In 2031, the service would capture 22.4% of the passengers
- In 2036, the service would capture 30.2% of the passengers
- In 2041, the service would capture 30.4% of the passengers

Below are a series of summary charts of the LRU Airport projected growth in the 20-year forecast.

Table 3-23 Estimated Capture of LRU Passengers Currently Using ELP		
Number of PAX and % of the 237K Annual Las Cruces Residents and Vistors using the ELP Airport		
	Annual	% of
Year	PAX	237,000
2026	13,989	5.50%
2031	53,032	22.40%
2036	71,540	30.20%
2041	72,174	30.40%

Annual Operations, Available Seats and Flown Passengers Summary

Below is a chart along with a graphical illustration of the mid-level forecasted growth by aircraft type, available seats and flown passengers by year through 2030, along with the years 2036 and 2041.

Table 3-24: LRU Growth of Passengers, Operations and Totals Seats

	2022	2023	2024	2025	2026	2027	2028	2029	2030	2036
King Air OPS	0	365	365							
E-135 OPS	0		188	553	730					
E-175 OPS	0					730	730	730	1,043	1,360
Total Seats	0	2,920	5,688	16,425	21,900	55,480	55,632	55,480	79,268	403,360
PAX	0	1,570	3,287	9,580	34,742	35,667	35,667	35,851	71,540	72,174

LRU Commercial Operations Growth by Month

The growth of annual aircraft operations initially starts small but gradually increases over the years to account for higher frequencies and larger aircraft.

Table 3-25 - LRU Moderate Growth Flight Count

Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	CY Total
2022	0	0	0	0	0	0	0	0	0	0	0	0	0
2026	62	56	62	60	62	60	62	62	60	62	60	62	730
2031	93	87	93	90	93	90	93	93	90	93	90	93	1098
2036	124	112	124	120	124	120	124	124	120	124	120	124	1460
2041	124	112	124	120	124	120	124	124	120	124	120	124	1460

LRU Available Seat Growth by Month

The growth in available seats is primarily driven by aircraft size and frequency.

Table 3-26 - LRU Moderate Growth Available Seats

Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	CY Total
2022	0	0	0	0	0	0	0	0	0	0	0	0	0
2026	4,712	4,256	4,712	4,560	4,712	4,712	4,560	4,712	4,560	4,712	4,560	4,712	55,480
2031	6,64	6,308	6,688	6,536	6,688	6,536	6,688	6,688	6,536	6,764	6,536	6,764	79,496
2036	8,816	7,904	8,664	8,512	8,664	8,512	8,664	8,664	8,512	8,816	8,512	8,816	103,056
2041	8,816	7,904	8,664	8,512	8,664	8,512	8,664	8,664	8,512	8,816	8,512	8,816	102,056

LRU Load Factor Summary by Month

The chart below displays the load factors by month based on similar monthly and seasonal fluctuations at the ELP.

Table 3-27 - LRU Assumed Load Factors

Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	CY Total
2022	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2026	56.0%	56.0%	57.5%	60.0%	60.0%	60.0%	61.0%	60.0%	60.0%	66.0%	60.0%	61.0%	59.3%
2031	64.0%	64.1%	67.1%	67.7%	68.2%	67.7%	67.4%	67.4%	66.7%	66.7%	67.3%	68.3%	66.9%
2036	65.0%	66.2%	70.0%	69.8%	71.3%	69.8%	69.5%	70.5%	69.2%	69.2%	68.5%	71.5%	69.2%
2041	66.1%	67.0%	71.2%	70.5%	72.1%	70.5%	70.2%	71.2%	70.0%	70.0%	69.2%	72.2%	70.0%

LRU Passenger Enplanements Summary by Month

Enplanement growth is driven by the size of the aircraft, frequency of service and load factors.

Table 3-28 - LRU Estimated Passenger (Enplanements)

Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	CY Total
2022	0	0	0	0	0	0	0	0	0	0	0	0	0
2026	2,827	2,554	2,945	2,896	2,992	2,896	2,992	2,957	2,861	2,956	2,861	3,004	34,742
2031	4,332	3,894	4,489	4,489	4,425	4,425	4,505	4,505	4,359	4,511	4,402	4,623	53,708
2036	5,740	5,238	6,108	5,939	6,181	5,939	6,020	6,108	5,893	6,104	5,829	6,303	71,400
2041	5,825	5,296	6,171	6,001	6,244	6,001	6,083	6,171	5,955	6,168	5,892	6,368	72,174

Annual Data Points Summary

The chart below offers a larger picture of the growth at the LRU Airport and milestones.

- 2023 - Initial commercial service returns to LRU with service to ABQ
- 2024 - Part 135 operations to DAL
- 2026 - Part 135 operations to PHX and DAL achieves 10,000 annual enplanements
- 2027 - Part 121 operations to DFW and PHX
- 2030 - Additional DFW daily fight

Table 3-29 - Annual Available Seats and Growth Rates

Year	Avail Seats	AV Seat Growth	% Growth	PAX Forecast	PAX Growth	% Inc.
2022	0			0		
2023	2,920	2,920		1,570	1,570	
2024	5,688	2,768	95%	3,287	1,717	109%
2025	16,425	10,737	189%	9,580	6,293	191%
2026	21,900	5,475	33%	12,989	3,409	36%
2027	55,480	33,580	153%	34,742	21,752	167%
2028	55,632	152	0%	35,667	926	3%
2029	55,480	-152	0%	35,851	184	1%
2030	79,268	23,788	43%	51,911	16,060	45%
2031	79,268	0	0%	53,032	1,122	2%
2032	79,496	228	0%	53,708	676	1%
2033	79,268	-228	0%	53,888	180	0%
2034	79,268	0	0%	54,174	285	1%
2035	79,268	0	0%	54,729	556	1%
2036	103,360	24,092	30%	71,540	16,811	31%
2037	103,056	-304	0%	71,400	-140	0%
2038	103,056	0	0%	71,659	258	0%
2039	103,056	0	0%	71,896	238	0%
2040	103,360	304	0%	72,099	203	0%
2041	103,056	-304	0%	71,174	74	0%

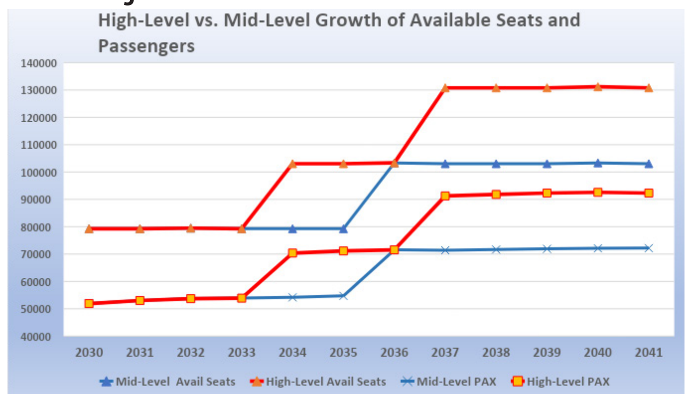
Years 2024, 2028, 2032, 2036 and 2040 are leap years

3-8-11 LRU High-Growth Scenario

The high-growth scenario contains essentially the same assumptions as the moderate-growth scenario with two noteworthy changes related to the speed at which capacity is expected to be added beyond the year 2034, along with the anticipated addition of a new market (DEN) in 2037: The second daily PHX flight (6x/week) is assumed to begin in 2034 rather than 2036.

Beginning 2037, a daily DEN-LRU trip is assumed to begin, presumably an E175 operated for United.
A copy of the high-growth scenario is in Appendix A

Table 3-30 - Comparison of High-Level vs. Mid-Level Available Seats and Passengers



3-9 Cargo Operations

3-9-1 Cargo Aviation Trends

Air cargo is transported either in the belly of the passenger aircraft or in specialized all cargo aircraft. Air cargo activity has historically moved in sync with GDP, therefore growth in this sector is tied to economic growth. Other factors that affect air cargo growth are fuel price volatility, movement of real yields, globalization and trade. The following significant structural changes have occurred in the air cargo industry in recent years: Effects of COVID-19 specifically, a surge in 2020 and 2021 supported by consumers purchasing goods to supplement time spent at home and by surface transportation disruptions caused by worker shortages. The current war in Ukraine and its impacts are still playing out and have had an impact on key factors mentioned earlier.

According to the FAA Aerospace forecast Fiscal years 2022–2042, historical total Revenue Ton Miles (RTM) flown by all-cargo carriers averaged 78.7% with passenger carriers covering the remaining 21.3%. In 2020 and 2021 this split increased to all cargo carriers covering 88% of total RTMs. During the 2020–2021 period, both all-cargo and passenger carriers recognized total RTM increases of around 17%.

As the world recovers from the impacts of the COVID-19 pandemic, the FAA Aerospace Forecast shows an expected growth rate of 2.5% for 2022 followed by a stable growth rate of 3.2% from 2022–2042 largely due to the residing impacts of the pandemic.

US carrier international air cargo traffic spans for regions consisting of Atlantic, Latin, Pacific, and other international. As the impacts of surface transportation delays on international cargo are resolved, the 20.4% total RTM boost seen in 2021 should dissipate and return to the pre pandemic forecast of 3.6% per year based on GDP. International regions are forecast to be growth rates of:

- Pacific International region 4%
- Other International 3.5%
- Atlantic 3.3%
- Latin America region 2.1%

3-9-2 LRU Cargo

Air cargo operators provide time critical air service for various cargo partners such as FedEx and UPS. The ability to have next day air delivery is important to many municipalities. Currently, LRU does not have this service. With the adjoining LCIIP, it would be possible to construct an air cargo facility within the LCIIP and then attract an operator. The majority of local air cargo/freight is being flown in and out of Doña Ana County International Jetport (DNA) which is 27 miles to the southeast of Las Cruces or 49 miles via Interstate 10.

In 2021 the state of New Mexico had three key airports reporting cargo operations in the National Plan of Integrated Airport Systems. These airports are:

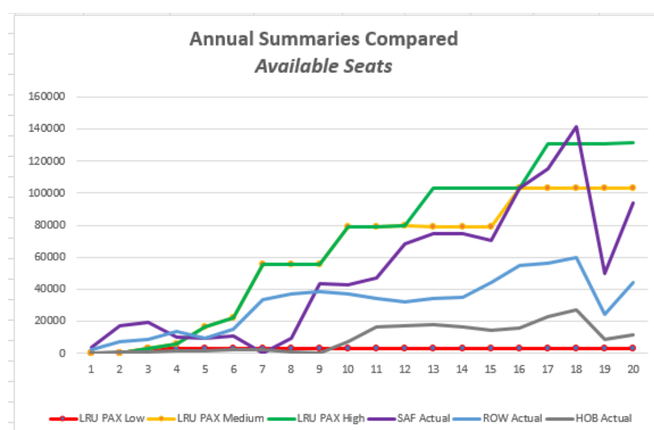
- Albuquerque (ABQ) reporting 607 million pounds
- Gallup (GUP) reporting 3.77 million pounds
- Tucumcari (TCC) reporting 1.6 million pounds

In a recent press release from October 14, 2022, Governor Michelle Lujan Grisham announced funding for a $72 million cargo aviation facility at Doña Ana County Jetport. This is proposed to be a public private partnership between Burrell Aviation and the Doña Ana County Jetport for the construction of multiple new structures designed to expand cargo and distribution services, including facilities dedicated to air cargo handling, cold storage, distribution, and aircraft maintenance. With this development in the border region and LRU's close proximity to Doña Ana County Jetport and El Paso International Airport, the development of cargo operations was not included as part of this study.

3-9-3 Proven Concept/Benchmark (SAF, ROW, HOB, ELP)

Without critical infrastructure in place, it is difficult for LRU to adequately serve the existing demand for commercial passenger service. Outside of airport facilities, airlines base their service decisions on demand and location; Las Cruces is in a strong position compared to other New Mexico airports. Four similar airports were used as a benchmark for future aviation activity. These airports include Santa Fe Municipal Airport (SAF), Roswell Air Center Airport (ROW), Lea County Regional Airport (HOB), and El Paso International Airport. The Actual enplanements per year following inaugural service are listed against the LRU forecast enplanements **(Table 3-31)**. This shows that the moderate-growth model is realistic and should be used as the preferred forecast moving forward.

Table 3-31 - Comparison of Growth of Available Seats of LRU Forecasts vs. real world examples experienced in New Mexico at SAF, ROW & HOB.



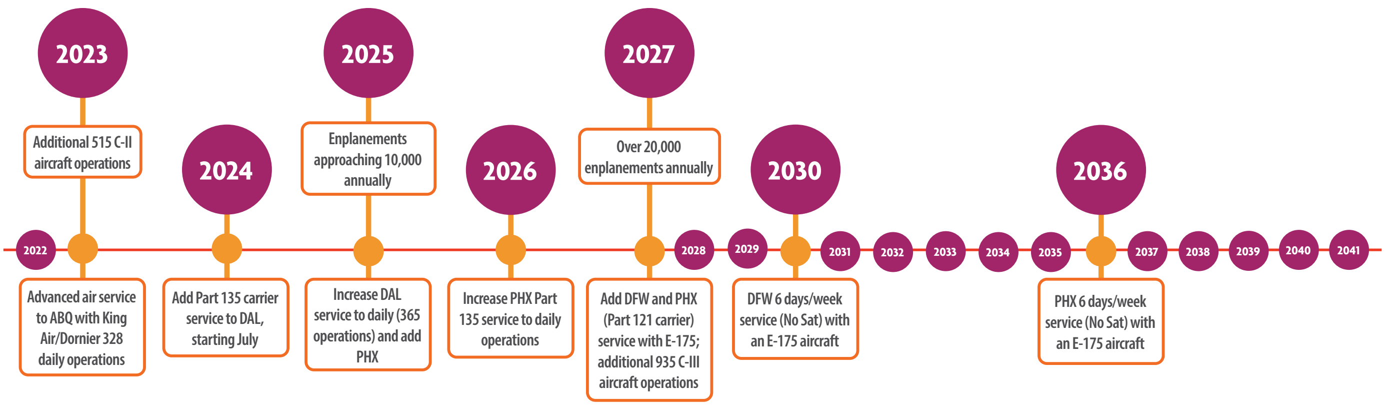
3-10 Preferred (Selected) Commercial Forecast Summary

The moderate-growth model was selected as the preferred commercial service forecast. The tables below summarize anticipated commercial operations and enplanements.

Table 3-31 - LRU Growth of PAX, Ops, and Total Available Seats

	2022	2023	2024	2025	2026	2027	2028	2029	2030	2036
King Air 350/Dornier 328	0	365	365							
E-135	0	188	188	553	730					
E-175	0					730	730	730	1,043	1,360
Total Operations	**0**	**553**	**553**	**553**	**730**	**730**	**730**	**730**	**1,043**	**1,360**
Enplanements	**0**	**3,287**	**3,287**	**9,580**	**12,989**	**34,742**	**35,667**	**35,851**	**71,540**	**72,174**

Commercial Service Milestones for LRU



3-11 Preferred (Selected) Aviation Forecast Summary

The following summary **(Table 3-32)** includes data presented in this report. The selected aviation forecasts presented below include the preferred methodology forecasts adjusted to current and future growth planned during this study period.

Table 3-32 - Aviation Activity Forecast Summary				
Passenger Enplanements				
	2021	**2026**	**2031**	**2041**
Air Taxi/Commuter	0	0	0	0
Air Carrier	0	12,989	51,911	72174
Operations				
Itinerant	**24,673**	**32,662**	**41,894**	**47,032**
Air Carrier	0	730	1,043	1360
Air Taxi/Commuter	3,634	3,634	3,634	3,634
General Aviation	10,686	17,945	26,864	31,685
MIlitary	10,353	10,353	10,353	10,353
Local	12,152	15,727	20,120	22,495
General Aviation	12,152	15,727	20,120	22,495
Total OPs	36,825	48,389	62,014	69,527
Based Aircraft				
Single	82	100	130	133
Multi	6	8	8	9
Turboprop	5	5	5	6
Turbojet	2	2	2	3
Rotorcraft	3	3	3	4
Glider	4	5	5	5
Light Sport	0	2	2	2
Military	4	4	4	4
Electric	0	1	1	3
Total	**106**	**130**	**161**	**169**

3-12 Future Critical Design Aircraft

As discussed earlier, the Critical Design Aircraft for LRU has been selected to be the Challenger 600 series and the Airport Design Group is C-II. The critical aircraft determination is an important aspect of airport planning and design for federally obligated airports. It sets dimensional requirements on an airport, such as the separation distance between taxiways and runways, and the size of certain areas protecting the safety of aircraft operations and passengers. The critical aircraft designation is set by establishing substantial use as defined in AC 150/5300-13B, is a single aircraft or a composite of several aircraft with similar aircraft and design characteristics with over 500 annual operations.

The 2021 baseline share of operations by aircraft type is shown in **Table 3-22.** Historically, Las Cruces has been a C-II airport and has been designed to these standards. The operational year 2021 LRU recorded 446 C-II aircraft operations. This does not meet the minimum 500 operations. However, it is understood that with the aviation community rebounding from the effects of the COVID-19 pandemic and continuing war in Ukraine, operations numbers are on the rise. This impact paired with ongoing and future Airport development, Airport marketing initiatives, as well as the addition of commercial passenger service that started in January 2023, C-II operations will continue to climb and will reach in excess of 500 operations in 2023. Forecast data further shows 730 operations of the E-145 (C-II) aircraft by 2027. With the additional commercial service planned in the short term (2022–2027), runway extension, increased use of LRU by NMSU, and increase in commercial space operations specifically out of Spaceport America, C-III operations are forecasted to exceed 500 yearly operations within the first five years of this forecast.

With the data presented in this forecast, It is recommended that the current critical aircraft designation of C-II is realistic and the Challenger 600 continue to be designated as the critical aircraft. However, due to substantial use of C-III aircraft in the short term (within 5 to 6 years of this study) it is recommended that the airport continue future conversations with the FAA regarding future design standards.

Future Critical Aircraft

To determine which jet aircraft should be considered the future critical aircraft, information was collected from the Airport to include interviews with Airport (users, businesses, management, GARD data) and the FAA (5010, TFMSC, Aerospace and Terminal Area Forecasts). After an in-depth analysis of the information collected, it was evident that numerous corporate aircraft used by private and charter companies utilize LRU frequently. It was determined that in 2021, the Bombardier Challenger is the most demanding aircraft and has the highest number of operations at LRU of other aircraft within its composite. The Bombardier Challenger is a C-II aircraft and is the current Design Aircraft at LRU

Given the forecasts developed, it is further evident that C-III aircraft such as the Embraer EMB 175 and Boeing 737-700 will be utilizing the Airport more than 500 times per year within the next 5-years and beyond. FAA guidance would lead LRU to consider changing the airport reference code from C-II to C-III and to consider the Boeing 737-800 as the design critical aircraft.

3-13 Selected Forecast Summary and Comparison to FAA TAF

The City of Las Cruces, LRU Airport Master Plan Committee as well as the LRU Air Alliance unanimously support moving forward with a plan that will utilize the Las Cruces International Airport to support the community and the State of New Mexico by being the lead economic engine in the region. A balanced approach to planning and development will support education through research and development in the aerospace and aviation industry, support local higher educational facilities, accommodate enhanced commercial passenger service, and ensure economic stability and growth for the region.

The following table shows a comparison of the selected forecast to the FAA TAF. As discussed earlier, the current 2021 TAF does not show any growth in operations or based aircraft for LRU. This study has shown that this is not realistic and as such falls outside the 10% and 15% thresholds of the FAA TAF numbers. LRU has a bright and promising future full of development and commercial service options.

Table 3-33 -Selected Forecast Comparison to FAA TAF

	2021 FAA TAF	Preferred Forecast	% Difference
Enplanements			
2021	0	8	0%
2026	0	12,989	12,989%
2031	0	51,911	51,911%
Based Aircraft			
2021	107	106	-1%
2026	107	130	18%
2031	107	161	34%
Operations			
2021	36,825	36,825	0%
2026	36,825	47,659	23%
2031	36,825	60,971	40%

U.S. Department of Transportation
Federal Aviation Administration

Federal Aviation Administration
Southwest Region, Airports Division
LA/NM Airports Development Office

FAA-ASW-640
10101 Hillwood Pkwy.
Fort Worth, Texas 76177

May 22, 2023

Andrew Hume
Airport Director
Las Cruces International Airport – (LRU)
700 N Main
Las Cruces, NM 88001

Federal Aviation Administration (FAA)
Las Cruces International Aiport (LRU) Aviation Activity Forecast Approval
New Mexico State Funded Grant

The FAA Louisiana/New Mexico Airports District Office has reviewed the aviation forecast for the Las Cruces International Airport (LRU) Airport Master Plan dated April 6, 2023. The FAA approves these forecasts for airport planning purposes, including Airport Layout Plan (ALP) development, in addition to the existing and future critical aircraft.

Our approval is based on the following:

- The forecast is supported by reasonable planning assumptions and current data
- The forecast appears to be developed using acceptable forecasting methodologies
- The difference between the FAA Terminal Area Forecast (TAF) and the Airport's forecast for total operations is within the 10 percent and 15 percent allowance for the 5 and 10 year planning horizons.

Approval of this forecast does not automatically justify any of the capital improvements shown on the ALP or recommended in the master plan. All future projects will need to be justified by current activity levels at the time of proposed implementation. Lastly, the approved forecasts may be subject to additional analysis, or the FAA may request a sensitivity analysis if this data is to be used for environmental or Part 150 noise planning purposes.

Accordingly, FAA approval of this forecast does not constitute justification for future projects. Justification for future projects will be made based on activity levels at the time the project is requested for development. Documentation of actual activity levels meeting planning activity levels will be necessary to justify AIP funding for eligible projects.

If you have any questions about this forecast approval, please call me at (817) 222-5654.

Sincerely,

BRITTANY MICHAEL JOSEPH SMITH

Digitally signed by BRITTANY MICHAEL JOSEPH SMITH
Date: 2023.05.22 11:28:56 -05'00'

cc: Patrick Sharrow Du bois & King,
Dan Moran (State of New Mexico),

Chapter Four: Facility Requirements

4-1 Introduction

The facilities requirements chapter evaluates and establishes the improvements necessary at LRU to maintain a safe and efficient facility while accommodating the demand expected during the 20-year planning period. The facilities should be developed to enhance both commercial and GA activities, foster business aviation, support aerospace development for the region, promote sustainability, and ultimately lead to financial independence. Comparing the existing airfield condition to the growth predicted by the aviation forecasts in the previous chapter will guide the decisions for runway, taxiway, apron, terminal, and other facility requirements at LRU.

4-2 Emerging Trends

Proper facility planning must account for emerging trends within the industry by considering how these trends affect the aviation industry and the Airport. The following section will focus on emerging trends that have been identified as the most relevant to LRU.

4-2-1 Next Generation

The National Airspace System (NAS) is being transformed by Next Generation Air Transportation System (NextGen) initiatives. NextGen is the FAA's plan for modernizing the national air transportation system. NextGen initiatives may affect airspace, aircraft approach capabilities as well as on and off-airport obstruction management requirements. The NextGen initiatives are based on GPS satellite navigation and enhanced communications systems that will improve efficient access to the airspace and airports of the National Airspace System. A recent Aeronautical survey conducted as part of this study has followed AC 150/5300-18B, General Guidance and Specifications for Submission of Aeronautical Surveys to NGS: Field Data Collection and Geographic Information System (GIS) Standards. This information has been uploaded to the FAA Obstruction Evaluation/Airport Airspace Analysis (OE/AAA) for future use in procedure development and AGIS planning efforts.

4-2-2 Unmanned Aircraft Systems (UAS)

LRU takes pride in its position as one of six airports in the country to be a nationally recognized UAS test facility. New Mexico State University's Physical Science Laboratory (PSL) manages/operates the program and maintains a presence at the airport year-round. As cited by the FAA:

> *"The main objective of the UAS Test Site Program is to provide verification of the safety of public and civil UAS, operations, and related navigation procedures before their integration into the NAS. Other program requirements include supporting the FAA during the development of certification standards, air traffic requirements, coordinating research, and other work with the National Aeronautics and Space Administration (NASA), FAA NextGen, the Department of Defense, and other Federal agencies."*

Over the past several years, UAS operations have become more widespread and the uses have diversified beyond recreational use. As businesses begin to rely more heavily on UAS for commercial operations, airports across the country must account for UAS operations as they plan future facilities. Moreover, the FAA has developed the UAS Integration Pilot Program (IPP) to work with state, local, and tribal governments to understand drone advancements and how to incorporate them into the airspace system safely. LRU has completed an Unauthorized UAS Response Plan that details operating protocols for UAS operations at and around LRU facilities.

The FAA UAS Data Exchange is an innovative, collaborative approach between government and private industry facilitating the sharing of airspace data between the two parties. The FAA has moved forward with the Low Altitude Authorization and Notification Capability (LAANC) program, a collaboration between the FAA and industry. This program directly supports UAS integration into the airspace. At this time, LRU is not a part of the LAANC program. It is recommended that LRU move towards integration with LAANC.

As the uses of UAS continue to grow, they will continue to demand more of the operating airspace on and above airports. The relationship between LRU and New Mexico State University Physical Science Lab, as well as Arrowhead to provide a base for aerospace UAS development and testing on airports, has evolved with these emerging demands. Meetings held through the Public Information Program have highlighted a need for additional office and hangar space for both NMSU and Arrowhead. Additionally, the effects these types of operations will have on the Airport system will be considered in the development of facilities.

4-2-3 Aerospace Development

After a long period in which the space global launch arena was dominated by governmental agencies launching vehicles developed by defense contractor corporations, largely operating vehicles derived from 1950s-era ballistic missile designs, and characterized by high costs limiting their markets to operators of geosynchronous communications satellites, the industry has in the past ten years been revolutionized by the entry of entrepreneurial companies. These companies have successfully designed and launched new designs characterized by reusability and frequent, low-cost flights.

Led in particular by Space Exploration Technologies, Inc. (SpaceX), these new entrants have dropped launch costs by at least an order of magnitude, opening up many new uses and users. The number of new entrants in both the space launch and space launch users categories has increased dramatically. The number of startups announcing an intent to develop competing space launch capabilities and receiving at least some venture funding is well over 120 worldwide, and more may be operating in stealth mode without public announcement.

Many of these companies have not proceeded beyond the design stage, but several dozen have demonstrated hardware development, and some substantial number have attempted test launches, with several succeeding and in commercial service. For example, Space Labs, a US/New Zealand company has been launching mostly successfully for five years. Several companies have, with great publicity, begun launching space flight participants on a commercial basis, including SpaceX, which has carried paying participants to orbit in their Dragon-crewed capsule, and Virgin Galactic and Blue Origin, which have carried flight participants on suborbital flights. All three companies plan to expand this service. Other startups are planning ambitious private space station projects that seek to have human-inhabited platforms in space before the end of the decade and that are successfully attracting private investment.

In short, the space transport industry is experiencing the sort of rapid expansion of new entrants that was seen in aviation in the decades following the First World War, or the personal computer industry after the initial success of Apple Computer in the 1980s. As with the previous examples, it is likely many of the new entrants will fail. However, it is also likely that those who survive the shakeout will dominate the field for the coming decades. Just as the rapid expansion of the aircraft industry sparked the need for airports and support capabilities, and the rapid expansion of personal computers sparked an enormous demand for application software, so it is likely that the rapid expansion of the space transport and space applications industries will spark a need for additional spaceports, research and development facilities, and testing areas. Once companies have made their choices in such facilities, they will likely remain there for coming decades, just as aviation companies have done. There will be substantial economic benefits to the areas so chosen. Any decisions regarding steps that would enhance LRU and the Las Cruces area as locations for such activities should bear in mind that these benefits likely require action in the near term to ensure such locations, as such opportunities may not arise again in future decades.

4-2-4 Emergency Planning

Another, more recent example is the role an airport plays in the containment of an infectious disease. During the COVID-19 pandemic, airports were relied upon heavily to put into place emergency measures that would reduce the risk of spreading the infection. Understanding how these events may impact the day-to-day operations and providing appropriate response tools will allow the Airport to return to normal operations quicker.

4-2-5 Sustainability

Sustainable infrastructure and investments are crucial to protecting New Mexico's natural environments and resources. Sustainability is a complex topic and may refer to environmental and financial. The goal of an Airport Sustainability Program is to provide guidance for implementing sustainability initiatives as part of the Airport's future and will be used as a reference to encourage sustainable development while planning future facilities. Benefits for the Airport offered by sustainable development include but are not limited to:

- Reduction of operating costs
- Better utilization of Airport assets
- Protection from fluctuating energy costs
- Enhanced community support
- Reduced environmental impacts
- Efficient use of Airport Improvement Program (AIP) and NMDOT funding
- Increased resourcefulness

4-2-6 Regional Access/Multi-Modal

As the world continues to become more connected, airports will continue to play an integral role in linking various regions and multiple modes of transportation. Appropriate planning by all stakeholders can make an airport the multimodal interchange point for a region. Facilities

should be planned within the context that airports are not singularly used for air transportation but are part of a broader multimodal transportation network.
Support for multimodal transportation can be in the form of rail and highway to ride share amenities, taxis, and rental cars. These interlinks can support many economically important industries throughout the region including, commercial space travel out of Spaceport America, Electric VTOL operations used for medical support, and cargo operations linked to the LCIIP and FTZ. Airports should consider the role they play in the transportation system and need to consider all relevant transportation modes while planning terminal buildings and other infrastructure requirements.

4-3 Capacity Demand Analysis

Airfield capacity is expressed in terms of the number of aircraft operations that can be conducted in a given period of time. Capacity is most often expressed as annual capacity (or annual service volume) and hourly capacity (or throughput capacity) for a particular runway and taxiway configuration.

The determination of airfield capacity is essential to the evaluation of the adequacy of the runway and taxiway system to meet existing and future Airport activity demand levels. Hourly capacities under Visual Flight Rules (VFR) and Instrument Flight Rules (IFR) and the Annual Service Volume (ASV) for the Airport were developed using methods specified in FAA Advisory Circular (AC) 150/5060-5, Airport Capacity and Delay.

A demand/capacity analysis for the existing airfield configuration was conducted using the methodology contained in Chapter 2 of the AC, commonly referred to as the FAA's "handbook methodology." This methodology uses a series of tables, graphs, and equations to calculate an airfield's hourly and annual capacity. It is generally used in situations where airfield capacity is not a constraining factor. The following paragraphs provide a discussion of the handbook methodology and present the results of the analysis.

An airport's capacity is generally measured in terms of the number of aircraft operations (landings and takeoffs) the runway and taxiway system can accommodate on an hourly or annual basis. The calculation for airfield capacity is a function of the number of available runways and the specific runway/taxiway configuration for a given airport. Airfield capacity was determined using two principal measures, Annual Service Volume (ASV) and hourly capacity. Calculation of an airfield's hourly capacity and ASV depends upon the following physical and operational factors:

- **Meteorological Conditions–**The percentage of time that the cloud ceiling or horizontal visibility is below certain minimums.
- **Aircraft Fleet Mix (Mix Index)–**The percentage of operations conducted by aircraft within certain weight, engine, and wake turbulence classifications.
- **Runway Use–**The percentage of time each runway use configuration is used.
- **Percent Touch-and-Go–**The percent of touch-and-go operations in relation to total aircraft operations.
- **Percent Arrivals–**The percent of arrivals in relation to departures.
- **Exit Taxiway Locations–**The number and locations of exit taxiways for landing aircraft

Hourly capacity is defined as the maximum number of aircraft operations that can be accommodated by the airfield system in one hour. It is used to assess the airfield's ability to accommodate peak-hour operations.

ASV is defined as a reasonable estimate of an airport's annual capacity. As the number of annual operations increases and approaches the Airport's ASV, the average delay incurred by each operation increases. When the number of annual aircraft operations exceeds the ASV, moderate to severe congestion will occur and the average delay per aircraft operation will increase exponentially. ASV is used to assess the adequacy of the airfield design, including the number and orientation of runways.

Delay is typically expressed in minutes per aircraft operation. When annual operations are equal to the ASV, the average delay per aircraft operation can be up to four minutes, depending upon the fleet mix using the Airport. Traditionally, one to four minutes of average delay per aircraft operation is used in ASV calculation. This can be considered an acceptable level of delay. The FAA considers delays of six minutes or more to be significant. When the average annual delays per aircraft operation reach four to six minutes, the Airport is approaching its practical capacity and is generally considered congested.

Delay can be translated into hours of annual delay and easily converted into dollar estimates to be used as a basis for comparison. Aircraft operational delay costs or savings are often used as the measure for comparing various airfield development alternatives.

Table 4-1- Aircraft Classifications			
Aircraft Class	Maximum Certificated Takeoff Weight	Number of Engines	Wake Turbulence Classification
A	12,500 or less	Single	Small
B		Multi	
C	12,500 – 300,000	Multi	Large
D	Over 300,000	Multi	Heavy

Source: AC 150/5060-5 Airport Capacity and Delay

Aircraft separation significantly impacts both airfield and airspace capacity. Reduced separation typically increases airfield capacity since the resulting closer spacing between aircraft means more aircraft can use the Airport during a specified time period. Conversely, increased separation typically reduces capacity. A variety of factors determine the required minimum aircraft separation, including prevailing weather conditions, flight rules, and the specific aircraft type.

The FAA's handbook methodology uses the term "Mix Index" to describe an airport's fleet mix. The FAA defines the Mix Index as the percentage of Weight Class C operations plus three times the percentage of Weight Class D operations.

The aircraft mix is the relative percentage of operations conducted by each of the four classes of aircraft (A, B, C, and D) and their relationship to terms used in wake turbulence standards. **Table 4-1** describes the four classes of aircraft as used in ASV calculations.

The aircraft fleet mix was taken from the data given in the previous chapter. Based on the data, it is estimated that Weight Class A and Class B constitute approximately 88.6% of aircraft operations, Weight Class C aircraft constitute 11.4% of aircraft operations, and Weight Class D aircraft have contributed a small percentage of (.04% of the aircraft operations) as shown in **Table 4-2.**

Mix Index (%) = Class C Operations/Total + 3 x Class D Operations/Total

Table 4-2- LRU Aircraft Mix 2021				
Aircraft Class	Maximum Certificated Takeoff Weight	Wake Turbulence Classification	Number of Operations	Percent of Total Operations
A, B	12,500 or less	Small	32,617	88.57%
C	12,500–300,000	Large	4,195	11.39%
D	Over 300,000	Heavy	13	.04%

Source: AC 150/5060-5 Airport Capacity and Delay, DuBois & King, 2022

Table 4-3 - LRU Aircraft Mix 2014				
Aircraft Class	Maximum Certificated Takeoff Weight	Wake Turbulence Classification	Number of Operations	Percent of Total Operations
A, B	12,500 or less	Small	63,167	90.87%
C	12,500–300,000	Large	6,335	9.11%
D	Over 300,000	Heavy	25	.04%

Source: AC 150/5060-5 Airport Capacity and Delay, DuBois & King 2022

Table 4-4 - Airfield Capacity Levels			
Year	Annual Operations	Annual Service Volume*	Capacity Level
Base Year			
2021	36,825	230,000	16.01%
Forecast			
2026	48,389	230,000	21.04%
2031	62,014	230,000	26.96%
2041	69,527	230,000	30.23%

*FAA Advisory Circular 150/5060-5 with estimated mix index of 11.52%

Based on the estimated mix index at 2021 of 11.52%, estimated mix index in 2041 of 9.23% and LRU airfield configuration, it was determined that the ASV is approximately 230,000 annual operations. The hourly capacity of the airfield is 98 operations per hour in VFR conditions and 59 hourly operations in IFR conditions. The forecast for the Airport indicates that the activity throughout the planning period will reach 69,527 annual operations, which is well below the ASV of 230,000 annual operations. Therefore, the capacity of the existing airfield system will not be reached, and the airfield can meet operational demands without adverse effects on aircraft operations and without significant operational delay.

The percent capacity at which an airfield is operating can be shown by comparing the calculated ASV to the existing or forecast level of operations. Based upon FAA Order 5090.3B, "Field Formulation of the National Plan of Integrated Airport Systems (NPIAS)," an airport should begin to address capacity-related issues once the operational demand exceeds 60% of the ASV. The capacity levels for the Las Cruces International Airport are shown in **Table 4-4**

The facility requirements analysis shows that LRU should not experience any runway-related capacity problems during the planning period. Recommendations will concentrate on developing the appropriate facilities to improve safety and service considerations rather than the operational capacity of the airfield. It should be noted that this is only with respect to runway occupancy times and the number of operations the runway system can accommodate each year. This does not include other airport facilities such as aircraft parking, hangar, GA terminal space, automobile parking, or utilities that are addressed in subsequent sections.

4-4 Critical Aircraft & Design Standards

Airport design standards provide basic guidelines for a safe, efficient, and economic airport system. The Runway Design Code (RDC) provides the information needed to determine which standards apply to a specific element of the runway. The first element of the RDC is the Aircraft Approach Category (ACC) which is defined based on the aircraft's approach speed and describes the operational characteristics of the aircraft. **Table 4-5** describes the five approach speed categories as defined by the FAA.

Table 4-5 - Aircraft Approach Category (ACC)	
Category	Approach Speed (knots)
A	< 91
B	91 – 121
C	121 – 141
D	141 – 166
E	> 166

Source: FAA AC 150/5300-13B

The second element of the RDC is the Airplane Design Group (ADG) which is defined by the aircraft's wingspan and tail height. The ADG represents the basic physical characteristics of the aircraft. **Table 4-6** describes the six design group categories as defined by the FAA.

Table 4-6 - Airplane Design Group (ADG)		
Design Group	Wingspan (feet)	Tail Height (feet)
I	<49	<20
II	49-79	20-30
III	79-118	30-45
IV	118-171	45-60
V	171-214	60-66
VI	214-262	66-80

Source: FAA AC 150/5300-13B

Current fleet mix and operations analysis shows that Runway 12/30 as well as Runway 8/26 provide the proper design criteria to accommodate C-II aircraft, which includes many of the light to medium-sized business jets as well as commercial passenger aircraft. Examples of these jet aircraft include a number of the Cessna Citation and Raytheon Hawker models, the Bombardier Challenger series of business jets, as well as the Embraer 145. For planning purposes, the medium-sized Bombardier Challenger 600 series of business jets, pictured in **Figure 4-1**, has been selected as the representative current critical aircraft. While there are a number of other business jet models with an ARC of C-II using the airfield, the Challenger series has been selected due to its heavier weight and higher tail height. Many of the Challenger series aircraft, including the heavier 600 series, have maximum allowable takeoff weights of around 48,000 pounds with a dual wheel landing gear configuration.

Figure 4-1–Bombardier Challenger 600 Series (Credit: nicepmg.com)

With upcoming commercial passenger service, it is anticipated that air carriers will utilize the Embraer 145 starting in 2025. The Embraer 145 is a C-II aircraft with similar operating characteristics as the Challenger series and is considered in the current design group.
While larger aircraft do use these runways, this practice has limitations to aircraft operations and is done only at the pilot's discretion. The FAA-approved Forecast of Aviation Activity shows substantial use of over 500 annual operations by category C-III aircraft by 2027. It is recommended that, as communication continues with commercial air service providers, the Airport conduct an ALP update to support future design standards for Runway 12/30 and Runway 8/26 be increased to C-III to accommodate the Embraer 175 and Boeing 737-700.

Figure 4-2 is considered to be the short-term (1–4 years) representative future critical aircraft for Runway 12/30 as well as Runway 8/26. The forecast shows commercial service aircraft upgrading to an Embrear E175 by 2027 (within 5 years of inaugural flight). The Embrear E175 is depicted in **Figure 4-3**.

Figure 4-2 - ERJ-145

Figure 4-3 - E175

Runway 4/22 is currently designated as a B-II runway. FAA standards for runway funding eligibility along with a windrose analysis on the Runways and configuration at LRU have shown that Runway 4/22 does not meet requirements for future federal funding. Due to a future lack of federal assistance with Runway 4/22, alternative funding sources will be considered. The fleet mix expected to utilize Runway 4/22 is a predominantly light single-engine, therefore the family of aircraft is selected to be A-I similar to a Cessna 182 depicted in **Figure 4-4.**

Figure 4-4-Cessna 182 Skylane

The third element of the RDC is the visibility minimums for the lowest instrument approach procedure developed for the Airport. **Table 4-7** below depicts the instrument runway visibility minimums in feet and statute miles. If a runway is designated Visual, the visibility is greater than 3 miles.

Table 4-7 - Visibility Minimums

RVR (feet)	Visibility Minimums (miles)
5,000	> 1
4,000	1 – 0.75
2,400	0.75 – 0.5
1,600	0.5 – 0.25
1,200	< 0.25

Source: FAA AC 150/5300-13B

The following sections describe the fundamental airfield design standards for safe, efficient, and economic aircraft operations. Airfield design standards are determined by a careful analysis of the aircraft characteristics for which the airfield will be designed. Airfield geometry designs based on only existing aircraft can severely limit the ability to expand the Airport to meet future requirements for larger, more demanding aircraft. On the other hand, airfield designs that are based on large aircraft never likely to operate at the Airport are not economical.

The current RDC for Runway 12/30 is classified as C-II with visibility minimums determined by the type of instrument approach. Runway 30 is equipped with a precision ILS approach that offers visibility minimums being 1/2 of a mile or 2400 ft. Runway 12 is equipped with a non-precision RNAV GPS approach which offers visibility minimums of ¾ of a mile or 5000 ft. The current RDC for Runway 8/26 is classified as C-II-Visual. It is recommended that the Airport moves forward to develop non-precision approaches for Runways 08 and 26. Runway 4/22 is currently classified as B-II-Visual. There are no plans for future approaches to Runways 04 or 22. **Table 4-6** shows current design standards with visibility minimums. There are specific areas beyond the ends and off the sides of the runways that the FAA requires to be clear. The Runway Safety Area (RSA) is defined as the prepared and suitable ground surrounding the runway to reduce the risk of damage to aircraft in the event of an overshoot, undershoot, or excursion from the runway.

The Runway Object Free Area (ROFA) is an area surrounding the centerline that restricts protruding objects that may damage the aircraft.

The Runway Protection Zone (RPZ) is an area beyond the runway ends that restricts the land use for the protection of people and property.

The size of these areas are defined by the RDC and the ADG. The size of the clear areas increases as the Airport serves larger aircraft and/or the instrument approach procedures become more precise. **Table 4-9** shows the current design characteristics of each runway and shows a comparison to existing and future design standards.

Table 4-8 - Runway Design Characteristics

Current					
Runway 12	Runway 30	Runway 08	Runway 26	Runway 04	Runway 22
C-II-5,000′	C-II-2,400	C-II-Visual		B-II-Visual	
Future					
Runway 12	Runway 30	Runway 08	Runway 26	Runway 04	Runway 22
C-III-5,000 ft	C-III-2,400 ft	C-III-5,000 ft	C-III-5,000 ft	A-I-Visual	

Source: DuBois & King

Table 4-9 - RDC Design Standards				
Runway Design	**A-I**	**B-II**	**C-II**	**C-III**
Runway Width	60 ft	75 ft	100 ft	100 ft
Shoulder Width	10 ft	10 ft	10 ft	20 ft
Blast Pad Width	80 ft	95 ft	120 ft	140 ft
Blast Pad Length	60 ft	150 ft	150 ft	200 ft
Crosswind Component	10.5 knots	13 knots	16 knots	16 knots
Runway Protection				
Runway Safety Area (RSA)	240 ft beyond, 240 ft prior to, 120 ft wide	300 ft beyond, 300 ft prior to, 150 ft wide	1,000 ft beyond, 600 ft prior to, 500 ft wide	1,000 ft beyond, 600 ft prior to, 500 ft wide
Runway Object Free Area (ROFA)	240 ft beyond, 240 ft prior to, 250 ft wide	300 ft beyond, 300 ft prior to, 500 ft wide	1,000 ft beyond, 600 ft prior to, 800 ft wide	1,000 ft beyond, 600 ft prior to, 800 ft wide
Obstacle Free Zone (OFZ)	Refer to Paragraph 3.11 of AC 150/5300-13B			
Approach Runway Protection Zone (RPZ)	1,000 ft Length, 250 ft Inner Width, 450 ft Outer Width	1,000 ft Length, 500 ft Inner Width, 700 ft Outer Width	1,700 ft Length, 500 ft Inner Width, 1,010 ft Outer Width	1,700 ft Length, 500 ft Inner Width, 1,010 ft Outer Width
Departure Runway Protection Zone (RPZ)	1,000 ft Length, 250 ft Inner Width, 450 ft Outer Width	1,000 ft Length, 500 ft Inner Width, 700 ft Outer Width	1,700 ft Length, 500 ft Inner Width, 1,010 ft Outer Width	1,700 ft Length, 500 ft Inner Width, 1,010 ft Outer Width
Runway Separation *Runway Centerline to:*				
Parallel Runway Centerline	Refer to Paragraph 3.9 of AC 150/5300-13B			
Holding Position	125 ft	200 ft	250 ft	250 ft
Parallel Taxiway/Taxilane Centerline	150 ft	240 ft	300 ft	400 ft
Aircraft Parking Area	Refer to Paragraph 5.4.1.2 of AC 150/5300-13B			

Source: FAA AC 150/5300-13B *RDC referencing Visual Standard

4-5 Runway Requirements

Existing and potential runway configurations were examined with respect to dimensional criteria, orientation, length, width, and pavement design strength. Each activity, along with associated critical aircraft demonstrating substantial use, is analyzed and considered when conducting a runway length analysis. Runway length requirements for the Airport were determined using FAA AC 150/5325-4B, Runway Length Requirements for Airport Design. In addition to determining the critical aircraft or family of aircraft, the principal parameters necessary to determine runway length are the Airport elevation and the mean daily maximum temperature of the hottest month. The Airport elevation is 4,457 feet mean sea level (MSL). Based on the NOAAs 1911-2020 Climate Normals for Las Cruces Airport, it was determined that the mean daily maximum temperature of the hottest month occurs in July at 94.6 °F.

4-5-1 Runway Orientation

A runway's orientation is primarily influenced by the physical and meteorological environment of its desired location. The runway heading is based on the magnetic heading. While the true runway heading doesn't change over time, the magnetic heading will wander due to the persistent shift of the magnetic north pole to the north-northwest at a rate of 34 miles per year. It's because of this gradual shift the magnetic heading of the runway needs to be evaluated periodically and when appropriate the runway heading redesignated to reflect the most accurate magnetic heading. According to NOAAs National Centers for Environmental Information, the rate of magnetic declination in the Las Cruces, NM area is 7° 52 ft E ± 0° 21 ft changing by 0° 6 ft W per year.

Table 4-10- Runway Redesignation						
Runway Redesignation	4	22	8	26	12	30
Runway Redesignation	047°	227°	082°	262°	127°	307°
Runway Redesignation	5	23	8	26	13	31

Source: NOAA's National Centers for Environmental Information (ngdc.noaa.gov), FAA Datasheet (October 2020)

As shown in **Table 4-10**, because of the magnetic declination Runway 4/22 should be redesignated to 5/23 and 12/30 to 13/31. The redesignation should be accomplished as soon as possible or during the next runway pavement maintenance project.

