

**CHAPTER**

**4**

**DEVELOPMENT ALTERNATIVES**

**COCHISE COLLEGE AIRPORT  
AIRPORT MASTER PLAN**



# Chapter Four

## Development Alternatives

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### 4.1 INTRODUCTION

The preceding discussion of facility requirements provides the basis for formulating project development concepts. Chapter 3 provided recommended development for the majority of needs at the airport. This Chapter will focus on the projects the sponsor should consider for the existing and future configuration of the airport.

### 4.2 DEVELOPMENT CONCEPTS

The overall objective of the alternatives analysis is to 1) Review the facility requirements that have been determined necessary to safely and efficiently accommodate aviation demand over the 20-year planning period; and 2) Through investigation of available projects and options (where applicable) to determine the best way to implement the facility requirements as determined in Chapter 3 of this report.

In some situations, various alternatives exist for implementing facility requirements. In other cases, the selection of a favored project can result from a straightforward and logical evaluation of the options at hand. After reviewing the current conditions, the future development options and recommendations are based on a logical evaluation of where and how they can best be planned. This alternatives analysis discusses recommendations for implementing facility requirements as determined in Chapter 3 of this report.

The following objectives, as presented in FAA AC 150/5070-6B, generally apply to the evaluation of master plan development alternatives; and serve the planner, airport owner and community well:

- Conforms to best practices for safety and security.
- Conforms to the intent of FAA and other appropriate design standards.
- Satisfies user needs.
- Is technically and financially feasible.
- Allows for forecast growth throughout the planning period.
- Provides for growth beyond the planning horizon.
- Provides for the “highest and best” land use on and off airport.
- Provides balance between development elements.
- Provides flexibility to adjust to unforeseen changes.
- Conforms to the airport owner’s strategic vision.
- Conforms to relevant local, regional and state transportation plans.
- Is socially and politically feasible.

A combination of effective airside and landside planning is essential to the successful development of the airport. Airside facilities are those used during takeoff or landing of aircraft. Landside facilities generally consist of a system of buildings, fuel systems, roadways and vehicle parking areas.

## 4.3 AIRSIDE DEVELOPMENT

Airside development is typically the most critical and physically dominant feature of airport development and therefore a focal point of an airport's planning process. This section discusses the airside development alternatives and addresses the needs of the existing and future aviation demand identified in Chapter 3 - Facility Requirements. Chapter 7 - Airport Development and Financial Plan will provide the projected scheduling and budgeting.

### 4.3.1 RUNWAY DEVELOPMENT

The recommended runway length analysis from the Chapter 3 – Facility Requirements identified that the existing actual runway length of 5,551 feet accommodates 97 percent of the small aircraft fleet mix and is considered adequate. Therefore, alternatives to extend the runway were not considered. The runway was recently reconstructed and it is important for the airport to maintain and prolong the life of the existing runway by adopting a pavement maintenance program which consists of regular crack seal, fog seal and remarking projects.

### 4.3.2 TAXIWAY DEVELOPMENT

Runway 5/23 is served by a full length parallel taxiway. The parallel taxiway is 22 feet wide and located 202 feet from the runway centerline. This distance exceeds the required separation of 150 feet based on the current ARC of B-I (Small). As described in the Facility Requirements Chapter the taxiway is in poor condition and in need of reconstruction. It is recommended that the taxiway be reconstructed in the existing location to a width of 25 feet in order to meet FAA design standards.

The development of holding bays and bypass taxiways is also recommended for future taxiway development. The holding bays and bypass taxiways provide an area for aircraft to conduct pre-flight checks as well as enhance circulation for aircraft entering and departing the runway. Reconstruction of the taxiway at a separation of 225 feet or 240 feet to facilitate a potential future upgrade to an ARC of B-I(Large) or B-II was considered. However, grant funding of the additional cost was not supported as it would exceed current standards.

### 4.3.3 AIRCRAFT APRON

Based on the recommendations from the Facility Requirements Chapter, the 19 existing tiedowns are considered adequate for the 20 year planning period. Should additional tiedowns or apron expansion be needed during the 20 year planning period expansion to the southwest of the existing aircraft parking apron is recommended in order to avoid significant impacts to the existing sunshades and airport aviation hangar/classroom facility. Reconstructing and reconfiguring the existing apron is recommended in order to provide adequate wingtip clearance and meet Group I design standards. The apron is showing signs of deterioration including significant cracking. Reconstruction of the apron is recommended as soon as grant funding becomes available. The existing apron is shown in **Figure 4-1**.