4-5-2 Runway 8/26 & 12/30 Length Analysis

Runway 8/26 and 12/30 are utilized for larger aircraft. Runway 12/30 is designated as the primary runway at LRU as it is the only runway offering instrument approach procedures. Runway 12/30 offers a precision Instrument approach (ILS/LOC Runway 30) and non-precision RNAV (GPS) Runway 30 and RNAV (GPS) Runway 12. Runways 8/26 and 4/22 offer Visual approach only. As air carrier operations increase, to increase the success rate of air carrier operations during IFR conditions, the Airport should consider the development of an additional instrument approach procedure to Runway 8/26.

Current design standards for both runways are C-II with a Bombardier Challenger 600 series as the critical aircraft. Referencing the FAA-approved forecast of aviation demand presented in chapter 4, the critical aircraft remains the Challenger 600 series.

Following AC 150/5325-4B, Runway Length Requirements for Airport Design, Chapter 3, "Runway Lengths for Airplanes Within A Maximum Certificated Takeoff Weight of More Than 12,500 Pounds (5,670 Kg) up to and Including 60,000 Pounds," the current runway length of 6,069-ft for Runway 8/26 and 7,506-ft for Runway 12/30 were compared to what the desired runway length should be in reference to this AC Figure 3-2.

Table 4-11 is an extract from the Advisory Circular that lists the airplanes that have a maximum gross takeoff weight between 12,500 pounds up to 60,000 pounds that are considered part of the 75% of the jet fleet used to determine runway length requirements. **Table 4-12** lists the larger aircraft that make up the remaining 25% of the fleet of aircraft under 60,000 pounds used in the runway length calculations.

Table 4-12 – Remaining 25 Percent of the Fleet That Make Up 100 Percent of Fleet

Manufacturer	Model
Bae	Corporate 800/1000
Bombardier	600 Challenger
Bombardier	601/601-3A/3ER Challenger
Bombardier	604 Challenger
Bombardier	BD-100 Continental
Cessna	S550 Citation S/II
Cessna	650 Citation III/IV
Cessna	750 Citation X
Dassault	Falcon 900C/900EX
Dassault	Falcon 2000/2000EX
Israel Aircraft Industries (IAI)	Astra 1125
IAI	Galaxy 1126
Learjet	45 XR
Learjet	55/55B/55C
Learjet	60
Raytheon/Hawker	Horizon
Raytheon/Hawker	800/800 XP
Raytheon/Hawker	1000
Sabreliner	65/75

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

Table 4-11 – Airplanes that Makeup 75 Percent of the Fleet			
Manufacturer	**Model**	**Manufacturer**	**Model**
Aerospatiale	Sn-601 Corvette	Dassault	Falcon 10
Bae	125-700	Dassault	Falcon 20
Beech Jet	400A	Dassault	Falcon 50/50 EX
Beech Jet	Premier I	Dassault	Falcon 900/900B
Beech Jet	2000 Starship	Israel Aircraft Industries (IAI)	Jet Commander 1121
Bombardier	Challenger 300	IAI	Westwind 1123/1124
Cessna	500 Citation/501 Citation Sp	Learjet	20 Series
Cessna	Citation I/II/III	Learjet	31/31A/31A ER
Cessna	525A Citation II (CJ-2)	Learjet	35/35A/36/36A
Cessna	550 Citation Bravo	Learjet	40/45
Cessna	550 Citation II	Mitsubishi	Mu-300 Diamond
Cessna	551 Citation II/Special	Raytheon	390 Premier
Cessna	552 Citation	Raytheon Hawker	400/400 XP
Cessna	560 Citation Encore	Raytheon Hawker	600
Cessna	560/560 XL Citation Excel	Sabreliner	40/60
Cessna	560 Citation V Ultra	Sabreliner	75A
Cessna	650 Citation VII	Sabreliner	80
Cessna	680 Citation Sovereign	Sabreliner	T-39

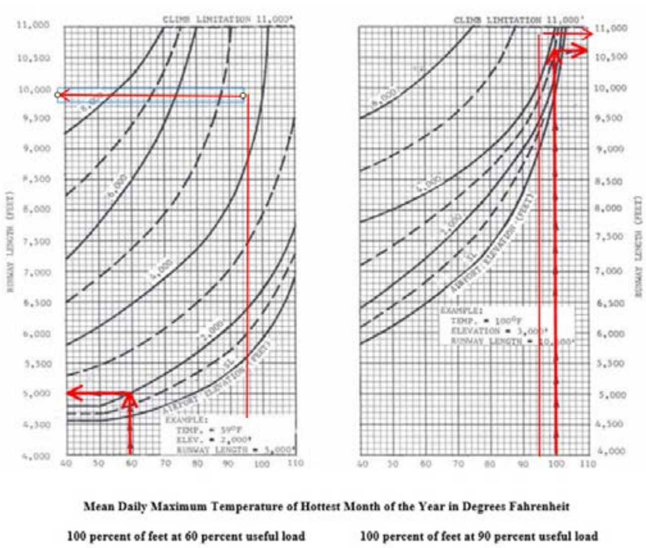
Source: AC 150/5325-4B Runway Length Requirements for Airport Design

Table 4-13 - Runway Length & Requirements

Current Runway Length			
Runway 8/26 (C-II)		Runway 12/30 (C-II)	
6,069 ft		7,506 ft	
Challenger 600 Series Runway Requirements (94.6 °F, 4,475 ft elevation)			
Percent Useful Load	Dry Condition	Gradient Adjustment	Wet Adjustment
60%	9,900 ft	10,110 ft	9,488 ft
90%	10,900 ft	11,110 ft	11,270 ft

Source: DuBois & King Inc., AC 150/5325-3B

The Challenger 600 series falls in the "100 Percentage of Fleet" category. Looking at the Challenger 600 series Maximum TakeOff Weight (MTOW) of 48,200 lbs, the charts provided in the AC were used as the MTOW is under 60,000 lbs. LRU has a mean daily maximum temperature of 94.6 and a field elevation of 4,475 ft, which is below the 5,000 ft minimum considered a "high altitude" airport. **Figure 4-5** shows runway length calculations for 100% of Fleet at 60 or 90 Useful Load.



The performance chart shows that runway length requirements at 60% useful load are 9,900 ft and 10,900 ft at 90% useful load. The runway lengths obtained above are increased at the rate of 10 feet (3 meters) for each foot (0.3 meters) of elevation difference between the high and low points of the runway centerline. Runway 12 has an endpoint elevation of 4,456.9 ft, a 21 ft difference from Runway 30 at an elevation of 4,435.9 ft. When we adjust the runway length to account for runway gradient we add an additional 210 ft for a total recommended length of 11,110 ft at 90% useful load.

Table 4-13 shows the current runway lengths and runway requirements of the Challenger 600 Series including dry conditions and the gradient adjustment of 210 feet.

Table 4-14 - Recommended Runway Length

Runway 8/26	Runway 12/30
11,110	11,110

Source: DuBois & King, Inc.

Currently, Runways 8/26 and 12/30 accommodate most of the based aircraft at the Airport and most of the itinerant aircraft using the Airport with small operational restrictions like take-off weight restrictions. However, future expectations of increased business aviation and commercial passenger air services will fall short if the runway lengths for 8/26 and 12/30 are overlooked.

It is not realistic to expect runway expansion construction projects to take place simultaneously on both Runways 8/26 and 12/30 before 2024. It is our recommendation that the runway expansion project for 12/30 take priority since that is the only runway with a precision approach to 30 and a Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR). The runway expansion would need to happen on the approach end of Runway 12. The expansion would need to be coordinated with the FAA as they operate and manage the ILS precision approach facilities on Runway 12/30. FAA cooperation is essential as the localizer facility will need to be relocated once the new approach end of Runway 12 is determined.

The expansion for Runway 8/26 can be phased after 12/30, as that paved surface is already in the planning stages for a 2,600 ft expansion and complete relocation, a few hundred feet to north for reasons further explained in **4-5-4 Runway Width Requirements.**

4-5-3 Runway 4/22 Length Analysis

Predominantly utilized by small, light aircraft and the New Mexico State Physical Science Lab, Runway 4/22 is currently classified as a B-II runway. As previously mentioned, FAA standards for runway funding eligibility along with a windrose analysis on the runways and configuration at LRU, have shown that Runway 4/22 does not meet requirements for future federal funding. Due to a future lack of federal assistance with Runway 4/22, alternative funding sources will be considered. The fleet mix expected to utilize Runway 4/22 is a predominantly light single-engine, therefore the family of aircraft is selected to be A-I similar to a Cessna 182 Skylane. AC 150-5325-4B, Chapter 2 "Runway Lengths for Small Airplanes With Maximum Certificated Takeoff Weight Of 12,500 Pounds or Less," was referenced to determine the runway needed for an A-I aircraft under the 95% of Fleet in **Figure 2-1 -** Small Airplanes with Fewer than 10 Passenger Seats. **Table 4-15** shows the current runway length and the recommended A-I length.

Table 4-15 - Runway Length & Requirements

Current Runway Length	
Runway 4/22 (B-II)	7,501 ft
Cessna Skylane Runway Requirements (94.6 °F, 4,475 ft elevation)	
Runway 4/22 (A-I)	5,450 ft

Source: DuBois & King Inc., AC 150/5325-3B

4-5-4 Runway Width Requirements

The existing 100-foot width of Runways 8/26 and 12/30 meet the minimum width standards of 100 ft for Runway Design Group (RDG) C-II runway. A runway width of 100 ft is also the minimum for RDG (C-III); therefore no additional considerations to the width of the paved runway surface are needed. It is recommended that the current width of Runways 8/26 and 12/30 should be preserved throughout the planning period. However, as previously shown in **Table 4-9**, the runway centerline to taxiway centerline separation increases from 300 ft to 400 ft when a runway's classification transitions from a C-II to a C-III. Where Runway 8/26 is currently located does not accommodate future commercial services for C-III aircraft. To view possible alternatives that address this dilemma, please refer to Chapter 6 Alternatives.

Runway 4/22 has an existing width of 105 ft and is currently designated as an RDG B-II. The standard runway width minimum for an A-I pavement width is 60 ft. It is our recommendation that the pavement width for Runway 4/22 be reduced to 60 ft. This action would also require the runway edge lights to be relocated as well as the position hold markings and box signs on all connected taxiways.

4-5-5 Runway Pavement Design Strength and Condition

The Pavement Condition Index (PCI) relates to the current condition of the pavement surface. A PCI value of 0 would represent a paved surface in a failed condition. A PCI value of 100 would represent a pavement in excellent condition. Paved surfaces with relatively high PCIs will not show signs of significant load-related distress. However, preventive maintenance actions, such as crack sealing and surface treatments may still be warranted. As PCI values decrease, depending on the severity of the pavement condition, major rehabilitation (mill and overlay) or reconstruction become topics of discussion.

The Aircraft Classification Number (ACN) expresses the relative effect of an aircraft on the runway pavement for a specified standard subgrade category. The Pavement Condition Number (PCN) is a number that expresses the load-carrying capacity of pavement for unrestricted operations. An aircraft that has an ACN equal to or less than the PCN of a given pavement can operate without restriction on the pavement. If the PCN is lower than the ACN, the aircraft will not be able to operate on the runway and the Airport will need to consider a full-depth reconstruction. LRU provides the public with the PCN information through FAA Form 5010.

Runway 12/30

The full-length runway surface type is concrete and grooved to reduce aircraft stopping distance. The LRU Part 139 Airport Certification Manual identifies Runway 12/30 as an air carrier runway. The runway has a single-wheel and double-wheel weight-bearing capacity of 70,000 pounds and 120,000 pounds, respectively. According to the 2014 New Mexico Department of Transportation (NMDOT) PCI study, it was determined that Runway 12/30 has a PCI of 99 (scale 0-100), and the FAA Form 5010 Master Record reports the Pavement Condition Number (PCN) as 41.

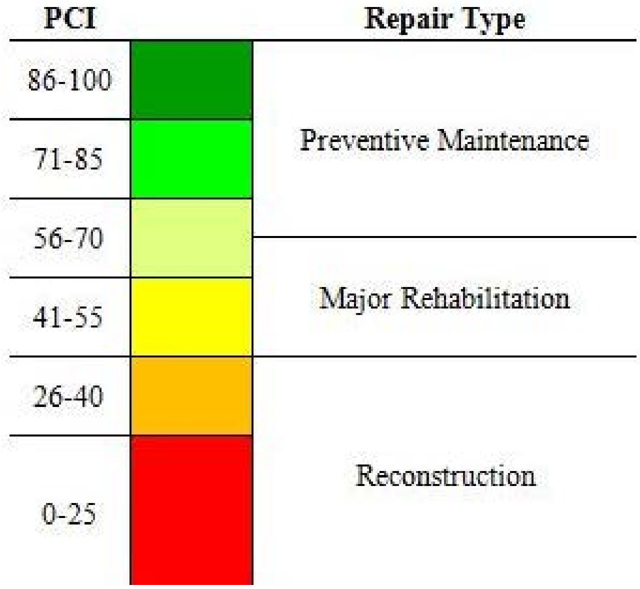
Runway 8/26

Designated a Runway Design Code (RDC) C-II, Runway 8/26 is considered a visual approach, crosswind runway and is 6,069 feet long by 100 feet wide. The runway surface type is asphalt. According to the 2020 Airport Master Record (5010), the asphalt is in good condition and the LRU Part 139 ACM, identifies Runway 12/30 as an air carrier runway. Take Off Distance Available (TODA) and Landing Distance Available (LDA) are the full length of the runway at 6,069 feet. The runway has a single-wheel and double-wheel weight-bearing capacity of 70,000 pounds and 120,000 pounds, respectively. According to the 2014 NMDOT PCI study, it was determined that Runway 8/26 has a PCI of 64 (scale 0 - 100), however, the FAA Form 5010 reports the PCN as 25.

Runway 8/26 is not served by an instrument approach procedure. When the FAA develops an instrument approach procedure for 8/26, if the visibility minimum is published as ¾ mile or greater, the current runway centerline to aircraft parking area separation of 400 ft will meet FAA standards. When the FAA develops an instrument approach procedure for 8/26, if the visibility minimum is published as lower than ¾ mile, such as the Runway 30 ILS at ½ mile, the current runway centerline to aircraft parking area separation will need to increase to 500 ft and will not meet FAA standards.

Runway 4/22

Designated a Runway Design Code (RDC) B-II, Runway 4/22 is considered a visual approach, crosswind runway and is 7,501 feet long by 105 feet wide. The runway surface type is asphalt. According to the LRU Airport Certification Manual, Runway 4/22 is not identified as an Air Carrier Movement area, therefore, may not be utilized for Air Carrier Operations. According to the 2020 Airport Master Record (5010), the asphalt is in poor condition with cracked slabs, open 1/8th inch, and spalling sealant failure in multiple joints. The runway has a single-wheel and double-wheel weight-bearing capacity of 30,000 lbs. According to the 2014 NMDOT Pavement Condition Index (PCI) study, it was determined that Runway 4/22 has a PCI of 36 (scale 0 - 100), however, the FAA Form 5010 reports the Pavement Condition Number (PCN) as 3. The pavement strength of runways and taxiways must be sufficient to support the repetitive landings, takeoffs, and movement of the designed aircraft, as well as the occasional use by heavier aircraft.



Based on the PCI values, the pavement strength for Runway 12/30 is sufficient for the planning period. Using the PCI scale, Runway 12/30 should be monitored and scheduled for preventative maintenance seasonally. Runway 8/26 has a PCI of 64 and should be scheduled for major rehabilitation within the next two years. Runway 4/22 has a PCI of 36 and it is recommended that full reconstruction should be planned within the next five years.

To prolong the useful life of the pavements, the Airport should at a minimum follow the recommendations in the NMDOT Routine Maintenance Guidelines and plan for routine pavement maintenance to address normal wear. NMDOT Pavement Management System Update can be referenced at **The New Mexico Department of Transportation, Aviation Divisions** website.

4-5-6 Runway Lighting

Both Runways 4/22 and 8/26 have Medium Intensity Runway Lights (MIRL) and 12/30 has High Intensity Runway Lights (HIRL) that meet the current operational needs of the Airport. All runway lighting has been updated FAA-approved LED fixtures to minimize operation and maintenance costs and increase sustainability.

4-5-7 Runway Marking and Signage

The sign and marking plan provides the Airport manager with an easily referenced graphical depiction of the signs and markings existing on the Airport. This sheet can be posted on a website or provided to pilots to assist with familiarization with the Airport layout. All runway signage has been updated to LED lights. Runway 12/30 pavement markings are Non-Precision Instrument (Runway 12) and Precision Instrument (Runway 30).

Both Runway 4/22 and 8/26 have Basic VFR markings. The current sign and marking plan sheet meet the needs of the Airport today. However, should the Airport apply for a GPS, non-precision approach for Runways 8 and 26 (which is recommended), the sign and marking plan will need to be updated to include the runway markings for a non-precision approach. Pavement markings typically require repainting every 5–10 years. Pavement marking should be included as part of the Airport's airfield maintenance program.

4-6 Taxiway/Taxilane Requirements

The Airport's taxiway network is essential to providing access to the runways and circulation between the hangars and aprons across the Airport. The following section will discuss the taxiways that exist at the Airport as well as future plans for rehabilitation and construction.

The undercarriage dimensions of the aircraft define the Taxiway Design Group (TDG). The TDG describes the ground operating characteristics of the aircraft. The current TDG is classified as TDG-2 and is recommended for this planning period. However, future plans should consider TDG-3 standards as demand develops for commercial air service development. In **Table 4-16**, the dimensional standards for TDG-2 and 3 are outlined and compared with the current infrastructure at LRU.

Current critical design group C-II requirements for TDG-II are met on all taxiways. If the Airport is increased to ADG C-III, TDG-3 standards, it is recommended that Taxiways A, E, F, G are built to TDG-3 standards. Taxiway D should be reduced to TDG1 standards to reflect a ADG A-I for Runway 4/22.

As major design standards are addressed in the ultimate airport layout plan, consideration should be given to the current AC 150-5300.13B Airport Design standards for taxiway design and designation. The figure below shows how taxiway design should not allow direct access to runways from the apron as well as limiting non-channelized taxi paths.

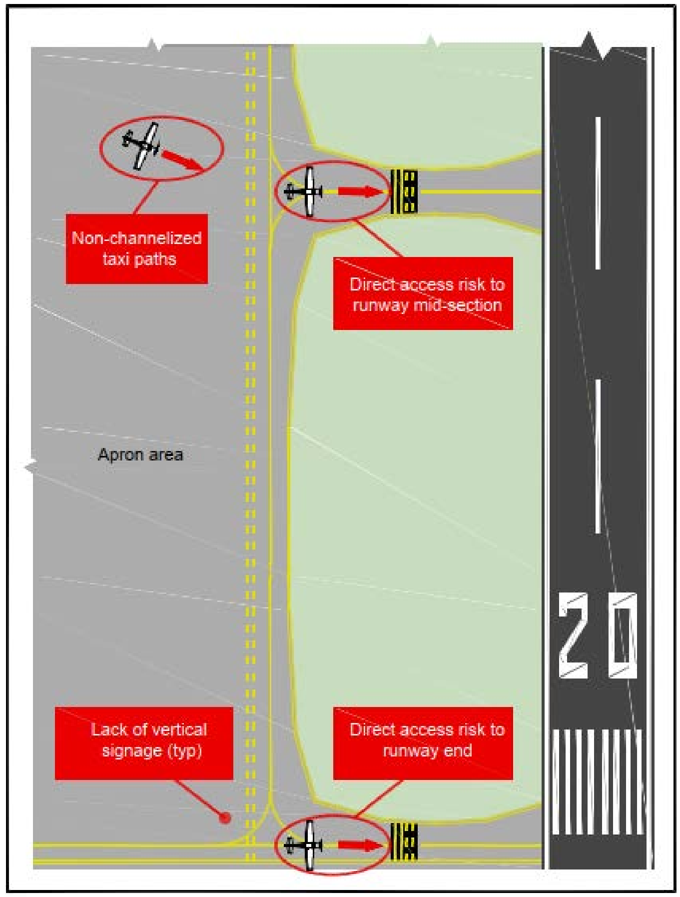


Table 4-16 – Taxiway Design Standards TDG-2 and TDG-3				
Element	**Taxiway Width (feet)**	**Taxiway Safety Area (feet)**	**Taxiway Object Free Area (feet)**	**Status**
TDG-2 Standard	35	79	124	Standard
TDG-3 Standard	50	118	171	Standard
Taxiway A	35	79	131	Unrestricted TDG 2
Taxiway B	50	118	186	Unrestricted TDG 3
Taxiway C	50	118	186	Unrestricted TDG 3
Taxiway D	35	79	131	Unrestricted TDG 2
Taxiway E	35	79	131	Unrestricted TDG 2
Taxiway F	35	79	131	Unrestricted TDG 2
Taxiway G	35	79	131	Unrestricted TDG 2

Source: DuBois & King Inc., AC 150/5300-13B

Taxiway designations are critical to airfield safety and should follow guidance provided in AC 150-5340.18G. The FAA recommends using the guidelines and standards in this AC when developing or revising an airport signage plan, an airport layout plan, and for all new development projects. Key considerations should include the following:

- Use letters of the alphabet for designating taxiways. For optimization purposes, start taxiway designation at one end of the Airport and continue to the opposite end.
- Do not use numbers by themselves or the letters "I" and "O" because they could be mistaken for a runway number.
- Do not use the letter "X" because pilots could misconstrue a sign with an "X" as indicating a closed taxiway or runway.
- For a runway with a parallel taxiway, use alphanumeric designators at the entrance and exit taxiways located at the ends and along the runway. Apply an increasing, sequentially numbered pattern from one runway end to the other runway end, such as A1, A2, …, A5.

Taxilanes provide access to aprons or neighboring taxiways but taxilanes have lesser restrictions defined by the undercarriage dimensions of the aircraft. In **Table 4-17**, TDG 1 and 2 standards are referenced followed by what currently exists.

4-6-1 Taxiway Condition

The Pavement inspection and ratings were conducted by the NMDOT in 2016 and can be referenced at The New Mexico Department of Transportation, Aviation Divisions website. **Table 4-18** Taxiway & Taxilane PCI Summary shows a quick snapshot of the observed taxiway and taxilane pavement conditions in 2016 and the forecasted condition in 2021.

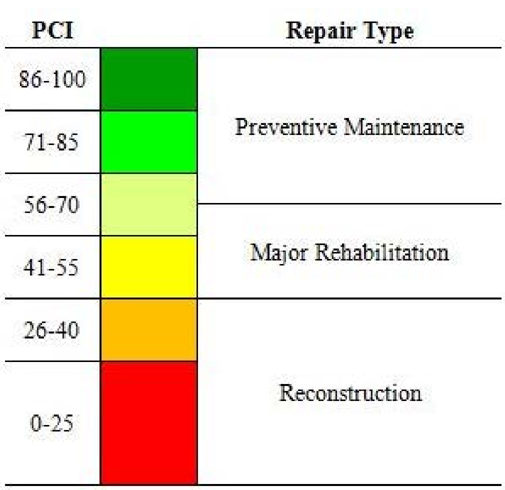


Table 4-18 - Taxiway & Taxilane PCI Summary

Surface	2016 Observation	2021 Forecast
Alpha	79	70
Bravo	70	61
Charlie	66	57
Delta	30	23
Echo	79	70
Foxtrot	79	70
Gulf	79	70
Taxilane 1	74	65
Taxilane 2	33	24
Taxilane 3	68	59
Taxilane 4	29	20
Taxilane 7	69	63
Taxilane 8	69	63
Taxilane 9	69	63
Taxilane 10	36	17
Taxilane 11	36	17
Taxilane 12	36	17
Taxilane 13	36	17
Taxilane 14	36	17
Taxilane 15	36	17

Source: NMDOT, Aviation Devisions

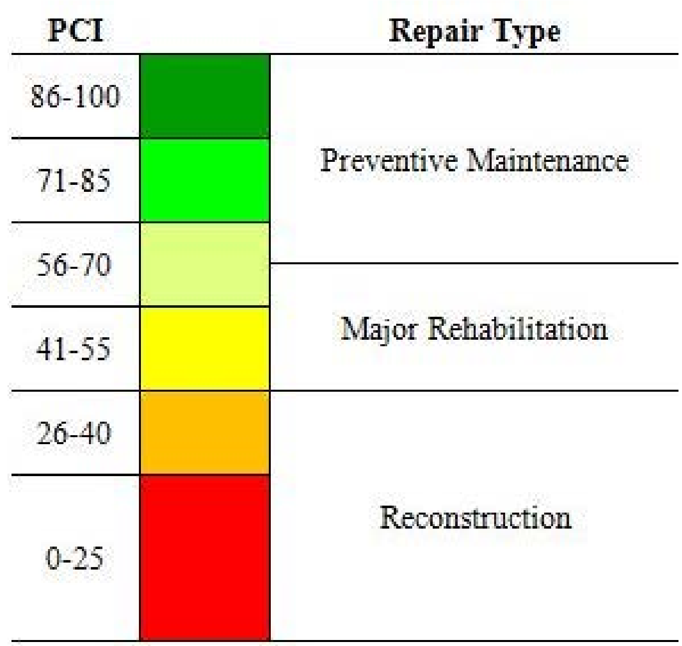


Table 4-17 – Taxilane Design Standards TDG-1 and TDG-2				
Taxilane	Pavement Width (feet)	TDG	TLOFA (Feet)	Status
TDG-1	25	1	79	Standard
TDG-2	35	2	110	Standard
1	Varies 50 to 90	2	115	Unrestricted TDG II
2	60	2	115	Unrestricted TDG II
3	120	2	115	Unrestricted TDG II
4	80	2	115	Unrestricted TDG 1: Hangar Door outrigger on the WAM hangar penetrates TOFA, TDG II.
5 / 6	80 / 113	1	79	No longer exists
7	50	1	79	Unrestricted TDG I
8	75	1	79	TOFA is deficit by 4 ft
9	75	1	79	TOFA is deficit by 4 ft
10	75	1	79	TOFA is deficit by 4 ft
11	80	1	79	Unrestricted TDG 1
12	80	1	79	Unrestricted TDG 1
13	80	1	79	Unrestricted TDG 1
14	80	1	79	Unrestricted TDG 1
15	50	1	79	TOFA is encumbered by vegetation and vehicular parking for hangar adjacent to the west

Source: DuBois & King Inc., AC 150/5300-13B

Table 4-18 shows pavement decline and highlights the importance of a pavement management program.

Each paved surface should be scheduled for pavement maintenance to some degree in the next five years. The pavement surfaces for Taxilane 2, 4, 10, 11, 12, 13, 14, and 15 are in a current state that may require a full depth reconstruction. With pavement conditions in the teens, loose aggregate or FOD could easily break apart under the weight of an aircraft and cause damage to the aircraft.

The following recommendations should be considered and incorporated into the Airport's pavement management program.

- Pavement maintenance scheduled for all taxiway and taxilane surfaces within the next 2 to 7 years.
- Taxilane 3 be relabeled as an apron surface.
- Taxilane 4 TLOFA be restored to its full width for the entire surface length. Remove WAM Hangar "outrigger" door to remove ADG-I restriction.
- Consider renaming the taxilane system, as design standards have changed since the last AC update and several surfaces are no longer used as taxilanes.

4-6-2 Future Taxiways and Taxilanes

Based on the potential future runway extensions and relocation of Runway 8/26, as well as the demand for additional hangar space, a new taxiway system may be needed to connect these facilities with the existing layout, including full parallel taxiways on all runways. Furthermore, any changes to current runway lengths and locations could adversely change the taxiway surfaces that currently exist. This includes eliminating direct access from apron space to runways. Any additional recommendations regarding the layout will be found in the alternatives section for reference as well as portrayed on the ultimate airport layout plan.

4-7 Electronic, Visual, and Satellite Aids to Navigation

A number of electronic, visual, and, more recently, satellite aids exist to help pilots find the Airport and land in less than perfect visual conditions and at night. These common tools are identified on the following page.

4-7-1 Airport Beacon

The rotating beacon produces alternate clear and green flashes of light with a flash rate of 24-30 flashes per minute. The main purpose of the beacon is to indicate the location of a lighted airport, and a rotating beacon is an integral part of an airfield lighting system. LRU's rotating beacon is located 1,365 ft south and mid-field of Runway 8/26, is enclosed within a 60-ft x 80-ft fenced area and is mounted atop a steel, four-legged tower.

The beacon is in very poor condition due to its age. The beacon meets the location and land requirements prescribed in AC 150/5300-13b; however, it does not meet the clearance requirements due to an issue produced by southerly water tower obstructions that are in close proximity and surpass the height of the rotating beacon tower. A new Rotating Beacon would increase the safety and reliability of the general and commercial aviation community at LRU. It is recommended that the Airport beacon be relocated and modernized within this planning period.

4-7-2 Runway and Taxiway Lighting

The airport has completed a full upgrade to LED lighting system for runways and taxiways, except Delta.

Runway 12/30

Lighting and approach aids include high-intensity runway lighting (HIRL).

Runway 8/26

Light and approach aids include Medium Intensity Runway Lighting (MIRL).

Runway 4/22

Lighting and approach aids include a Medium Intensity Runway Lighting (MIRL).

Taxiway Lights

Taxiway edge lights are used to outline the edges of taxiways during periods of darkness or restricted visibility conditions. These fixtures emit blue light. At LRU, Taxiways Alpha, Echo, Foxtrot, and Gulf are equipped with base-mounted, medium-intensity lights (MITL) with blue-colored globes. Taxiway Bravo and Charlie, Delta (between Runway 12/30 and TWY Bravo) are equipped with stake-mounted medium intensity lights with blue-colored globes. Taxiway Delta between Runway 12/30 and Runway 22 is equipped with elevated edge taxiway retroreflective markers (blue/yellow).

It is recommended that all runway and taxiway lights be converted from HIRL and MIRL to LED lighting with optional heaters for aircraft that utilize forward-looking infrared (FLIR) technology. The LED lights consume less power and would save the Airport in annual operational costs.

4-7-3 Runway End Identifier Light (REIL)

Runway 12 has Runway End Identifier Lights (REIL) while Runway 30 is equipped with Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR). The MALSR and REILS are owned, operated, and maintained by the FAA for Runway 12. These REILs should be relocated with the proposed runway extension.

4-7-4 Precision Approach Path Indicator (PAPI)

Runway 8/26 is equipped with a four-light PAPI on both ends. It is recommended that PAPI be constructed on both ends when the runway is relocated and lengthened. Runway 12/30 does not currently have PAPIs. It is recommended that a PAPI be constructed on both runway ends to aid jet traffic that utilizes the runway and the instrument approaches.

4-7-5 Visual Approach Slope Indicator (VASI)

Runway 22 is equipped with two two-light VASI. The future of Runway 4/22 is dependent on non-federal funding. With 4/22 becoming an A-I runway, the future length and width will most likely be reduced. This reduction in length will shorten the Runway 4 end and leave the current Runway 22 endpoint at the same location. It is recommended that consideration be given to the future length and width of Runway 4/22 regarding the reuse of VASI. Given the funding eligibility and the fact that this is a visual runway with no instrument approach procedures, there is no need for installing a PAPI. However, if funding becomes available, a VASI on the Runway 4 end would be beneficial to aid pilots on a visual approach.

4-7-6 Distance Measuring Equipment (DME)

Since the completion of the 2014 LRU Action Plan, a notable change to the ILS/LOC Runway 30 Precision Instrument approach procedure includes the addition of Distance Measuring Equipment (DME). The DME improves a pilot's situational awareness when en route or inbound on final approach.

4-7-7 Segmented Circle and Wind Cones

The wind cone, also called the "windsock," is a tool that offers relevant wind information to pilots, allowing them to quickly and easily determine the approximate wind speed and direction before taking off or landing. LRU has five wind indicators, conveniently installed around the field to aid pilots in deciding which runway to use. The main wind indicator (also the largest) is located in the middle of the segmented circle, positioned on the west edge of Taxiway Bravo and the north edge of Runway 8/26. The segmented circle is not standard and should be replaced with a standard segmented circle when 8/26 is reconstructed. Additional wind indicators can be found on the approach end of Runways 8, 12, 22, and 26. All of the wind indicators are lighted for night use and each runway uses a standard left traffic pattern. Should Runway 8/26 be decoupled and relocated, it is recommend the associated wind cones at each end be relocated as well.

4-7-8 Instrument Approaches/Airspace Requirements

Runway 12/30 is the only runway with established instrument approaches. Runway 30 has a precision Instrument Landing System (ILS) approach that provides the pilot with both runway lateral alignment through the ground-based Localizer antenna as well as vertical glideslope alignment through the ground-based Glide Slope antenna. The FAA owns and operates the ILS. The Airport protects and maintains Localizer and Glide Slope critical areas on the Airport property. The straight-in ILS altitude and visibility minimums for this approach are 200 feet and ½ mile, respectively.

Runway 12 has a GPS approach procedure. This procedure is a Localizer Performance with vertical guidance (LPV) approach that uses the Wide Area Augmentation System (WAAS) and has very precise GPS capabilities to attain an airplane's position. The straight-in RNAV (GPS) decision altitude and visibility minimums for this approach are 250 feet and ¾ mile, respectively.

If it is the Airport's intent to extend and relocate Runway 8/26 to enable larger aircraft to utilize the Airport, the Airport should also consider the development of instrument approach procedures. Currently, Runway 8/26 is visual only. With the current aGIS airport survey being uploaded into the FAA OEAAA portal, it is recommended that the Airport submit a request for GPS LPV approach procedures from the FAA for Runway 8/26 to better serve GA and Commercial operations. This should be initiated in the design phase of the runway project as these procedures require a significant amount of time and coordination to become active.

Runway 4/22 is not served by an instrument approach procedure and is mainly utilized by light single-engine aircraft. Instrument approach procedures to Runway 4/22 are not recommended during this planning period.

4-7-9 Automated Weather Observing System (AWOS)

LRU's Automated Weather Observation System (3PT) is equipped to provide pilots with the date, time, wind, visibility, ceiling, temperature, dew point, altimeter, and other critical data such as density altitude, gust indication, precipitation identification, and intensity, thunderstorm, and local-area lightning tracking. This non-federal 3PT is owned and maintained by the Airport and was installed/upgraded in 2010. The 3PTI transmits the weather on two (2) discrete frequencies and is also available via landline telephone (575-526-4831). The ground-to-ground/air frequency (119.025 MHz) enables pilots to listen to the repeated weather data that is collected by the 3PT system. The 3PT system simultaneously transmits the weather data on a separate ground-to-ground UHF frequency to the weather base station at the Airport. From here, the data is transmitted through the secure FAA system through the National Airspace Data Interchange Network (NADIN) allowing local and remote pilots to access the Meteorological Aerodrome Report (METAR).

In recent years, the 3PT weather station has frequently been out of service or is under maintenance, and has required the sourcing of replacement parts that are no longer being manufactured. A new 3PT would increase the safety and reliability of the GA and commercial aviation community at LRU. It is recommended that the 3PTbe completely replaced by a more modern system within this planning period.

4-7-10 Airfield Electrical Vault

The on-airport electrical vault supplies the electricity needed for airport lighting and operations. For safety and security reasons, access to the vault should be limited only to those who have a function with airport operations and maintenance staff. As airfield lighting technology and supply sources advance, the hardware installed within the vault should also be updated.

4-7-11 Airfield Markings

Currently, Runway 12/30 pavement markings are Non-Precision Instrument (Runway 12) and Precision Instrument (Runway 30). Both Runways 4/22 and 8/26 have basic visual markings. As the airfield is developed it is recommended that all airport markings follow FAA standards layed out in AC 150-5340-1M (or current edition).

4-8 General Aviation Facility Requirements

4-8-1 Aircraft Storage Facilities

The current based aircraft total is 106, most of which are kept in individual hangars. Out of the 29 transient aircraft that land at LRU every day, 25% or 7 aircraft may require parking on a tie-down. With 100 tie-downs available, LRU has enough tie-downs to meet the needs of both local and transient aircraft with portions of the 62,000 SF of apron space that have not been outlined for tie-downs.

In the 2020 LRU Facilities Assessment, hangars were evaluated for their ability to store air carrier aircraft. Commercial hangars owned by the City of Las Cruces and the FBOs were included in this evaluation, and it was determined that there were four (4) sizable hangars on the Airport. **Table 4-19** is a summary of the hangars and associated dimensions (privately owned hangars were not included):

Table 4-19 - Commercial Hangar Storage Table

Hangar	Owner	Door Opening	Door Height	Hangar Depth
14	Southwest	68′	15′	70′
15	Las Cruces	110′	25′	80′
16	Southwest	75′	15′	80′
14	Las Cruces	54′	14′	60′

Source: DuBois & King, Inc

The Commercial Forecast in Chapter 3 highlighted air carrier service starting in 2024. The aircraft cited in the chapter to provide commercial air service in 2024 was the ERJ-145 with two-daily flights. The ERJ-145 dimension specifications are:

- Wing span: 65 ft 9 in
- Height: 22 ft 2 in
- Length: 98 ft 0 in

Contributors and stakeholders of the Master Plan noted that there is a waiting list for aircraft owners to build hangars. The Airport is currently developing plans to construct additional GA hangars on the East Side Hangar Development Area. The development would require the relocation of both Southwest Aviation and the City-owned fuel farm facilities. It is reasonable to assume that with additional hangars, the Airport will realize more based aircraft and the associated operations. Parcels 53 through 62 in the East Side Development Area will allow for the construction of five conventional hangars as well as five ten-unit T-Hangars. Conservatively, it is anticipated that these hangars will increase based aircraft by 55, and 50% of this number was used to calculate an adjustment to the forecast. Hangar construction would be phased and therefore it is forecasted that two conventional and two T-hangars would be built by year five. Three more T-hangars would be built by year ten. The remaining three conventional hangars would be built by year twenty. Gains to single-engine and multi-engine aircraft related to this hangar development are outlined in **Table 4-20**.

Table 4-20 - Operational Gains - East Side Hangar Development

	2021 (Baseline)	2026	2031	2041
Additional Aircraft Housed in East Side Hangars	0	22	52	55
Annual Operations Forecast	0	7,700	18,200	19,250

Source: DuBois & King, Inc

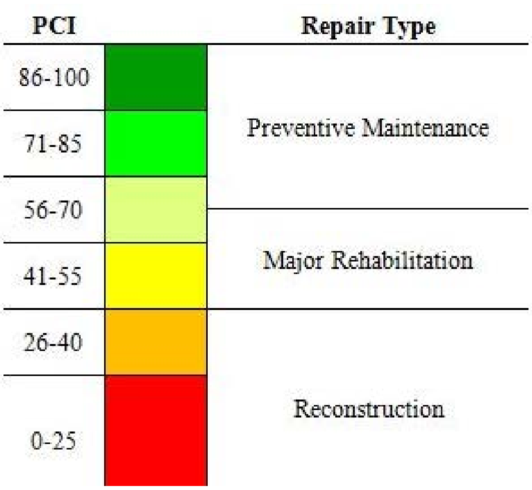
The Airport should continue to explore alternatives to fill this potential need for additional private and commercial hangars. Potential opportunities will be presented and considered in Chapter 5: Alternatives.

4-8-2 Apron Pavement Condition

The pavement inspection and ratings were conducted by the NMDOT in 2016 and can be referenced on The New Mexico Department of Transportation, Aviation Devisions website. The paved aprons are just as susceptible to natural wear over time as runways and taxiways. Table 4-21 Apron PCI Summary shows a quick snapshot of the observed apron pavement conditions in 2016 and the forecasted condition in 2021.

Table 4-21 - Apron PCI Summary				
Apron	Lease Holder	Apron SF	2016 Observation	2021 Forecast
A	Southwest Aviation	7,000	71	62
B	Southwest Aviation	16,000	47	38
C	City	11,000	50	41
D	City	7,000	Mix 87/50	Mix 80/41
E	City	5,500	Mix 87/64/50	Mix 80/55/41
F	Southwest Aviation	5,000	64	55
G	City	10,500	Mix 29/68	Mix 20/59

Source: DuBois & King, Inc



Aprons are an important part of the Airport's infrastructure. An apron is the designated area on an airport where aircraft, vehicles, and pedestrians all come within close contact with each other. Just like the runway and taxiway pavement conditions, if steps aren't taken to limit the natural degradation over the course of ten to fifteen years then the airport's options are limited to more drastic measures to rehabilitate or reconstruct the pavement.

In addition to natural degradation, hazmat incidents like oil or fuel leaks and spills will also deteriorate the integrity of the pavement over time. The chemicals in Jet A fuel are particularly corrosive to the polymers in asphalt. The damage is almost instant if a fuel spill is not cleaned up properly and immediately.

It is recommended within this planning period to schedule major rehabilitation pavement maintenance for all apron surfaces within the next two to seven years. Portions of apron "G" should be considered for reconstruction. These maintenance efforts should be phased with future airside development recommendations depicted in the ultimate airport layout plan drawing.

4-8-3 General Aviation Terminal Building

Out of the two Fixed Based Operators (FBOs) on the field, only one leases building space from LRU in a shared facility. Francis Aviation offers amenities that include aviation fuel, aircraft ground handling and parking (ramp or tie down), hangars, ground power unit, and power cart, a common area passenger terminal that is shared with the Airport administration in Building 8990, a lounge area, food catering, rental cars, a courtesy car for pilots to use in the local area, and crew rest room. Francis leases a portion of the terminal building 8990. The FBO is open seven days per week from 7 am to 6 pm after which service is provided on a call-out basis.

Southwest Aviation has served LRU for over 48 years and operates out of its own facility west of terminal building 8990 on a perpetual land lease with the City. Southwest Aviation provides aviation fuel, aircraft ground handling and parking (ramp or tie down), hangars, ground power unit, and power cart, a common area passenger terminal, aviation accessories/pilot supplies, aircraft sales/leasing/brokerage, catering, rental cars, courtesy/ground transportation, a pilot's lounge and crew restroom, public telephone, computerized weather, internet access, and restrooms. Southwest is open seven days per week from 8 am to 6 pm.

4-9 Commercial Aviation Facility Requirements

4-9-1 Commercial Service Apron

The current commercial service apron, meets the demands of the lighter nine-seat Beechcraft King Air providing Intra-State air service to Albuquerque, NM. Commercial airline providers using larger aircraft will want assurances from LRU and the City of Las Cruces that the commercial service apron meets the safety and service demands of their fleet.

4-9-2 Commercial Service Apron Pavement Condition

The commercial service apron surrounding Building 8990 and 8960 has a single-wheel and double-wheel weight-bearing capacity of 75,000 pounds and 100,000 pounds. The maximum ramp weight (dual-wheel) for an Embraer ERJ-145 is 53,352 lbs. The maximum ramp weight (duel-wheel) for an Embraer E175 is 89,353 lbs.

It is important to note that the weight-bearing capacity is not related to the pavement condition index (PCI). Although the apron's pavement area may have been engineered to support the weight of larger aircraft, the PCI rating would still warrant scheduled maintenance as necessary.

4-9-3 Commercial Service Terminal Building

This 14-foot-tall, single story, 10,400-SF fixed-base operator building was never designed to be a passenger terminal. Located immediately east of Building 8990, it currently serves the Airport as an administrative office suite with limited bunks to accommodate overnight stays. Though it has been considered for passenger terminal use, its current aspect does not make it an ideal choice. Current uses in this building are administrative offices, flight training, and operator's quarters.

In November of 2019, the City ordered a situational assessment of Building 8960 as part of the Las Cruces International Airport Terminal Planning document. The assessment included a code review. As part of the review, it was determined that the occupancy classification for Building 8960 is Mixed Business-B and Residential-R due to the bunk quarters. A summary of Building 8960 code review, relevant to air service development, includes the following:

- 2015 International Building Code (IBC) maximum building height is 40 to 55 ft depending on construction type.
- Allowable Building Area/No Sprinklers is 9,000 - 23,000 SF depending on construction type.
- If the building is of Construction Type VB, combustible construction, a fire-sprinkler system becomes a mandatory element if proceeding with alteration/renovations.
- Building 8960 occupant load based on gross area: 1,000 and 3 exits required.

Building 8960 is 14 feet in height Above Ground Level (AGL) and the set back distance from the primary surface area of Runway 8/26 is 545 feet. Building 8960 does not penetrate 14 CFR Part 77 airspace. When considering future development at the Building 8960, one assumption is that Runway 8/26 will remain a visual-only runway without an instrument approach procedure. At a lateral distance of 545 feet from Runway 8/26 primary surface, Building 8960 could be constructed vertically up to 77 feet tall. If the Airport were to consider the development of an instrument approach procedure in the future for Runway 8/26, the maximum height for Building 8990's location would be 60 feet tall.

Chapter 3: Aviation Activity Forecast estimates, twice daily service on a 50-seat regional jet could be supported with a load factor of 70%. Assuming this were to happen, the Airport terminal could see 70 or more daily passenger enplanements. The current terminal (Building 8990) is not adequately sized and will not provide the necessary facilities for air service which would include the space needed to conduct baseline/minimum operations, desired restaurant, concessions, training/office space, and future commercial operations (ticketing, baggage, TSA, ground transportation).

4-10 Support Facilities

Support facilities encompass a broad range of functions that ensure the smooth, efficient, and safe operation of the Airport.

4-10-1 Aircraft Rescue and Firefighting

As previously stated in Chapter 2: Existing Conditions, the Airport is served by the Las Cruces Fire Department from Fire Station No. 7, located on the corner of Crawford and Zia Boulevards. The proximity of the fire station enables the Airport to provide adequate Aircraft Rescue and Firefighting (ARFF) Index A response for unscheduled air carrier operations and minimizes the Airport's operational costs. Fire Station No. 7, constructed in 2014, is a 30,000-SF building. This 3-bay facility is dimensionally adequate to support an ARFF Index B vehicle.

Title 14 CFR Part 139.315 outlines the parameters used for determining how a Certificated Part 139 Airport's index is selected. The combination of two factors, the length of the air carrier aircraft and the daily average departures of the air carrier aircraft, are what determines the ARFF Index. As stated in AC 150/5220-10E Guide Specification for Aircraft Rescue and Fire Fighting (ARFF) Vehicles, if there are five or more average daily departures of air carrier aircraft in a single index group serving that airport, the longest index group with an average of five or more daily departures is the index required for the Airport. If there are less than five average daily departures of air carrier aircraft in a single index group serving that airport, the next lower index from the longest Index group with air carrier aircraft in it is the index required for the Airport. The minimum designated index will be Index A.

Index A aircraft include aircraft less than 90 ft in length. Index B includes aircraft at least 90 ft but less than 126 ft in length. Both the Embraer ERJ-145 (98 ft) and E175 (103 ft) because of their length fall under ARFF Index B aircraft. Following the guidance of Title 14 CFR Part 139.315, with no more than four forecasted flights starting in 2036, LRU can remain an ARFF Index A airport for the foreseeable future.

4-10-2 Air Traffic Control Tower

LRU airspace falls under Class "G" airspace which is also referred to as uncontrolled airspace. An Air Traffic Control Tower does not exist at LRU. Operators utilizing the airspace communicate through a Common Traffic Advisory Frequency (CTAF), 122.7. Aircraft that are filing IFR have the ability to file, open, or close a flight plan and communicate with Flight Service on 122.6 or by calling (800) 992-7433. Albuquerque Center can be contacted on 128.2 when en route to or from LRU. There have been no reports of issues with communication between pilots and Albuquerque Center.

4-10-3 Airport Maintenance Facility

The airport maintenance team at LRU did have the use of two sunshade buildings off of Taxilane 5 and 6. Recently, those sunshades were removed, and that parcel of land is now being repurposed for a new private hangar facility. A new, fully enclosed facility is recommended to house maintenance equipment, parts, materials, and supplies. A fully enclosed building for the maintenance staff and equipment is a facility LRU has been missing for some time, and it will prolong the operational life span of the equipment housed in it. It is also recommended that a diesel/gasoline farm be constructed adjacent to the maintenance facility for use with refueling airport equipment.

4-10-4 Aviation Fuel Storage

The aviation fuel farm is located off of Gasoline Alley in a fenced-in, secured location. Southwest Aviation owns and maintains a 12,000-gallon tank for Avgas and a 12,000-gallon tank for Jet A. In 2014, the City installed an additional 12,000-gallon Avgas and a 12,000-gallon Jet A tank that Francis Aviation leases. Both FBOs are confident they would be able to meet the demands of increased traffic when air carrier service returns to LRU. With future hangar development in the current fuel farm location, it is recommended that a relocation of the fuel farm be considered during this planning period.

4-10-5 Aircraft Maintenance

The Airport does have an aircraft maintenance facility. The building, however, is not large enough to house an aircraft with a wingspan greater than 39 feet. In addition, the aircraft maintenance staff do not work on turbine-powered aircraft. It was concluded that the Air Maintenance Facility and its staff are not able to provide support to Air Service operations.

4-10-6 Airport Utilities

Water, sewer, gas, and electric are the four major utilities available for most of the facilities. All electricity comes through aboveground utility poles but is transferred to underground electric utility lines prior to crossing Zia Blvd. and Wingspan Dr.

The water line runs west of Crawford Blvd. and connects to the water towers. From the water towers water is distributed to Gasoline Alley and Zia Blvd. All the buildings along Zia Blvd. and Gasoline Alley, including the private hangars east of Building 8960, have access to water.

The gas utility runs west of Crawford Blvd. and is distributed to Gasoline Alley and Zia Blvd. All the buildings along Zia Blvd. and Gasoline Alley, including the private hangars east of Building 8960, have access to gas. The sewer runs parallel, east of Crawford Blvd. As the sewer line continues north, a section of sewer line tees off and heads east down Gasoline Alley before it terminates at the intersection of Gasoline Alley and Wingspan Dr. Roughly halfway down Gasoline Alley, another line connects and travels north to Buildings 8960 and 8950. The sewer line that continued north along Crawford Blvd turns west before terminating at 9201 Zia Blvd. in front of the Las Cruces Fire Department training facility.

Future hangar development west of 9201 Zia Blvd. would have access to existing electric, water, and gas utilities. Aside from hangar development, open parcels adjacent to Zia Blvd., Wingspan Dr., Gasoline Alley, and Crawford Blvd. have all been identified for potential commercial development. What future hangar and commercial development might look like will be discussed in Chapter 5: Alternatives.

4-11 Airport Access, Circulation, and Parking

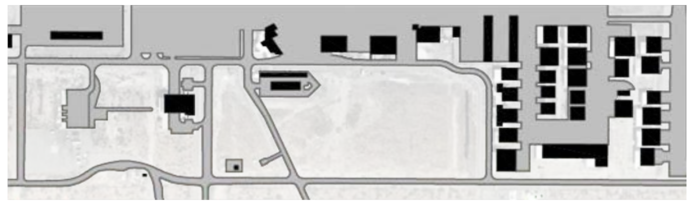
4-11-1 Airport Access

LRU is in a preferred location with direct access off Interstate 10 via Exit 132. Exit 132 provides direct access to Crawford Boulevard and LRU parking, hangars, and terminals. Access is also possible on Frontage Road which parallels the interstate. Circulation within the Airport and to various buildings and hangars is serviced by Zia Road. Additional roads exist at the airport outside of the secured area such as Gasoline Alley, which is one of the primary entrances to the secured area of the airport via gate 4, and Rocket Road, which exists outside of the secured area but has little to no use at this time. Harry Burrell runs along the power lines and connects the frontage road to Gasoline Alley and Zia. Wingspan is located along the eastern edge of the unsecured area of the airport.

The needs for planning and consideration of connecting roads, adding additional roads, or other such considerations have been considered for the growth of both airside and non-airside opportunities. To attract businesses, an understanding of the roads, availability of utilities, and access to highways and the airport are critical for the anticipated growth. As facilities, development expands—specifically the relocation of a commercial terminal area, UAS R&D facility, and future space operations support areas—access roads will be critical infrastructure and should be considered in the design of the facilities.

4-11-2 Airport Parking

Terminal Building parking is located south of Zia Boulevard, with approximately 30,000 SF of dedicated parking space. All 46 covered parking spaces are owned by the City of Las Cruces, which includes two parking spaces for people with disabilities. Airport tenants such as Southwest Aviation have additional parking areas available next to their buildings.



An Airport Facility Needs Assessment was conducted in 2020 and recommended the following parking development plan. The terminal building is currently occupied by Airport administration, reception staff, a few lease holders, and Francis Aviation. The vehicular parking area south of the terminal building is 30,000 SF and has room for expansion. Of the 30,000 SF of parking area, approximately 18,500 SF is used for vehicular maneuvering and not for parking netting the usable parking area down to 11,500 SF for parking. Of the 46 parking spaces adjacent to the current terminal building, approximately 25% or 11 parking spaces are utilized by day users of the terminal netting the usable vehicular parking spaces down to 35.

The facility needs assessment utilized two methods to determine the number of parking spaces needed at LRU once air service begins. The first method included the review of the most recent NMDOT-A Airport System Plan (NMASP) to identify other Part 139 Commercial Services airports in New Mexico. The NM ASP provided the research with a list of commercial airports and the number of enplanements per airport. A physical count of the number of vehicle parking spaces was conducted for each commercial airport using Google Earth. A summary of the physical count is provided as well as the average number of parking spaces per 1,000 enplanements. Based on this physical count, the New Mexico commercial service airports are providing an average of 2.5 parking spaces for every 1,000 enplanements.

Table 4-22 - NM Airports, Enplanements, Vehicular Parking Spaces			
Airport	Annual Enplanements	Parking Spaces	Spaces per Enplanement
Carlsbad - Cavern City (CNM)	2,600	130	20
Clovis Municipal (CVN)	1,384	50	28
Farmington Four Corners (FMN)	14,263	610	23
Grant County - Silver City (SVC)	1,670	70	24
Lea County-Hobbs (HOB)	17,246	345	50
Roswell Int'l (ROW)	32,616	509	64
Santa Fe Municipal (SAF)	65,845	470	140
Average Parking Spaces per 1,000 Enplanements			2.5

Source: DuBois & King, Inc

The second method involved the utilization of the Parking Generation Manual from the Institute of Transportation Engineers (ITE), 5th Edition. By simply inputting the number of daily enplanements, the software generates the number of parking spaces required. The research provided by RRC Associates assumes that, initially, air service at Las Cruces would include two daily flights with aircraft of 50 seats and a load factor of 70%. Given these assumptions, annual enplanements would equate to 25,550. This would meet the goals set forth in the City of Las Cruces 2017–2022 Strategic Plan which calls for, "The Las Cruces airport terminal will be renovated to accommodate 20,000 enplanements per year."

The following table provides the results of the ITE parking generation model. It should be noted that the average number of parking spaces per 1,000 enplanements is similar to the other commercial airports in New Mexico that were reviewed in method one.

It should be noted that the ITE method provides a fairly average number of parking spaces for the constrained low end, however accounts for a much higher number for the unconstrained parking spaces for the lower number of annual enplanement. Example: 25,550 annual enplanements equates to 3.99 parking spaces per 1,000 enplanements, while 153,300 annual enplanements equates to 1.28 parking spaces per 1,000 enplanements. Although they average out, our recommendation is for Las Cruces to utilize the ITE method for calculating the number of required parking spaces for the terminal building. The following table provides an estimated number of parking spaces required at various enplanement benchmarks.

Table 4-23 - LRU - ITE Parking Generation Methodology					
					Parking Surplus (+) /Deficiency (-)
70	25,550	2	20 to 102	0.78 to 3.99	+15 to - 67
140	51,100	4	41 to 121	0.80 to 2.37	-6 to - 86
280	102,200	8	81 to 158	0.79 to 1.55	-46 to -123
420	153,300	12	122 to 196	0.79 to 1.28	-87 to -161
Average Parking Spaces per 1,000 Enplanements					0.8 to 2.3

Source: Institute of Transportation Engineers Manual 5th Edition and DuBois & King, Inc

Table 4-23 - LRU - ITE Parking Generation Methodology			
Annual Enplanements	Daily Flights	# Parking Spaces Required	Parking Surplus (+) /Deficiency (-)
25,550	2	20 to 102	+15 to -67
51,110	4	41 to 121	-6 to -86
102,200	8	81 to 158	-46 to -123
153,300	12	122 to 196	-87 to -161

Source: Institute of Transportation Engineers Manual 5th Edition and DuBois & King, Inc

4-12 Aerospace Facilities Requirements

The following estimates cover expected facility needs for various levels of entrepreneurial aerospace activity at LRU, divided into low, medium, and high ranges of activity in the general commercial space marketplace. The commercial aerospace marketplace is in a state of rapid development and flux. These ventures encompass a wide variety of target markets and technological and operational approaches. It is reasonable to assume, referring to analogous patterns of development in other technology areas, that some approaches will be abandoned and others will emerge as dominant, but until more experience in operations is gained, it will not be possible to anticipate winners and losers. Since different approaches have quite different facilities requirements, the facilities requirements presented here must be considered highly provisional and subject to change as the field develops over the next 15 years. The following sections will discuss activity types and facilities needs:

4-12-1 Space Operations Support Facilities

Level one: Startup Research and Development: Typically startups in the first several years of development have small teams, in the realm of five to ten people. Often these will be distributed virtually, so workspace need not be sized for the full number of people. Most of the activity is business and engineering work performed on desktop computers, and ordinary office space is adequate (500–1000 SF would be typical). Startups are not expected to have prestigious premises, so Class B or C office space is adequate, although shared use of better-quality meeting room space is desirable. For ventures developing physical components or systems, access to workshop space suitable for machining, welding, and assembly activity will be desired (equivalent to auto-shop type activity). Small-scale ground-based testing of systems may require isolated space on airport grounds, for which the landing pad areas at the western border fence may be adequate. Support equipment can be brought in on a campaign basis with no permanent construction or installation required. Some activities may desire temporary barriers such as earth-filled sandbags and exclusion of non-involved persons from a cleared area for the duration of the testing.

Level Two: Research, Development, and Implementation. This stage occurs once the startup gains full funding and needs to develop, test, and demonstrate working prototypes. This activity would typically need in the range of 10,000 to 50,000 square feet of space, divided 20% office, 80% light industrial. Workforce would range between 30 and 100, with appropriate parking, truck access, and full utilities required. Depending on the particular technologies used, flight line access and/or propulsion testing stands and other hazardous testing areas might be required. Test stand areas typically include concrete pad adequate for test stand and propellant tankage, thrust takeout (depending on engine size, may require earth backstop), separated earth-banked bunker, and at least 100 feet separation from any other human-attended activity. Initial phase test stands may not require fixed utilities; operations can use batteries or generators for power, supplied water, and temporary sanitary facilities. However, permanent utilities would be desirable for long-term operation.

It is in this phase that users will likely want to begin low-level flight test activity. Although the exact altitude the FAA is likely to permit for such tests will depend on the maximum expected performance of the article being tested, it is likely that the tests would not exceed 10,000 feet in altitude, or even 5,000. Such testing is normal in development, allowing developers to test ignition, liftoff, guidance and control, and performance in the lower atmosphere environment. The critical limitations on such testing would include not being able to impact inhabited areas or major roadways even in the event of a major mishap. In Phase 1, this would mean confining such tests to the northwest corner of the existing LRU footprint area, other uses permitting. As the acquisition of BLM land for Phase 2 permits, such activity would be moved to the new area.

Level Three: Ongoing R&D, Manufacture, Operations. This phase would be typical of a firm that had a product or service on the market and required future product development and upgrades, manufacture, or other mature operations. The proposed Virgin Galactic hybrid rocket motor plant would be an example of the latter activity. Facility sizes could be anywhere from 50,000 SF upward, with employee numbers in the 100 to 500 range. Static test facilities might be required for occasional QC testing for manufacture, or advanced developmental work for R&D facilities. Low-altitude flight testing similar to that of the second phase might also be required. For some technologies, flight line access might also be required.

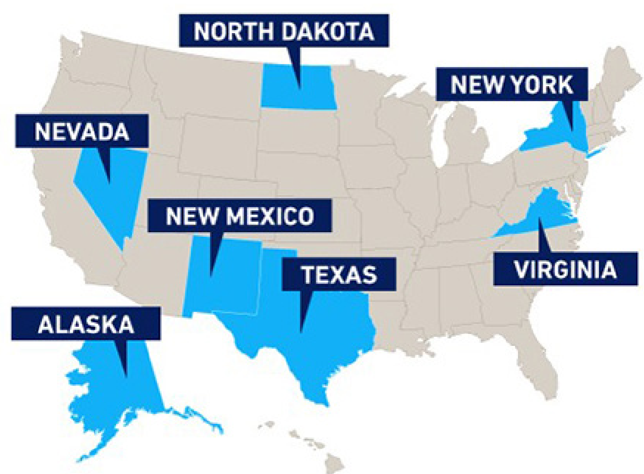
Siting considerations specific to LRU and current expansion planning, as can be seen by the previous discussion LRU Phase 1, needs to be iterative and responsive to specific customer needs as they arise. The process of recruiting new aerospace users will require many of the user-ready facilities that they will need be available. This will likely require some facilities to be built or adapted ahead of demonstrated need. It may be worth considering designating some airport spaces currently dedicated as aeronautical as dual-use during the Phase 1 period. This would be particularly useful with any prospective tenants that require flight-line access. Current area designations have no aerospace facilities with flight-line access and could not be made so without extensive extension of taxiways. Such users could be gradually moved to the new Space Campus area in Phase Two, or possibly just remain as grandfathered exceptions.

The levels and composition of each category changes over time as the industry matures. In the earlier phases, startups will be of hopeful first-tier companies, launch providers, etc. As the industry matures, new startups will more likely be lower-tier providers as the industry begins to need more specialized niches. Level Three companies will tend to be more the ongoing R&D activities of established companies and fewer startups developing their initial products. It can be expected that the Space Campus will then take on more of the character of a research park.

4-12-2 Unmanned Aerial Systems

The FAA Modernization and Reform Act of 2012 (FMRA 2012) directed the Federal Aviation Administration (FAA) Administrator to initiate a five-year program to establish six unmanned aircraft systems (UAS) test sites to support the FAA in integrating UAS into the national airspace system (NAS). After conducting a competitive selection process, the FAA designated six UAS Test Sites, which became operational in 2014 and began to conduct test flights. In 2016, the FAA added a seventh test site as mandated by the FAA Extension, Safety and Security Act of 2016 (FESSA 2016). The original five-year program was extended for two more years under FESSA 2016, then extended another four years under the FAA Reauthorization Act of 2018 (FRA 2018) and is scheduled to continue until September 30, 2023. The following list names the seven FAA UAS Test Sites:

1. Griffiss International Airport, NY
2. **New Mexico State University, NM**
3. North Dakota Department of Commerce, ND
4. State of Nevada, NV
5. Texas A&M University Corpus Christi, TX
6. University of Alaska Fairbanks, AK
7. Virginia Polytechnic Institute & State University, VA



The main objective of the UAS Test Site Program is to provide verification of the safety of public and civil UAS, operations, and related navigation procedures before their integration into the NAS. Other program requirements include supporting the FAA during the development of certification standards, air traffic requirements, coordinating research and other work with

National Aeronautics and Space Administration (NASA), FAA NextGen, the Department of Defense, and other Federal agencies.

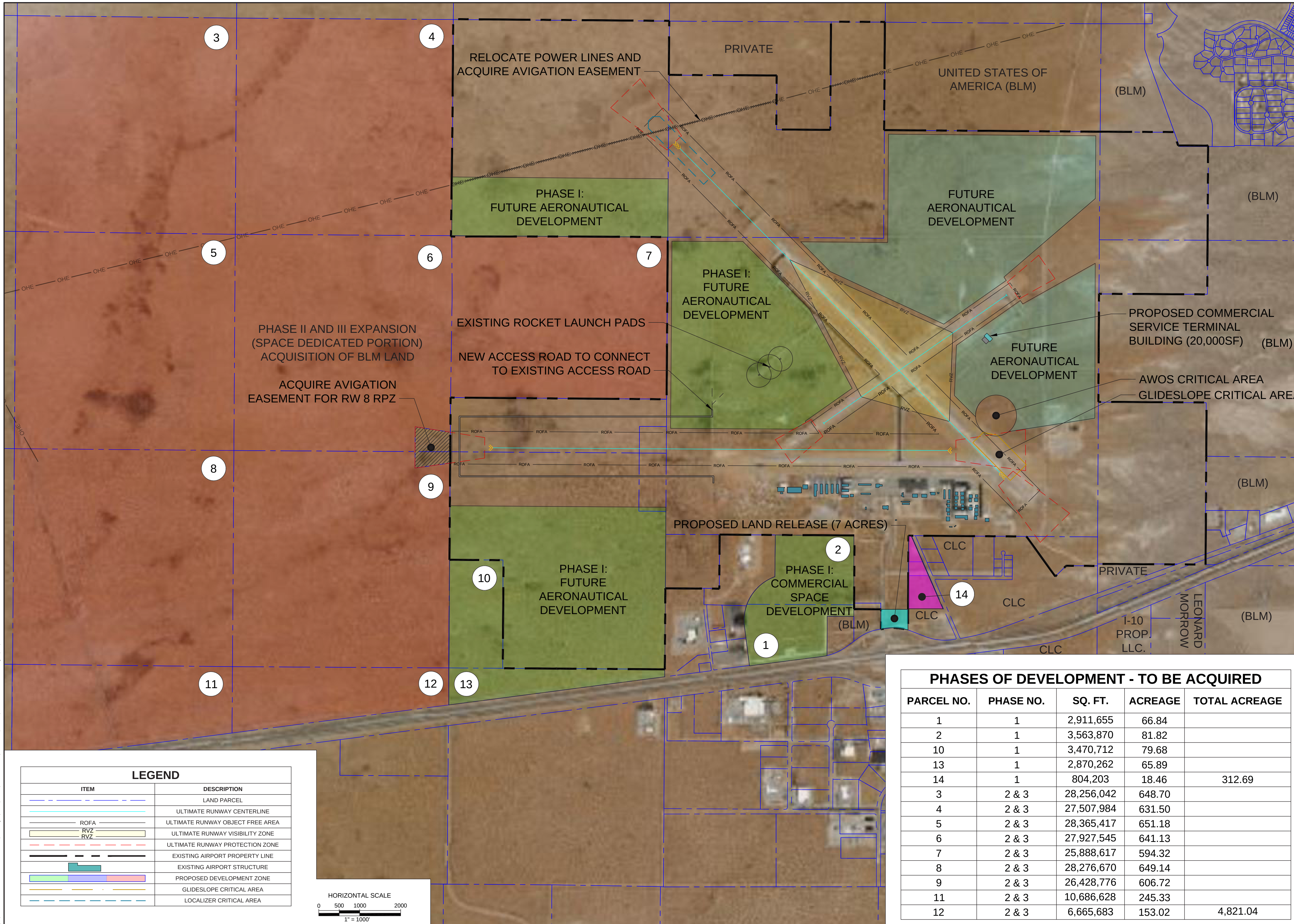
The UAS Test Sites are focusing their research and demonstration operations on the following areas, supporting the FAA advance these technologies and concepts:

- Detect and avoid (DAA)
- Command and Control (C2)
- Airworthiness
- Beyond Visual Line of Sight (BVLOS) operations
- Standards for the safe operation of UAS in various airspace classes
- Air traffic control operational and communications procedures
- Multiple UAS operations
- Counter UAS
- UAS Traffic Management (UTM)
- Test and evaluation of proposed UAS standards, processes and procedures
- Environmental impacts
- Urban Air Mobility

New Mexico State University, along with private enterprises, support the State of New Mexico and the National Airspace System by conducting governmental functions such as aeronautical research, biological and geological resource management, search and rescue, and public safety. The availability of Runway 4/22 is critical for this research and development. As Runway 4/22 does not qualify for federal funding, it is recommended that the runway be redesigned to support UAS operations in the A1 design group category. This is described in the earlier section on right-sizing Runway 4/22. It is also recommended that future plans address facility needs by developing a UAS campus to the north of Runway 4/22 with access to this runway.

4-12-3 Land Acquisition/Land Release

During the development of this planning study, the City took a holistic approach for future development of LRU. This approach balances between commercial and business aviation activity, partnerships with aerospace companies working R&D efforts, cutting-edge space operations, as well as non-aeronautical opportunities. While development of the airport infrastructure evolves, it is important that efforts are made to gain control over critical land assets surrounding LRU. This can come in the form of land acquisitions or avigation easements. The City should move forward with obtaining an avigation easement for the powerlines that will be obstructions to the 13 approach and are located within the Localizer critical area. The future RPZ for Runway 8 will extend off airport property. The City should move to acquire this land or obtain an avigation easement to protect the RPZ. There are two parcels of land located by the entrance to the airport by frontage road and Harry Burrell Boulevard. To support future non-aeronautical activities such as an airport hotel, it is recommended that the City move to acquire the parcel adjacent to Harry Burrnell and release the parcel adjacent to Frontage Rd. Finally, with the future development of the space campus, additional land to the west should be acquired in phases to support development opportunities. The following figure displays future avigation easements as well as land acquisition and land release.



PHASES OF DEVELOPMENT - TO BE ACQUIRED				
PARCEL NO.	PHASE NO.	SQ. FT.	ACREAGE	TOTAL ACREAGE
1	1	2,911,655	66.84	
2	1	3,563,870	81.82	
10	1	3,470,712	79.68	
13	1	2,870,262	65.89	
14	1	804,203	18.46	312.69
3	2 & 3	28,256,042	648.70	
4	2 & 3	27,507,984	631.50	
5	2 & 3	28,365,417	651.18	
6	2 & 3	27,927,545	641.13	
7	2 & 3	25,888,617	594.32	
8	2 & 3	28,276,670	649.14	
9	2 & 3	26,428,776	606.72	
11	2 & 3	10,686,628	245.33	
12	2 & 3	6,665,683	153.02	4,821.04

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LAS CRUCES INTERNATIONAL AIRPORT
8990 ZIA BLVD.
LAS CRUCES, NEW MEXICO 88007

MASTER PLAN

SHEET TITLE
COMMERCIAL SPACE DEVELOPMENT

DRAWN BY: AJL | DATE: JUNE 2023
CHECKED BY: GAR | D&K PROJECT #: 327310
PROJ. MGR.: PJS | D&K ARCHIVE #:

SHEET NUMBER
14
SHEET 14 OF 18

Chapter Five: Alternatives Development and Evaluation

5-1 Introduction

This chapter of the Airport Master Plan Update describes the development of airport facilities and improvement projects previously identified in Chapter 4 – Facility Requirements, which are anticipated to be undertaken over the course of the 20-year airport master planning period. Potential facility developments and airport improvements are anticipated to be developed over time as demand dictates. Potential facility and airport improvements were identified based upon comments and suggestions offered by the public, airport users, and stakeholders through the Public Involvement Program.

An organized approach to identifying and evaluating alternative development options is essential for effective planning. The key elements of this process are:

- Identification of alternative ways to address the facility requirements identified in the previous chapter.
- Evaluation of the alternatives, individually, and collectively to gain a thorough understanding of the strengths, weaknesses, and other implications of each alternative.
- Selection of the best (preferred) alternative.

5-2 Evaluation of Alternatives

In this chapter, the evaluation criteria of development alternatives have been divided into the following broad categories:

5-2-1 Operational Performance

Capacity–The capacity and demand analysis presented in Chapter 4 determined that there is little likelihood of exceeding the current runway capacity limitations at LRU over the planning period. Therefore, capacity is not a factor when evaluating development alternatives.

Capability–The capability of the Airport to meet the needs and desires of the flying public is at the core of the operational performance evaluations of the proposed development alternatives. The public involvement program has revealed a common theme whereby members of the flying and non-flying community believe the Airport could and should have greater capability to provide support for commercial passenger service, better amenities, and a larger role in servicing the regional aviation/aerospace community. There are also opportunities for the Airport to leverage relationships in the aerospace industry through UAS and aerospace R&D.

Efficiency–Operational performance is measured for an aircraft in a fashion similar to that of a business. Efficiency revolves around the question of whether an aircraft owner or operator can plan a flight to LRU, land, easily find parking near an FBO or terminal that provides physical and business amenities, including bathrooms, fuel, flight planning, rental cars, etc., and then just as easily file a flight plan, taxi, and depart from the field after staying for less than an hour or perhaps longer if the reason for travel requires it. Efficiency is measured against other airports from which the aircraft pilot has been able to successfully operate. If LRU does not measure up to the standards of capability and efficiency at competing airports, the aircraft owner or operator may go elsewhere and possibly not utilize LRU again, and thus business opportunities and revenue will be lost.

5-2-2 Best Planning Tenets

The common core or planning tenets that proposed development alternatives must meet include:

- Conform to best practices for safety and security.
- Conform to the intent of applicable FAA design standards.
- Provide for highest and best on- and off-airport land use.
- Allow for forecast growth throughout the planning period.
- Provide for growth beyond the planning horizon, as applicable.
- Provide the flexibility to adjust to unforeseen changes.
- Conform to the Airport sponsor's strategic vision.
- Conform to appropriate local, regional, and state transportation and other plans.
- Be technically feasible.
- Be socially and politically feasible.
- Satisfy user needs.

5-2-3 Environmental Factors

Environmental constraints play a significant role in determining alternative development feasibility from a stewardship, aesthetic, and financial perspective. Additional environmental factors include development-related impacts that may affect humans including noise, socioeconomics, public areas, disproportionate impacts, and how a specific project contributes to the cumulative total of impacts over time. All proposed developments must be closely examined during the planning phase to ensure Federal and State NEPA requirements are met and that impacts to any fourteen (14) environmental categories are avoided, minimized, or are mitigated. Specific projects will require different levels of NEPA review effort, provided extraordinary circumstances are absent, with the least impactful projects eligible to receive a Categorical Exclusion (CATEX) determination and more significant projects with more potential human environmental impacts requiring an Environmental Assessment (EA) or, if warranted, an Environmental Impact Statement (EIS). The major development alternatives at LRU that are expected to trigger the NEPA review process and the anticipated level of review in accordance with the recently released FAA Order 1050.1F Environmental Impacts: Policies and Procedures include:

- Extension of Runway 12/30– EA
- Land or Easement Acquisition for Runway 8/26 relocation and extension RPZ – CATEX
- Runway 8/26 relocation and extension – EA
- Reconstruction of Runway 4/22 – CATEX
- Taxiway A Relocation – CATEX
- Hangar Construction – CATEX
- New GA Apron Construction – CATEX
- Taxiway D Extension – CATEX
- Taxiway C Extension – CATEX
- Construct Terminal Building – CATEX
- Relocation of AWOS, Rotating Beacon, and Windsock/Segmented Circle – CATEX
- Relocation of Fuel Farm – CATEX

5-3 Airport Facility Planning Considerations

A number of considerations impact facility development alternatives that would best utilize existing airport land:

- Conformance with regional and city planning efforts
- Presence of commercial passenger service
- Area support of AEROSPACE development (NMSU physical science lab, Arrowhead, VG)
- NM aerospace alliance

A very important consideration is the known environmental site constraints of the existing airport footprint. An equally important but less tangible consideration came from the feedback during the public information program. Airport users and local residents expressed a desire to improve the image of the Airport and attract and accommodate more business activity, including strengthening partnerships with aerospace companies, commercial air service development, cargo opportunities, and support for the existing aeronautical businesses including FBOs.

LRU has several opportunities that provide the Airport great potential for economic development. A list of these opportunities follow:

- There is a significant amount of land available in the northwest and southwest quadrants for additional aeronautical and non-aeronautical development and revenue generation.
- FAA and New Mexico DOT funding programs remain committed to supporting and encouraging infrastructure improvement at LRU.
- The City and State are committed to the development of commercial service and aerospace development at LRU.
- Local private businesses are committed to basing operations at LRU.

5-4 Selection of the Recommended Alternatives

The selection of the development alternatives is based upon how well the development meets the needs of the Airport and users. According to Chapter 4, Facility Requirements, even moderately loaded heavier aircraft require runway lengths exceeding those currently available. This is based on the approved aviation activity forecast found in Chapter 3. To meet the current needs of the Challenger 600 series and commercial ERJ-145 (both C-II aircraft) at 60% of useful load, 10,110 feet is required for takeoff. These same aircraft operating at 90% useful load require 11,110 feet. Future critical aircraft such as the ERJ-175 (C-III) require 9,210 feet at 60% useful load and 11,410 feet at 90% useful load. There is a clear need for longer runways to meet the landing and takeoff needs of the fleet mix at LRU.

In addition to meeting the needs, the alternative must have public support and be financially feasible. The desire for airport improvements was expressed during the public information gathering sessions. The estimate of probable development cost for each runway alternative will dictate which alternative is attainable and in what timeframe.

Environmental impacts are also a major component in the federal approval of development projects. These impacts will be discussed and their effect on the development will be represented in the estimate of probable costs, as permitting and mitigation can be significant if avoidance is not possible.

5-5 Runway Development Alternatives

Three runway development alternatives were selected for further analysis: No-Build Alternative, Alternative 1, and Alternative 2. The following sections describe each alternative in detail and explain their ability to meet the needs of the Airport and users.

Included with the runway extension or relocation projects will be redesignation of the runway ends. Due to magnetic declination change, Runway 12/30 will now be known as Runway 13/31, and Runway 4/22 will now be known as Runway 5/23. For all alternatives, this will include remarking of the runway ends to the appropriate numbers.

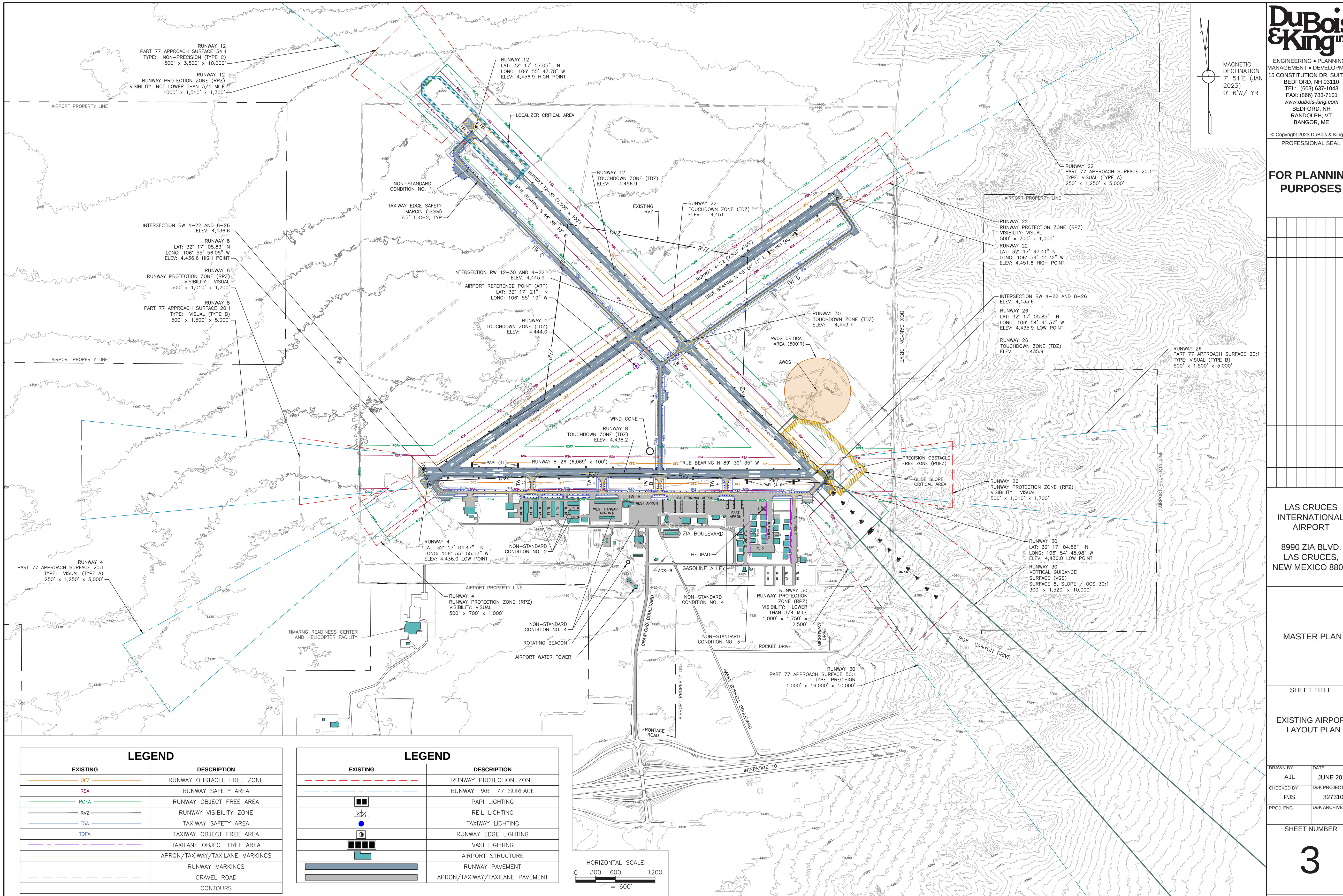
5-5-1 No Build Alternative

The "No-Build" does not propose any new changes to the existing runway configuration. Runway 12/30 would remain 7,506 feet in length and 100 feet wide, 8/26 would remain at 6,069 feet in length and 100 feet wide with 50 foot shoulders, and Runway 4/22 would remain at 7,501 feet in length and 105 feet wide.

There are no biotic resources impacted by this alternative, however it will have an effect on the future economic development of the Airport and the surrounding community by limiting the size of aircraft that can utilize the facility. It should also be noted that Runway 4/22 is currently closed due to the pavement conditions and is in need of rehabilitation. Studies have shown that this runway is not eligible for federal funding and must be supported with alternative funding sources. It is not recommended that Runway 4/22 remain in this current condition or retain its current B-II design standard. If nothing is done to Runway 4/22, it is anticipated that the runway could remain closed. This No-Build alternative may limit the Airport to minimal commercial passenger service growth and minor business growth or may result in a decline—as businesses and users grow and expand, they will relocate to facilities that meet their needs.

This alternative does not meet the needs of the Airport or current and future fleet mix. However, it does provide the least expensive available option when considering capital improvement costs and not the potential economic impacts. This alternative allows the public to decide whether or not it is worth investing in this airport. The No-Build alternative is depicted graphically in **Exhibit 5-1**.

Exhibit 5-1 No Build Alternative



5-5-2 Runway 12/30 & 8/26 Extension, 4/22 Reduction and Decoupling Alternative 1

- Extend Runway 12/30 to a length of 10,110 feet with the extension of Taxiway C to meet the new runway end.
- Decouple Runway 8/26 from Runway 4 and Runway 30. Relocate the 26 end and extend the 8 end to a total length of 10,110 with the extension of Taxiway A to meet the new runway end.
- Decouple Runway 22 and shorten the runway to a total length of 5,450'. Reduce width to 60 feet and extend Taxiway D to meet the new runway end.

Alternative 1 shifts Runway 26 to the west by 600 feet and extends the 8 end by 4,641 feet. The width of Runway 8/26 would remain the same at 100 feet. This would increase the runway length from 6,069 feet to 10,110 feet. Runway 30 will remain in the same location, while Runway 12 would extend 2,604 feet to a new length of 10,110 feet. This new length allows for the Challenger 600 at a 60% load to utilize the runways. Alternative 1 is depicted graphically in **Exhibit 5-2.**

Runway 8 meets current FAA standards with minimal impacts to biotic resources. However, with the extension of Runway 8, there may be future environmental impacts that will have to be considered. Vegetative clearing would be required for the new instrument approaches, which may require off-airport brush removal. This alternative accomplishes reduction of the development constraints caused by the Runway Visibility Zone (RVZ) with the decoupling of multiple runway ends.

With the decoupling of multiple runway intersection points and taxiway extensions, overall safety and movement area traffic flow is improved.

5-5-3 Preferred Runway 12/30 Extension, Runway 8/26 Relocation, 4/22 Reduction and Decoupling Development Alternative 2

As previously determined using FAA design guidelines, the runway length needed for 100% of the fleet at 60% of useful load for the Challenger 600 is 10,110 feet for takeoff and 11,110 feet for 90% of the useful load when adjusted for runway grade. The alternatives meet the needs of the heavier fleet mix for both takeoff and landing. The No Build Alternative is the least expensive, but has future restrictive consequences to the economic development of the airport and does not support the critical design aircraft runway length requirement. Alternative 1 provides an ultimate runway length of 11,110 feet with the location of 8/26 remaining the same, while alternative 2 details the relocation of Runway 8/26 to the northwest. This alternative provides the same runway length, but does so with limited environmental impacts and at less cost. Alternative 2 will be more costly to build and require an avigation easement for the RPZ on the western side of the airfield, but will improve overall safety and movement area traffic flow.

The Airport Advisory Board and Las Cruces International Airport Director reached consensus after a public discussion on 12 April 2023 that Alternative 2 is the desirable proposed action. The board members encouraged the Airport to revise the originally proposed CIP to expedite the Environmental Assessment required for Alternative 2 and to move the design and construction of the proposed action into the near-term CIP from the Intermediate Term. This document reflects those changes.

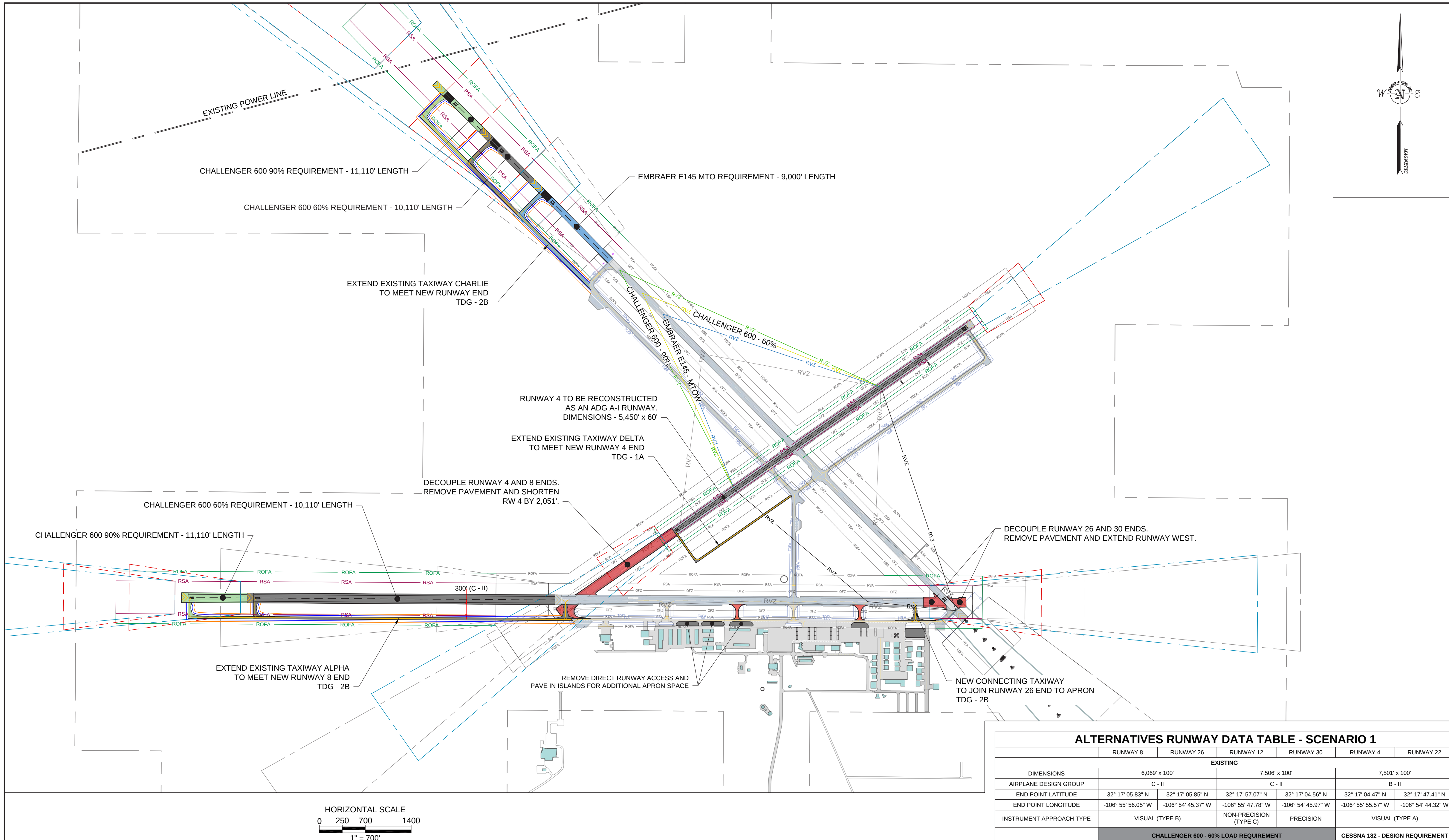
Alternative 2 contains the following improvements to the runway system:

- Extension of Runway 12/30 to a total length of 11,110 feet with the extension of Taxiway C to meet the new runway end at TDG 2B.
- Relocation and extension of Runway 8/26 to a location just northwest of the existing one. New extended length will be 11,110 feet and utilizes the existing Runway 8/26 to become the new full parallel Taxiway A to meet the new runway end, with multiple connecting taxiway stubs.
- Decoupling of Runway 22 and shortening the runway to a total length of 5,450', reducing width to 60 feet, and extending Taxiway D to meet the new runway end.
- Extension of Taxiway C to the southeast to meet the new Runway 26 end, as well as demolition of a section of the existing Taxiway B.

Alternative 1 shifts the entire layout of the runway to the northwest, essentially building a new runway at a length of 11,110 feet. The width of Runway 8/26 would remain the same at 100 feet. Runway 30 will remain in the same location, while Runway 12 would extend 3,604 feet to a new length of 11,110 feet. This new length allows for the Challenger 600 at a 90% load to utilize the runways, as well as the Embraer E145 at Maximum Takeoff Weight. Alternative 2 is depicted graphically in **Exhibit 5-3.**

The shifting and relocation of Runway 8/26 as well as the redesigned taxiway route through the airport result in a smoother traffic flow path to not only the GA apron, but to the proposed commercial terminal building as well.

Exhibit 5-2 Alternative One



LEGEND

EXISTING	DESCRIPTION
	AIRPORT PAVEMENT
RVZ	RUNWAY VISIBILITY ZONE
RSA	RUNWAY SAFETY AREA
ROFA	RUNWAY OBJECT FREE AREA
	RUNWAY PROTECTION ZONE
	RUNWAY PART 77 SURFACE
	AIRPORT STRUCTURE

LEGEND

PROPOSED	DESCRIPTION
	RUNWAY PAVEMENT
RVZ	RUNWAY VISIBILITY ZONE
RSA	RUNWAY SAFETY AREA
ROFA	RUNWAY OBJECT FREE AREA
	RUNWAY PROTECTION ZONE
	RUNWAY PART 77 SURFACE
	DEMOLITION/REMOVAL
	TAXIWAY SAFETY AREA
	TAXIWAY OBJECT FREE AREA

RW DESIGNATIONS

PREVIOUS	NEW
8 - 26	NO CHANGE
4 - 22	5 - 23
12 - 30	13 - 31

ALTERNATIVES RUNWAY DATA TABLE - SCENARIO 1

	RUNWAY 8	RUNWAY 26	RUNWAY 12	RUNWAY 30	RUNWAY 4	RUNWAY 22
	EXISTING					
DIMENSIONS	6,069' x 100'		7,506' x 100'		7,501' x 100'	
AIRPLANE DESIGN GROUP	C - II		C - II		B - II	
END POINT LATITUDE	32° 17' 05.83" N	32° 17' 05.85" N	32° 17' 57.07" N	32° 17' 04.56" N	32° 17' 04.47" N	32° 17' 47.41" N
END POINT LONGITUDE	-106° 55' 56.05" W	-106° 54' 45.37" W	-106° 55' 47.78" W	-106° 54' 45.97" W	-106° 55' 55.57" W	-106° 54' 44.32" W
INSTRUMENT APPROACH TYPE	VISUAL (TYPE B)		NON-PRECISION (TYPE C)	PRECISION	VISUAL (TYPE A)	
	CHALLENGER 600 - 60% LOAD REQUIREMENT				CESSNA 182 - DESIGN REQUIREMENT	
DIMENSIONS	10,110' x 100'		10,110' x 100'		5,450' x 60'	
AIRPLANE DESIGN GROUP	C - II		C - II		A - I	
END POINT LATITUDE	32°17'05.80" N	32° 17' 05.85" N	32° 18' 15.32" N	NO CHANGE	32° 17' 16.21" N	NO CHANGE
END POINT LONGITUDE	-106° 56' 50.73" W	-106° 54' 52.96" W	-106° 56' 09.25" W	NO CHANGE	-106° 55" 36.10" W	NO CHANGE
INSTRUMENT APPROACH TYPE						
	CHALLENGER 600 - 90% LOAD REQUIREMENT					
DIMENSIONS	11,110' x 100'		11,110' x 100'			
AIRPLANE DESIGN GROUP	C - II		C - II			
END POINT LATITUDE	32° 17' 05.80" N	32° 17' 05.85" N	32° 18' 22.32" N	NO CHANGE		
END POINT LONGITUDE	-106° 57' 02.38" W	-106° 54' 52.96" W	-106° 56' 17.49" W	NO CHANGE		
INSTRUMENT APPROACH TYPE						
	EMBRAER E145 MAXIMUM TAKEOFF WEIGHT REQUIREMENT					
DIMENSIONS	9,000' x 100'		9,000' x 100'			
AIRPLANE DESIGN GROUP	C - III		C - III			
END POINT LATITUDE			32° 18' 09.02" N	NO CHANGE		
END POINT LONGITUDE			-106° 56' 01.83" W	NO CHANGE		
INSTRUMENT APPROACH TYPE						

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PROFESSIONAL SEAL

FOR PLANNING PURPOSES

NO.	DATE	DESCRIPTION	BY	CK'D

LAS CRUCES INTERNATIONAL AIRPORT

8990 ZIA BLVD.
LAS CRUCES,
NEW MEXICO 88007

MASTER PLAN

SHEET TITLE

RUNWAY AND TAXIWAY ALTERNATIVES

SCENARIO 1

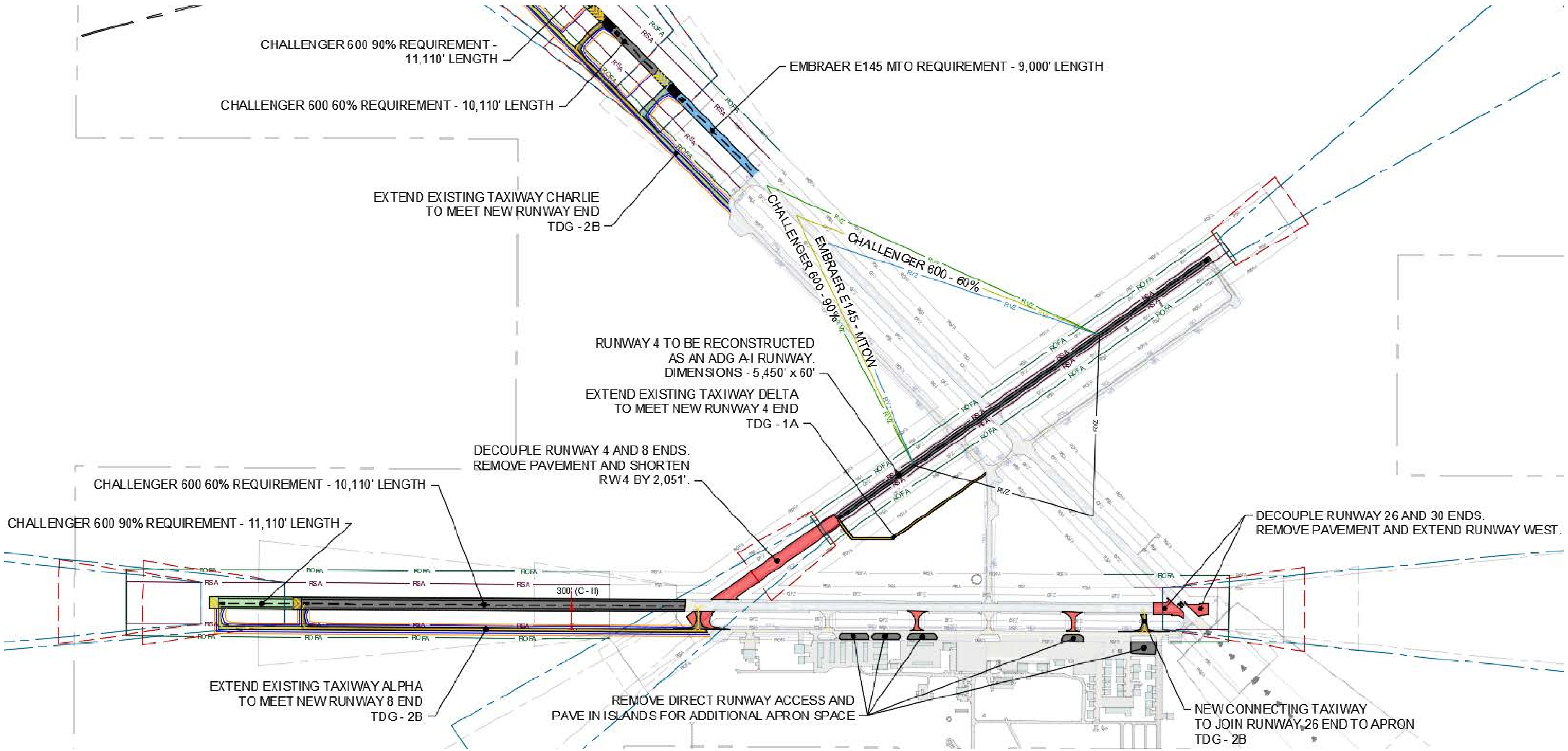
DRAWN BY	DATE
AJL	JUNE 2023
CHECKED BY	D&K PROJECT #
PJS	327310
PROJ. ENG.	D&K ARCHIVE #
MCG	

SHEET NUMBER

1

SHEET 01 OF 14

Exhibit 5-3 Alternative Two (Preferred Alternative)



5-6 Commercial Passenger Service

5-6-1 No Action Commercial Passenger Service Development Alternative

The current small-scale commercial service operations are supported by Terminal Building 8990. Terminal building 8990 is a 14-foot-tall, single-story, 4,400 SF building located south of and mid-field of Runway 8/26 and adjacent to the main apron. Building 8990 was built in 1975 and remodeled in 1984. Historically, 8990 was used to accommodate commercial air carrier passengers. Currently, the terminal building houses airport management, restrooms, and Francis Aviation, one of two FBOs. Francis Aviation occupies much of the building's current space and, according to their lease, utilizes the space for administrative offices, flight line service, restrooms, and a pilot's lounge.