**FIGURE 4-1 EXISTING AIRCRAFT APRON**

#### **4.3.4 INSTRUMENT APPROACH DEVELOPMENT**

Because instrument approach visibility minimums influence the airfield design standards, it is important to first consider the effects of developing an instrument approach at the airport. Generally the weather conditions in southern Arizona are sunny and clear, low visibility minimums are rare and are usually associated with dust storms and the monsoon flow during late summer. Historical weather conditions from the Bisbee Douglas International Airport Automated Weather Observation System report that instrument weather conditions occur less than six percent of the time. Therefore low instrument approach visibility minimums are not as critical at Cochise College as they are in other parts of the country. Even though weather conditions may be visual most of the time the development of an instrument approach procedure would enable flight students to practice instrument approach procedures at the airport, would support business aircraft, and would enhance safety and utility of night approaches to the airport.

The development a Global Positioning System (GPS) approach with vertical guidance, such as a Localizer Performance with vertical guidance (LPV) approach with 1-mile visibility minimums is recommended for the future. The approach development would require an aeronautical survey of the airport and surroundings to verify the height and location of any obstructions. Implementing a precision approach or lower minimums would not be cost effective, would require an additional 250 foot building setback from the runway would consume existing development and would not be utilized on a regular basis given the local weather conditions. The other alternative for the airport is to remain visual and to not implement future instrument approach procedures. Based on discussion with the College Aviation Department planning for future instrument approach procedures is recommended.

#### **4.3.5 AIRPORT LIGHTING**

Currently the parallel taxiway is illuminated with direct burial low intensity taxiway lights (LITLs). The existing taxiway lighting system is considered beyond its useful life and obtaining replacement parts for these old lighting systems are becoming difficult. Two alternatives were considered for the future lighting of the parallel taxiway. The first alternative considered for the taxiway lighting system includes replacing the direct burial LITLs with can and duct medium intensity taxiway lights (MITLs). This alternative would include replacing the lighting system with light emitting diodes (LEDs). LEDs use considerably less energy than traditional lighting systems and work very well in dry warm climates. The second alternative for the taxiway lighting includes replacing the existing taxiway lighting system with retro-reflectors. This alternative was eliminated from further evaluation for not meeting the needs of the college of providing a lighted parallel taxiway. Therefore replacing the LITLs with MITLs is recommended for the future.

#### **4.3.6 AUTOMATED WEATHER OBSERVING SYSTEMS**

The installation of an AWOS was recommended in Chapter Three. The AWOS should be located so as to prevent constraints with future landside development and so that it meets FAA Advisory Circular 150/55220-16D, Automated Weather Observing Systems and NOAA siting criteria, specifically clearance from buildings (500 foot AWOS critical area) and proximity to the primary runway end. The proposed location is shown near mid field. Alternative locations for the AWOS were considered and eliminated due to conflicts with existing and future landside development.

## 4.4 LANDSIDE DEVELOPMENT

Landside development consists of all portions of the airport designed to serve students, passengers, users and operators and maintenance facilities. These areas consist of the college hangar/ and classroom building, vehicle roads, parking facilities, general aviation development areas, and airport support facilities. The following facilities were evaluated to meet future forecast of aviation, passenger activity and growth for landside development.

### 4.4.1 HANGAR DEVELOPMENT

Since the Cochise College Airport is owned and operated by the college and the primary airport user is the college no significant hangar development is expected to occur at the airport during the 20 year planning period. However it is recommended that a mix of new box hangar and T-hangar development be included and protected for in the event that hangar demand increases during the planning period. A sample corporate hangar is shown in **Figure 4-2**. As the college increases the number of based training aircraft at the airport demand exists for the development of additional sun shade structures. Two alternatives exist for future hangar development.



**FIGURE 4-2 CORPORATE HANGAR**

Alternative one includes developing hangars to the east of the existing landside development area along the parallel taxiway. Alternative two includes developing hangars to the west of the existing landside development area along the parallel taxiway. It is recommended that both areas be protected for future hangar development. Corporate parcels are planned to occur along the east side of the existing landside development area and single box and T-hangar development including taxilanes are planned to occur along the west side of the existing landside development area.

### 4.4.2 AIRPORT SUPPORT AND MAINTENANCE

Cochise College owns and operates several pieces of airport maintenance equipment including a mower, plow and broom. The construction of a maintenance equipment storage building is recommended. This will help keep the airport equipment in usable condition as well as provide for security for the equipment. **Figure 4-3** shows a sample airport equipment storage building. The proposed location for the equipment storage building is east of the college hangar/classroom facility.