5-6-2 Interim Commercial Passenger Service Development Alternative 1

Plans for a temporary transitional terminal building have been developed in order to meet the commercial service requirements while a proper commercial terminal building can be designed and constructed. Alternative 1 details the addition of a building extension to the existing building 8960 that will provide temporary dedicated commercial airline services. Though building 8960 itself has been considered for passenger terminal use, its current aspect does not make it an ideal choice. Current uses in this building are administrative offices, flight training, and operator's quarters. Shown in **Exhibit 5-4** is the building extension in relation to the existing terminal.

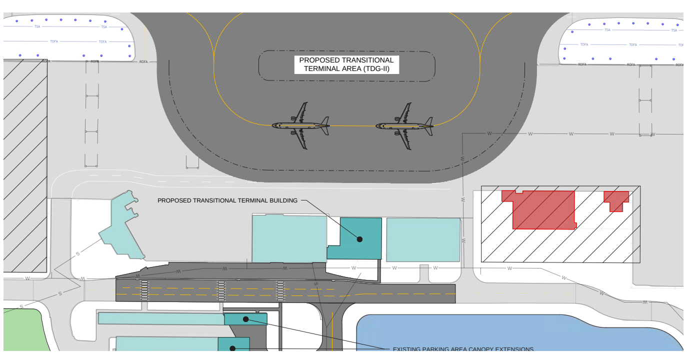


Exhibit 5-4 - Commercial Service Alternative 1
Source: DuBois & King, Inc.

5-6-3 Eastside Commercial Passenger Service Development Alternative 2 - Preferred Alternative

Alternative 2 for commercial passenger service includes construction of a new dedicated commercial service terminal building with a vehicular parking area. The construction of a new terminal that is separate from the GA area will separate GA and commercial activities, giving each their own respective operations areas. The new commercial terminal will be 30,000 SF and is located to the east of the northern portion of Runway 5/23 as shown below in **Exhibit 5-5.**

Exhibit 5-5 - Commercial Service Alternative 2
Source: DuBois & King, Inc.

5-7 General Aviation Facilities

Three different alternative layouts for GA Facilities and the terminal area were designed and presented to the Airport Advisory Board, City of Las Cruces, and Las Cruces International for discussion. The layouts considered three important factors crucial to the operations of the airport: access to general and aviation maintenance facilities, additional hangar spaces for commercial or general leasing, and ease of access to the new commercial terminal building. For planning purposes in the ALP, this drawing set was broken down into three different sections: west of the terminal, the terminal area, and east of the terminal (refer to the Las Cruces ALP sheets 6-8.) The Airport and city's preferred facilities layout alternative was determined to be Alternative 2.

5-7-1 General Aviation Terminal Area Hangar Development - No Action/Alternative 1

The current layout of the airport provides a small GA apron area to the west, with no commercial airline services or terminal to supplement that. Taxilanes 7–15 provide access to those hangars, while taxilanes 1–4 give access to the group of hangars to the east. One helipad is located in the eastern apron as well. The existing General Aviation Terminal Area and Layout is shown below in **Exhibit 5-6.**

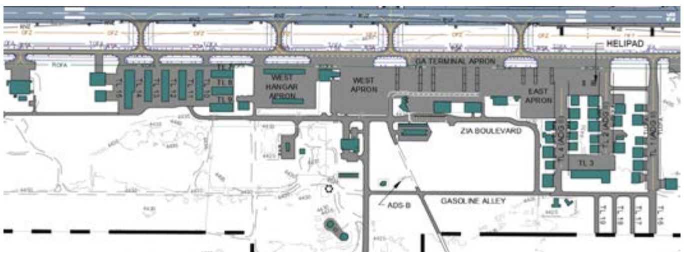


Exhibit 5-6 - Existing Facilities Layout
Source: DuBois & King, Inc.

5-7-2 General Aviation Terminal Area Hangar Development - Alternative 2

Alternative 2 begins with the preservation of existing facilities and non-movement areas, and includes the addition of a larger GA apron with several variations of hangar sizes to accommodate larger aircraft. A new taxilane to the west will provide a path for planes to taxi from either the runway or the existing apron to the new apron. The new terminal area taxilane at TDG 2B will essentially create a space for commercial planes to park and taxi in and out of the proposed transitional terminal, shown in **Exhibit 5-5**. Several zones in the alternative will be reserved for future non-aeronautical development south of the terminal area. A new Fixed Base Operator office will provide non-commercial operations and procedures. Finally, both Zia Boulevard and Gasoline Alley are to be realigned into a more direct vehicular traffic path. Shown below is a breakdown of Alternative 2 in **Exhibit 5-7.**

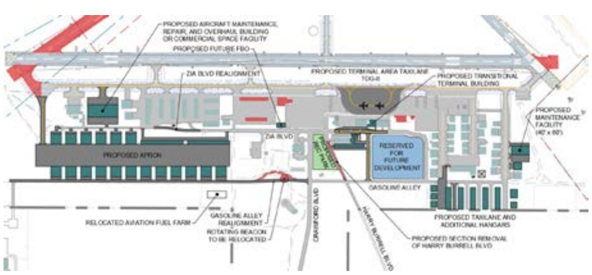


Exhibit 5-7 - Apron Alternative 2
Source: DuBois & King, Inc.

5-7-3 General Aviation Terminal Area Hangar Development - Alternative 3 - Full Build

Alternative 3 is similar to the layout of alternative 2, but boasts a maximum-potential GA Apron space with hangars to accommodate any size aircraft that could potentially use the airport with room to grow. This alternative begins with the preservation of existing facilities and non-movement areas, and the aforementioned expanded apron. A new taxilane to the west will provide a path for planes to taxi from either the runway or the existing apron to the new apron. The new terminal area taxilane at TDG 2B will essentially create a space for commercial planes to park and taxi in and out of the proposed transitional terminal, shown in Exhibit 5-8. Several zones in the alternative will be reserved for future non-aeronautical development south of the terminal area. A new Fixed Base Operator office will provide non-commercial operations and procedures. Finally, both Zia Boulevard and Gasoline Alley are to be realigned into a more direct vehicular traffic path. Shown below is a breakdown of Alternative 3 in **Exhibit 5-8.**

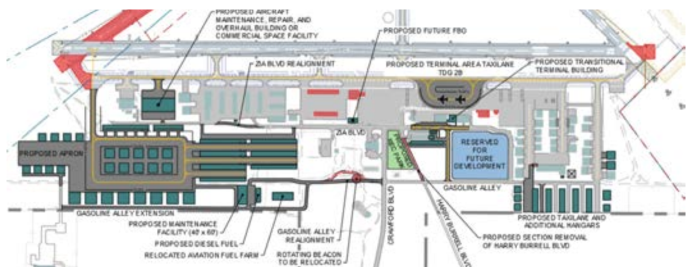


Exhibit 5-8 - Apron Alternative 3
Source: DuBois & King, Inc.

5-8 Aerospace and Aviation Development

5-8-1 Aerospace and Aviation Commercial Development

A phased approach will be taken with regard to Aerospace and Aviation Development as Las Cruces International. Given the fact that commercial space launch and related space activities are undergoing a rapid expansion—in which both the levels and types of activities are uncertain—this plan will approach the question of future facilities development for space commerce through the definition of a multi-phase implementation plan built around a core facilities plan that can be expanded in response to market development. This ensures that the region is not hampered by shortfalls in facilities and can be competitive for new facilities and users, while at the same time not overbuilt with facilities in excess of actual demand. The three phases are broken down as follows:

Phase 1 (2024-29). Development within the current LRU footprint, and immediately adjacent to BLM land to the south of the present boundary. Areas marked "Future Aeronautical and Commercial Development" on Exhibit 5-9, plus designation of some areas within LRU boundaries as interim "dual use" aviation and space commerce facilities. Static test stands and/or low-level launch test areas to be developed along Western boundary fence, including on currently existing pads from the 2006 Lunar Lander competition.

Phase 2. (2030–35). Acquisition of BLM parcel to the west of the current LRU boundary. Development of a "Space Campus" on the southern 3rd of BLM parcel, with tenant facilities, common use facilities, and admin offices. Development of new static rocket test stands and low-level launch test pads on the northern 3rd of the BLM parcel.

Phase 3. (2035–2045). Expansion of tenant facilities in the Space Campus area. Development (if warranted by demand) of a dedicated space operations runway in the middle third of the BLM parcel, including dedicated hangars and industrial facilities with flightline access. Possible acquisition of the state land parcel to the west of the BLM parcel.

5-8-2 Preferred Space Commerce Development Westside Alternative

The preferred initial development site would begin with a precise inventory of existing available office and lab/workshop space in existing airport structures. These structures would be defined as "dual-use" (aviation plus space commerce) facilities and available for immediate or near-term use by space commerce tenants. (They would continue to be classified as "aeronautical" uses, defining aeronautical as any activity requiring a license from the FAA.)

Requirements for light industrial facilities with or without flightline access would be met by construction of a dual-use facility on currently vacant land to the immediate west of the current NMSU drone hangar, capable of being converted to hangar use. Size would be somewhat dependent on expected tenant need, but nominally 50,000SF, divided 20% office, 80% industrial.

Concurrently, an initial test operations area would be developed along the current western boundary of the airport beginning with the existing test pads built for the Lunar Landing Challenge. (See call-out on Exhibit 5-9.)

These would consist initially of one to two static rocket engine test areas, which when built out would each consist of one concrete pad to accommodate test stand, propellant and pressurization run tankage, instrumentation, and thrust take-out. For larger engines (4000 lbf or more) an earth-banked thrust take-out might be desired. At a safe distance (TBD according to engine thrust and propellant mix, but nominally 100 ft), an earth-banked control bunker would contain room for 6 to 8 workstations and observers. A simple semicircular metal structure on concrete foundation was used at Mojave; such would be adequate for LRU initially. Utilities would not be needed initially; testing could be done on a campaign basis with batteries or generators for power, and other requirements (e.g., water, sanitation) similarly met by portable equipment.

Maximum height could be limited to on the order of 10 ft if needed to comply with Part 77 restrictions, wherever they might apply.

If the western boundary area becomes fully dedicated to test stand use, additional testing areas can be developed along the northern boundary of the airport, starting at the westernmost end.

As space commerce use increases, new potential users may require more space than can be accommodated along the flightline west of the NMSU facility. The BLM parcel between the southern boundary and Interstate 10 would be acquired and developed, starting with the utility and road access on the eastern side of the parcel, and one or more industrial/office facilities can be built, according to tenant needs.

LRU should also investigate the possibility of using Arrowhead Incubator office space, and Industrial Park industrial space, as interim locations for LRU space commerce users. Use of existing space on or near LRU, combined with the ability to rapidly establish test stands on LRU premises, would provide a low-cost near-term entry strategy for LRU in the commercial space arena.

Further development will require acquisition and construction on the BLM land parcel west of the airport.

5-8-3 Space Commerce Development Alternatives

Alternative 1 for further expansion of the Space Commerce activities at LRU is the development of the Space Campus on the BLM tract immediately west of the western airport boundary. This 4,400-acre tract is currently raw land and would require the standard preparation for building, including access roads, utilities, and land-leveling for building sites. The land area would be allocated in three equal sections. The southernmost third would be the actual Campus area, consisting of one or more building sites for light industrial space, a commons building containing space for common facilities to be shared among tenants, including meeting rooms of various sizes, space for educational activities to be developed in conjunction with NMSU, Arrowhead, and other local institutions, a cafe, and office and lab space for Spaceport tenants not requiring industrial space, such as space-related software and service developers. This could be accomplished in the Phase 2 period.

During this phase, static testing and low-level launch pads would be migrated to the operational area on the northern third of the BLM parcel. As with the test facilities along the western border in Phase 1, operations could initially begin without permanent utilities, operating on a campaign basis. However, as the phase progresses, and as user demand dictates, permanent utility lines can be installed, making the test areas more attractive to users with a heavy ongoing test schedule.

In the event that systems utilizing the runways become a significant percentage of Space Campus users, consideration should be given to construction of a space-dedicated runway in the middle third of the BLM area to accommodate takeoffs and landings of space-related systems. If the runway is dedicated solely to systems licensed as space operators, FAA requirements for runways would not necessarily be fully applicable, which might permit lower costs in initial phases of operations. Even if that were to be the case, it would still be prudent to refrain from any permanent decisions that would prevent it from being brought into conformity at a later phase.

Alternative 2 would develop Phase 1 as planned in Alternative 1 up to the point at which BLM land needed to be developed either for the parcel south of the existing LRU southern boundary, (Phase 1b), or when Phase 2 required the acquisition of the 4,400-acre BLM parcel to the west of the current LRU boundary. In the event that the acquisition of the BLM parcels is denied, burdened with impractical conditions or costs, or otherwise rendered unusable or undesirable, Alternative 2 would seek to acquire or gain use of the State land parcel to the west of the western BLM parcel. As this is state land, and the State has chosen to actively pursue space commerce business, it is possible that acquisition of said parcel might be easier, quicker, or less expensive than the acquisition of the BLM parcel. It may also be the case that the land need not be formally transferred, but merely leased or assigned to space use, possibly under the formal auspices of Spaceport Authority. The state parcel would be developed in the same general way or manner as Alternative 1 envisions for the BLM parcel.

This would have the disadvantage of being non-contiguous with the LRU property, and might make sharing infrastructure more complicated. Other issues, like the question of police and fire jurisdiction, would need to be addressed. On the other hand, separation might lessen noise and safety issues less problematic. Finally, the fact of Space Campus operations on both sides of the BLM parcel might strengthen the case for transferring that parcel, which would then give LRU and the Space Campus room for expansion well beyond the time horizon of this Plan. Shown below in **Exhibit 5-9** is a breakdown of commercial space developments at Las Cruces International.

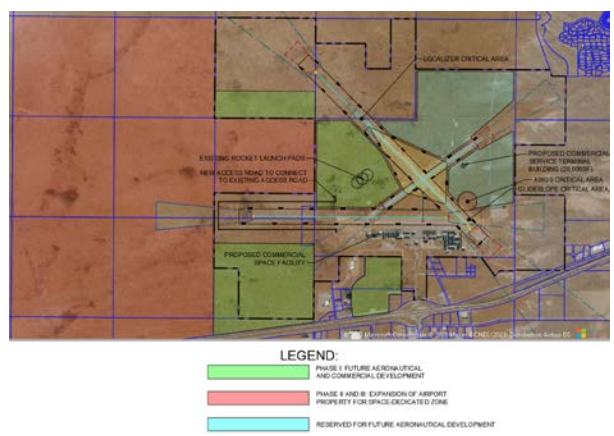


Exhibit 5-9 - Commercial Space Development
Source: DuBois & King, Inc.

Chapter Six: Airport Layout Plan

6-1 Introduction

The Airport Layout Plan (ALP) is a scaled set of drawings that depict existing and proposed land and facilities necessary for the operation and future development of LRU. The ALP is a key communication and agreement document between the City of Las Cruces, the Federal Aviation Administration (FAA), and the New Mexico Department of Transportation (NMDOT). The drawings represent an understanding among these three parties regarding the current and future operation and development of the airport.

The five primary functions of the ALP may be summarized as follows:

1. An ALP creates a blueprint for airport development by depicting proposed facility improvements. The ALP provides a guideline by which the airport sponsor can ensure that development maintains airport design standards and safety requirements and is consistent with airport and community land use plans.
2. The ALP is a public document that serves as a record of aeronautical requirements, both present and future, and as a reference for community deliberations on land use proposals and budget resource planning.
3. The approved ALP enables the airport sponsor and the FAA to plan for facility improvements at the airport. It also allows the FAA to anticipate budgetary and procedural needs. The approved ALP will also allow the FAA to protect the airspace required for facility or approach procedure improvements.
4. The ALP can be a working tool for the airport sponsor, including its development and maintenance staff.
5. An approved ALP is necessary for the airport to receive financial assistance under the terms of the Airport and Airway Improvement Act of 1982, as amended, and to be able to impose and use Passenger Facility Charges. An airport must keep its ALP current and follow that plan, in accordance with grant assurance requirements of the AIP and previous airport development programs, including the 1970 Airport Development Aid Program (ADAP) and Federal Aid Airports Program (FAAP) of 1946, as amended.

6-2 FAA Review and Approval of the ALP

The ALP drawing set approval process may vary, depending on the requirements of the state aviation agency.

Conditional Approval – After review of draft documents using the FAA ALP SOP Checklist agreed to during the scoping for the project, and when satisfied that any necessary edits have been made, the FAA will conditionally approve the ALP drawing set. Approval typically comes in the form of a letter stating that projects depicted will be subject to further environmental review and approvals prior to funding and implementation. This drawing set—particularly the Airport Layout Plan drawing—also becomes a historical record of the physical changes at the airport and as such should be updated as developments occur or as design standards change.

6-3 ALP Sheets Description

The ALP Drawing Set for LRU comprises 26 sheets, each of which is briefly described in the following sections. These drawings were prepared in accordance with the latest version of the FAA Airports Standard Operating Procedures (AOP) 2.00, "Standard Procedure for FAA Review and Approval of Airport Layout Plans," and FAA SOP 3.00, "Standard Operating Procedure for FAA Review of Exhibit A Airport Property Inventory Maps." The drawing set is described below and included at half scale.

6-3-1 Title Sheet (Sheet 1)

Pertinent information on this sheet includes the grant identification number and index of the sheets contained in the drawing set, vicinity/location map, approval signature blocks, space for an FAA approval stamp, and other pertinent information as required by the local FAA Airports District Office (ADO).

6-3-2 Existing Airport Data Sheet (Sheet 2)

A separate sheet containing existing airport facilities data tables.

6-3-3 Existing Airport Layout Plan Drawing (Sheet 3)

A separate drawing depicting the existing airport facilities.

6-3-4 Future Airport Data Sheet (Sheet 4)

A separate sheet containing future airport facilities and runway data tables.

6-3-5 Future Airport Layout Plan Drawing (Sheet 5)

The ALP is a comprehensive presentation of the recommended improvements and conceptual layouts intended to provide the facilities needed to satisfy the forecasted demands at LRU for the planning period. The facility layout shown on the Future ALP sheet meets all of the requirements documented in Chapter 4. Phasing of the recommended development plan is shown relative to the forecasted demands; however, it is understood that development should occur when demand materializes and not at a predetermined timeline. This development plan provides flexibility and enables the airport to evaluate the operating environment and respond to interim changes while considering potential long-term impacts.

6-3-6 Airport Airspace Drawing (Sheet 6)

The Airport Airspace Drawing is a large-scale presentation of the future Part 77 surfaces and their relationships to the surrounding communities. Title 14 CFR Part 77, Objects Affecting Navigable Airspace, defines this as a drawing depicting obstacle identification surfaces for the full extent of all airport development, including the limit of the FAA Form 7460, "Notice of Proposed Construction or Alteration" notification area.

6-3-7 Inner Portion of the Approach Surface Drawings (Sheets 7-12)

This section includes six drawings containing the plan and profile views of the inner portion of the approach and departure surfaces to the end of each runway and a tabular listing of all surface penetrations. The drawings include an existing conditions depiction as well as the future build depiction. The drawings further depict the obstacle identification approach surfaces contained in 14 CFR Part 77, Objects Affecting Navigable Airspace, as well as those surfaces associated with United States Standards for Instrument Procedures (TERPS) or those required by the local FAA office or state agency.

6-3-8 Terminal Area Layout Plan (Sheets 13-15)

The Terminal Area Layout Plan (TALP) is a detailed depiction of the terminal and apron areas. The TALP is divided up into three sheets: the Eastside development, Terminal area development, and Westside area development. These plan sheets include detailed information regarding taxilanes, apron drive lanes, and parking tie-downs, as well as existing and future building heights.

6-3-9 Airport Land Use Drawing (Sheet 16)

A drawing depicting the land uses surrounding the airport, as well as within the airport property boundary.

6-3-10 Airport Utility Drawing (Sheet 17)

A drawing depicting the utilities associated with the airport.

6-3-11 Exhibit "A" Property Map (Sheet 18)

A drawing depicting the airport property boundary, the various tracts of land that were acquired to develop the airport, and the methods of acquisition. This drawing is required as LRU has acquired land with Federal funds or through an FAA-administered land transfer program. If any obligations were incurred as a result of obtaining property or an interest therein, they should be noted. Obligations that stem from a Federal grant or an FAA-administered land transfer program, such as surplus property programs, should also be noted. The drawing should also depict easements beyond the airport boundary. Exhibit A provides a detailed account of the property owned by the airport. It is a formal drawing required for the submission of grant applications. This drawing was prepared in accordance with the latest version of the FAA SOP 3.00, "Standard Operating Procedure for FAA Review of Exhibit A Airport Property Inventory Maps."

DuBois & King inc.
engineering planning management development

LAS CRUCES INTERNATIONAL AIRPORT

LAS CRUCES, NEW MEXICO

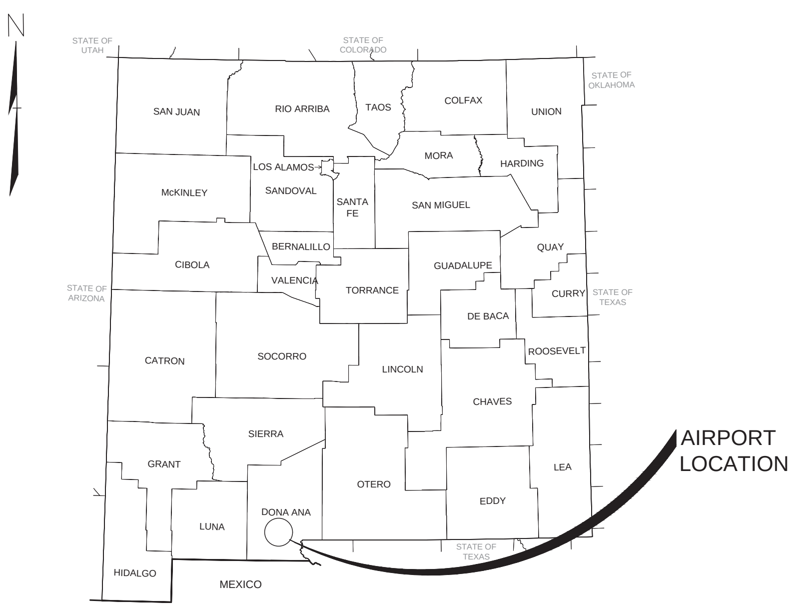
AIRPORT MASTER PLAN

NMDOT-A PROJECT NO. LRU-21-02

FOR THE CITY OF LAS CRUCES
JUNE 2023

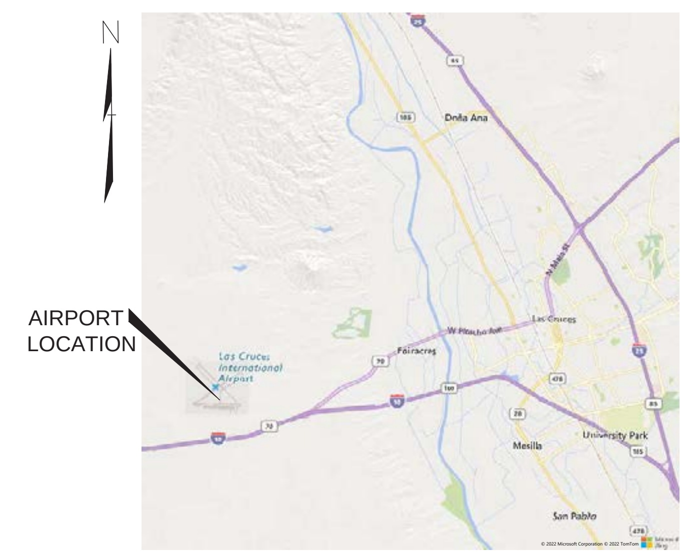
INDEX OF SHEETS

SHEET NO.	DESCRIPTION	REVISION DATE
1	COVER SHEET	
2	EXISTING AIRPORT DATA SHEET	
3	EXISTING AIRPORT LAYOUT PLAN	
4	ULTIMATE AIRPORT DATA SHEET	
5.1 - 5.2	ULTIMATE AIRPORT LAYOUT PLAN	
6	ULTIMATE AIRSPACE PLAN	
7.1 - 7.2	EXISTING INNER PORTION OF THE APPROACH SURFACE RW 12-30	
8.1 - 8.2	EXISTING INNER PORTION OF THE APPROACH SURFACE RW 8-26	
9.1 - 9.2	EXISTING INNER PORTION OF THE APPROACH SURFACE RW 4-22	
10.1 - 10.2	ULTIMATE INNER PORTION OF THE APPROACH SURFACE RW 13-31	
11.1 - 11.2	ULTIMATE INNER PORTION OF THE APPROACH SURFACE RW 8-26	
12.1 - 12.2	ULTIMATE INNER PORTION OF THE APPROACH SURFACE RW 5-23	
13	ULTIMATE FACILITIES LAYOUT PLAN - WEST AREA	
14	ULTIMATE FACILITIES LAYOUT PLAN - TERMINAL AREA	
15	ULTIMATE FACILITIES LAYOUT PLAN - EAST AREA	
16	LAND USE PLAN	
17	UTILITIES PLAN	
18.1 - 18.2	EXHIBIT "A"	



LOCATION MAP
NOT TO SCALE

FEDERAL AVIATION ADMINISTRATION	STATE OF NEW MEXICO	LAS CRUCES INTERNATIONAL AIRPORT
SOUTHWEST REGION	DEPARTMENT OF TRANSPORTATION	CITY OF LAS CRUCES, NEW MEXICO
AIRPORTS DIVISION		
APPROVED BY:	APPROVED BY:	APPROVED BY:
TITLE:	TITLE:	TITLE:
DATE:	DATE:	DATE:



VICINITY MAP
SCALE: 1" = 10,000'

LAS CRUCES INTERNATIONAL AIRPORT

LAS CRUCES INTERNATIONAL AIRPORT
8990 ZIA BLVD.
LAS CRUCES, NM 88007

COVER SHEET

PREPARED BY:
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DRAWN BY: AJL	DATE: JUNE 2023
CHECKED BY: GAR	PROJECT NO.: 327310
PROJECT MGR: PJS	SHEET NO.: 1
SHEET 1 OF 18	

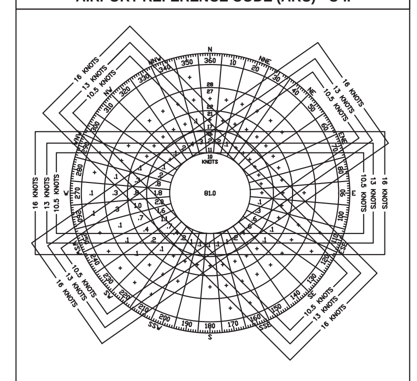
EXISTING RUNWAY DATA TABLE

DESCRIPTION		EXISTING RUNWAY 4	RUNWAY 22	RUNWAY 8	RUNWAY 26	RUNWAY 12	RUNWAY 30
RUNWAY DESIGN CODE (RDC)		B - II - VIS		C - II - VIS		C - II - 4000	C - II - 2400
APPROACH REFERENCE CODE (APRC)		B - II - VIS		C - II - VIS		C - II - 4000	C - II - 2400
PAVEMENT STRENGTH / MATERIAL TYPE	STRENGTH	SINGLE WHEEL 30,000 LBS		SINGLE WHEEL 70,000 LBS; DUAL WHEEL 120,000 LBS		SINGLE WHEEL 70,000 LBS; DUAL WHEEL 120,000 LBS	
	SURFACE	ASPHALT		ASPHALT		CONCRETE	
	PCR	3 / F/D/Y/T		25 / F/C/X/T		41 /R/B/W/T	
	TREATMENT	NO SPECIAL SURFACE TREATMENT		NO SPECIAL SURFACE TREATMENT		GROOVED	
EFFECTIVE GRADIENT (%)		0.1		0.2		0.2	0.3
RUNWAY LENGTH		7,501'		6,069'		7,506'	
RUNWAY WIDTH		105'		100'		100'	
RUNWAY END ELEVATION		4,435.9	4,451.7	4,436.5	4,435.9	4,456.9	4,435.9
DISPLACED THRESHOLD ELEVATION		NONE		NONE		NONE	
RUNWAY SAFETY AREA (RSA)		150' (W) x 300' (L) BEYOND RUNWAY END		500' (W) x 1,000' (L) BEYOND RUNWAY END		500' (W) x 1,000' (L) BEYOND RUNWAY END	
RUNWAY END COORDINATES (NAD 83/ NAVD 88)	LATITUDE	32° 17' 04.47" N	32° 17' 47.41" N	32° 17' 05.83" N	32° 17' 05.85" N	32° 17' 57.07" N	32° 17' 04.56" N
	LONGITUDE	106° 55' 55.57" W	106° 54' 44.32" W	106° 55' 56.05" W	106° 54' 45.37" W	106° 55' 47.78" W	106° 54' 45.97" W
DISPLACED THRESHOLD COORDINATES (NAD 83/ NAVD 88)	LATITUDE	NONE		NONE		NONE	
	LONGITUDE	NONE		NONE		NONE	
RUNWAY LIGHTING		MIRL		MIRL		HIRL	
RUNWAY PROTECTION ZONE		500' x 700' x 1,000'		500' x 1,010' x 1,700'		1000' x 1,510' x 1,700'	1,000' x 1,750' x 2,500'
RUNWAY MARKING		BASIC		BASIC		NON-PRECISION	PRECISION
14 CFR PART 77 APPROACH SLOPE		20:1		20:1		34:1	50:1
PART 77 APPROACH TYPE		VISUAL (TYPE A)		VISUAL (TYPE B)		NON-PRECISION (TYPE C)	PRECISION
VISIBILITY MINIMUMS		VISUAL		VISUAL		3/4 MILE	1/2 MILE
AERONAUTICAL SURVEY TYPE		NON-VERTICALLY GUIDED SURVEY (VGS)		NON-VERTICALLY GUIDED SURVEY (VGS)		VERTICALLY GUIDED SURVEY (VGS)	
RUNWAY DEPARTURE SURFACE		NA		NA		1,000' x 7512' x 12,152'	
RUNWAY OBJECT FREE AREA (ROFA)		500' (W) x 300' (L) BEYOND RUNWAY END		800' (W) x 1,000' (L) BEYOND RUNWAY END		800' (W) x 1,000' (L) BEYOND RUNWAY END	
RUNWAY OBSTACLE FREE ZONE (ROFZ)		250' (W) x 200' (L) BEYOND RUNWAY END		250' (W) x 200' (L) BEYOND RUNWAY END		250' (W) x 200' (L) BEYOND RUNWAY END	
THRESHOLD SITING SURFACE (TSS)		250' x 700' x 2,250' x 2,750' (SURFACE 2)		400' x 1,000' x 1,500' x 8,500' (SURFACE 3)		200' x 400' x 3,400' x 10,000' (SURFACE 5)	200' x 400' x 3,400' x 10,000' (SURFACE 7)
NAVIGATIONAL AIDS	VISUAL	NONE	VASI (4L)	PAPI (4L)		REIL	MALSR
	INSTRUMENT	NONE		NONE		RNAV GPS	RNAV GPS, ILS OR DME
TOUCHDOWN ZONE (TDZ) ELEVATION		4,444	4,451	4,438.2	4,435.9	4,456.9	4,443.7
TAXIWAY (TW) WIDTH		TW D: 35'; TW C: 50'		TW A, E, F, G: 35'; TW B: 50'		TW D: 35'; TW C: 50'	
TAXILANE (TL) WIDTH		NA		TL 1: VARIES FROM 50' TO 90'; TL 2: 60'; TL 3: 120'; TL 4, 11, 12, 13, 14: 80'; TL 7, 15: 50'; TL 8, 9, 10: 75'		NA	
TAXIWAY SAFETY AREA (TSA) WIDTH		TW C - 118'; TW D - 79'		TW A, E, F, G: 79'; TW B: 118'		TW C: 118'; TW D: 79'	
TAXILANE SAFETY AREA (TLSA) WIDTH		N/A		TL 1, 2, 3, 4: 110'; TL 7, 8, 9, 10, 11, 12, 13, 14, 15: 79'		N/A	
TAXIWAY OBJECT FREE AREA (TOFA) WIDTH		TW C: 171'; TW D: 124'		TW A, E, F, G: 124'; TW B: 171'		TW D - 131'; TW C - 186'	
TAXILANE OBJECT FREE AREA (TLOFA) WIDTH		NA		TL 1, 2, 3, 4: 110'; TL 7, 8, 9, 10, 11, 12, 13, 14, 15: 79'		NA	
TAXIWAY SAFETY AREA (TSA) LIST OF OBJECTS WITHIN		TW D SIGN		TW A, B, E, F, G, SIGNS		TW C SIGN	
TAXILANE SAFETY AREA (TLSA) LIST OF OBJECTS WITHIN		NA		TL 7-15 HANGARS		NA	
TAXIWAY (TW) CENTERLINE DIMENSION TO OBJECTS		NONE		TW A APRON: 129', 137', 157', 234', 265', 309', 310', 314', 367', 371'; TW B WIND CONE: 151'		NONE	
TAXILANE (TL) CENTERLINE DIMENSION TO OBJECTS		NA		TL T HANGARS: 83', 91.8', 113'		NONE	
TAXIWAY / TAXILANE LIGHTING		TW C - MITL; TW D - ELEVATED EDGE RETRO REFLECTIVE MARKERS		MITL		TW C - MITL; TW D - ELEVATED EDGE RETRO REFLECTIVE MARKERS	

EXISTING AIRPORT DATA TABLE

DATA		EXISTING
AIRPORT REFERENCE CODE (ARC)		C-II
MEAN MAX. TEMPERATURE AND HOTTEST MONTH		94.6°F (JUNE)
AIRPORT ELEVATION		4456.90
AIRPORT NAVIGATIONAL AIDS (OWNERSHIP)		BEACON (CITY OF LAS CRUCES) ; LOCALIZER, GLIDESLOPE (FAA)
AIRPORT REFERENCE POINT (NAD 83/NAVD 88)	LATITUDE	32° 17' 21" N
	LONGITUDE	106° 55' 19" W
MISCELLANEOUS FACILITIES (OWNERSHIP)		MALSR, VASI, ADS-B ANTENNA (FAA) ; AWOS-III, MIRL, REIL, LIGHTED WIND INDICATOR, SEGMENTED CIRCLE (CITY OF LAS CRUCES)
CRITICAL AIRCRAFT		C - II / CHALLENGER 600 - WINGSPAN: 61'-10", TAIL HEIGHT: 20'-9", APPROACH SPEED: 100
AIRPORT MAGNETIC DECLINATION		7° 52' E (DEC. 2022), ± 0° 21" CHANGING BY 0° 6' W / YR
NPIAS SERVICE LEVEL		GENERAL AVIATION
STATE SERVICE LEVEL		REGIONAL GENERAL

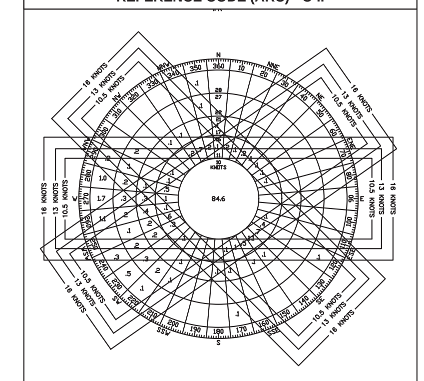
ALL WEATHER WIND ROSE (RUNWAYS COMBINED) AIRPORT REFERENCE CODE (ARC) - C-II



RUNWAY	10.5 KNOTS	13 KNOTS	16 KNOTS
12-30	89.00%	93.17%	96.90%
8-26	96.16%	98.04%	99.45%
4-22	94.24%	97.10%	99.30%
COMBINED	99.64%	99.92%	99.99%

SOURCE: 722695 LAS CRUCES INTL. AIRPORT ANNUAL PERIOD RECORD 2011 - 2020

IFR WIND ROSE (RUNWAYS COMBINED) AIRPORT REFERENCE CODE (ARC) - C-II



RUNWAY	10.5 KNOTS	13 KNOTS	16 KNOTS
12-30	89.89%	91.12%	92.80%
8-26	92.81%	95.18%	97.32%
4-22	90.56%	93.56%	96.91%
COMBINED	99.39%	99.74%	99.99%

SOURCE: 722695 LAS CRUCES INTL. AIRPORT ANNUAL PERIOD RECORD 2011 - 2020

DECLARED DISTANCES

RUNWAY END ID	TORA	TODA	ASDA	LDA	LDA: APPROACH END RSA LENGTH	LDA: STOP END RSA LENGTH	ASDA: RSA LENGTH	DATE OF APPROVAL
–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–

MODIFICATIONS OF DESIGN STANDARDS

NO.	STANDARD MODIFIED	FAA STANDARDS	EXISTING CONDITION	PROPOSED ACTION	DATE OF APPROVAL
–	NONE	–	–	–	–

EXISTING NON-STANDARD CONDITIONS

NO.	NON-STANDARD CONDITION	EXISTING CONDITION	FAA STANDARD (C-II)	PROPOSED ACTION
1	TAXILANES 8, 9, AND 13: DO NOT MEET GROUP I TAXILANE OBJECT FREE AREA (TLOFA)	TAXILANES 8, 9 AND 13 ARE 74', 75' AND 75' RESPECTIVELY	TAXILANE CLEARANCE = 79'	NONE; AIRCRAFT SPEEDS ARE MINIMAL
2	TAXILANE 4: DOES NOT MEET GROUP II TAXILANE OBJECT FREE AREA (TLOFA)	OUTRIGGING ADJACENT TO HANGAR 33 EXTENDS INTO TAXILANE 4 OBJECT FREE AREA	TAXILANE CLEARANCE = 110'	REMOVE OUTRIGGING AND CLEAR OBJECT FREE AREA

NOTES

1. THERE ARE NO KNOWN OBSTACLE FREE ZONE (OFZ) OBJECTS THAT ARE PENETRATIONS.

2. FUTURE DEVELOPMENT IS TO SUPPORT ACCESS AND CIRCULATION BY ARC GROUP II AIRCRAFT THROUGHOUT THE TERMINAL AREA.

3. ALL ELEVATIONS ARE IN FEET ABOVE MEAN SEA LEVEL (MSL).

4. ALL ELEVATIONS ARE IN ACCORDANCE WITH NATIONAL MAP ACCURACY STANDARDS. SPOT ELEVATIONS AND GROUND CONTOURS ARE DERIVED FROM AERIAL PHOTOGRAMMETRY AND ARE APPROXIMATE. GROUND SURVEYS ARE RECOMMENDED TO VERIFY ACCURACY.

5. ALL LATITUDE AND LONGITUDE COORDINATES ARE NAD 83/ NAVD 88.

6. TOPOGRAPHY AND PLANIMETRICS FROM AERIAL SURVEYS OBTAINED FROM THE FOLLOWING:

GEOPRO CONSULTANTS, LLC. SURVEY DATE: 01/25/2023

7. LEGEND ELEMENTS REPRESENT DEPICTIONS ON DRAWING BUT MAY VARY IN SIZE DUE TO SCALING ON DRAWING.

8. ALL RUNWAYS MEET LINE OF SIGHT REQUIREMENTS.

9. MAGNETIC DECLINATION CALCULATED BY USING NOAA MAGNETIC CALCULATOR.

DuBois & King inc.
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BEDFORD, NH
RANDOLPH, VT
BANGOR, ME

PROFESSIONAL SEAL

FOR PLANNING PURPOSES

NO.	DATE	DESCRIPTION	BY	CK'D

LAS CRUCES INTERNATIONAL AIRPORT

8990 ZIA BLVD.
LAS CRUCES,
NEW MEXICO 88007

MASTER PLAN

SHEET TITLE

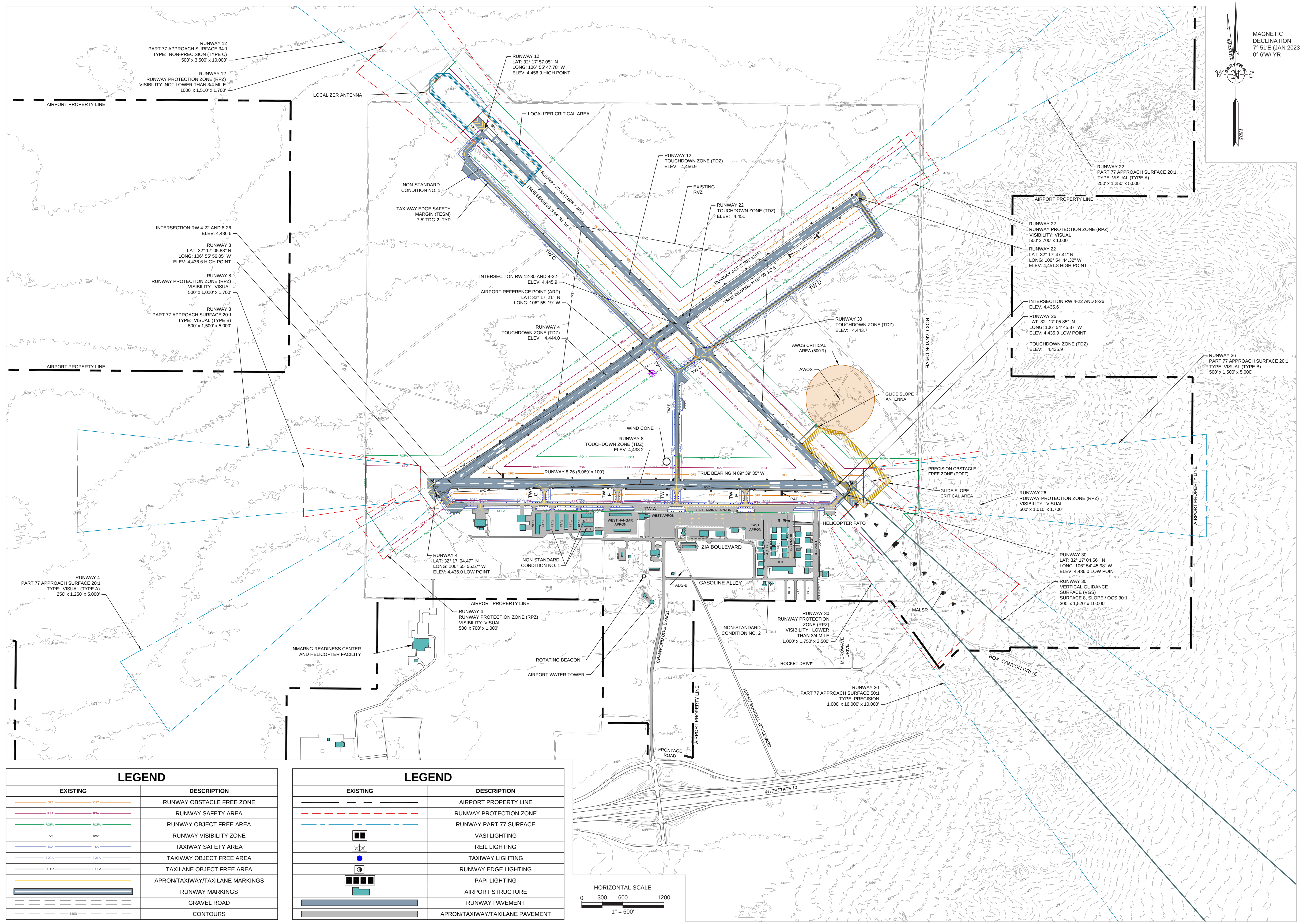
EXISTING AIRPORT DATA SHEET

DRAWN BY	DATE
AJL	JUNE 2023
CHECKED BY: GAR	D&K PROJECT #: 327310
PROJ. MGR.: PJS	D&K ARCHIVE #:

SHEET NUMBER

2

SHEET 2 OF 18.2



LEGEND

EXISTING	DESCRIPTION
OFZ	RUNWAY OBSTACLE FREE ZONE
RSA	RUNWAY SAFETY AREA
ROFA	RUNWAY OBJECT FREE AREA
RVZ	RUNWAY VISIBILITY ZONE
TSA	TAXIWAY SAFETY AREA
TOFA	TAXIWAY OBJECT FREE AREA
TLOFA	TAXILANE OBJECT FREE AREA
	APRON/TAXIWAY/TAXILANE MARKINGS
	RUNWAY MARKINGS
	GRAVEL ROAD
4400	CONTOURS

LEGEND

EXISTING	DESCRIPTION
	AIRPORT PROPERTY LINE
	RUNWAY PROTECTION ZONE
	RUNWAY PART 77 SURFACE
	VASI LIGHTING
	REIL LIGHTING
	TAXIWAY LIGHTING
	RUNWAY EDGE LIGHTING
	PAPI LIGHTING
	AIRPORT STRUCTURE
	RUNWAY PAVEMENT
	APRON/TAXIWAY/TAXILANE PAVEMENT

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BANGOR, ME

PROFESSIONAL SEAL

FOR PLANNING PURPOSES

NO.	DATE	DESCRIPTION	BY	CK'D

LAS CRUCES INTERNATIONAL AIRPORT

8990 ZIA BLVD.
LAS CRUCES, NEW MEXICO 88007

MASTER PLAN

SHEET TITLE

EXISTING AIRPORT LAYOUT PLAN

DRAWN BY	DATE
AJL	JUNE 2023
CHECKED BY	D&K PROJECT #
GAR	327310
PROJ. MGR.	D&K ARCHIVE #
PJS	

SHEET NUMBER

3

SHEET 3 OF 18.2

I:\3\327310 las cruces master plan\Drawings\CAD\LRU ALP 2022_AJL\Drawings\3 Existing Airport Layout Plan.dwg 7/17/2023 11:33 AM

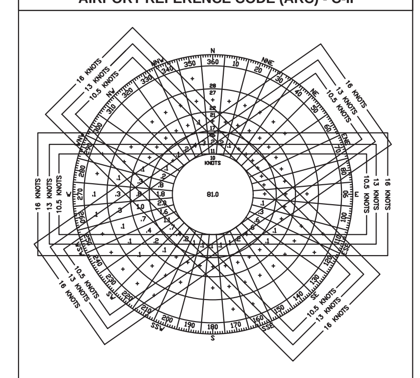
ULTIMATE RUNWAY DATA TABLE

DESCRIPTION		ULTIMATE					
		RUNWAY 5	RUNWAY 23	RUNWAY 8	RUNWAY 26	RUNWAY 13	RUNWAY 31
RUNWAY DESIGN CODE (RDC)		A - I - VIS		C - II - 4000		C - II - 4000	C - II - 2400
APPROACH REFERENCE CODE (APRC)		A - I - VIS		C - II - 4000		C - II - 4000	C - II - 2400
PAVEMENT STRENGTH / MATERIAL TYPE	STRENGTH	SINGLE WHEEL 30,000 LBS		SINGLE WHEEL 70,000 LBS; DUAL WHEEL 120,000 LBS		SINGLE WHEEL 70,000 LBS; DUAL WHEEL 120,000 LBS	
	SURFACE	ASPHALT		ASPHALT		CONCRETE	
	PCR	3 / F/D/Y/T		25 / F/C/X/T		41 /R/B/W/T	
	TREATMENT	NO SPECIAL SURFACE TREATMENT		NO SPECIAL SURFACE TREATMENT		GROOVED	
EFFECTIVE GRADIENT (%)		0.1		0.2		0.2	0.3
RUNWAY LENGTH		5,450'		11,110'		11,110'	
RUNWAY WIDTH		60'		100'		100'	
RUNWAY END ELEVATION		4,435.9	4,451.7	4,436.5	4,435.9	4,456.9	4,435.9
DISPLACED THRESHOLD ELEVATION		NONE		NONE		NONE	
RUNWAY SAFETY AREA (RSA)		150' (W) x 300' (L) BEYOND RUNWAY END		500' (W) x 1,000' (L) BEYOND RUNWAY END		500' (W) x 1,000' (L) BEYOND RUNWAY END	
RUNWAY END COORDINATES (NAD 83/ NAVD 88)	LATITUDE	32° 17' 16.21" N	32° 17' 47.40" N	32° 17' 09.75" N	32° 17' 09.79" N	32° 18' 22.31" N	32° 17' 04.56" N
	LONGITUDE	106°55'36.10" W	106° 54' 44.31" W	106° 57' 10.18" W	106° 55' 00.75" W	106° 56' 17.49" W	106° 54' 45.97" W
DISPLACED THRESHOLD COORDINATES (NAD 83/ NAVD 88)	LATITUDE	NONE		NONE		NONE	
	LONGITUDE	NONE		NONE		NONE	
RUNWAY LIGHTING		MIRL		MIRL		HIRL	
RUNWAY PROTECTION ZONE (RPZ)		500' x 700' x 1,000'		1000' x 1,510' x 1,700'		1000' x 1,510' x 1,700'	1,000' x 1,750' x 2,500'
RUNWAY MARKING		BASIC		NON-PRECISION		NON-PRECISION	PRECISION
14 CFR PART 77 APPROACH SLOPE		20:1		34:1		34:1	50:1
PART 77 APPROACH TYPE		VISUAL (TYPE A)		NON-PRECISION (TYPE C)		NON-PRECISION (TYPE C)	PRECISION
VISIBILITY MINIMUMS		VISUAL		3/4 MILE		3/4 MILE	1/2 MILE
AERONAUTICAL SURVEY TYPE		NON-VERTICALLY GUIDED SURVEY (VGS)		NON-VERTICALLY GUIDED SURVEY (VGS)		VERTICALLY GUIDED SURVEY (VGS)	
RUNWAY DEPARTURE SURFACE		N/A		N/A		1,000' x 7512' x 12,152'	
RUNWAY OBJECT FREE AREA (ROFA)		500' (W) x 300' (L) BEYOND RUNWAY END		800' (W) x 1,000' (L) BEYOND RUNWAY END		800' (W) x 1,000' (L) BEYOND RUNWAY END	
RUNWAY OBSTACLE FREE ZONE (ROFZ)		250' (W) x 200' (L) BEYOND RUNWAY END		250' (W) x 200' (L) BEYOND RUNWAY END		250' (W) x 200' (L) BEYOND RUNWAY END	
THRESHOLD SITING SURFACE (TSS)		250' x 700' x 2,250' x 2,750' (SURFACE 2)		400' x 1,000' x 1,500' x 8,500' (SURFACE 3)		200' x 400' x 3,400' x 10,000' (SURFACE 5)	200' x 400' x 3,400' x 10,000' (SURFACE 7)
NAVIGATIONAL AIDS	VISUAL	NONE	NONE	PAPI (4L)		REIL	MALSR
	INSTRUMENT	NONE		ILS		RNAV GPS	RNAV GPS, ILS OR DME
TOUCHDOWN ZONE (TDZ) ELEVATION		4,444	4,451	4,438.2	4,435.9	4,456.9	4,443.7
TAXIWAY (TW) WIDTH		TW D: 25' (WEST OF TW C), TW C: 50', TW D: 35' (EAST OF TW C)		TW A, A1, A2, A3, A4, A5, A6, C, E: 35'; TW B: 50'		TW A, D: 35'; TW C: 50'	
TAXILANE (TL) WIDTH		N/A		TL 1: VARIES FROM 50' TO 90'; TL 2: 60'; TL 3: 120'; TL 4, 11, 12, 13, 14: 80'; TL 7, 15: 50'; TL 8, 9, 10: 75'; TL 21, 22, 23: 25'		N/A	
TAXIWAY SAFETY AREA (TSA) WIDTH		TW D: 49' (WEST OF TW C), TW C: 118', TW D: 79' (EAST OF TW C)		TW A, A1, A2, A3, A4, A5, A6, C, E: 79'		TW C: 118'; TW A, D: 79'	
TAXILANE SAFETY AREA (TLSA) WIDTH		N/A		TL 1, 2, 3, 4: 110'; TL 7, 8, 9, 10, 11, 12, 13, 14, 15, 21, 22, 23: 79'		N/A	
TAXIWAY OBJECT FREE AREA (TOFA) WIDTH		TW D: 89' (WEST OF TW C), TW C: 171', TW D: 124' (EAST OF TW C)		TW A, A1, A2, A3, A4, A5, A6, E: 124'; TW B: 171'		TW A: 124', TW D: 131'; TW C: 186'	
TAXILANE OBJECT FREE AREA (TLOFA) WIDTH		N/A		TL 1, 2, 3, 4: 110'; TL 7, 8, 9, 10, 11, 12, 13, 14, 15, 21, 22, 23: 79'		N/A	
TAXIWAY SAFETY AREA (TSA) LIST OF OBJECTS WITHIN		TW C, D SIGNS		TW A, A1, A2, A3, A4, A5, A6, B, E SIGNS		TW A, C, D SIGNS	
TAXILANE SAFETY AREA (TLSA) LIST OF OBJECTS WITHIN		N/A		TL 7-15 HANGARS		N/A	
TAXIWAY (TW) CENTERLINE DIMENSION TO OBJECTS		NONE		NONE		NONE	
TAXILANE (TL) CENTERLINE DIMENSION TO OBJECTS		N/A		TL TO HANGARS: 83', 91.8', 113'		NONE	
TAXIWAY / TAXILANE LIGHTING		TW C - MITL; TW D - ELEVATED EDGE RETRO REFLECTIVE MARKERS		MITL		TW C - MITL; TW D - ELEVATED EDGE RETRO REFLECTIVE MARKERS	

ULTIMATE AIRPORT DATA TABLE

DATA		EXISTING
AIRPORT REFERENCE CODE (ARC)		C-II
MEAN MAX. TEMPERATURE AND HOTTEST MONTH		94.6°F (JUNE)
AIRPORT ELEVATION (NAVD88)		4456.90
AIRPORT NAVIGATIONAL AIDS (OWNERSHIP)		BEACON (CITY OF LAS CRUCES) ; LOCALIZER, GLIDESLOPE (FAA)
AIRPORT REFERENCE POINT (NAD83)	LATITUDE	32° 17' 21" N
	LONGITUDE	106° 55' 19" W
MISCELLANEOUS FACILITIES (OWNERSHIP)		MALSR, VASI, ADS-B ANTENNA (FAA) ; AWOS-III, MIRL, REIL, LIGHTED WIND INDICATOR, SEGMENTED CIRCLE (CITY OF LAS CRUCES)
CRITICAL AIRCRAFT		C - II / CHALLENGER 600 - WINGSPAN: 61'-10", TAIL HEIGHT: 20'-9", APPROACH SPEED: 100
AIRPORT MAGNETIC DECLINATION		7° 52' E (DEC. 2022), ± 0° 21'' CHANGING BY 0° 6' W / YR
NPIAS SERVICE LEVEL		NON-PRIMARY COMMERCIAL
STATE SERVICE LEVEL		REGIONAL GENERAL

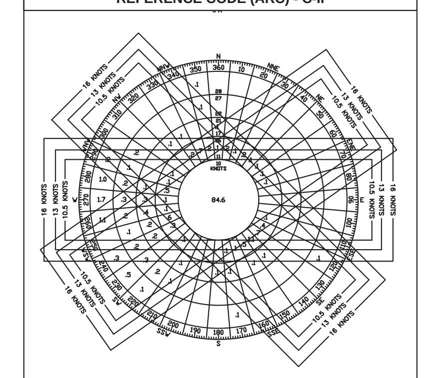
ALL WEATHER WIND ROSE (RUNWAYS COMBINED) AIRPORT REFERENCE CODE (ARC) - C-II



RUNWAY	10.5 KNOTS	13 KNOTS	16 KNOTS
12-30	89.00%	93.17%	96.90%
8-26	96.16%	98.04%	99.45%
4-22	94.24%	97.10%	99.30%
COMBINED	99.64%	99.92%	99.99%

SOURCE: 722695 LAS CRUCES INTL. AIRPORT ANNUAL PERIOD RECORD 2011 - 2020

IFR WIND ROSE (RUNWAYS COMBINED) AIRPORT REFERENCE CODE (ARC) - C-II



RUNWAY	10.5 KNOTS	13 KNOTS	16 KNOTS
12-30	89.89%	91.12%	92.80%
8-26	92.81%	95.18%	97.32%
4-22	90.56%	93.56%	96.91%
COMBINED	99.39%	99.74%	99.99%

SOURCE: 722695 LAS CRUCES INTL. AIRPORT ANNUAL PERIOD RECORD 2011 - 2020

DECLARED DISTANCES

RUNWAY END ID	TORA	TODA	ASDA	LDA	LDA: APPROACH END RSA LENGTH	LDA: STOP END RSA LENGTH	ASDA: RSA LENGTH	DATE OF APPROVAL
–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–

MODIFICATIONS OF DESIGN STANDARDS

NO.	STANDARD MODIFIED	FAA STANDARDS	EXISTING CONDITION	PROPOSED ACTION	DATE OF APPROVAL
–	NONE	–	–	–	–

ULTIMATE NON-STANDARD CONDITIONS

NO.	NON-STANDARD CONDITION	EXISTING CONDITION	FAA STANDARD (C-II)	PROPOSED ACTION
1	TAXILANES 8, 9, AND 13: DO NOT MEET GROUP I TAXILANE OBJECT FREE AREA (TLOFA)	TAXILANES 8, 9 AND 13 ARE 74', 75' AND 75' RESPECTIVELY	TAXILANE CLEARANCE = 79'	NONE; AIRCRAFT SPEEDS ARE MINIMAL
2	TAXILANE 4: DOES NOT MEET GROUP II TAXILANE OBJECT FREE AREA (TLOFA)	OUTRIGGING ADJACENT TO HANGAR 33 EXTENDS INTO TAXILANE 4 OBJECT FREE AREA	TAXILANE CLEARANCE = 110'	REMOVE OUTRIGGING AND CLEAR OBJECT FREE AREA

NOTES

1. THERE ARE NO KNOWN OBSTACLE FREE ZONE (OFZ) OBJECTS THAT ARE PENETRATIONS.
2. FUTURE DEVELOPMENT IS TO SUPPORT ACCESS AND CIRCULATION BY ARC GROUP II AIRCRAFT THROUGHOUT THE TERMINAL AREA.
3. ALL ELEVATIONS ARE IN FEET ABOVE MEAN SEA LEVEL (MSL).
4. ALL ELEVATIONS ARE IN ACCORDANCE WITH NATIONAL MAP ACCURACY STANDARDS. SPOT ELEVATIONS AND GROUND CONTOURS ARE DERIVED FROM AERIAL PHOTOGRAMMETRY AND ARE APPROXIMATE. GROUND SURVEYS ARE RECOMMENDED TO VERIFY ACCURACY.
5. ALL LATITUDE AND LONGITUDE COORDINATES AND ELEVATIONS ARE NAD 83/ NAVD 88.
6. TOPOGRAPHY AND PLANIMETRICS FROM AERIAL SURVEYS OBTAINED FROM THE FOLLOWING:

   GEOPRO CONSULTANTS, LLC. SURVEY DATE: JAN. 25, 2023

7. LEGEND ELEMENTS REPRESENT DEPICTIONS ON DRAWING BUT MAY VARY IN SIZE DUE TO SCALING ON DRAWING.
8. ALL RUNWAYS MEET LINE OF SIGHT REQUIREMENTS.

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NO.	DATE	DESCRIPTION	BY	CK'D

LAS CRUCES INTERNATIONAL AIRPORT

8990 ZIA BLVD.
LAS CRUCES,
NEW MEXICO 88007

MASTER PLAN

SHEET TITLE

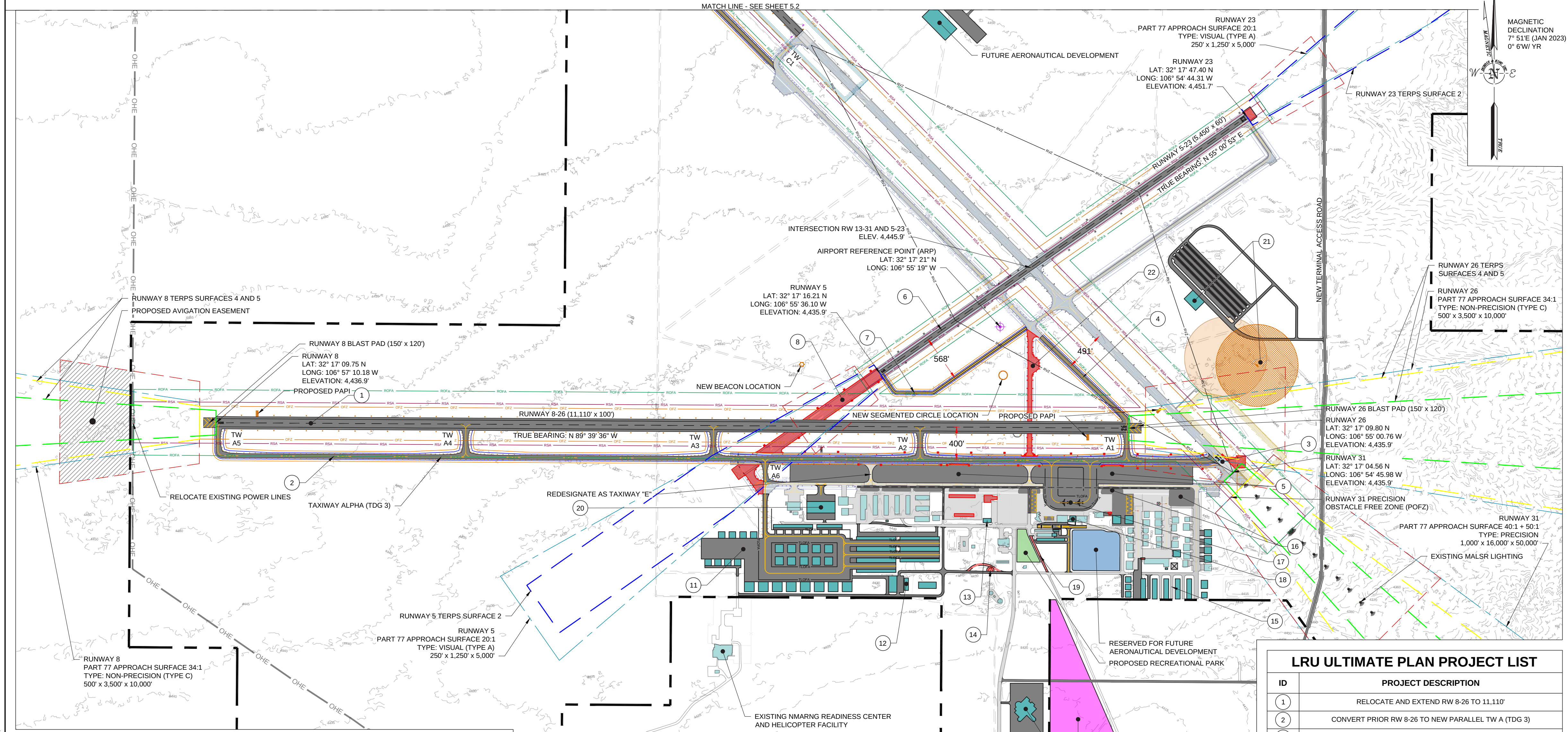
ULTIMATE AIRPORT DATA SHEET

DRAWN BY	DATE
AJL	JUNE 2023
CHECKED BY: GAR	D&K PROJECT #: 327310
PROJ. MGR.: PJS	D&K ARCHIVE #:

SHEET NUMBER

4

SHEET 4 OF 18.2



LEGEND

EXISTING	ULTIMATE	DESCRIPTION
		AIRPORT PROPERTY LINE
RVZ	RVZ	RUNWAY VISIBILITY ZONE
RSA	RSA	RUNWAY SAFETY AREA
ROFA	ROFA	RUNWAY OBJECT FREE AREA
OFZ	OFZ	RUNWAY OBSTACLE FREE ZONE
		RUNWAY PROTECTION ZONE
		RUNWAY PART 77 SURFACE
TSA		TAXIWAY SAFETY AREA
TOFA		TAXIWAY OBJECT FREE AREA
TLOFA	TLOFA	TAXILANE OBJECT FREE AREA
		TAXIWAY/TAXILANE CENTERLINE
		GRAVEL ROAD
		EDGE OF PAVEMENT
		FENCE
		VASI LIGHTING
		REIL LIGHTING
		TAXIWAY EDGE LIGHTING
		RUNWAY EDGE LIGHTING
		PAPI LIGHTING
		DEMOLITION/REMOVAL
		RUNWAY MARKINGS
		AIRPORT PAVEMENT
		AIRPORT STRUCTURE
		GLIDESLOPE CRITICAL AREA
		LOCALIZER CRITICAL AREA

FEDERAL AVIATION ADMINISTRATION APPROVAL STAMP

LRU ULTIMATE PLAN PROJECT LIST

ID	PROJECT DESCRIPTION
1	RELOCATE AND EXTEND RW 8-26 TO 11,110'
2	CONVERT PRIOR RW 8-26 TO NEW PARALLEL TW A (TDG 3)
3	DECOUPLE RW 26 AND 31 ENDS AND JOIN TO NEW TW A
4	EXTEND EXISTING TW C TO MEET NEW RW 26 END (TDG 3)
5	REMOVE EXISTING TW E AND F; CONSTRUCT TRANSITIONAL TAXILANE
6	RW 4 RECONSTRUCTION AS RW 5-23 - ADG A-1
7	EXTEND EXISTING TW D TO MEET NEW RW 5 END (TDG 1A)
8	DECOUPLE RW 5 AND 8 ENDS AND REMOVE PAVEMENT
9	EXTEND RW 13-31 TO 11,110'
10	EXTEND EXISTING TW C TO MEET NEW RW 13 END (TDG 2B)
11	CONSTRUCT NEW GENERAL AVIATION APRON
12	NEW MAINTENANCE FACILITY, DIESEL FUEL, AND AVIATION FUEL FARM
13	CONSTRUCT NEW FBO OFFICE
14	RELOCATION OF ROTATING BEACON AND GASOLINE ALLEY REALIGNMENT
15	CONSTRUCT NEW TAXILANES AND ADDITIONAL HANGARS
16	REMOVE ISLANDS FOR ADDITIONAL APRON SPACE
17	CONSTRUCT NEW TERMINAL AREA TAXILANE - TDG 2B
18	CONSTRUCT NEW TRANSITIONAL TERMINAL BUILDING
19	SECTION REMOVAL OF HARRY BURRELL BOULEVARD
20	CONSTRUCT NEW MRO BUILDING OR COMMERCIAL SPACE FACILITY
21	CONSTRUCT NEW COMMERCIAL SERVICE TERMINAL & RELOCATE AWOS
22	REMOVE EXISTING TW B SECTION

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SHEET TITLE

ULTIMATE AIRPORT LAYOUT PLAN

DRAWN BY: AJL	DATE: JUNE 2023
CHECKED BY: GAR	D&K PROJECT #: 327310
PROJ. MGR: PJS	D&K ARCHIVE #:

SHEET NUMBER

5.1

SHEET 5.1 OF 18.2

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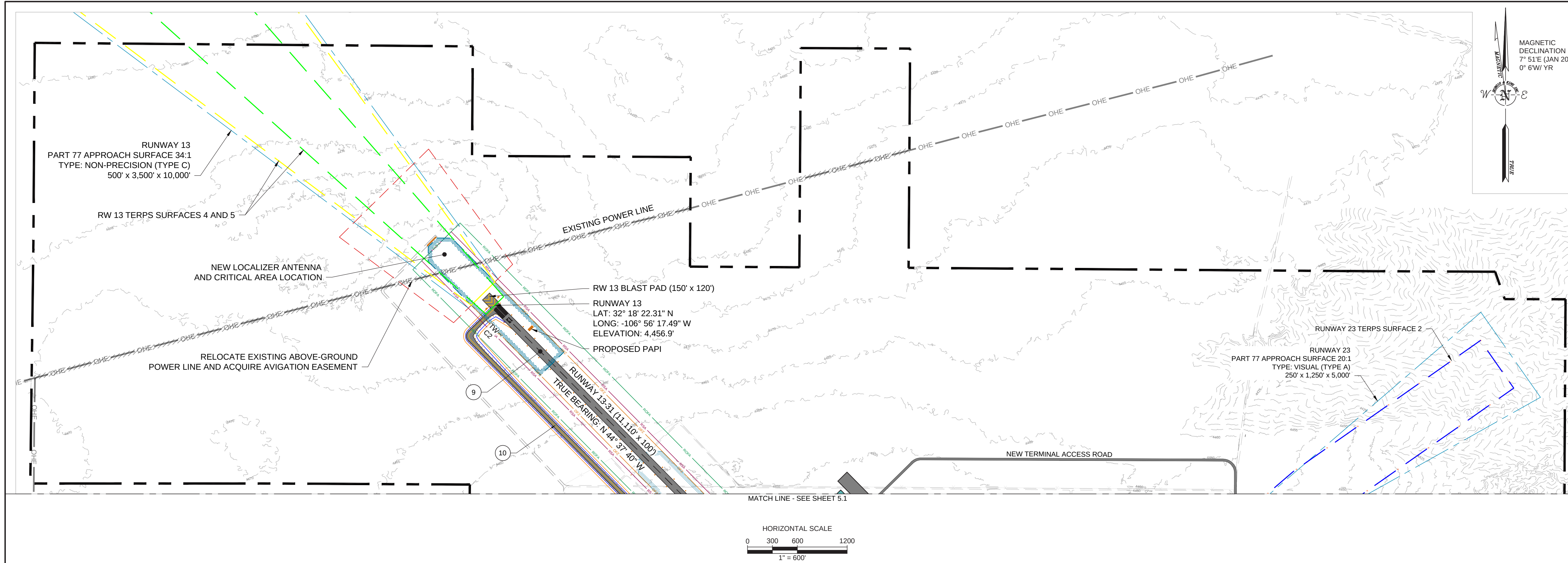

LEGEND

EXISTING	ULTIMATE	DESCRIPTION
		AIRPORT PROPERTY LINE
RVZ	RVZ	RUNWAY VISIBILITY ZONE
RSA	RSA	RUNWAY SAFETY AREA
ROFA	ROFA	RUNWAY OBJECT FREE AREA
OFZ	OFZ	RUNWAY OBSTACLE FREE ZONE
		RUNWAY PROTECTION ZONE
		RUNWAY PART 77 SURFACE
TSA		TAXIWAY SAFETY AREA
TOFA		TAXIWAY OBJECT FREE AREA
TLOFA	TLOFA	TAXILANE OBJECT FREE AREA
		TAXIWAY/TAXILANE CENTERLINE
		GRAVEL ROAD
		EDGE OF PAVEMENT
		FENCE
		VASI LIGHTING
		REIL LIGHTING
		TAXIWAY EDGE LIGHTING
		RUNWAY EDGE LIGHTING
		PAPI LIGHTING
		DEMOLITION/REMOVAL
		RUNWAY MARKINGS
		AIRPORT PAVEMENT
		AIRPORT STRUCTURE
		GLIDESLOPE CRITICAL AREA
		LOCALIZER CRITICAL AREA

LRU ULTIMATE PLAN PROJECT LIST

ID	PROJECT DESCRIPTION
1	RELOCATE AND EXTEND RW 8-26 TO 11,110'
2	CONVERT PRIOR RW 8-26 TO NEW PARALLEL TW E
3	DECOUPLE RW 26 AND 31 ENDS AND JOIN TO NEW TW E
4	EXTEND EXISTING TW C TO MEET NEW RW 26 END
5	REMOVE EXISTING TW E AND F
6	RW 4 RECONSTRUCTION AS RW 5-23 - ADG A-1
7	EXTEND EXISTING TW D TO MEET NEW RW 5 END
8	DECOUPLE RW 5 AND 8 ENDS AND REMOVE PAVEMENT
9	EXTEND RW 13-31 TO 11,110'
10	EXTEND EXISTING TW C TO MEET NEW RW 13 END (TDG 3)
11	CONSTRUCT NEW GENERAL AVIATION APRON
12	NEW MAINTENANCE FACILITY, DIESEL FUEL, AND AVIATION FUEL FARM
13	CONSTRUCT NEW FBO OFFICE
14	RELOCATION OF ROTATING BEACON AND GASOLINE ALLEY REALIGNMENT
15	CONSTRUCT NEW TAXILANES AND ADDITIONAL HANGARS
16	REMOVE ISLANDS FOR ADDITIONAL APRON SPACE
17	CONSTRUCT NEW TERMINAL AREA TAXILANE - TDG 2B
18	CONSTRUCT NEW TRANSITIONAL TERMINAL BUILDING
19	SECTION REMOVAL OF HARRY BURRELL BOULEVARD
20	CONSTRUCT NEW MRO BUILDING OR COMMERCIAL SPACE FACILITY
21	CONSTRUCT NEW COMMERCIAL SERVICE TERMINAL BUILDING
22	REMOVE EXISTING TW B SECTION

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SHEET TITLE

ULTIMATE AIRPORT LAYOUT PLAN

DRAWN BY: AJL	DATE: JUNE 2023
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PROJ. MGR: PJS	D&K ARCHIVE #:

SHEET NUMBER

5.2

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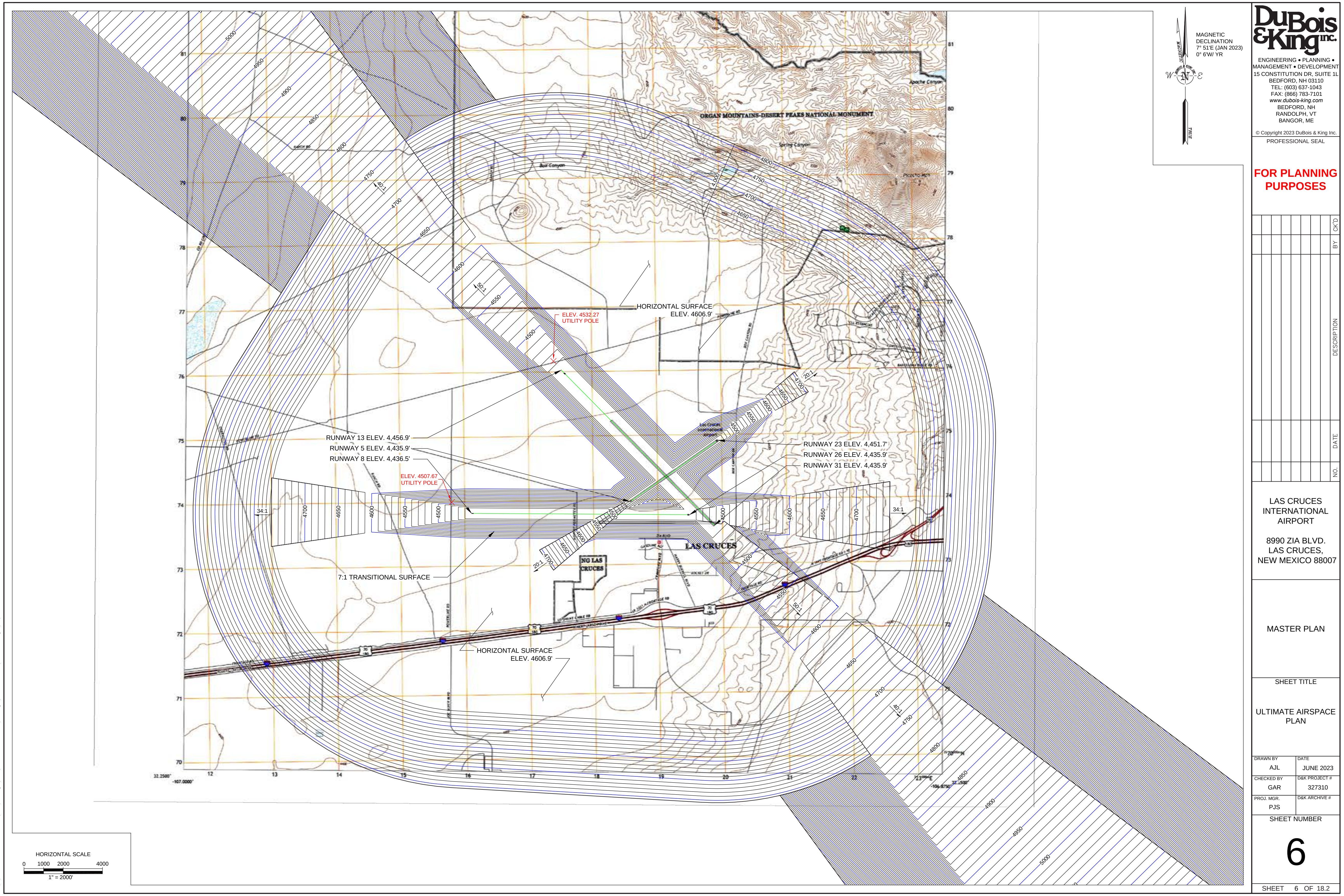
MAGNETIC DECLINATION
7° 51'E (JAN 2023)
0° 6'W/ YR
TRUE
ORGAN MOUNTAINS-DESERT PEAKS NATIONAL MONUMENT
HORIZONTAL SURFACE
ELEV. 4606.9'
ELEV. 4532.27
UTILITY POLE
RUNWAY 13 ELEV. 4,456.9'
RUNWAY 5 ELEV. 4,435.9'
RUNWAY 8 ELEV. 4,436.5'
ELEV. 4507.67
UTILITY POLE
RUNWAY 23 ELEV. 4,451.7'
RUNWAY 26 ELEV. 4,435.9'
RUNWAY 31 ELEV. 4,435.9'
34:1
40:1
50:1
20:1
7:1 TRANSITIONAL SURFACE
HORIZONTAL SURFACE
ELEV. 4606.9'
LAS CRUCES
HORIZONTAL SCALE
0 1000 2000 4000
1" = 2000'
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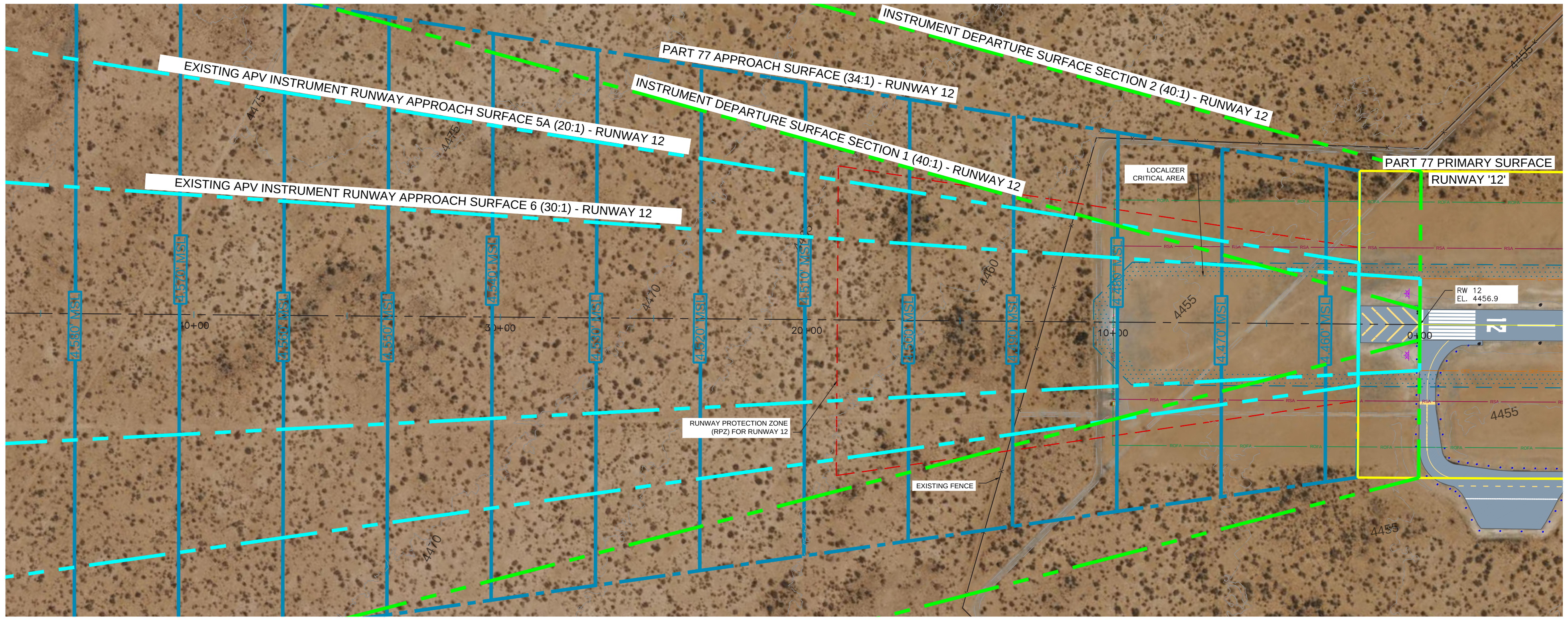
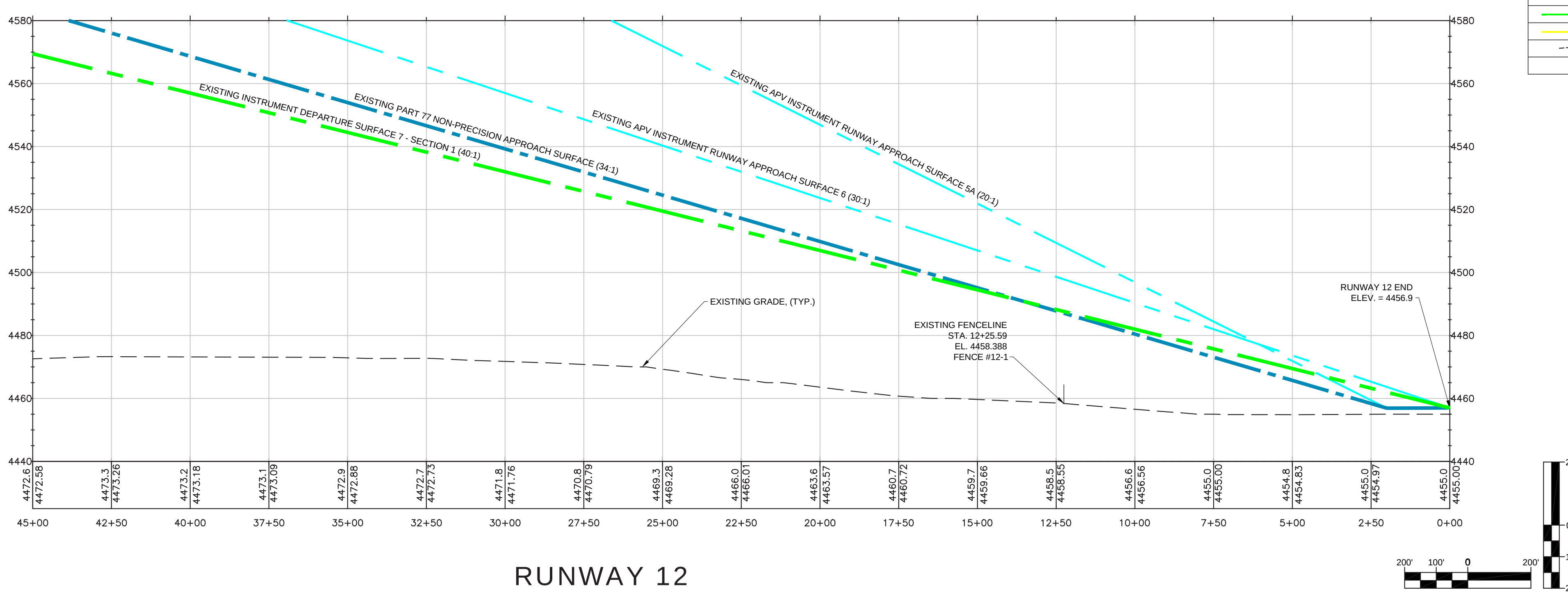
LAS CRUCES,
NEW MEXICO 88007
MASTER PLAN
SHEET TITLE
ULTIMATE AIRSPACE PLAN
DRAWN BY AJL
DATE JUNE 2023
CHECKED BY GAR
D&K PROJECT # 327310
PROJ. MGR. PJS
D&K ARCHIVE #
SHEET NUMBER
6
SHEET 6 OF 18.2



RUNWAY 12
PLAN VIEW

EXISTING	DESCRIPTION
	AIRPORT PROPERTY LINE
	PART 77 PRIMARY SURFACE
	EXISTING PART 77 APPROACH SURFACE
	EXISTING APV APPROACH SURFACE
	EXISTING INSTRUMENT DEPARTURE SURFACE
	FENCE
	CONTOURS
	PART 77 OBSTRUCTION POINTS

LEGEND



RUNWAY 12
PROFILE VIEW

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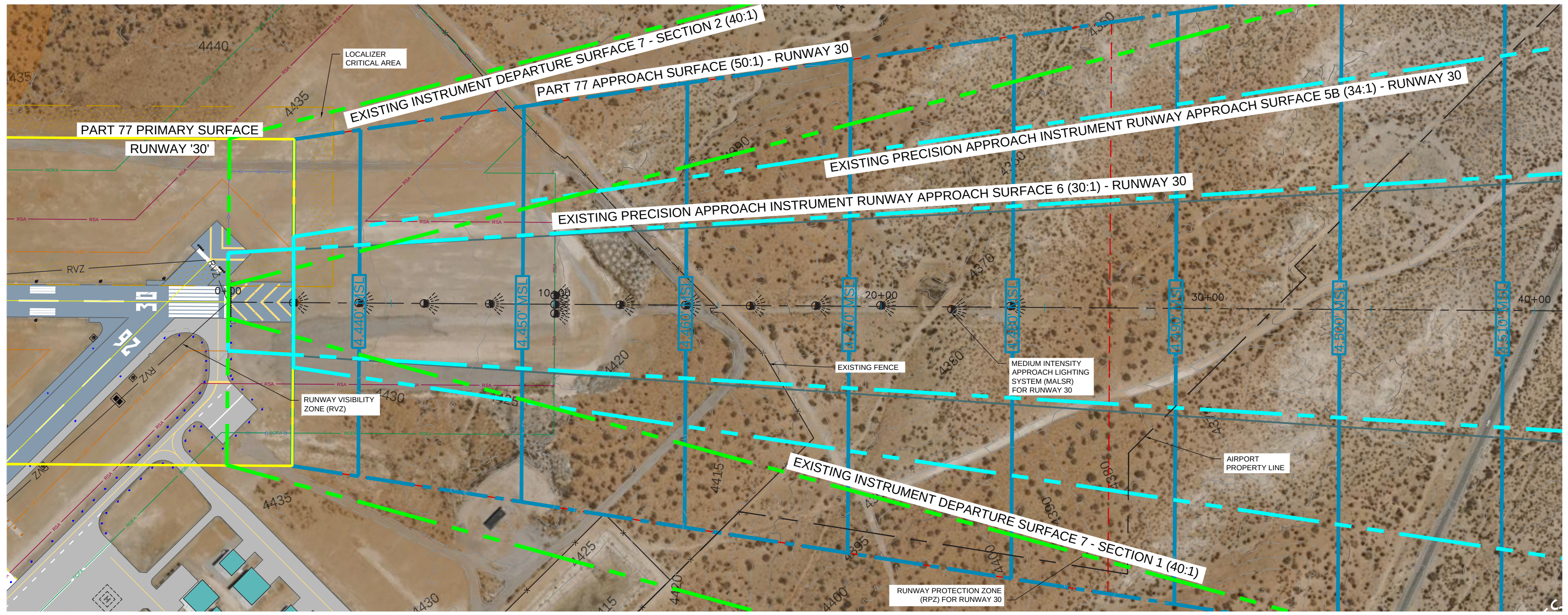
LAS CRUCES, NEW MEXICO 88007

MASTER PLAN

SHEET TITLE
EXISTING INNER APPROACH SURFACE RUNWAY 12

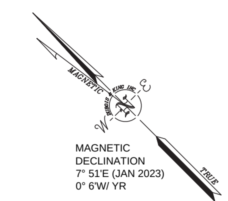
DRAWN BY	DATE
AJL	JUNE 2023
CHECKED BY	D&K PROJECT #
GAR	327310
PROJ. MGR.	D&K ARCHIVE #
PJS	

SHEET NUMBER
7.1
SHEET 7.1 OF 18.2



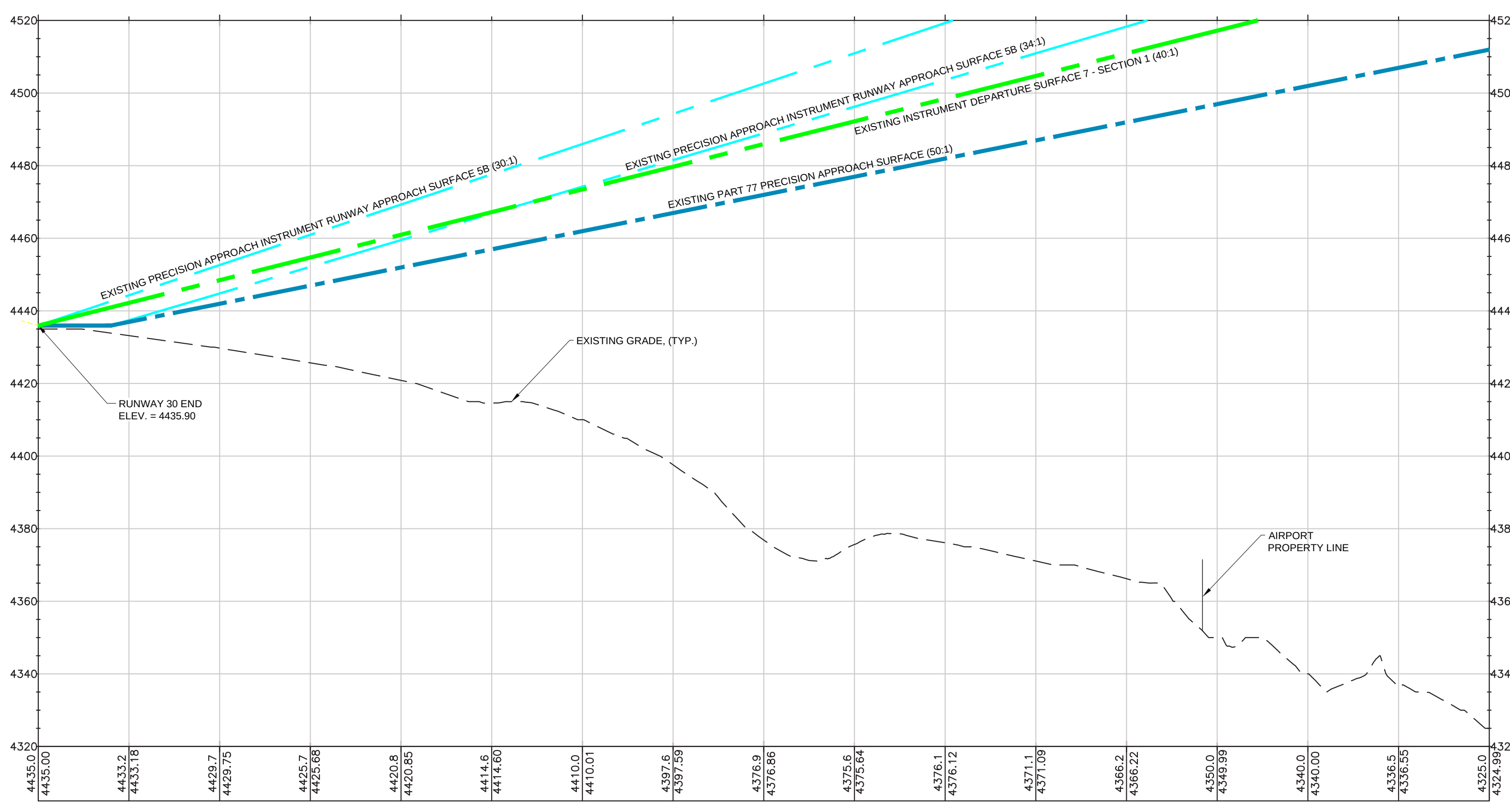
RUNWAY 30
PLAN VIEW

HORIZONTAL SCALE
0 100 200 400
1"= 200'