**FIGURE 4-3 EQUIPMENT STORAGE BUILDING**

Other locations were considered for the equipment storage building however since equipment is currently stored in the area of the proposed building it was considered to be the best location. The proposed equipment storage building location would also remain clear of other airport development projects including apron expansion and hangar development areas.

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#### **4.4.3 MISCELLANEOUS LANDSIDE DEVELOPMENT PROJECTS**

Based on the recommendations from the Facility Requirements Chapter other projects include the acquisition of 1.4 acres of land on the northwest side of the runway to protect the building restriction line setback. The installation of perimeter fence along the existing airport boundary is also recommended to keep people and animals from inadvertently accessing the runway.

#### **4.5 ACCOMMODATION OF AVIATION DEMAND LEVELS**

Each development project would meet FAA safety and design standards for an ARC of B-I (Small). This will allow the airport to accommodate the current and projected types of aircraft that are expected to use the airport.

#### **4.6 AIRSPACE IMPACTS**

The obstruction survey will determine which end of the runway would be better suited for a non-precision instrument approach. The obstruction survey will evaluate the surrounding terrain, airspace and proximity to the U.S./Mexico border to safely implement an instrument approach, missed approach procedure and an instrument departure procedure at Cochise College Airport.

#### **4.7 ENVIRONMENTAL IMPACTS**

The development projects are expected to result in short-term construction and air quality impacts. The airport is located within an air quality non-attainment area. An attainment area is a zone within which the level of a pollutant is considered to meet National Ambient Air Quality Standards.

In addition to emissions originating in Mexico, unpaved road dust, agricultural burning, cleared areas, windblown agricultural land, off road vehicles and unpaved parking lots were identified as contributing sources.

In a 1990 clarification, the Douglas-Paul Spur Group I Area was specified to include all or part of eight contiguous townships in and around the City of Douglas and the Paul Spur unincorporated area. Consistent with EPA's PM10 grouping scheme, the Douglas-Paul Spur Group I Area was designated and classified as a moderate PM10 nonattainment area upon enactment of the 1990 Clean Air Act (CAA) amendments. Arizona Department of Environmental Quality (ADEQ) is currently developing a maintenance plan and request for re-designation for the Douglas-Paul Spur PM10 Nonattainment Area. Further evaluation of air quality impacts will be discussed in Chapter 6.

#### **4.8 DEVELOPMENT COSTS**

Estimated development costs for each project are further discussed in Chapter 7 Financial Development Plan. Costs are primarily related to construction, engineering and administration.

Phasing is recommended to accommodate budgetary constraints. In addition, phasing should mirror, to the extent practical, the requirements of users at the airport by phasing according to known and forecast operations referenced in Chapter 2.

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## 4.9 OTHER ALTERNATIVES CONSIDERED

### 4.9.1 PROVIDE SERVICE FROM ANOTHER AIRPORT IN THE REGION

The Cochise College Airport was constructed to serve the college aviation program and general aviation interests. The alternative of providing aviation services from another airport is considered impractical due to the lack of another airport close enough to Cochise College which possesses adequate facilities to meet the aviation demands of the college aviation program. The nearest airports providing facilities to accommodate the aircraft activity that takes place at the Cochise College Airport are located 15 surface miles northeast at Bisbee-Douglas International Airport. Providing service from another airport would not be economical or feasible to the aviation department students that enjoy the unprecedented convenience of having an airport located on a college campus. Service from another location would result in increased time, energy and additional travel expense to aviation users and students that would otherwise be unnecessary. This alternative ignores the existing goal of providing a safe and efficient airport for the Cochise College aviation program. Furthermore, the airport represents a significant financial investment by the State and Cochise College and is obligated to remain operational under State grant assurances.

### 4.9.2 NO ACTION ALTERNATIVE

The no action alternative would include leaving the airport in its current condition including the runway, taxiway and apron area. This alternative does not meet the objectives for accommodating future operations.