LEGEND

EXISTING	DESCRIPTION
	AIRPORT PROPERTY LINE
	PART 77 PRIMARY SURFACE
	EXISTING PART 77 APPROACH SURFACE
	EXISTING PA APPROACH SURFACE
	EXISTING INSTRUMENT DEPARTURE SURFACE
	FENCE
	CONTOURS
	PART 77 OBSTRUCTION POINTS



RUNWAY 30
PROFILE VIEW

SCALE IN FEET

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MASTER PLAN

SHEET TITLE

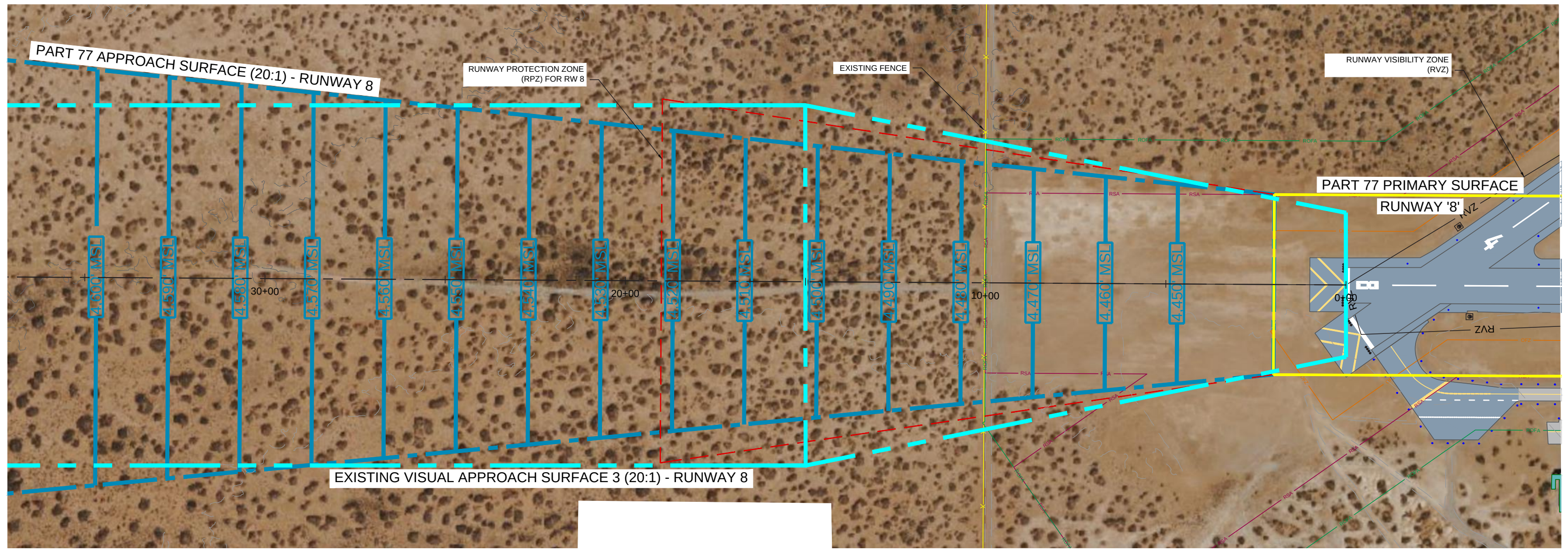
EXISTING INNER APPROACH SURFACE RUNWAY '30'

DRAWN BY	DATE
AJL	JUNE 2023
CHECKED BY	D&K PROJECT #
GAR	327310
PROJ. MGR.	D&K ARCHIVE #
PJS	

SHEET NUMBER

7.2

SHEET 7.2 OF 18.2



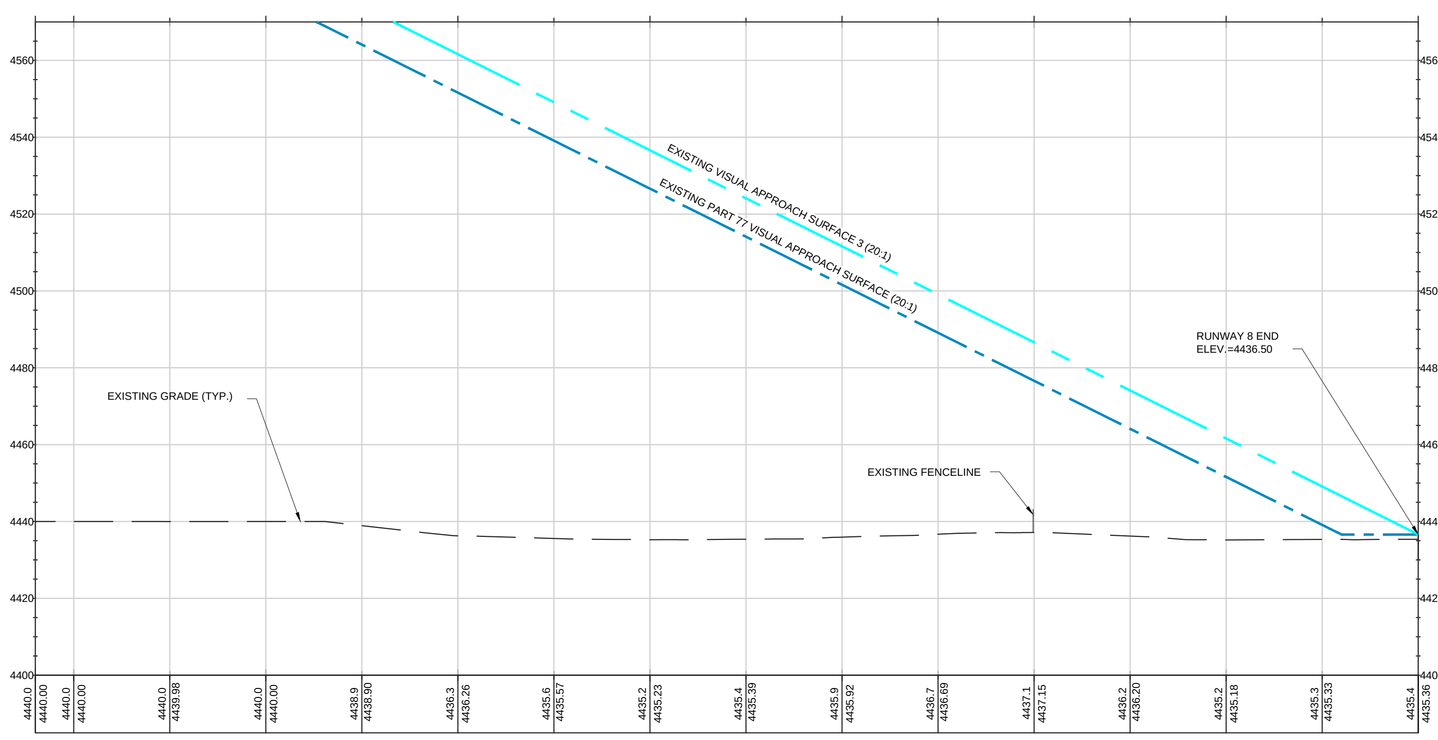
RUNWAY 8
PLAN VIEW

HORIZONTAL SCALE
0 100 200 400
1"= 200'

MAGNETIC DECLINATION
7° 51'E (JAN 2023)
0° 6'W/ YR

LEGEND

EXISTING	DESCRIPTION
— - —	AIRPORT PROPERTY LINE
—	PART 77 PRIMARY SURFACE
- · - ·	EXISTING PART 77 APPROACH SURFACE
- · - ·	EXISTING VISUAL APPROACH SURFACE
—x—x—	FENCE
- - -	CONTOURS
X	PART 77 OBSTRUCTION POINTS



RUNWAY 8
PROFILE VIEW

SCALE IN FEET

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MASTER PLAN

SHEET TITLE

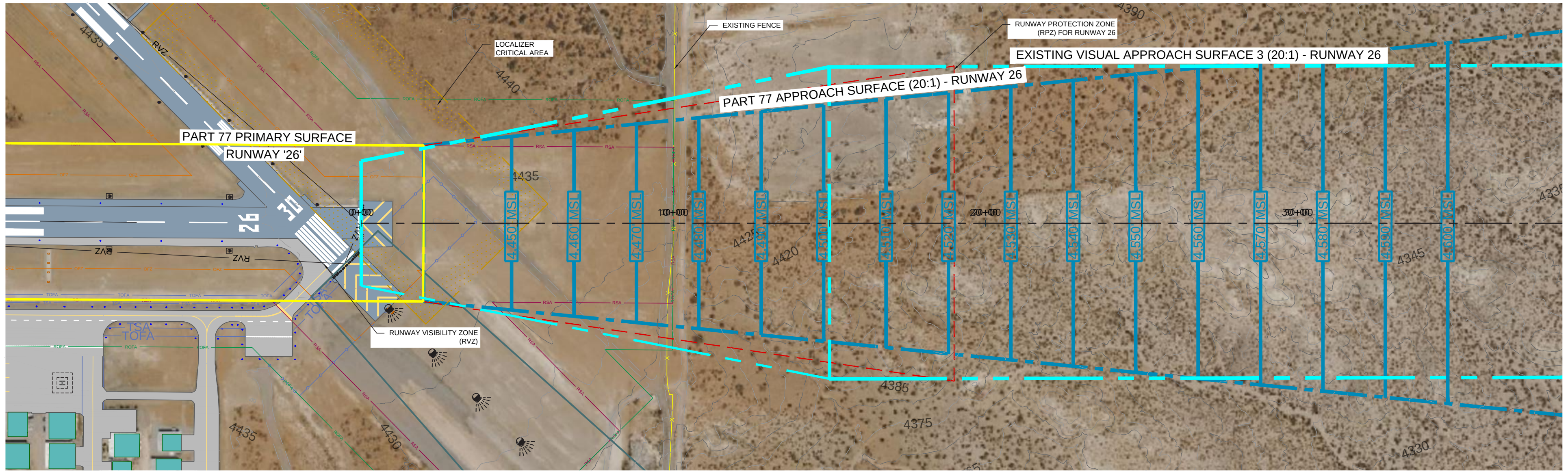
EXISTING INNER APPROACH SURFACE RUNWAY '8'

DRAWN BY	DATE
AJL	JUNE 2023
CHECKED BY	D&K PROJECT #
GAR	327310
PROJ. MGR.	D&K ARCHIVE #
PJS	

SHEET NUMBER

8.1

SHEET 8.1 OF 18.2



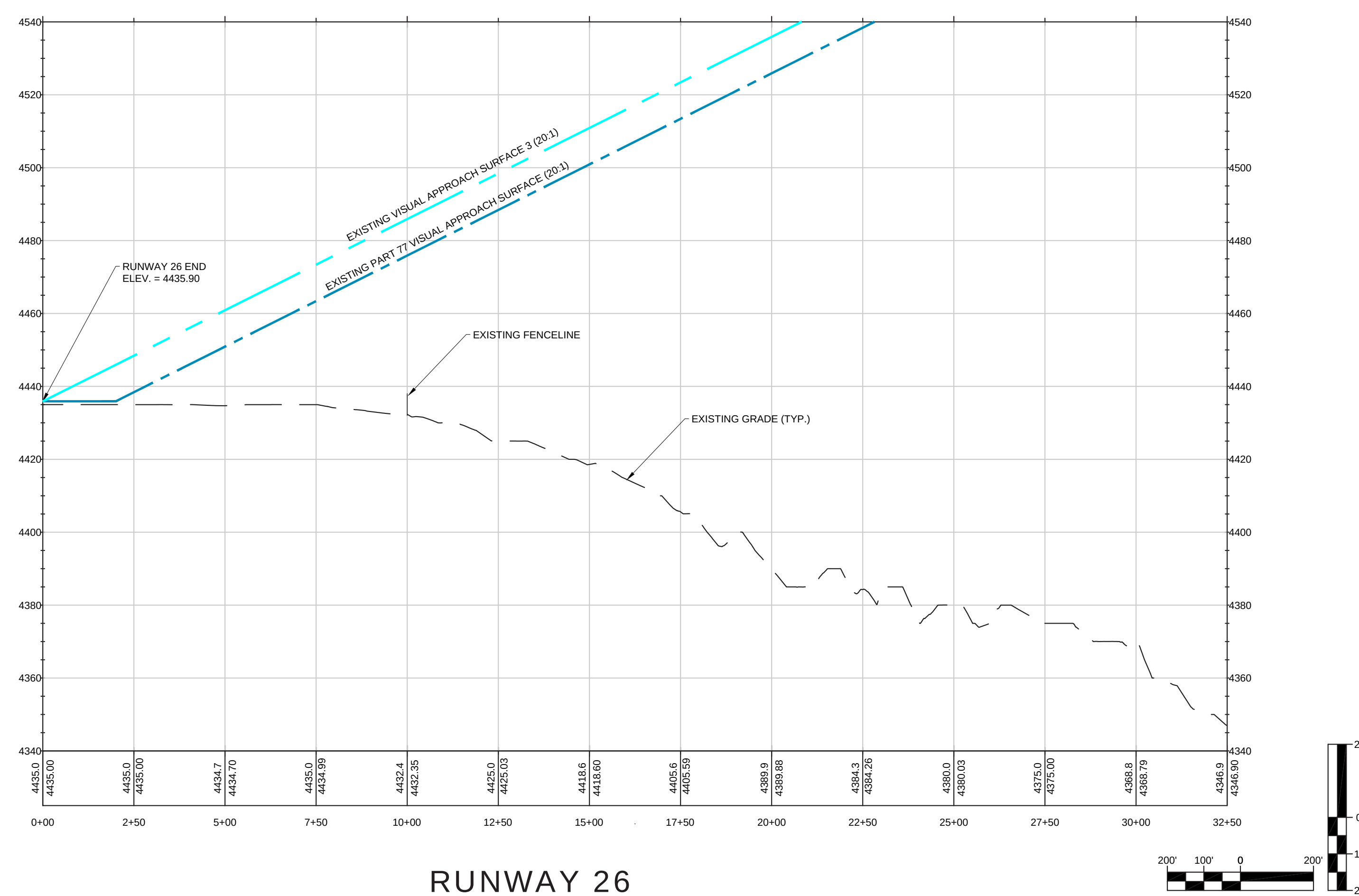
RUNWAY 26 PLAN VIEW

HORIZONTAL SCALE
0 100 200 400
1"= 200'

MAGNETIC DECLINATION
7° 51'E (JAN 2023)
0° 6'W/ YR

LEGEND

EXISTING	DESCRIPTION
	AIRPORT PROPERTY LINE
	PART 77 PRIMARY SURFACE
	EXISTING PART 77 APPROACH SURFACE
	EXISTING VISUAL APPROACH SURFACE
	FENCE
	CONTOURS
	PART 77 OBSTRUCTION POINTS



RUNWAY 26 PROFILE VIEW

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SHEET TITLE

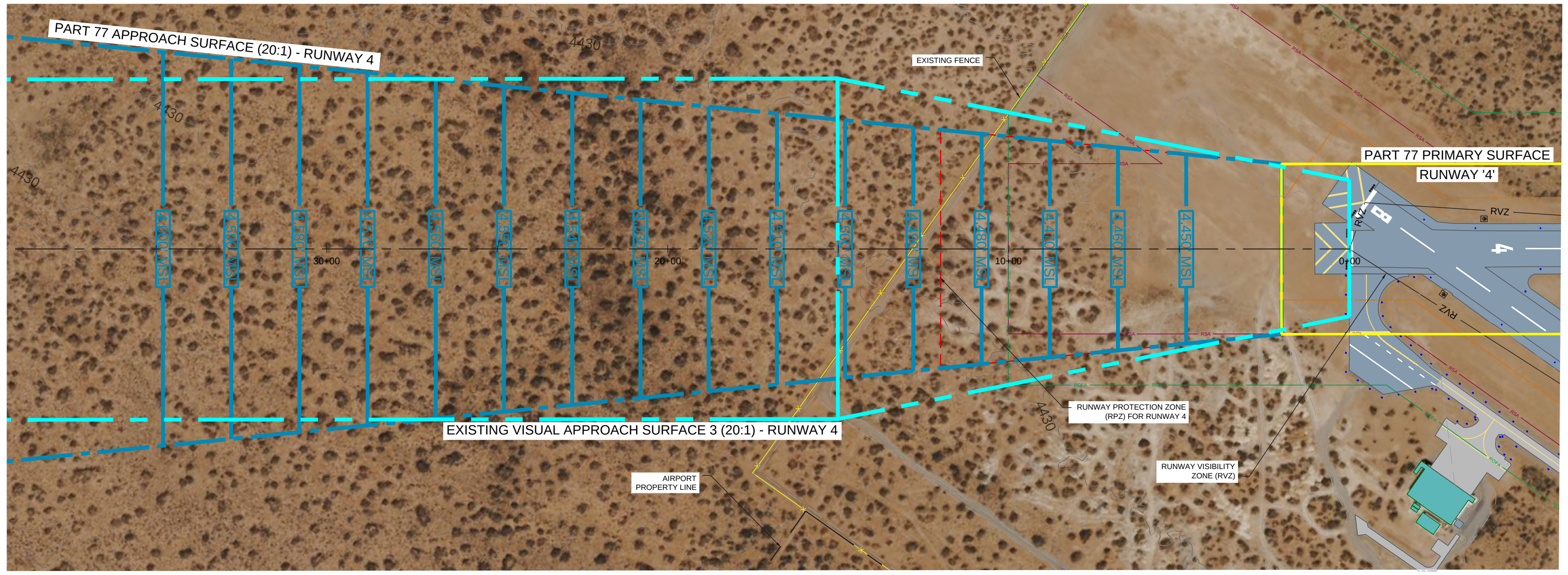
EXISTING INNER APPROACH SURFACE RUNWAY '26'

DRAWN BY: AJL	DATE: JUNE 2023
CHECKED BY: GAR	D&K PROJECT #: 327310
PROJ. MGR.: PJS	D&K ARCHIVE #:

SHEET NUMBER

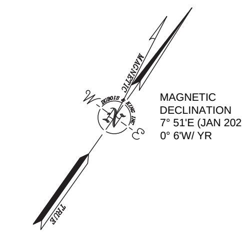
8.2

SHEET 8.2 OF 18.2



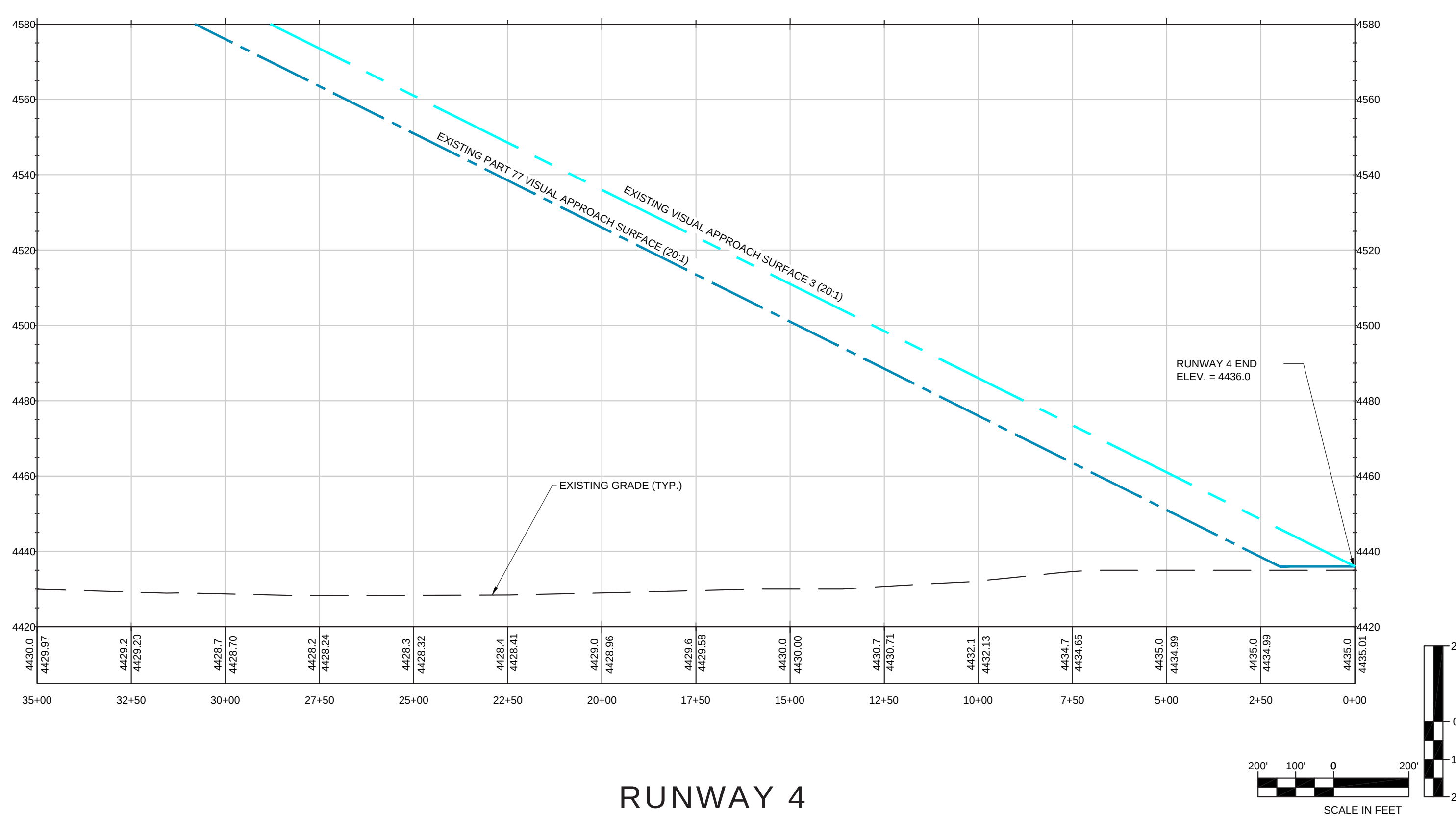
RUNWAY 4
PLAN VIEW

HORIZONTAL SCALE
0 100 200 400
1"= 200'



LEGEND

EXISTING	DESCRIPTION
	AIRPORT PROPERTY LINE
	PART 77 PRIMARY SURFACE
	EXISTING PART 77 APPROACH SURFACE
	EXISTING VISUAL APPROACH SURFACE
	FENCE
	CONTOURS
	PART 77 OBSTRUCTION POINTS



RUNWAY 4
PROFILE VIEW

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MASTER PLAN

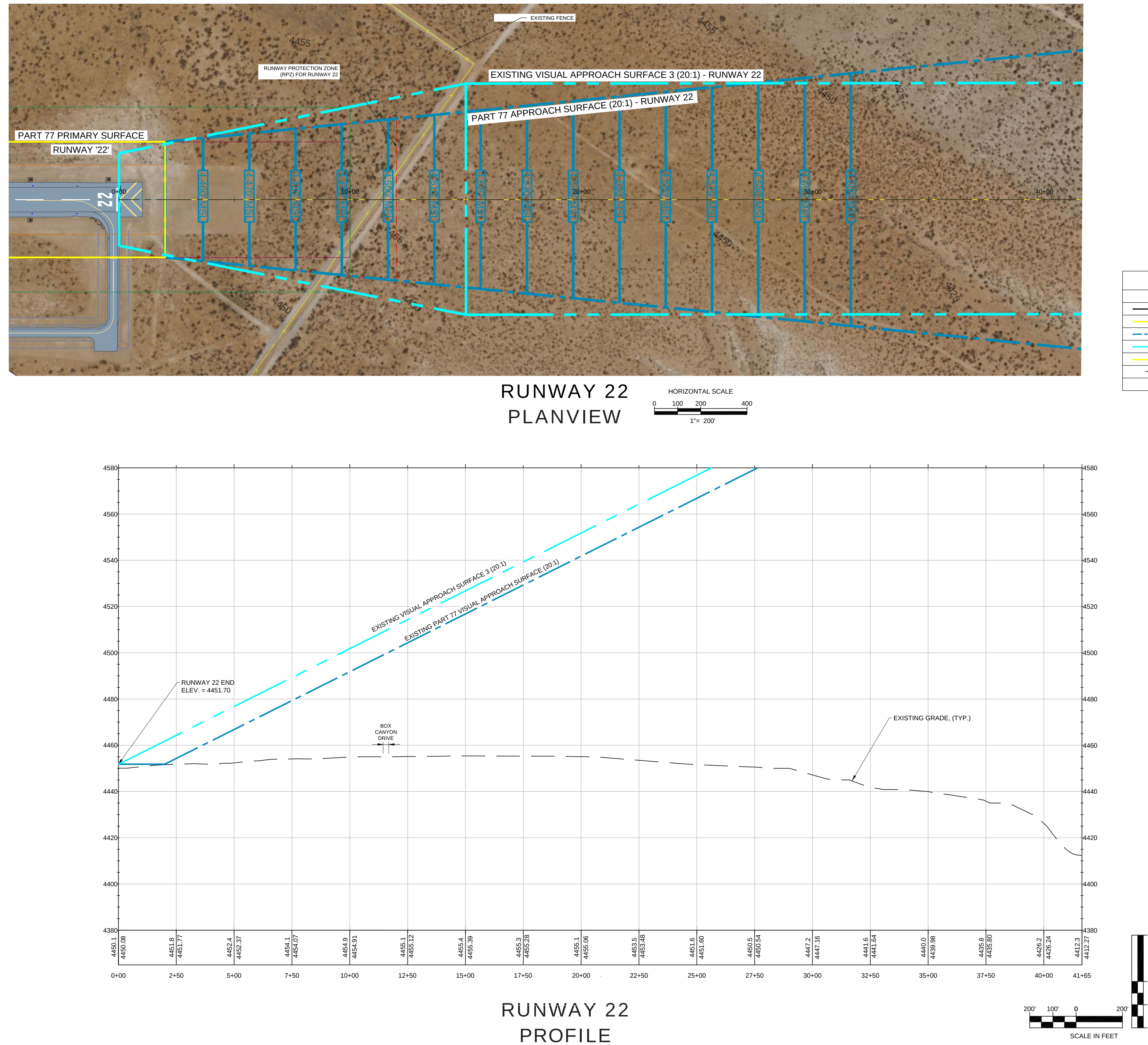
SHEET TITLE

EXISTING INNER APPROACH SURFACE RUNWAY '4'

DRAWN BY	DATE
AJL	JUNE 2023
CHECKED BY	D&K PROJECT #
GAR	327310
PROJ. MGR.	D&K ARCHIVE #
PJS	

SHEET NUMBER
9.1

SHEET 9.1 OF 18.2



LEGEND

EXISTING	DESCRIPTION
	AIRPORT PROPERTY LINE
	PART 77 PRIMARY SURFACE
	EXISTING PART 77 APPROACH SURFACE
	EXISTING VISUAL APPROACH SURFACE
	FENCE
	CONTOURS
	PART 77 OBSTRUCTION POINTS

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SHEET TITLE

EXISTING INNER APPROACH SURFACE RUNWAY '22'

DRAWN BY: AJL	DATE: JUNE 2023
CHECKED BY: GAR	D&K PROJECT #: 327310
PROJ. MGR.: PJS	D&K ARCHIVE #:

SHEET NUMBER

9.2

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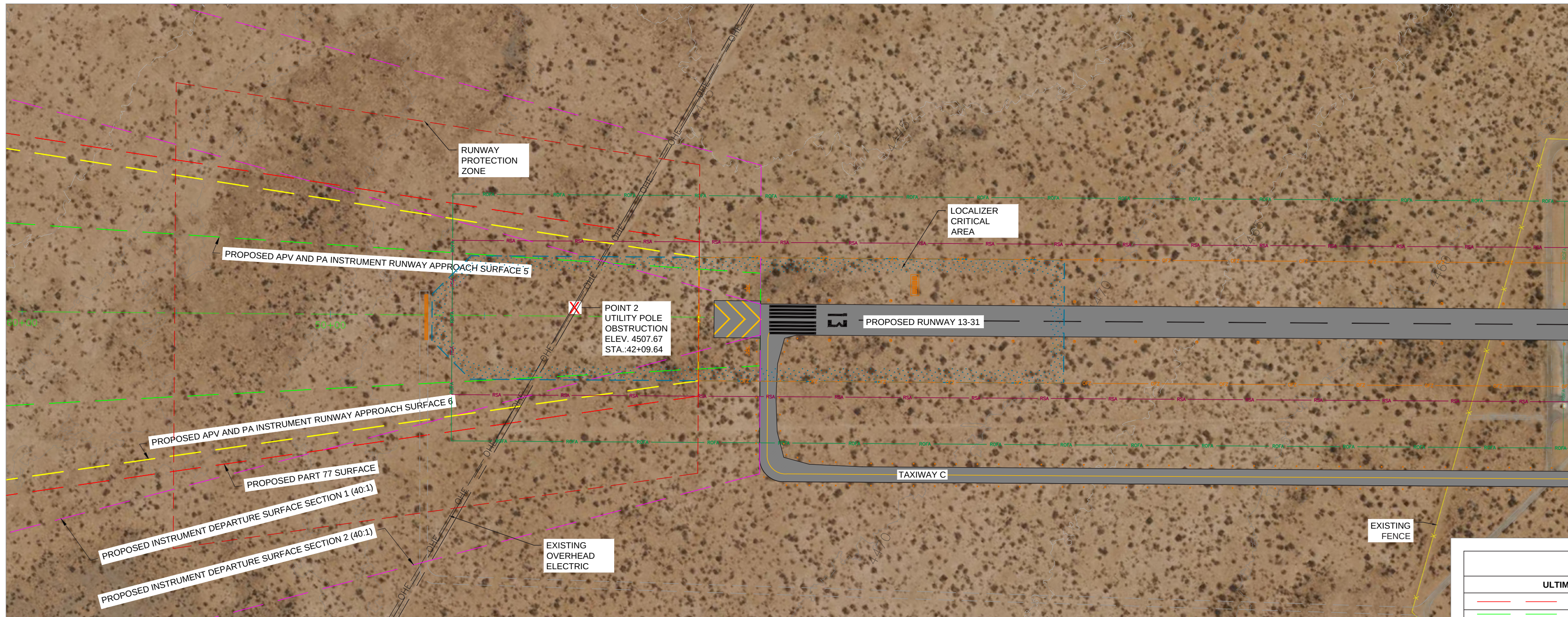
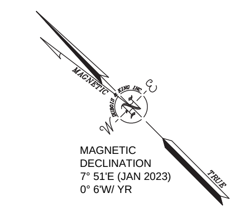


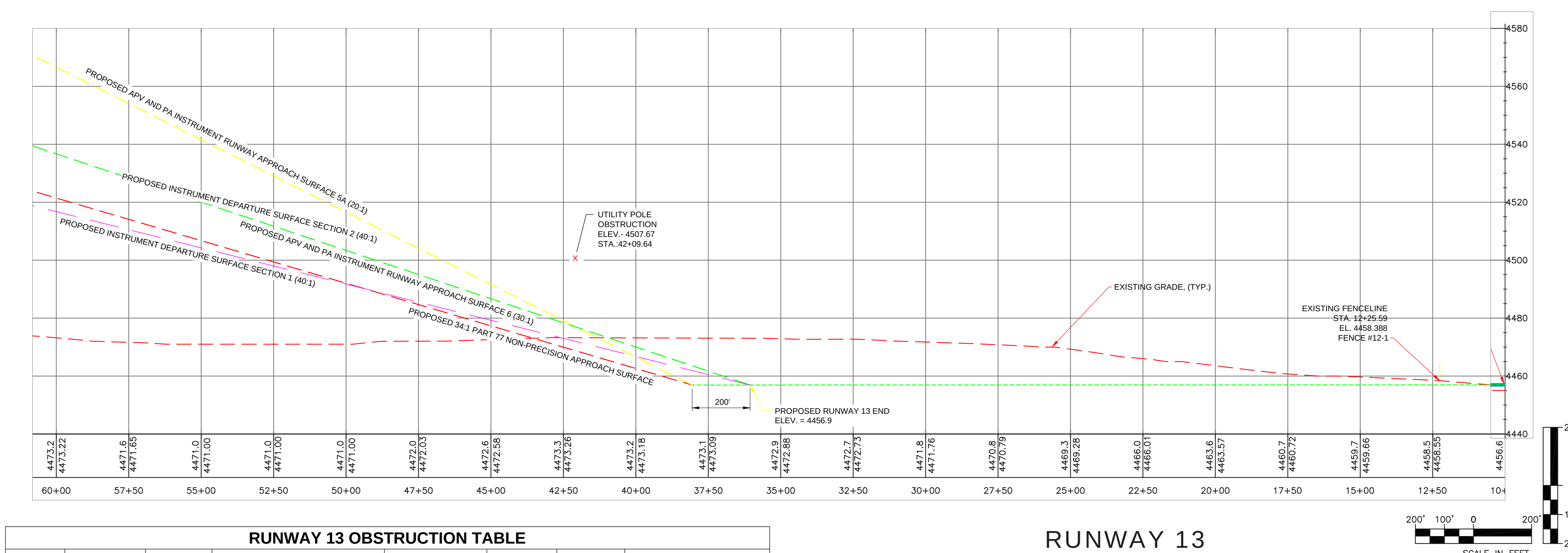


RUNWAY 13
PLAN VIEW

HORIZONTAL SCALE
0 100 200 400
1"=200'

LEGEND

ULTIMATE	DESCRIPTION
(red dashed line)	PART 77 APPROACH SURFACE
(yellow dashed line)	APV AND PA APPROACH SURFACES
(magenta dashed line)	INSTRUMENT DEPARTURE SURFACE
(long-short dashed line)	AIRPORT PROPERTY LINE
(line with x marks)	FENCE
(dashed contour line)	CONTOURS
(red X)	PART 77 OBSTRUCTION POINTS



RUNWAY 13
PROFILE VIEW

RUNWAY 13 OBSTRUCTION TABLE

POINT NUM.	DESCRIPTION	POINT ELEV.	DISTANCE ABOVE PART 77 SURFACE	SURFACE ELEVATION	EASTING	NORTHING	ACTION
2	UTILITY POLE	4,507.67'	38.88'	4,468.79'	672556.36	1346089.78	RELOCATE POWER LINES

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NO.	DATE	DESCRIPTION	BY	CK'D

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MASTER PLAN

SHEET TITLE

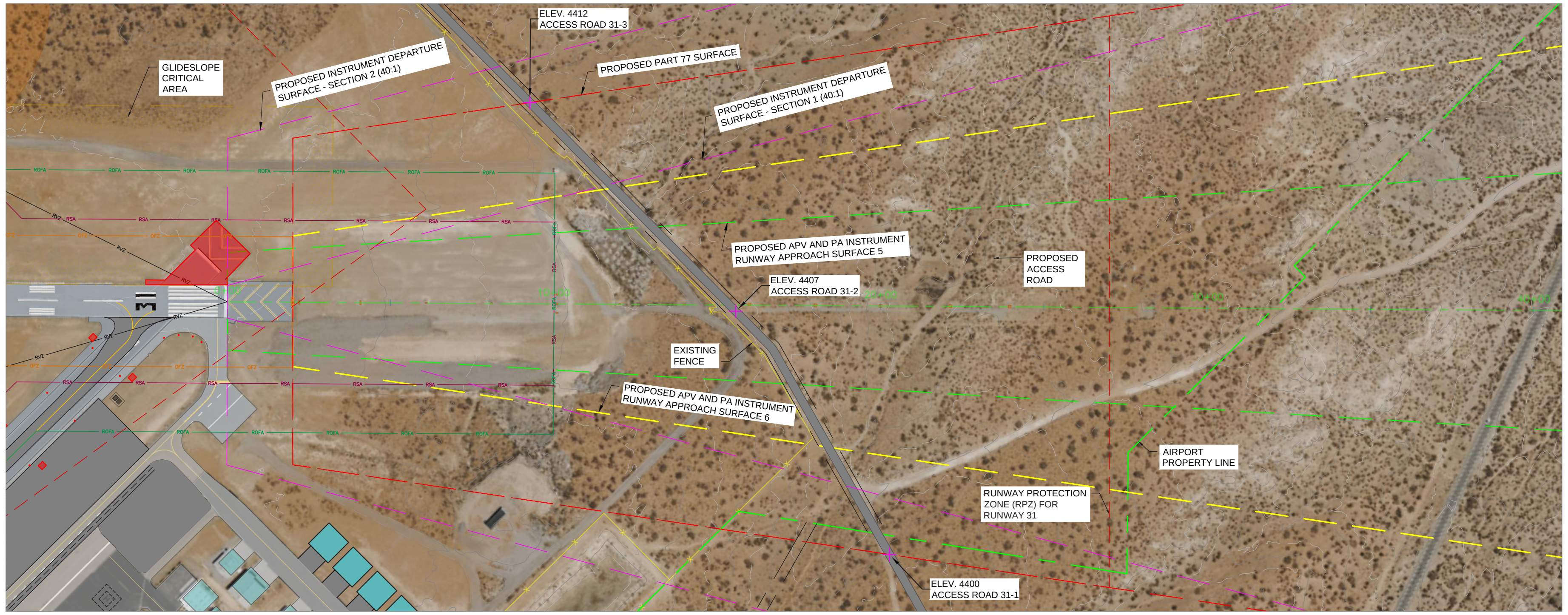
ULTIMATE INNER APPROACH SURFACE RUNWAY '13'

DRAWN BY	DATE
EJM	JUNE 2023
CHECKED BY	D&K PROJECT #
GAR	327310
PROJ. MGR.	D&K ARCHIVE #
PJS	

SHEET NUMBER

10.1

SHEET 10.1 OF 18.2



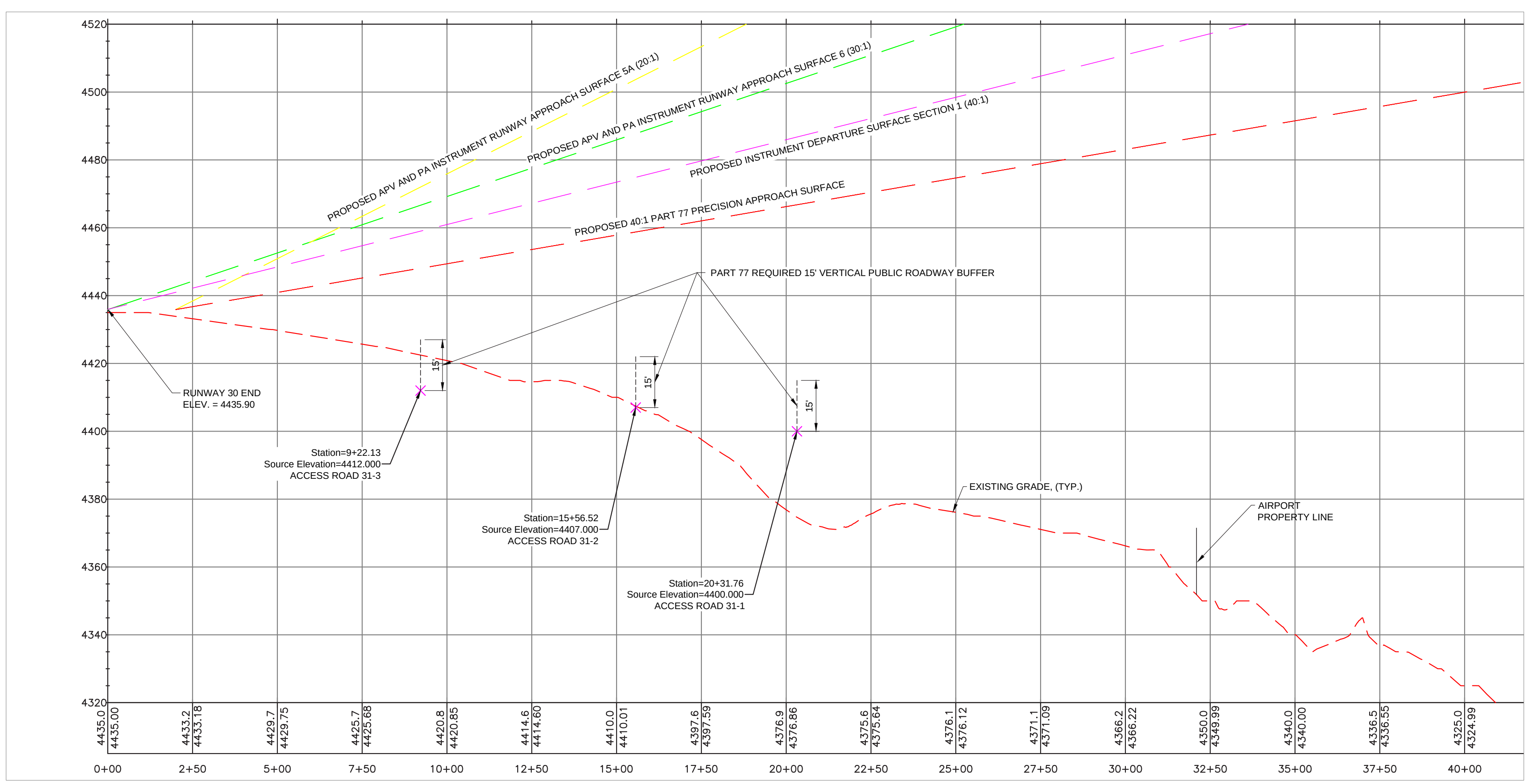
RUNWAY 31
PLAN VIEW

HORIZONTAL SCALE 0 100 200 400 1"=200'

MAGNETIC DECLINATION 7° 51'E (JAN 2023) 0° 6'W/ YR

LEGEND

ULTIMATE	DESCRIPTION
	PART 77 APPROACH SURFACE
	APV AND PA APPROACH SURFACES
	AIRPORT PROPERTY LINE
	FENCE
	CONTOURS
	PART 77 OBSTRUCTION POINTS



RUNWAY 31
PROFILE VIEW

SCALE IN FEET

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FOR PLANNING PURPOSES

NO.	DATE	DESCRIPTION	BY	CK'D

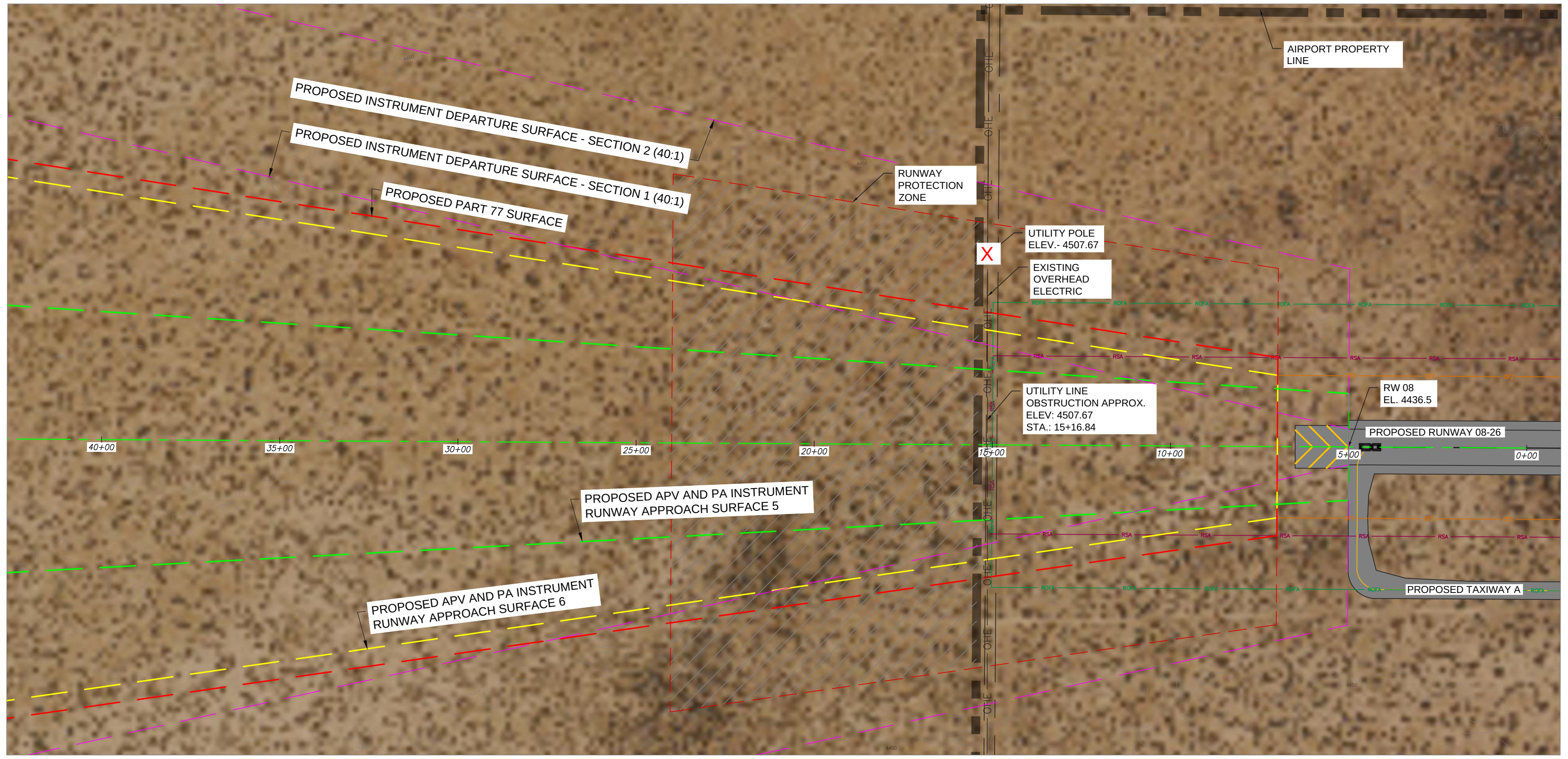
LAS CRUCES INTERNATIONAL AIRPORT
8990 ZIA BLVD.
LAS CRUCES, NEW MEXICO 88007

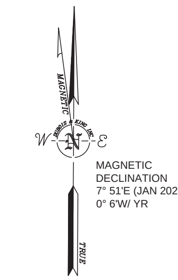
MASTER PLAN

SHEET TITLE
ULTIMATE INNER APPROACH SURFACE RUNWAY '31'

DRAWN BY	DATE
EJM	JUNE 2023
CHECKED BY	D&K PROJECT #
GAR	327310
PROJ. MGR.	D&K ARCHIVE #
PJS	

SHEET NUMBER
10.2
SHEET 10.2 OF 18.2



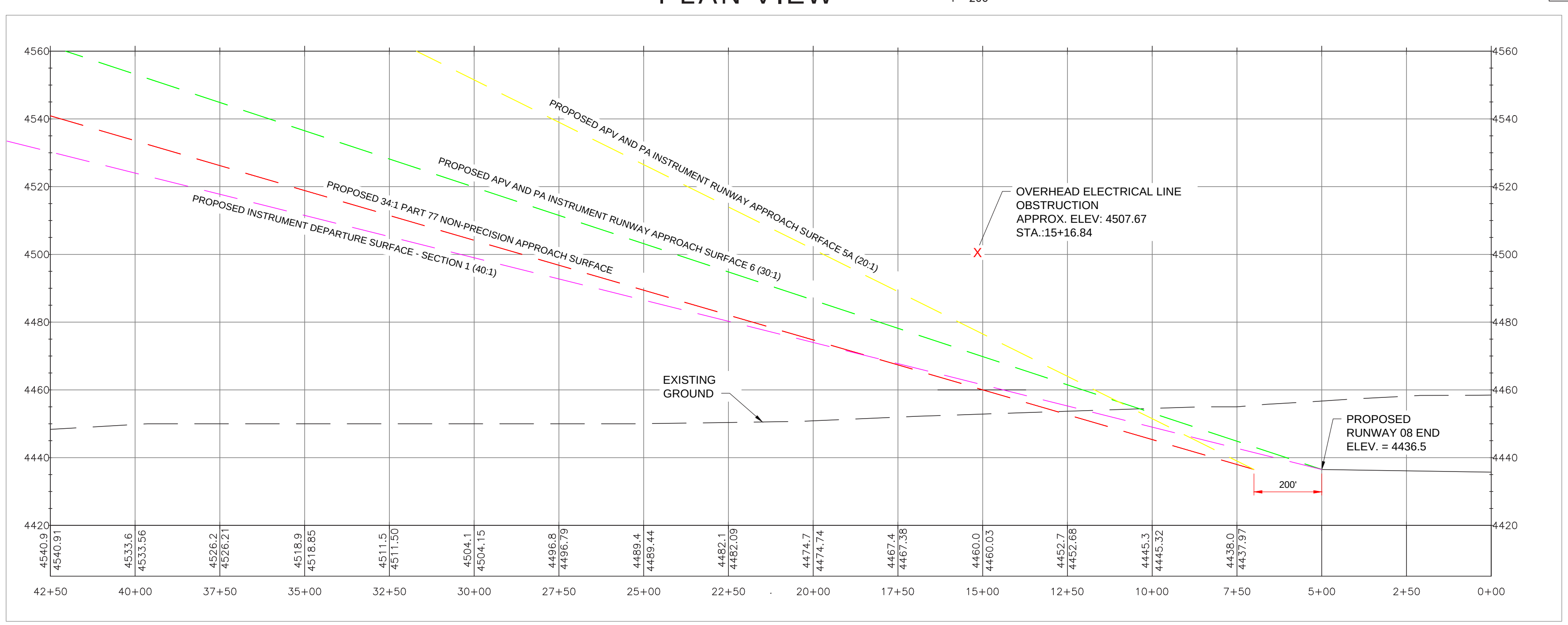


RUNWAY 08
PLAN VIEW

HORIZONTAL SCALE 0 100 200 400 1"=200'

LEGEND

ULTIMATE	DESCRIPTION
	PART 77 APPROACH SURFACE
	APV AND PA APPROACH SURFACE
	AIRPORT PROPERTY LINE
	FENCE
	CONTOURS
	PART 77 OBSTRUCTION POINTS



RUNWAY 08
PROFILE VIEW

SCALE IN FEET 200' 100' 0 200'

RUNWAY 8 OBSTRUCTION TABLE

POINT NUM.	DESCRIPTION	POINT ELEV.	DISTANCE ABOVE PART 77 SURFACE	SURFACE ELEVATION	EASTING	NORTHING	ACTION
1	UTILITY POLE	4,507.67'	47.14'	4,460.53'	1422213.97	469040.19	RELOCATE POWER LINES

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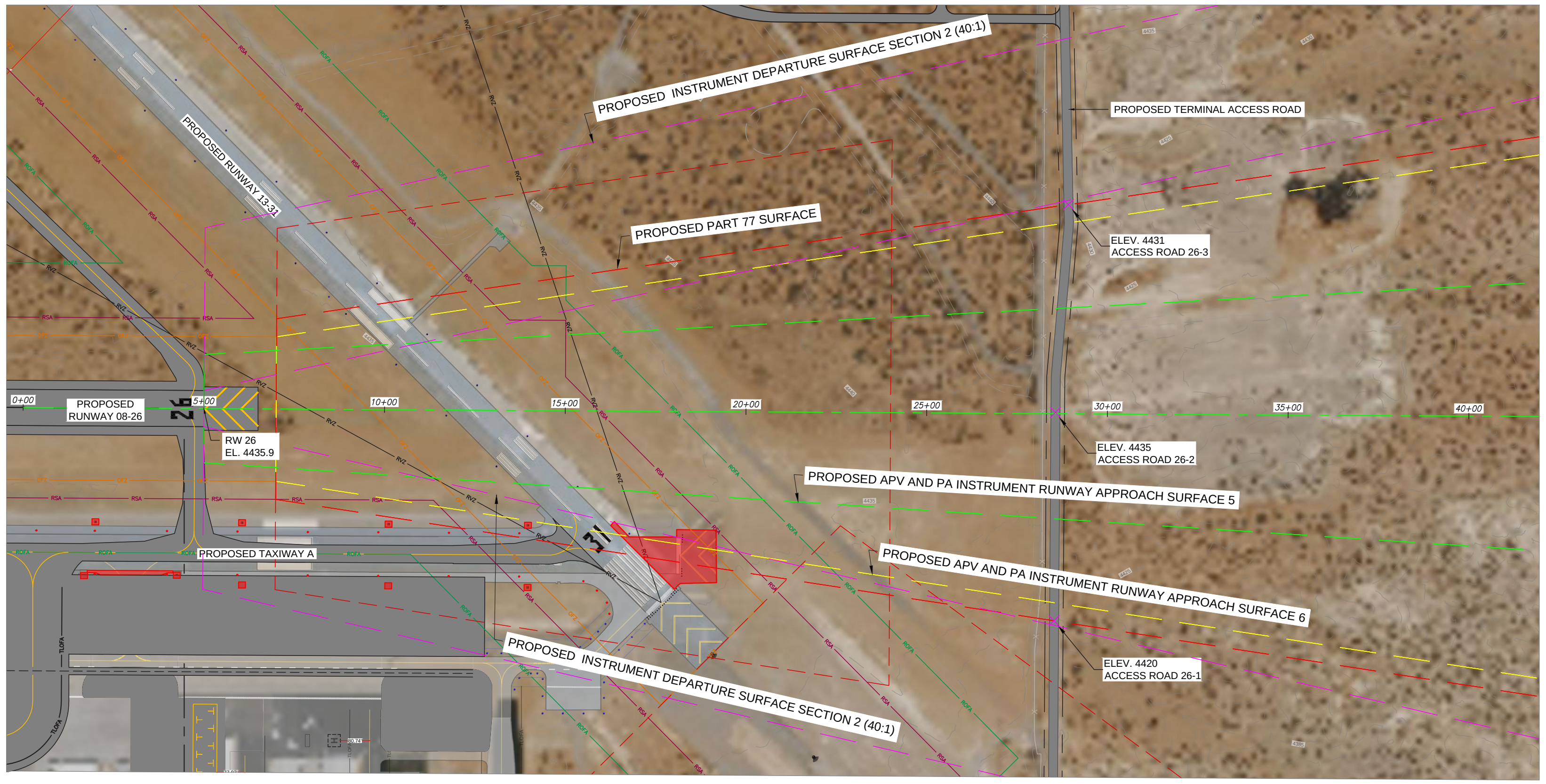
MASTER PLAN

SHEET TITLE
ULTIMATE INNER APPROACH SURFACE RUNWAY '8-26'

DRAWN BY EJM	DATE JUNE 2023
CHECKED BY GAR	D&K PROJECT # 327310
PROJ. MGR. PJS	D&K ARCHIVE #

SHEET NUMBER
11.1
SHEET 11.1 OF 18.2



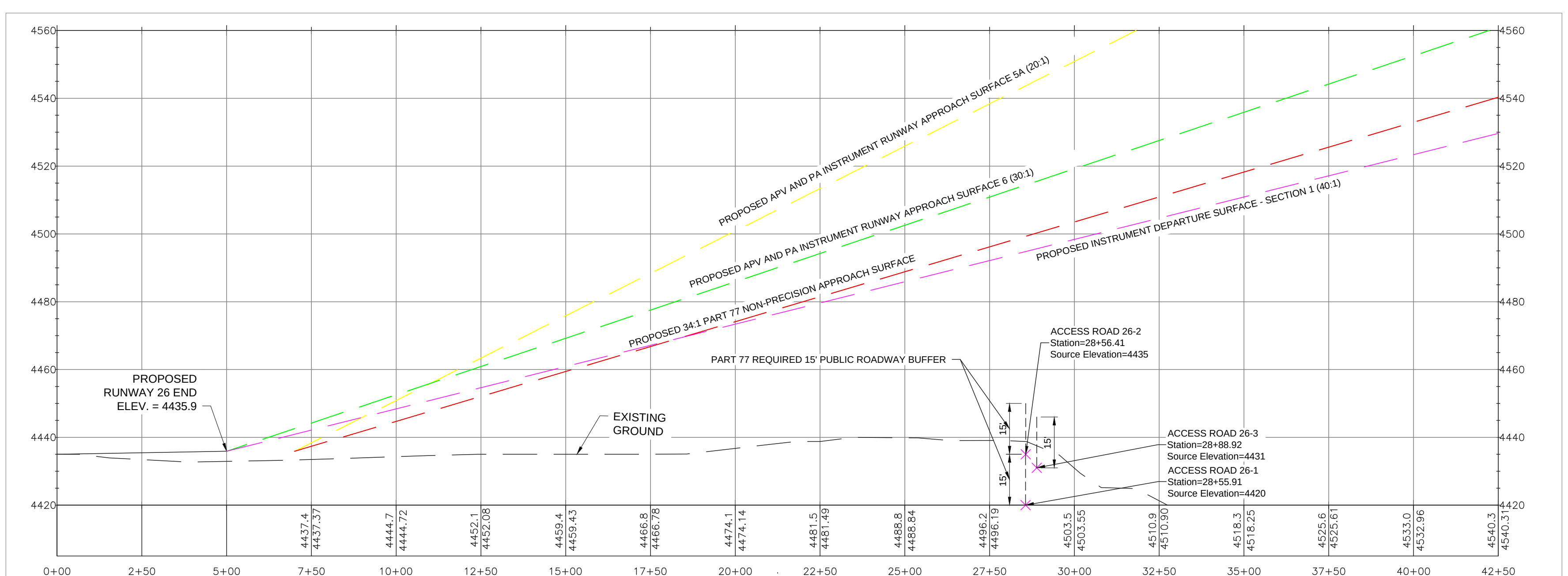
MAGNETIC DECLINATION 7° 51'E (JAN 2023) 0° 6'W/ YR

LEGEND

ULTIMATE	DESCRIPTION
	PART 77 APPROACH SURFACE
	APV AND PA APPROACH SURFACE
	AIRPORT PROPERTY LINE
	FENCE
	CONTOURS
	PART 77 OBSTRUCTION POINTS

RUNWAY 26
PLAN VIEW

HORIZONTAL SCALE 0 100 200 400 1"=200'



RUNWAY 26
PROFILE VIEW

200' 100' 0 200' SCALE IN FEET

20' 0 10' 20'

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NEW MEXICO 88007

MASTER PLAN

SHEET TITLE

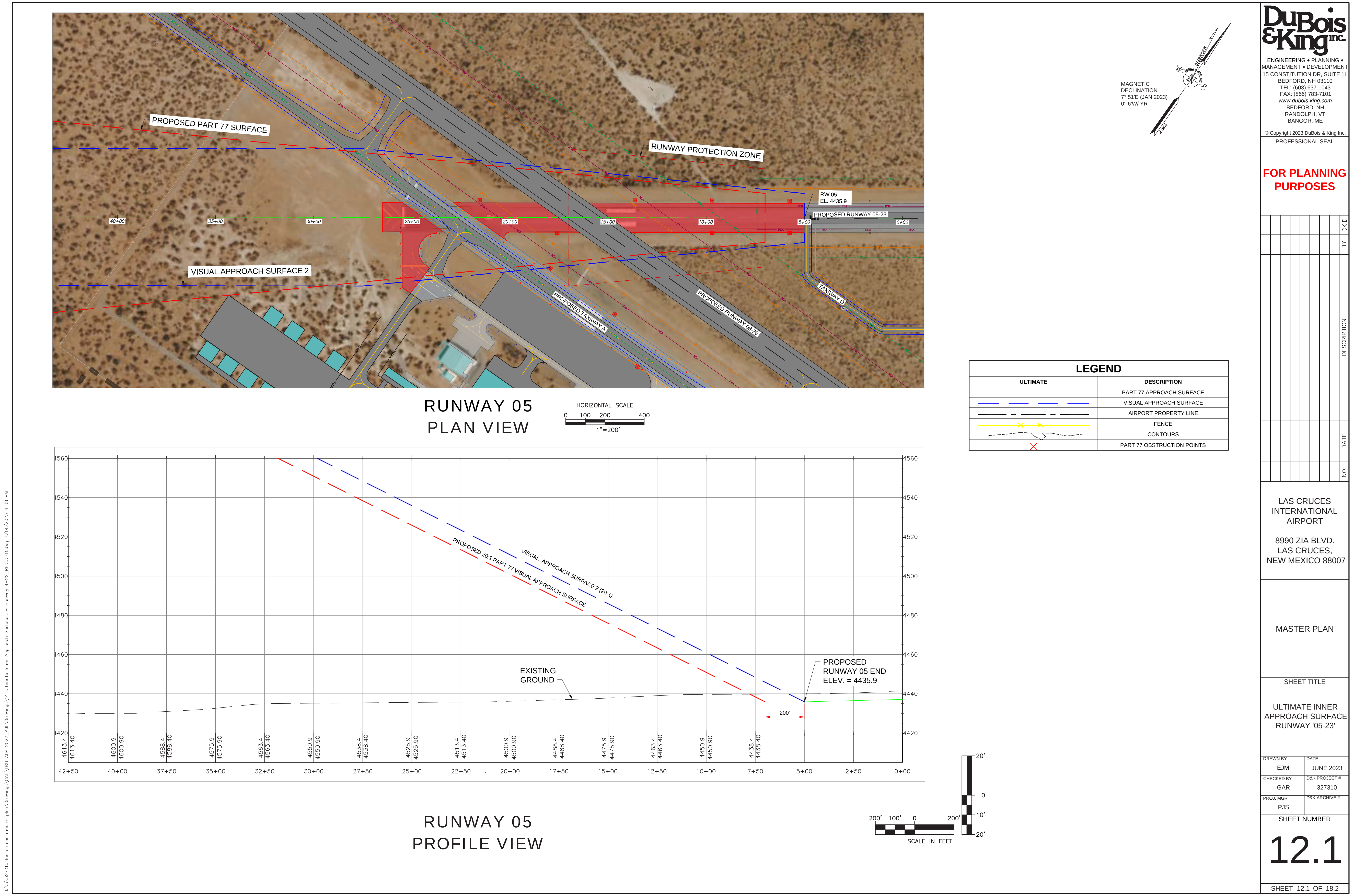
ULTIMATE INNER APPROACH SURFACE RUNWAY '26'

DRAWN BY	DATE
EJM	JUNE 2023
CHECKED BY	D&K PROJECT #
GAR	327310
PROJ. MGR.	D&K ARCHIVE #
PJS	

SHEET NUMBER

11.2

SHEET 11.2 OF 18.2


PROPOSED PART 77 SURFACE
RUNWAY PROTECTION ZONE
RW 05
EL. 4435.9
PROPOSED RUNWAY 05-23
VISUAL APPROACH SURFACE 2
PROPOSED TAXIWAY A
PROPOSED RUNWAY 08-26
TAXIWAY D
RUNWAY 05
PLAN VIEW
HORIZONTAL SCALE
1"=200'
MAGNETIC
DECLINATION
7° 51'E (JAN 2023)
0° 6'W/ YR
LEGEND
ULTIMATE
DESCRIPTION
PART 77 APPROACH SURFACE
VISUAL APPROACH SURFACE
AIRPORT PROPERTY LINE
FENCE
CONTOURS
PART 77 OBSTRUCTION POINTS
PROPOSED 20:1 PART 77 VISUAL APPROACH SURFACE
VISUAL APPROACH SURFACE 2 (20:1)
EXISTING
GROUND
PROPOSED
RUNWAY 05 END
ELEV. = 4435.9
200'
RUNWAY 05
PROFILE VIEW
SCALE IN FEET
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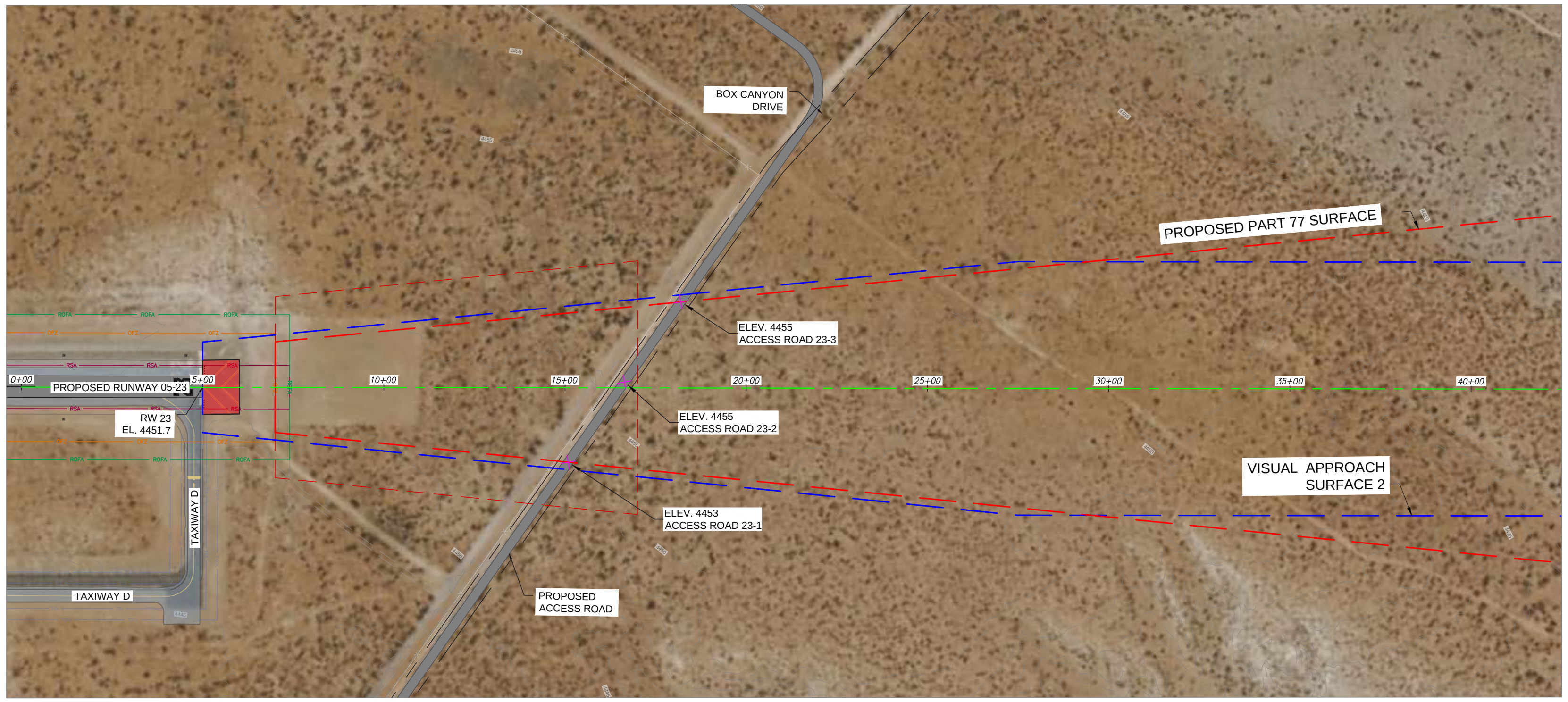
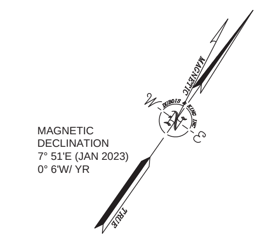
NEW MEXICO 88007
MASTER PLAN
SHEET TITLE
ULTIMATE INNER APPROACH SURFACE RUNWAY '05-23'
DRAWN BY EJM
DATE JUNE 2023
CHECKED BY GAR
D&K PROJECT # 327310
PROJ. MGR. PJS
D&K ARCHIVE #
SHEET NUMBER
12.1
SHEET 12.1 OF 18.2



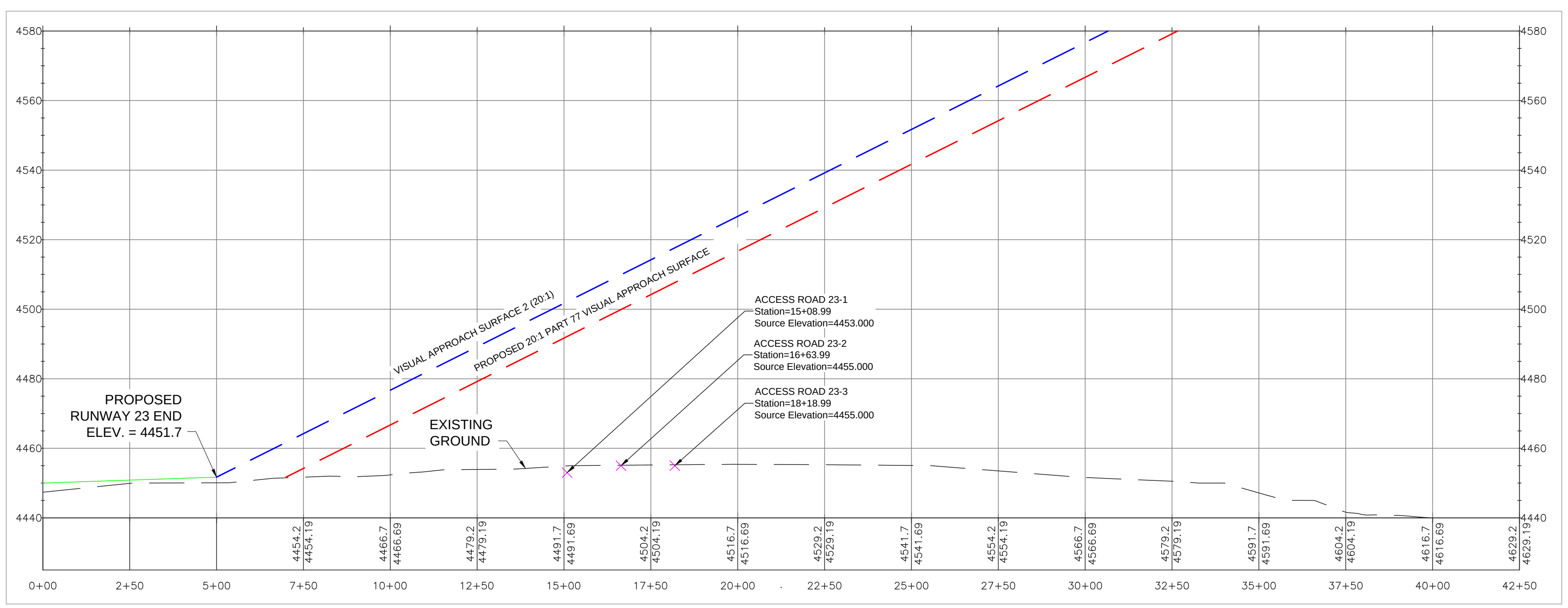
RUNWAY 23
PLAN VIEW

HORIZONTAL SCALE
0 100 200 400
1"=200'



LEGEND

ULTIMATE	DESCRIPTION
red dashed line	PART 77 APPROACH SURFACE
dashed line	VISUAL APPROACH SURFACE
dash-dot line	AIRPORT PROPERTY LINE
yellow line	FENCE
dashed line	CONTOURS
X	PART 77 OBSTRUCTION POINTS



RUNWAY 23
PROFILE VIEW

200' 100' 0 200'
SCALE IN FEET
20' 0 10' 20'

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MASTER PLAN

SHEET TITLE

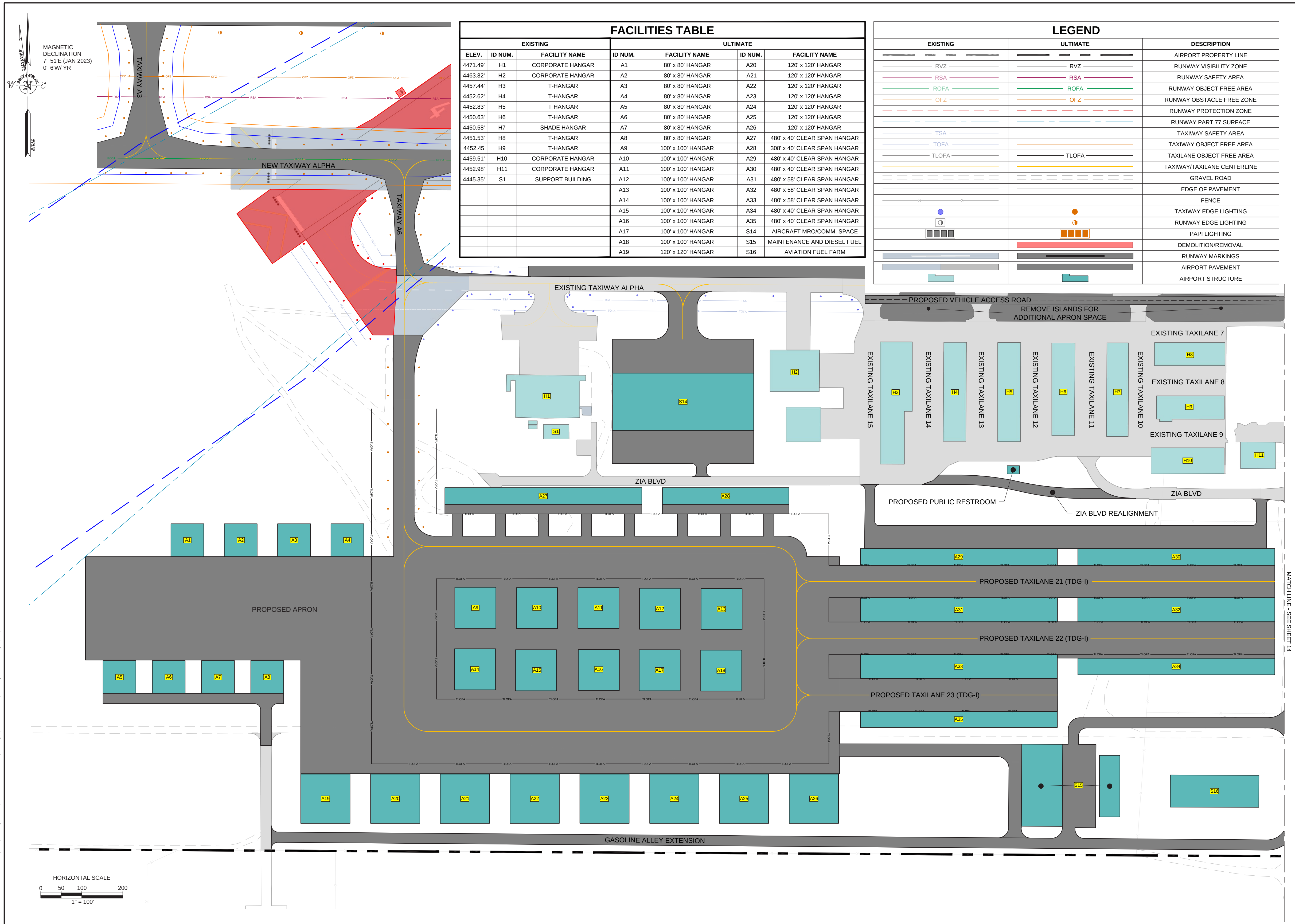
ULTIMATE INNER APPROACH SURFACE RUNWAY '05-23'

DRAWN BY	DATE
EJM	JUNE 2023
CHECKED BY	D&K PROJECT #
GAR	327310
PROJ. MGR.	D&K ARCHIVE #
PJS	

SHEET NUMBER

12.2

SHEET 12.2 OF 18.2



FACILITIES TABLE

EXISTING			ULTIMATE			
ELEV.	ID NUM.	FACILITY NAME	ID NUM.	FACILITY NAME	ID NUM.	FACILITY NAME
4471.49'	H1	CORPORATE HANGAR	A1	80' x 80' HANGAR	A20	120' x 120' HANGAR
4463.82'	H2	CORPORATE HANGAR	A2	80' x 80' HANGAR	A21	120' x 120' HANGAR
4457.44'	H3	T-HANGAR	A3	80' x 80' HANGAR	A22	120' x 120' HANGAR
4452.62'	H4	T-HANGAR	A4	80' x 80' HANGAR	A23	120' x 120' HANGAR
4452.83'	H5	T-HANGAR	A5	80' x 80' HANGAR	A24	120' x 120' HANGAR
4450.63'	H6	T-HANGAR	A6	80' x 80' HANGAR	A25	120' x 120' HANGAR
4450.58'	H7	SHADE HANGAR	A7	80' x 80' HANGAR	A26	120' x 120' HANGAR
4451.53'	H8	T-HANGAR	A8	80' x 80' HANGAR	A27	480' x 40' CLEAR SPAN HANGAR
4452.45	H9	T-HANGAR	A9	100' x 100' HANGAR	A28	308' x 40' CLEAR SPAN HANGAR
4459.51'	H10	CORPORATE HANGAR	A10	100' x 100' HANGAR	A29	480' x 40' CLEAR SPAN HANGAR
4452.98'	H11	CORPORATE HANGAR	A11	100' x 100' HANGAR	A30	480' x 40' CLEAR SPAN HANGAR
4445.35'	S1	SUPPORT BUILDING	A12	100' x 100' HANGAR	A31	480' x 58' CLEAR SPAN HANGAR
			A13	100' x 100' HANGAR	A32	480' x 58' CLEAR SPAN HANGAR
			A14	100' x 100' HANGAR	A33	480' x 58' CLEAR SPAN HANGAR
			A15	100' x 100' HANGAR	A34	480' x 40' CLEAR SPAN HANGAR
			A16	100' x 100' HANGAR	A35	480' x 40' CLEAR SPAN HANGAR
			A17	100' x 100' HANGAR	S14	AIRCRAFT MRO/COMM. SPACE
			A18	100' x 100' HANGAR	S15	MAINTENANCE AND DIESEL FUEL
			A19	120' x 120' HANGAR	S16	AVIATION FUEL FARM

LEGEND

EXISTING	ULTIMATE	DESCRIPTION
		AIRPORT PROPERTY LINE
RVZ	RVZ	RUNWAY VISIBILITY ZONE
RSA	RSA	RUNWAY SAFETY AREA
ROFA	ROFA	RUNWAY OBJECT FREE AREA
OFZ	OFZ	RUNWAY OBSTACLE FREE ZONE
		RUNWAY PROTECTION ZONE
		RUNWAY PART 77 SURFACE
TSA		TAXIWAY SAFETY AREA
TOFA		TAXIWAY OBJECT FREE AREA
TLOFA	TLOFA	TAXILANE OBJECT FREE AREA
		TAXIWAY/TAXILANE CENTERLINE
		GRAVEL ROAD
		EDGE OF PAVEMENT
		FENCE
		TAXIWAY EDGE LIGHTING
		RUNWAY EDGE LIGHTING
		PAPI LIGHTING
		DEMOLITION/REMOVAL
		RUNWAY MARKINGS
		AIRPORT PAVEMENT
		AIRPORT STRUCTURE

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LAS CRUCES INTERNATIONAL AIRPORT

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LAS CRUCES, NEW MEXICO 88007

MASTER PLAN

SHEET TITLE

FACILITIES LAYOUT PLAN

WEST AREA

DRAWN BY	DATE
AJL	JUNE 2023
CHECKED BY	D&K PROJECT #
GAR	327310
PROJ. MGR.	D&K ARCHIVE #
PJS	

SHEET NUMBER

13

SHEET 13 OF 18.2

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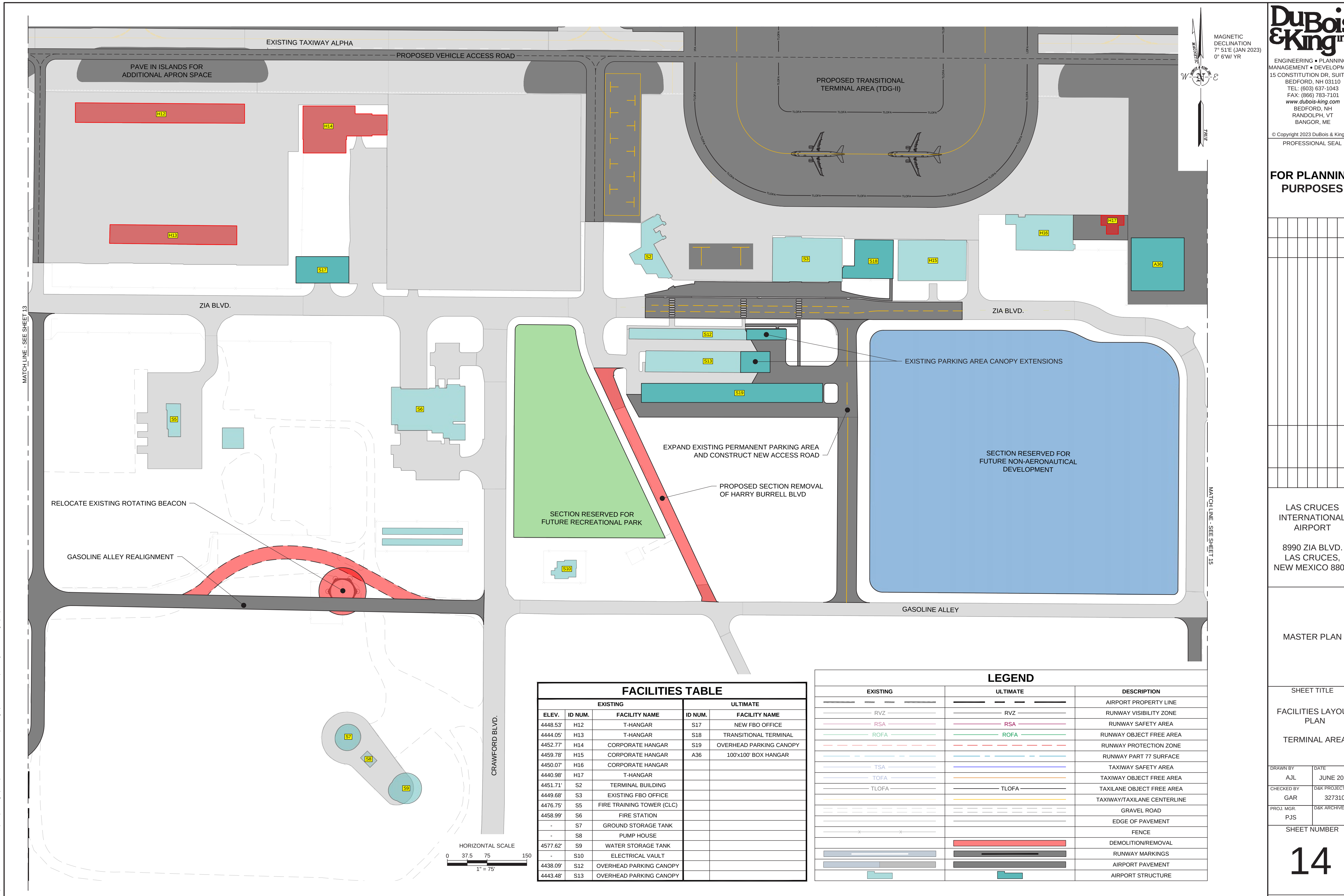
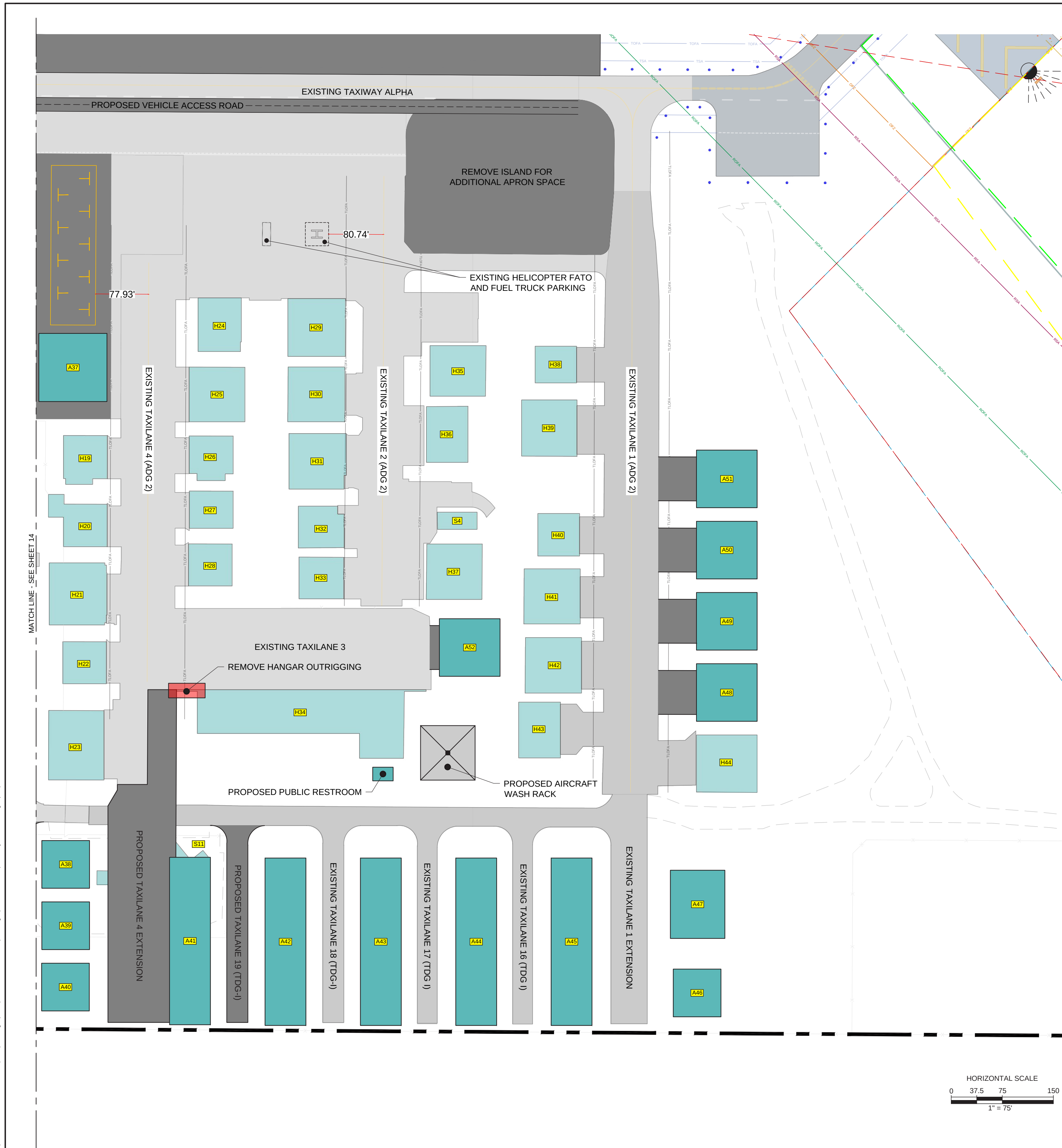


FACILITIES TABLE

EXISTING			ULTIMATE	
ELEV.	ID NUM.	FACILITY NAME	ID NUM.	FACILITY NAME
4448.53'	H12	T-HANGAR	S17	NEW FBO OFFICE
4444.05'	H13	T-HANGAR	S18	TRANSITIONAL TERMINAL
4452.77'	H14	CORPORATE HANGAR	S19	OVERHEAD PARKING CANOPY
4459.78'	H15	CORPORATE HANGAR	A36	100'x100' BOX HANGAR
4450.07'	H16	CORPORATE HANGAR		
4440.98'	H17	T-HANGAR		
4451.71'	S2	TERMINAL BUILDING		
4449.68'	S3	EXISTING FBO OFFICE		
4476.75'	S5	FIRE TRAINING TOWER (CLC)		
4458.99'	S6	FIRE STATION		
-	S7	GROUND STORAGE TANK		
-	S8	PUMP HOUSE		
4577.62'	S9	WATER STORAGE TANK		
-	S10	ELECTRICAL VAULT		
4438.09'	S12	OVERHEAD PARKING CANOPY		
4443.48'	S13	OVERHEAD PARKING CANOPY		



FACILITIES TABLE

EXISTING						ULTIMATE	
ELEV.	ID NUM.	FACILITY NAME	ELEV.	ID NUM.	FACILITY NAME	ID NUM.	FACILITY NAME
4452.80'	H19	CORPORATE HANGAR	4454.64'	H38	CORPORATE HANGAR	A37	100' x 100' BOX HANGAR
4451.01'	H20	CORPORATE HANGAR	4458.57'	H39	CORPORATE HANGAR	A38	70' x 70' BOX HANGAR
-	H21	CORPORATE HANGAR	4450.90'	H40	CORPORATE HANGAR	A39	70' x 70' BOX HANGAR
-	H22	CORPORATE HANGAR	4451.45'	H41	CORPORATE HANGAR	A40	70' x 70' BOX HANGAR
-	H23	CORPORATE HANGAR	-	H42	CORPORATE HANGAR	A41	250' x 60' T-HANGAR
4454.71'	H24	CORPORATE HANGAR	-	H43	CORPORATE HANGAR	A42	250' x 60' T-HANGAR
4459.82'	H25	CORPORATE HANGAR	4458.87'	H44	CORPORATE HANGAR	A43	250' x 60' T-HANGAR
4451.06'	H26	CORPORATE HANGAR	4445.00'	S4	SUPPORT BUILDING	A44	250' x 60' T-HANGAR
4450.30'	H27	CORPORATE HANGAR	-	S11	AVIATION FUEL FARM	A45	250' x 60' T-HANGAR
-	H28	CORPORATE HANGAR				A46	70' x 70' BOX HANGAR
4459.26'	H29	CORPORATE HANGAR				A47	80' x 100' BOX HANGAR
4457.84'	H30	CORPORATE HANGAR				A48	90' x 90' BOX HANGAR
4452.62'	H31	CORPORATE HANGAR				A49	90' x 90' BOX HANGAR
4451.03'	H32	CORPORATE HANGAR				A50	90' x 90' BOX HANGAR
-	H33	CORPORATE HANGAR				A51	90' x 90' BOX HANGAR
-	H34	CORPORATE HANGAR				A52	90' x 90' BOX HANGAR
4457.87'	H35	CORPORATE HANGAR					
4453.48'	H36	CORPORATE HANGAR					
-	H37	CORPORATE HANGAR					

LEGEND

EXISTING	ULTIMATE	DESCRIPTION
		AIRPORT PROPERTY LINE
RVZ	RVZ	RUNWAY VISIBILITY ZONE
RSA	RSA	RUNWAY SAFETY AREA
ROFA	ROFA	RUNWAY OBJECT FREE AREA
OFZ	OFZ	RUNWAY OBSTACLE FREE ZONE
		RUNWAY PROTECTION ZONE
		RUNWAY PART 77 SURFACE
TSA		TAXIWAY SAFETY AREA
TOFA		TAXIWAY OBJECT FREE AREA
TLOFA	TLOFA	TAXILANE OBJECT FREE AREA
		TAXIWAY/TAXILANE CENTERLINE
		GRAVEL ROAD
		EDGE OF PAVEMENT
		FENCE
		VASI LIGHTING
		REIL LIGHTING
		TAXIWAY EDGE LIGHTING
		RUNWAY EDGE LIGHTING
		PAPI LIGHTING
		DEMOLITION/REMOVAL
		RUNWAY MARKINGS
		AIRPORT PAVEMENT
		AIRPORT STRUCTURE

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LAS CRUCES, NEW MEXICO 88007

MASTER PLAN

SHEET TITLE

FACILITIES LAYOUT PLAN

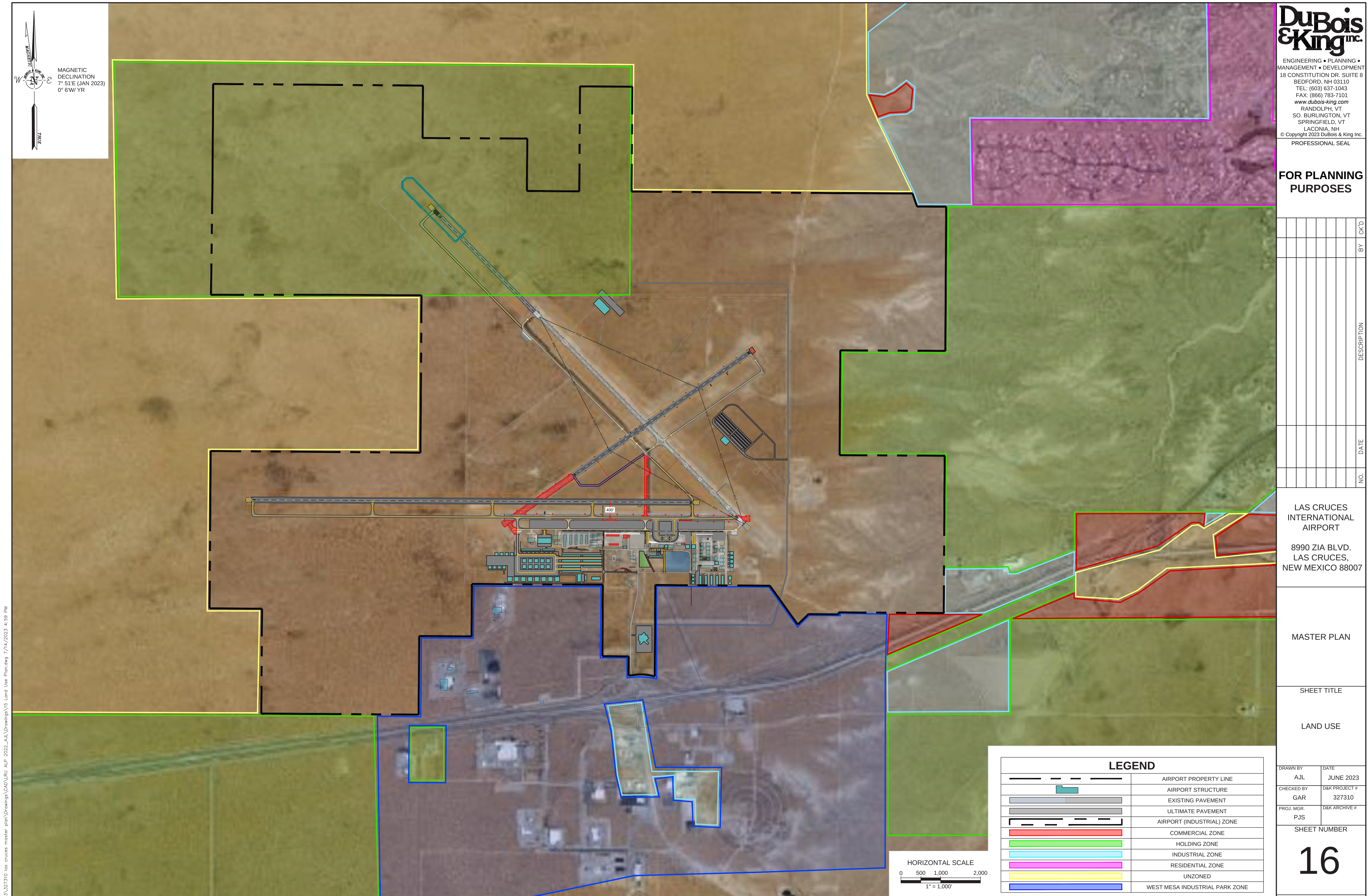
EAST OF TERMINAL AREA

DRAWN BY	DATE
AJL	JUNE 2023
CHECKED BY: GAR	D&K PROJECT #: 327310
PROJ. MGR.: PJS	D&K ARCHIVE #:

SHEET NUMBER

15

SHEET 15 OF 18.2


MAGNETIC
TRUE
MAGNETIC DECLINATION
7° 51'E (JAN 2023)
0° 6'W/ YR
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DATE
DESCRIPTION
BY
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8990 ZIA BLVD.
LAS CRUCES,
NEW MEXICO 88007
MASTER PLAN
SHEET TITLE
LAND USE
DRAWN BY
AJL
DATE
JUNE 2023
CHECKED BY
GAR
D&K PROJECT #
327310
PROJ. MGR.
PJS
D&K ARCHIVE #
SHEET NUMBER
16
SHEET 16 OF 18.2
LEGEND
AIRPORT PROPERTY LINE
AIRPORT STRUCTURE
EXISTING PAVEMENT
ULTIMATE PAVEMENT
AIRPORT (INDUSTRIAL) ZONE
COMMERCIAL ZONE
HOLDING ZONE
INDUSTRIAL ZONE
RESIDENTIAL ZONE
UNZONED
WEST MESA INDUSTRIAL PARK ZONE
HORIZONTAL SCALE
0 500 1,000 2,000
1" = 1,000'


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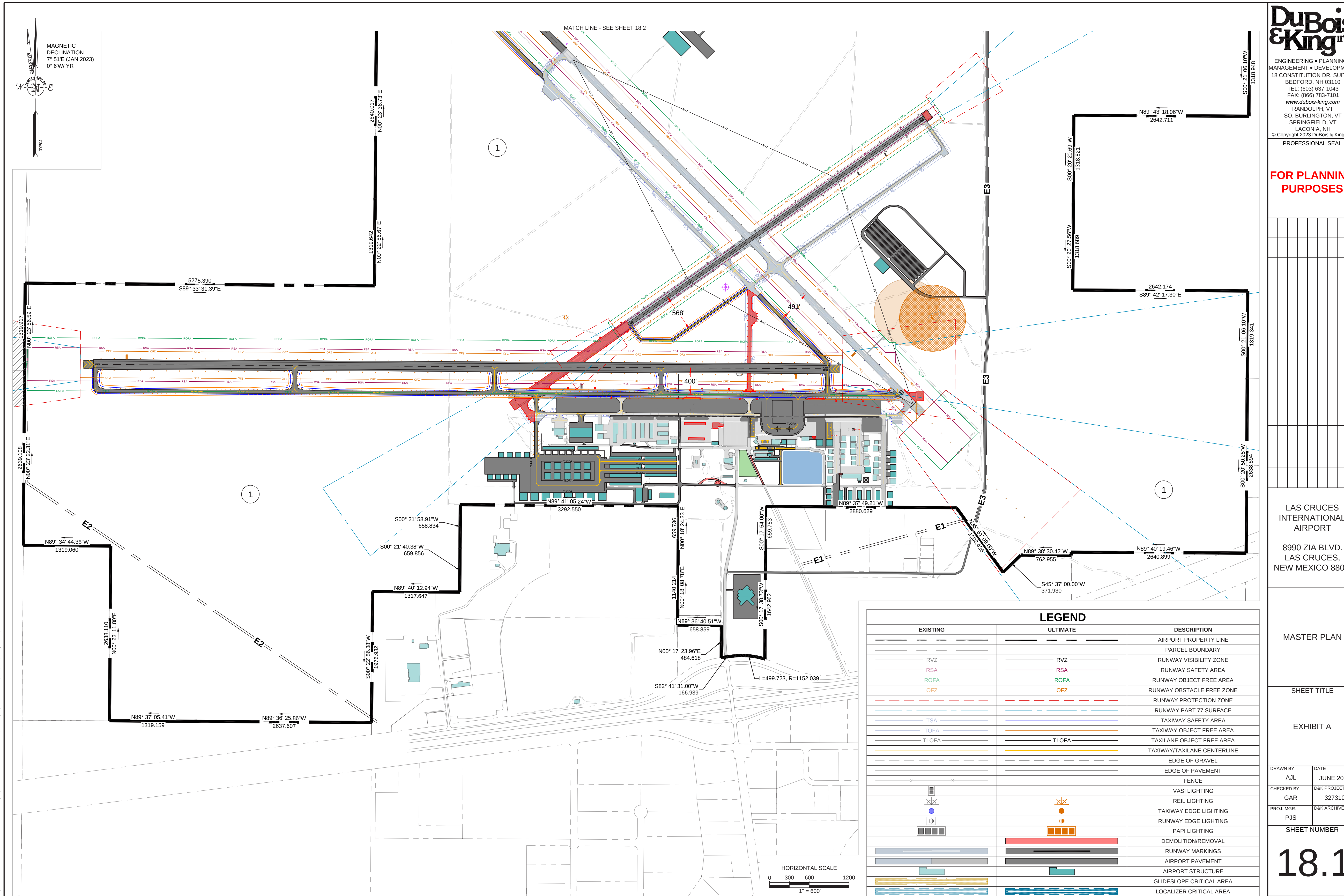
MASTER PLAN
SHEET TITLE
EXISTING UTILITIES
DRAWN BY
AJL
DATE
JUNE 2023
CHECKED BY
GAR
D&K PROJECT #
327310
PROJ. MGR.
PJS
D&K ARCHIVE #
SHEET NUMBER
17
SHEET 17 OF 18.2
HORIZONTAL SCALE
0 100 200 400
1" = 200'
LEGEND
AIRPORT PROPERTY LINE
PARCEL BOUNDARIES
APPROXIMATE ROAD CENTERLINE
GAS
WATER
SEWER
STORM DRAIN
ELECTRIC
FIBER OPTIC CABLE
EXISTING BUILDINGS/STRUCTURES
I:\3\327310 las cruces master plan\Drawings\CAD\Existing Conditions\Utilities&ParcelsOnly.dwg 7/11/2023 11:38 AM


MATCH LINE - SEE SHEET 18.2
MAGNETIC DECLINATION
7° 51'E (JAN 2023)
0° 6'W/ YR
568'
491'
400'
E1
E2
E3
5275.390
S89° 33' 31.39"E
N89° 43' 18.06"W
2642.711
2642.174
S89° 42' 17.30"E
N89° 41' 05.24"W
3292.550
N89° 37' 49.21"W
2880.629
N89° 34' 44.35"W
1319.060
N89° 37' 05.41"W
1319.159
N89° 36' 25.86"W
2637.607
N89° 40' 12.94"W
1317.647
N89° 36' 40.51"W
658.859
N89° 38' 30.42"W
762.955
N89° 40' 19.46"W
2640.899
S45° 37' 00.00"W
371.930
S00° 21' 58.91"W
658.834
S00° 21' 40.38"W
659.856
N00° 17' 23.96"E
484.618
S82° 41' 31.00"W
166.939
L=499.723, R=1152.039
LEGEND
EXISTING
ULTIMATE
DESCRIPTION
AIRPORT PROPERTY LINE
PARCEL BOUNDARY
RUNWAY VISIBILITY ZONE
RUNWAY SAFETY AREA
RUNWAY OBJECT FREE AREA
RUNWAY OBSTACLE FREE ZONE
RUNWAY PROTECTION ZONE
RUNWAY PART 77 SURFACE
TAXIWAY SAFETY AREA
TAXIWAY OBJECT FREE AREA
TAXILANE OBJECT FREE AREA
TAXIWAY/TAXILANE CENTERLINE
EDGE OF GRAVEL
EDGE OF PAVEMENT
FENCE
VASI LIGHTING
REIL LIGHTING
TAXIWAY EDGE LIGHTING
RUNWAY EDGE LIGHTING
PAPI LIGHTING
DEMOLITION/REMOVAL
RUNWAY MARKINGS
AIRPORT PAVEMENT
AIRPORT STRUCTURE
GLIDESLOPE CRITICAL AREA
LOCALIZER CRITICAL AREA
HORIZONTAL SCALE
0 300 600 1200
1" = 600'
DuBois & King inc.
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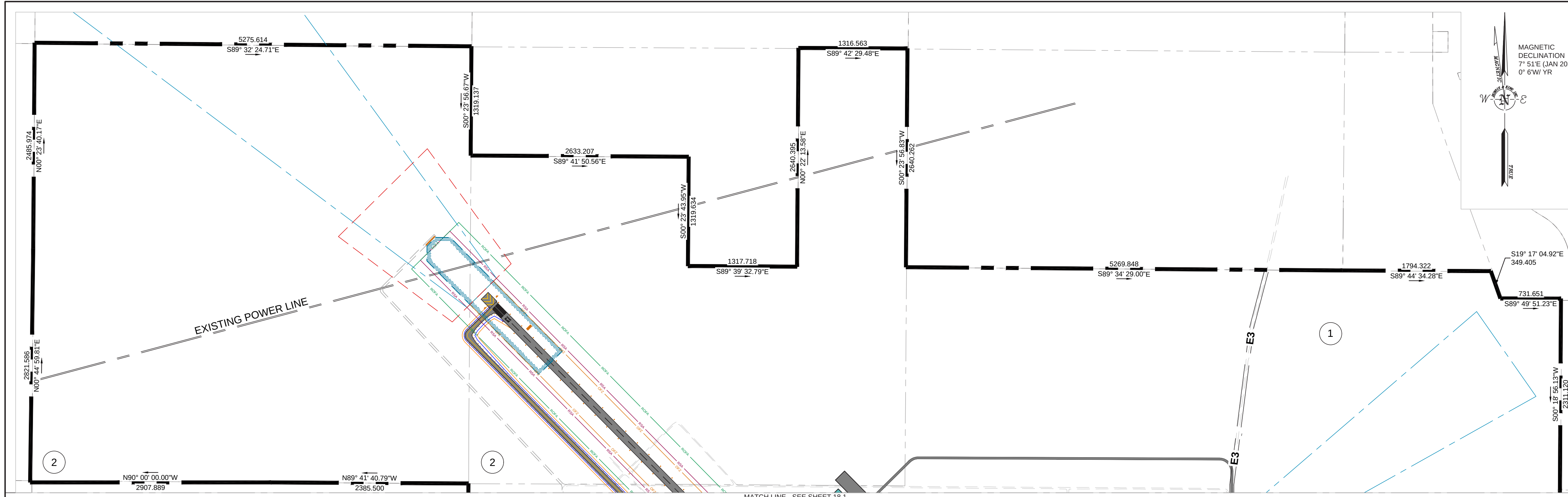
PROFESSIONAL SEAL
FOR PLANNING PURPOSES
NO.
DATE
DESCRIPTION
BY
CK'D
LAS CRUCES INTERNATIONAL AIRPORT
8990 ZIA BLVD.
LAS CRUCES, NEW MEXICO 88007
MASTER PLAN
SHEET TITLE
EXHIBIT A
DRAWN BY
AJL
DATE
JUNE 2023
CHECKED BY
GAR
D&K PROJECT #
327310
PROJ. MGR.
PJS
D&K ARCHIVE #
SHEET NUMBER
18.1
SHEET 18.1 OF 18.2



HORIZONTAL SCALE
0 300 600 1200
1" = 600'

LEGEND

EXISTING	ULTIMATE	DESCRIPTION
		AIRPORT PROPERTY LINE
		PARCEL BOUNDARY
RVZ	RVZ	RUNWAY VISIBILITY ZONE
RSA	RSA	RUNWAY SAFETY AREA
ROFA	ROFA	RUNWAY OBJECT FREE AREA
OFZ	OFZ	
		RUNWAY PROTECTION ZONE
		RUNWAY PART 77 SURFACE
TSA		TAXIWAY SAFETY AREA
TOFA		TAXIWAY OBJECT FREE AREA
TLOFA	TLOFA	TAXILANE OBJECT FREE AREA
		TAXIWAY/TAXILANE CENTERLINE
		EDGE OF GRAVEL
		EDGE OF PAVEMENT
		FENCE
		VASI LIGHTING
		REIL LIGHTING
		TAXIWAY EDGE LIGHTING
		RUNWAY EDGE LIGHTING
		PAPI LIGHTING
		DEMOLITION/REMOVAL
		RUNWAY MARKINGS
		AIRPORT PAVEMENT
		AIRPORT STRUCTURE
		GLIDESLOPE CRITICAL AREA
		LOCALIZER CRITICAL AREA

EXISTING AIRPORT PROPERTY TABLE

REF. NO.	BLM SECTIONS	FAA GRANT NO.	DEED REFERENCE			PROPERTY OWNER		METHOD OF ACQUISITION	ACREAGE	PURPOSE
			RECORDED DATE	BOOK	PAGE	GRANTOR	GRANTEE			
1	TOWNSHIP 26 SOUTH, RANGE 1 WEST: PARTS OF SECTION 13, 14, 21, 24, 25, 26, 27, 28; ALL OF SECTIONS 22, 23.	N/A	5/13/1946	161 166 279	110-113 127-129 684-689	UNITED STATES OF AMERICA BLM	CITY OF LAS CRUCES	FEDERAL AIRPORT ACT	3,370.16	INITIAL AIRFIELD/FEDERAL SURPLUS
2	TOWNSHIP 23 SOUTH, RANGE 1 WEST N.M.P.M., SECTION 16 ALL, SECTION 15 $E\frac{1}{2}$ $NE\frac{1}{4}$,$S\frac{1}{2}$ $NW\frac{1}{4}$	N/A	9/11/1996	N/A	N/A	COMMISSIONER OF PUBLIC LANDS	CITY OF LAS CRUCES	SALE	1,120.17	EXTENSION OF RUNWAY 12-30
E1	N/A	N/A	11/2/1944	42	55	EL PASO ELECTRIC COMPANY	CITY OF LAS CRUCES	EASEMENT	N/A	ELECTRICAL (30'W)
E2	N/A	N/A	11/25/1959	42	63	EL PASO ELECTRIC COMPANY	CITY OF LAS CRUCES	EASEMENT	N/A	ELECTRICAL (30'W)
E3	N/A	N/A	11/14/1983	176	365	UNITED STATES OF AMERICA BLM	CITY OF LAS CRUCES	EASEMENT	N/A	ROADWAY (50'W)

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PROFESSIONAL SEAL

FOR PLANNING PURPOSES

NO. | DATE | DESCRIPTION | BY | CK'D

LAS CRUCES INTERNATIONAL AIRPORT
8990 ZIA BLVD.
LAS CRUCES, NEW MEXICO 88007

MASTER PLAN

SHEET TITLE
EXHIBIT A

DRAWN BY: AJL | DATE: JUNE 2023
CHECKED BY: GAR | D&K PROJECT #: 327310
PROJ. MGR: PJS | D&K ARCHIVE #:

SHEET NUMBER
18.2

SHEET 18.2 OF 18.2

Chapter Seven: Financial and Implementation Plan

7-1 Introduction

The analyses completed in the preceding chapters evaluated airport-wide development needs at Las Cruces International Airport (LRU) over the next 20 years based on forecast activity, safety improvement and operational needs. The next step is to apply fundamental economic, financial, and management rationale to each development item so that the feasibility of each item in the plan can be assessed. The presentation of the capital improvement program (CIP) has been organized into three sections. First, the Airport's capital program needs are recognized by various categories ranging from enhancing safety, increasing sustainability, and to satisfying demand. Second, the Airport development schedule and project cost estimates are presented in narrative form. Third, capital improvement funding sources on the federal, state, and local levels are identified and discussed. The CIP is developed following Federal Aviation Administration (FAA) guidelines for Master Plans and primarily identifies those projects that are likely eligible for FAA and/or NMDOT grant funding.

7-2 Phasing

LRU is a well-maintained airport. Capacity and safety concerns at the airport were identified and solutions were provided through the selection of a Preferred Alternative in Chapter 4. Other concerns related to sustainability are included in the Ultimate Airport Layout Plan update.

Identified capacity/safety concerns include:

> Runway 12/30, with a current runway length of 7,506 ft, does not provide adequate length to meet the runway length requirements of 11,110 ft for the critical design aircraft; Challenger 600 series. Extending the runway by 3,604 ft will mitigate this issue.
>
> Runway 8/26 is a visual only Runway. 8/26 is required to meet the all weather wind coverage of 95%. An instrument approach procedure should be published for this runway.

Runway 4/22 has been temporarily closed and is in need of reconstruction. The FAA is no longer participating in the funding of this runway. Reconstructing, while shortening and narrowing the runway to 5,450 ft by 60 ft, respectively, will mitigate this issue.

The Runway 8/26 centerline to parallel Taxiway A and the runway centerline to the aircraft parking area do not meet the separation standards for ADG-III. The current runway length of 6,069 ft does not provide adequate length to meet the ADG-II aircraft and should be extended. Abandoning Runway 8/26 in its current location, relocating the runway north of its current location, and extending it by 3,614 ft will mitigate this issue.

Taxiway A is 35 ft in width and does not meet the width standards for ADG-III. In addition, Taxiway A greatly decreases the terminal area apron due to the Taxiway Object Free Area and the installation of numerous Engineering Brief 75 islands. Relocating Taxiway A to the abandoned Runway 8/26 while narrowing the width to 50 ft will mitigate this issue.

Taxiway B and C combined provide access to and from the approach end of Runway 12, however, they do not constitute a full parallel taxiway. Realigning Taxiway B to parallel Runway 12/30 will improve airport approach minimums and mitigate this issue.

The Airport does not have an adequate number of tie-downs to meet the forecasted facility needs of transient and based aircraft. The expansion of the current General Aviation Apron, the construction of more apron space, and the resolution of the perpetual lease of the west apron will mitigate this issue.

The Airport does not have enough hangars and, therefore, does not meet the forecasted facility needs. The construction of a ADG II/III Taxilane in the West Area would allow the airport to attract private investors to build hangars. The construction of new hangars would mitigate this issue.

The Airport does not have a terminal building that is adequate in size to accommodate passenger processing during forecasted years one (1) through seven (7) intra- and inter-state air service. The Airport has preliminarily designed a new transitional terminal building to accommodate 120 enplanements per flight and adequate vehicular parking. The Airport should complete the final design, permitting and construction of the transitional terminal and vehicular parking.

The Airport fuel farm, consisting of both a City of Las Cruces fuel farm and a Southwest Aviation fuel farm, is inconveniently located causing significant delays for both FBOs to refuel their aviation fuel trucks as well as increasing time to conduct maintenance and fuel quality checks and services to the fuel farm. Relocating the fuel farms to a more centralized location on the Airport would mitigate this issue.

Taxilane 4 has Non-Standard Conditions with regard to the Object Free Area due to the "outrigger" door of the WAM hangar. Removing the "outrigger" door will mitigate this issue. Until such time, Taxilane 4 should remain restricted to ADG-I aircraft.

With the extension of Runway 13, the power lines will need to be relocated and an easement for the reconstructed power lines within the approach to Ultimate Runway 13 will need to be acquired.

With the relocation to the north and extension of Runway 8, the power lines will need to be relocated. The current easement will need to be amended to account for the relocated power lines within the approach to Ultimate Runway 8.

Property release by Frontage Road followed by a property acquisition adjacent to Harry Burrel Boulevard for future non-aeronautical development.

Newly constructed taxilanes in the East Area adjacent to the retention pond and the Airport fuel farm do not meet ADG-I Object Free Area standards. Relocating the fuel farm will mitigate this issue.

The AWOS-3PT has been failing frequently and replacement parts are not available. The current location of the AWOS-3PT will not meet the FAA recommended siting criteria within the forecasted period. Relocating and Replacing this AWOS-3PT with a new AWOS 3-PT will mitigate this issue.

The Airport's General Aviation Rotating Beacon does not meet FAA siting criteria and is not visible in all quadrants due to the shadowing effect of two (2) Airport water towers. The relocation and replacement of the GA Rotating Beacon will mitigate this issue.

The Airport does not have an airport maintenance building to store, maintain, and fuel maintenance equipment. Currently, the City Fleet Division is fueling airport maintenance vehicles which is neither efficient nor cost effective. The construction of an airport maintenance building with an equipment fuel farm would mitigate this issue.

The City of Las Cruces has provided significant improvements with regard to utility infrastructure. The Airport currently has gas, water, sewer and electric services, however, there are additional improvements that, once complete, will enable the Airport to be more attractive to more Airport users and investors. It is the Airport's intention to provide all utilities to the East Area, Terminal Area, and West Area.

a. The East Area is defined as infrastructure east of Wingspan Drive, west of the water detention pond, west of the final approach course of Runway 30 and south of Taxiway A.

    i. **Gas.** Has been installed below ground and is available for all hangars throughout Taxilanes 1 through 4. Gas has not been installed for the new hangar taxilanes south of Gasoline Alley.
    ii. **Water.** Has been installed below ground and is available for all hangars throughout Taxilanes 1 through 4. Water has not been installed for the new hangar taxilanes south of Gasoline Alley.
    iii. **Sewer.** Has been installed below ground along Gasoline Alley to the intersection of Wingspan Drive and terminates west and north of the fuel farm. Sewer has not been extended to any of the hangars east of Wingspan Drive.
    iv. **Electric.** Has been installed below ground and is available for all hangars throughout Taxilanes 1 through 4. Electric has not been installed for the new hangar taxilanes south of Gasoline Alley.
    v. **Fiber Optics/Internet.** Is a priority

b. The Terminal Area is defined as infrastructure west of Wingspan Drive, north of Gasoline Alley, south of Taxiway A, and east of the westerly end of the two (2) nested t-hangars immediately west of the South West Aviation FBO building.

i. **Gas.** Has been installed below ground for infrastructure throughout the entire terminal area.
ii. **Water.** Has been installed below ground for infrastructure throughout the entire terminal area.
iii. **Sewer.** Has been installed below ground for infrastructure throughout the entire terminal area.
iv. **Electric.** Has been installed below ground for infrastructure throughout the entire terminal area.
v. **Fiber Optics/Internet.** Is a priority.

c. The West Area is defined as infrastructure west of the two (2) nested t-hangars immediately west of the South West Aviation FBO building.

i. **Gas.** Has been installed below ground and is available for all hangars throughout the West Area. Gas will need to be extended to new hangars constructed south of Zia Blvd in the West Area.
ii. **Water.** Has been installed below ground and is available for all hangars throughout the West Area. Water will need to be extended to new hangars constructed south of Zia Blvd in the West Area.
iii. **Sewer.** Has not been installed below ground throughout the West Area. Sewer will need to be extended westerly to new hangars constructed west of the fire station and south of Zia Blvd in the West Area.
iv. **Electric.** Has been installed below ground and is available for all hangars throughout the West Area. Electric will need to be extended to new hangars constructed south of Zia Blvd in the West Area.
v. **Fiber Optics/Internet.** Is a priority.

Project Priorities

As discussed in Chapter 5, Alternatives, the Airport has several terminal area projects to develop over the course of the planning period. The order in which these projects appear in the CIP is a matter of importance in terms of safety, capacity, sustainability and the financial ability of the City to fund their share, as well as FAA and NMDOT priorities. With these three entities, safety always comes first, with capacity issues considered a secondary concern. It is important to note that this list is dynamic in nature, meaning the order in which projects appear can, and often does, change for a number of reasons. Change in Airport demand, funding availability, and political disposition are a few examples of catalysts for priority modifications. The City should be prepared to make adjustments as necessary, provided those adjustments are justified, eligible and feasible. The list below represents the priority of the short-term (5 years) projects at this time.

Construction, engineering, and other costs listed in this chapter are based on 2023 dollars. These costs will rise in the future, possibly by as much as 2–5% per year. To compute current cost estimates or revisions in the future, refer to the Construction Cost Index (CCI) of Engineering News Record (ENR). As an example (see formula below), a $100,000 project in 2022 with a CCI of 206.2 would cost $114,355 in the year 2027 with a presumed CCI of 235.8. Increased costs associated with COVID and supply/demand issues will also need to be addressed.

Figure 7-1 - Determining Future Costs

Formula:
*2022 project cost * 2027 CCI / 2021 CCI = future project cost $100,000 * 235.8 = 23,580,000 / 206.2 = $114,355*

Thus, a $100,000 project in 2022 could cost 14% more in 2027.

Airport Development

With the Ultimate Airport Layout Plan developed, and specific needs and improvements for the Airport established, the next step is to determine a realistic implementation timeline and associated costs for the plan. The current year's planning period is the target of this project. **Table 7-1** summarizes key activity milestones for the planning horizon. A key aspect of this Ultimate Airport Layout Plan is the use of demand-based planning milestones. Many projects should be considered based on actual demand level of activity. As short-term horizon activity levels are reached, it will then be time to program for the intermediate term based on the next event milestones. Some of the development items included in the Ultimate Airport Layout Plan will need to follow these demand indicators. For example, the plan includes a runway extension which will create capacity issues with the terminal apron and is therefore tied to the shifting of Runway 8/26 and the extension of the GA apron. Some projects may be delayed, thus, capital expenditures are planned to be made on an as-needed basis, which leads to a more responsible use of capital assets.

During a transitional period, the Airport will need to construct a terminal building in the GA terminal area to meet the needs of scheduled air carrier operations. These C-II/III operations will exacerbate the significant deficit in tie-down space in the GA Terminal area resulting in the need to construct more apron space to meet the demand.

The Airport also has a deficit with transient hangars, whether owned by the City of Las Cruces or privately owned by tenants, which then have land lease contracts with the City and pay property taxes. Because of economic realities, few airports are constructing new hangars on their own, instead relying on private developers. In some cases, private developers can keep construction costs lower, which in turn lowers the monthly fee necessary to amortize the cost of development. To the greatest extent possible, private development of all hangar types should be supported and promoted by the City. The CIP for LRU assumes that the potential for future hangars would most likely be constructed through public/private partnerships. This assumption does not preclude the possibility of LRU building new hangars. Ultimately, the City of Las Cruces will determine—based on demand and the needs of a potential developer—whether to self-fund hangar construction or to rely on private developers.

Not all projects identified are necessary to meet projected demand. Other projects are needed to enhance the safety and efficiency of the Airport, maintain existing pavement infrastructure, generate revenue, or address FAA design standards. Since the Ultimate Airport Layout Plan is a conceptual document, implementation of the capital projects should only be undertaken after further refinement of their design and costs through architectural and engineering analyses. Moreover, some projects may require additional infrastructure improvements (drainage improvements, an extension of utilities, etc.) that may increase the estimated cost of the project or increase the timeline for completion.

Once a list of significant projects was identified and refined, project-specific cost estimates were developed. The cost estimates include design, engineering, construction administration, and contingencies that may arise on the project. Capital costs presented here should be viewed as estimates subject to further refinement during the design process. Nevertheless, they are considered sufficient for planning purposes. Cost estimates for several projects included in the CIP were provided by the Airport's Engineer, DuBois & King, Inc. Cost estimates for each of the development projects in the CIP are based on present-day construction, design, and administration costs. Adjustments will need to be applied over time as construction costs or capital equipment costs change. The sidebar, **Figure 7-1**, provides one possible method of determining future costs.

The following pages show a proposed 5-Year CIP for the Las Cruces International Airport. An estimate of FAA and NMDOT funding eligibility has been included, although actual funding is not guaranteed. For those projects that would be eligible for federal funding, the FAA's Airport Improvement Program (AIP) provides 90 percent of the total project cost. The federal eligibility breakdown is based on the Airport's FAA designation (general aviation). The remaining amount would be equally shared between NMDOT and the City of Las Cruces at 5 percent each. Other projects in the CIP are either funded with NMDOT Capital funding or solely through local funding. As detailed in the CIP, most projects listed are eligible for both federal and state funding. Naturally, demand and justification for these projects must be provided by a grant being issued by the FAA and/or NMDOT. The City should aggressively pursue NMDOT and FAA funding of recommended projects.

The FAA and NMDOT each utilize a priority ranking system to help objectively evaluate potential airport projects. Projects are weighted toward safety, infrastructure preservation, ability to meet design standards, and capacity enhancement. The FAA and NMDOT will participate in the highest priority projects before considering lower priority projects, even if a lower priority project is seen as a more urgent need for the Airport, although there are exceptions. Nonetheless, the project should remain a priority for the Airport, and funding support should continue to be requested in subsequent years or funded locally if the project is critical to the Airport.

Some projects identified in the CIP will require environmental documentation. The level of documentation necessary for each project must be determined in consultation with the FAA and NMDOT. There are three major levels of environmental review to be considered under the National Environmental Policy Act (NEPA) that include categorical exclusions (CATEX), Environmental Assessments (EA), and Environmental Impact Statements (EIS). Each level requires more time to complete and more detailed information. Guidance on what level of documentation is needed for a project is provided in FAA Order 1050.1F, Environmental Impacts: Policies and Procedures. The following sections will describe in greater detail the projects identified for the Airport over the next

5 years (Short-Term), then the projects identified for the Airport for years 6 through 10 (Mid-Term), and finally the projects identified for the Airport for the balance of the 20-year forecast period (Long-Term).

The Short-Term projects are subdivided into yearly increments and refer to the federal fiscal year (FY) (October–September). While the 5-year CIP shows the priority ranking of the projects, the list should be evaluated and revised on a regular basis.

Short-Term, 5-year Program (2023–2028)

The Short-Term planning period is separated into single years. This is to allow the Airport Capital Improvement Plan (ACIP) to be coordinated with the five-year planning cycle and anticipated funding sources with the FAA, NMDOT, and the City. If any of these projects cannot be funded in the time frame indicated, the City should consider the project for the following year. Plans called out during this Short-Term timeframe are very specific regarding actual planning, design, and construction.

In the next five years, some projects may also be addressed in a CATEX or an EA. As such, some projects are initially put through an environmental and/or design phase and then followed up with actual construction. The Short-Term program is presented in **Table 7-1 - Proposed 5-Year (Short-Term) Capital Improvement Plan (2023–2028)**

The following provides a detailed breakdown of each project within list the Short-Term window of FY2024 through FY2028. This Short-Term program includes current year FY2023 projects to show work in progress within the current ACIP submitted to the FAA, resulting in a total of 6 years. A Medium-Term plan (FY2029–FY2033) and Long-Term plan (FY2034–2043) will follow the Short-Term and are provided for planning purposes.

1. Runway 12/30 (Ultimate 13-31) Pavement Maintenance-2023 (BIL)-$250,000
2. Resolve the perpetual lease of the west and east apron. NMDOT/FAA/CLC-$100,000
3. Relocate and Replace AWOS-3PT-2024 (BIL)-$450,000
4. Relocate and Replace the GA Rotating Beacon-2024 (NPE)-$200,000
5. Reconstruct Runway 4/22 (approx 5,450-ft x 60-ft)-2024 (NMDOT/CLC)-$4,500,000
6. Property Release-2024 (CLC)-$70,000
7. Extend Fiber Optics/Internet from the I-10 exchange to Buildings 8990, 8960, and 8950- 024 (CLC)-$25,000
8. New Sweeper-2024 (BIL)-$330,000
9. Runway 12 (Ultimate Runway 13) Power Line Easement Acquisition-2025 (NPE)-$100,000
10. Construct airport maintenance building with equipment fuel farm-2025 (NMDOT/CLC)- 650,000
11. Property Acquisition-2025 (NPE)-$125,000
12. Relocate the fuel farms to a more centralized location on the airport-2026 (NMDOT/CLC)-$500,000
13. Environmental Assessment for Runway 8/26 and Runway 12/30-2026-$300,000
14. Extend Runway 12/30 and Taxiway C by 3,604 ft to a total length of 11,110 ft-2026 (Discretionary)-$4,300,000
15. Review, revise, and implement Airport Pavement Maintenance Management Plan-2026 (CLC)-$40,000
16. Realign Taxiway B to parallel Runway 12/30 to a width of 50 ft-2027 (Discretionary)-$1,800,000

Table 7-1 - Proposed 5-Year (Short-Term) Capital Improvement Plan (2023–2028)					
	Project	**Funding Source**	**Estimated Design/ Plan Cost**	**Estimated Construction Cost**	**Total Cost**
2023	12/30 (13/31 Ultimate) Pavement Maintenance	FAA-BIL	$25,000	$225,000	$250,000
2023	Resolve the perpetual lease of the west and east apron.	NMDOT/FAA/CLC	$8,500	$91,500	$100,000
Total			**33,500**	**316,500**	**350,000**
2024	Relocate and Replace AWOS-3PT	FAA-BIL	$45,000	$405,000	450,000
2024	Replace General Aviation Rotating Beacon	FAA-NPE	$20,000	$180,000	200,000
2024	Reconstruct Runway 4/22 to a length of 5,450-ft and a width of 60-ft	NMDOT/City	$450,000	$4,050,000	$4,500,000
2024	Property Release	CLC	$70,000	$	$70,000
2024	Extend Fiber Optics/Internet from the I-10 exchange to Buildings 8990, 8960, and 8950	CLC	$7,500	$17,500	$25,000
2024	Purchase Sweeper	FAA-BIL	$350,000	$	$350,000
Total			**$942,500**	**$4,652,500**	**$5,595,000**
2025	Power Line Easement acquisition Runway 12 (Runway 13 Ultimate)	FAA-NPE	$10,000	$90,000	$100,000
2025	Construct airport maintenance building with equipment fuel farm.	NMDOT/CLC	$65,000	$585,000	$650,000
2025	Property Acquisition	FAA-NPE	$125,000	$	$125,000
Total			**$200,000**	**$675,000**	**$875,000**
2026	Relocate the fuel farms to a more centralized location on the airport	NMDOT/CLC	$50,000	$450,000	$500,000
2026	Environmental Assessment 8/26 FAA 12/30 NMDOT	FAA-NPE	$300,000	$	$300,000
2026	Conduct Pavement Maintenance and Review, revise, and implement Airport Pavement Maintenance Management Plan.	FAA/CLC	$4,000	$36,000	$40,000
Total			**$784,000**	**$4,356,000**	**$5,140,000**
2027	Extend Runway 12/30 (13-31 Ultimate) and Taxiway C by 3,604-ft to a total length of 11,110-ft	FAA Discretionary	$430,000	$3,870,000	$4,300,000
2027	Realign Taxiway B to parallel Runway 12/30 to a width of 50-ft	FAA Discretionary	$180,000	$1,620,000	$1,800,000
Total			**$480,000**	**$1,620,000**	**$1,800,000**
5-Year (Short-Term) CIP Totals			**2,140,000**	**11,620,000**	**13,760,000**

5-Year Short-Term Summary

The 5-Year (Short-Term) CIP presented in this chapter is intended as a road map of airport improvements to help guide the City of Las Cruces, the FAA, and NMDOT. Projects included in the 5-Year ACIP are aimed at meeting the forecasted facility needs, will continue to improve the overall safety, security and capacity of the airport, and will expand the ability of the airport to generate more revenue while reducing operating expenses.

The plan as presented will continue to accommodate increases in forecast demand at the Las Cruces International Airport over the next five years and beyond. The five years of the CIP are separated into yearly installments. The total investment necessary for the 5-Year ACIP is approximately $13.5 million. About $7.5 million is programmed for federal/state funding assistance. The remaining $5.7 million is to be provided through local sources of financing. The sequence of projects may change due to the availability of funds or changing priorities. Nonetheless, this is a comprehensive list of capital projects the airport should consider in the next five years.

Mid-Long Term (2029–2042)- Years 6-20

1. Construct a Transitional Terminal with parking.
2. Relocate, Construct and Extend Runway 8/26 by 3,614 ft to a length of 11,110 ft and a width 100 ft. Publish instrument approach procedure for Runway 8/26.
3. Relocate, Extend Taxiway A on the abandoned Runway 8/26 to a width of 50 ft.
4. Obtain an Avigation Easement for Runway 8 RPZ.
5. Expand the current General Aviation Terminal Area Apron
6. Construct West Area ADG II/III Taxilane. (FAA funded)
7. Construct apron space to meet the facility needs for transient and based aircraft.
8. Long-term Terminal with parking—Decision as it relates to Commercial space, AWOS location
9. Remove WAM Hangar "outrigger" door to remove ADG-I restriction on TL4.

Mid-Long Term Summary

Projects included in the Mid-Long Term are aimed at meeting the forecasted facility needs, will continue to improve the overall safety, security and capacity of the Airport, and expand the ability of the Airport to generate more revenue while reducing operating expenses. Due to market volatility associated with the extended effects of COVID-19, an opinion of probable cost and the total investment necessary for the Mid-Long Term Plan was not provided. As the supply and demand chain improves during the Short-Term period, more accurate opinions and estimates will be available. Each year, when the Airport updates its CIP, these opinions and estimates will be more carefully developed.

Capital Improvement Funding Sources

There are generally three sources of funds used to finance airport development and they include:

- Airport cash flow;
- Revenue and general obligation bonds; and
- Federal/state/local grants.

Access to these sources of financing varies widely among airports, with some large airports maintaining substantial cash reserves and the smaller commercial service and GA airports often requiring subsidies from local governments to fund operating expenses and finance modest improvements. Financing capital improvements at the Airport will not rely solely on the financial resources of the City. Capital improvement funding is available through various grant-in-aid programs on both the federal and state levels. Historically, the Las Cruces International Airport has received federal and state grants. While more funds were available some years, the CIP was developed with project phasing to remain realistic and within the range of anticipated grant assistance. The following discussion outlines key sources of funding potentially available for capital improvements at the Airport.

Federal Grants

Through federal legislation over the years, various grant-in-aid programs have been established to develop and maintain a system of public use airports across the United States. The purpose of this system and its federally based funding is to support national defense and to promote interstate commerce. The most recent legislation affecting federal funding is titled the FAA Reauthorization Act of 2018 (Public Law 115-254).

Non-Primary Entitlement (NPE) Funds

The passage of the Wendell H. Ford Aviation Investment and Reform Act for 21st Century (AIR-21) introduced a new funding source for GA airports, Non-Primary Entitlement. The subsequent AIP re-authorizations including the FAA Reauthorization Act of 2018 (Public Law 115-254) retained Non-Primary Entitlement funding with changes. Non-Primary Entitlement funds are specifically for GA airports listed in the latest published

National Plan of Integrated Airports (NPIAS) that show needed airfield development. GA airports with an identified need are eligible to receive the lesser value of 20% of the five-year cost of their current NPIAS value or $150,000 annually. A condition of Non-Primary Entitlement funding is that Congress must appropriate $3.2 billion or more for non-primary entitlement funds to existing airports in that fiscal year.

Primary Entitlement (PE) Funds

Airport with 10,000 enplanements per year received Primary Entitlement funds of $1,000,000 per year. The updated reauthorizations program from March of 2022 created a new category of commercial service airports eligible for "not less than $600,000 in primary apportionments for each fiscal year the airport had fewer than 10,000 passenger boardings, but at least 8,000 passenger boardings, during the prior calendar year." This money can be used to fund a whole host of capital infrastructure projects.

Discretionary Funds

The remaining AIP funds are distributed by the FAA based on the priority of the project for which they have requested federal assistance through discretionary apportionments. A national priority ranking system is used to evaluate and rank each airport project. Those projects with the highest priority from airports across the country are given preference in funding. High priority projects include those related to meeting design standards, capacity improvements, and other safety enhancements.

Under the AIP program, examples of eligible development projects include the airfield, public aprons, and access roads. Additional buildings and structures may qualify if the function of the structure is to serve airport operations in a non-revenue generating capacity, such as maintenance facilities. Some revenue-enhancing structures, such as t-hangars and fuel farms, may be eligible if all airfield improvements have been made; however, the priority ranking of these facilities are low. At the Las Cruces International Airport, funding for these types of projects should be considered carefully in the near term. This is the reason the runway extensions for commercial development are proposed in the Short-Term and immediately followed by the extension of the terminal apron and then followed by the construction of the CII/III taxilane in the West Area.

Whereas entitlement monies are guaranteed (subject to annual appropriations) on an annual basis, discretionary funds are not. If the combination of entitlement, discretionary, and airport sponsor match does not provide enough capital for planned development, projects may be delayed, although a project that is "shovel-ready" may be considered by the FAA for end-of-year money.

FAA Facilities and Equipment Program

The Airway Facilities Division of the FAA administers the Facilities and Equipment (F&E) Program. This program provides funding for the installation and maintenance of various navigational aids and equipment of the national airspace system. Under the F&E program, funding is provided for FAA airport traffic control towers (ATCTs), en route navigational aids, on-airport navigational aids, and approach lighting systems. While F&E still installs and maintains some navigational aids, on-airport facilities at GA airports have not been a priority.

Project Priority

Because the demand for AIP funds exceeds the availability, the FAA bases the distribution of limited AIP funds on current national priorities and objectives. Projects that rate a high priority will receive higher consideration for funding over those projects with lower priority ratings. Each fiscal year, the FAA apportions AIP funds into major entitlement categories such as entitlements, non-primary, and state apportionment funds. The FAA distributes the remaining funds to a discretionary fund. Set-aside projects are mandated congressionally.

AIP Grant Obligations

When Sponsors receive federal assistance, they also accept certain obligations and conditions associated with that support. Sponsors may incur these obligations by contract, or by restrictive covenants within property deeds. These generally involve one of the following:

- Agreements issued under federal grant programs
- Instruments of approved property transfers
- Deeds of conveyance

Airport owners and operators who accept a federal grant are obligated to maintain and operate their facility in a safe and efficient manner for a specific amount of time based on the type of project. Acceptance of the subsidy also invokes certain conditions and assurances for which the sponsor must comply. These terms and guarantees become binding contractual obligations between the sponsor and the United States.

The FAA administers the following development program:

- Airport Improvement Program (AIP)

Airport owners should be aware that obligations incurred under each program or conveyance document can vary. The following list identifies some of the general responsibilities of an airport owner. This list is not inclusive of all such incurred federal obligations.

- Prohibition on Exclusive Rights
- Utilization of Airport Revenue
- Proper Maintenance and Operation of Airport Facilities
- Protection of Approaches
- Maintaining Good Title of airport property
- Compatible Land Use
- Availability of Fair and Reasonable Terms without unjust discrimination
- Adherence to the approved Airport Layout Plan
- Sale or Disposal of Federally Acquired Property
- Preserving Rights and Powers
- Maintaining acceptable accounting and record keeping systems
- Compliance with Civil Rights requirements
- Compliance with Disadvantaged Business Enterprise (DBE) requirements

The FAA and NMDOT encourage airport owners to thoroughly review and understand each executed agreement and conveyance document to verify the obligations they have accepted. The Administration also helps Airport owners to establish a central point for record keeping purposes that permits readily available reference to their obligations. Annual reviews of all such agreements will significantly aid Sponsor efforts in complying with their federal obligations.

Local Funding

The balance of project costs, after consideration has been given to other sources of financing described above, must be funded through local resources. The Las Cruces International Airport is owned, operated and governed by the City of Las Cruces.

Airport revenues are generated by Airport operations through the collection of various fees and charges. Fees collected by the Airport are to be used specifically to help fund the operation and maintenance of the Airport and for additions or improvements to Airport facilities. Now that the Airport has identified deficiencies in apron space for tie-downs and the number of hangars and in anticipation of the construction of hangars, LRU has established standard base rates for various leases. All rental rates are set to adjust to a standard index, such as the consumer price index (CPI), to assure that fair and equitable rates continue to be charged into the future. Many factors will impact what the standard lease rate should be for a facility or ground parcel. For example, land leases for aviation-related facilities should have a different lease rate than for non-aviation leases. When airports own hangars, a separate facility lease rate should be added to the ground rent. The lease rate for any individual parcel or hangar can vary due to the availability of utilities, condition, location, and other factors. Nonetheless, standard lease rates should fall within an acceptable range.

There are several alternatives for local financing options for future development at the Airport, including Airport revenues, direct funding (subsidizing) from the City, issuing bonds, fuel sales revenue, and leasehold financing. These strategies could be used to fund the local matching share or complete the project if grant funding cannot be arranged.

Leasehold financing refers to a developer or tenant financing improvements under a long-term ground lease. The obvious advantage of such an arrangement is that it relieves the community of all responsibility for raising the capital funds for improvements. However, the private development of facilities on a ground lease, particularly on property owned by a government agency, produces a unique set of concerns.

It is harder to obtain private financing as only the improvements and the right to continue the lease can be claimed in the event of a default. Ground leases frequently provide for the reversion of improvements to the lessor at the end of the lease term, which reduces their potential value to a lender taking possession. Also, companies that want to own their property as a matter of financial policy may not locate where land is only available for lease. It is also acceptable for the airport to enter some form of public/private partnership for various airport projects. Typically, this would be limited to hangar construction, but there are some examples where a private developer constructs, for instance, a taxilane, then deeds it to the airport for ongoing maintenance. When entering any such arrangement, the airport must be sure that the private developer does not gain an economic advantage over other airport tenants.

Ultimate Airport Layout Plan Implementation

To implement the recommendations in this Plan, it is key to recognize that planning is a continuous process and does not end with acceptance, adoption, and/or approval of this document. The airport should implement measures that allow it to track various demand indicators, such as based aircraft, hangar demand, General and Commercial Aviation operations, and passenger enplanements. The issues that this Plan identifies will remain valid for some years. The primary goal is for the Airport to safely serve the air transportation needs of the region best while continuing to be economically self-sufficient. Sustainability is a complex topic and may refer to environmental and financial. Financially sustainable airports have the ability to generate enough revenue to offset/balance its operational costs.

The actual need for facilities is best established by airport activity levels rather than a specified date. For example, projections have been made as to when additional hangars may be needed at the Airport. The timeframe in which the development is necessary may be substantially different. Actual demand may be slower to develop than expected. On the other hand, high levels of demand may establish the need to accelerate development. Although every effort has been made in this planning process to conservatively estimate when facility development may be necessary, aviation demand will dictate the timing of facility improvements.

The value of any plan is keeping the issues and objectives at the forefront of leadership. In addition to adjustments in aviation demand, when to undertake the improvements recommended in this Plan will impact how long the plan remains valid. The format of this program reduces the need for regular and costly updates by just adjusting the timing of project implementation. Updating can be done by the Airport Administrator, thereby improving the Plan's effectiveness.

In summary, the planning process requires the City to consistently monitor the progress of the Las Cruces International Airport regarding General and Commercial Aviation aircraft operations and based aircraft. Analysis of aviation demand is critical to the timing and need for new Airport facilities.