## 4.10 CONCLUSIONS AND RECOMMENDATIONS

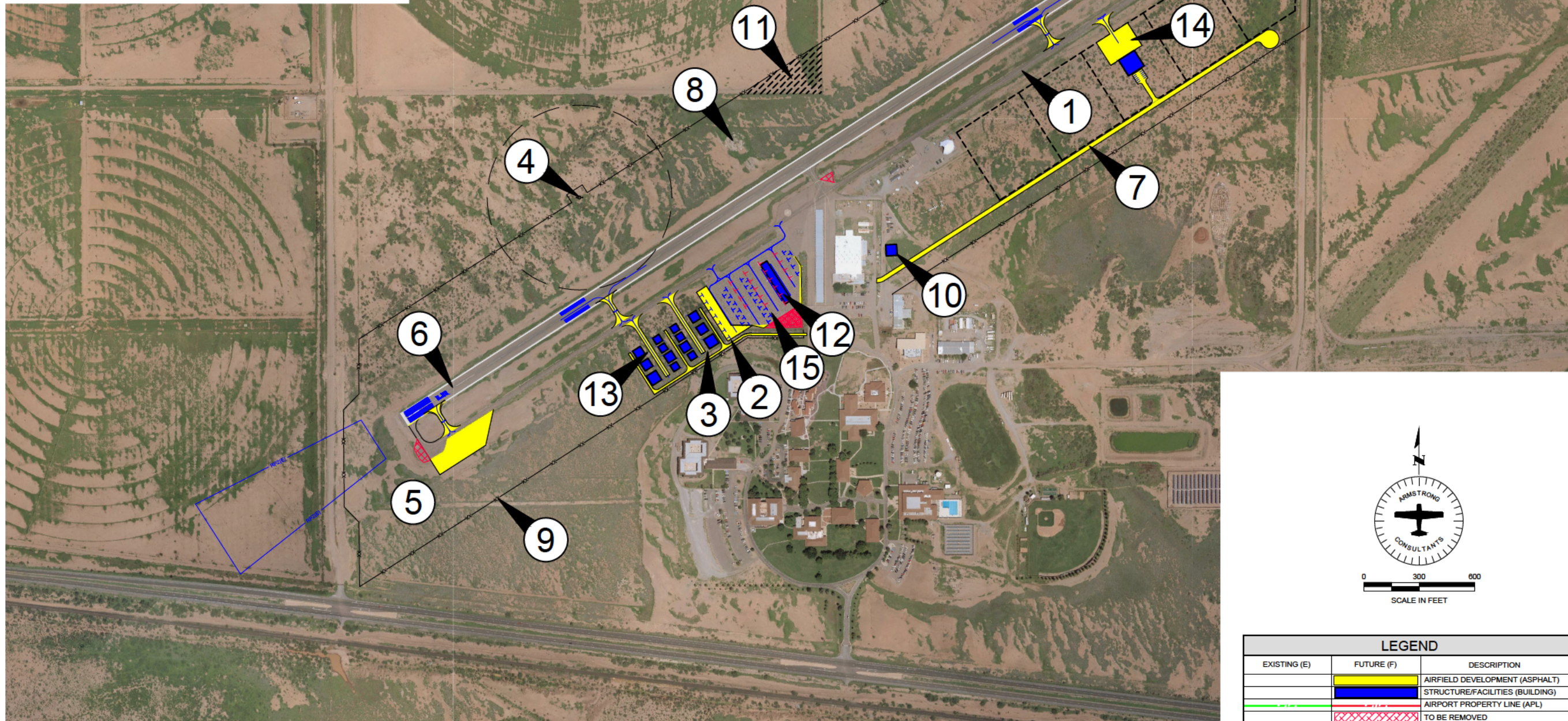
Regular coordination with the College has developed the recommendations discussed in the sections above. The recommended airport development projects are shown in **Figures 4-4 and 4-5**. A planning meeting was held on July 25, 2013 with the College, State and Consultant to discuss the recommended development. The recommended development was agreed upon by all the meeting participants.

As discussed in previous sections there are no major airport expansion projects anticipated during the 20 year planning period. Future airport development projects are primarily related to maintaining existing airfield pavement and facilities and to correct any existing nonstandard conditions. The projects discussed will accommodate existing and forecast traffic utilizing the airport by identifying areas on the airport. Each project meets the required criteria for accommodation of existing and expected aviation demand.

Table 4-1 Development Projects

Project	Description
1	Parallel Taxiway Reconstruction
2	Apron Expansion
3	Storage Hangar
4	Automated Weather Observing Systems (AWOS)
5	Obstruction Survey
6	Non-precision Instrument Approach
7	Road to Corporate Parcels
8	Replace Segmented Circle and Wind Cone
9	Install Airport Perimeter Fencing
10	Acquire Maintenance Equipment Storage Building
11	Land Acquisition
12	Sun Shade Parking Apron Reconfiguration
13	Small Hangar Development / Taxilanes
14	Corporate Hangar Development
15	Apron Reconstruction

NOTE: Not in any particular order.



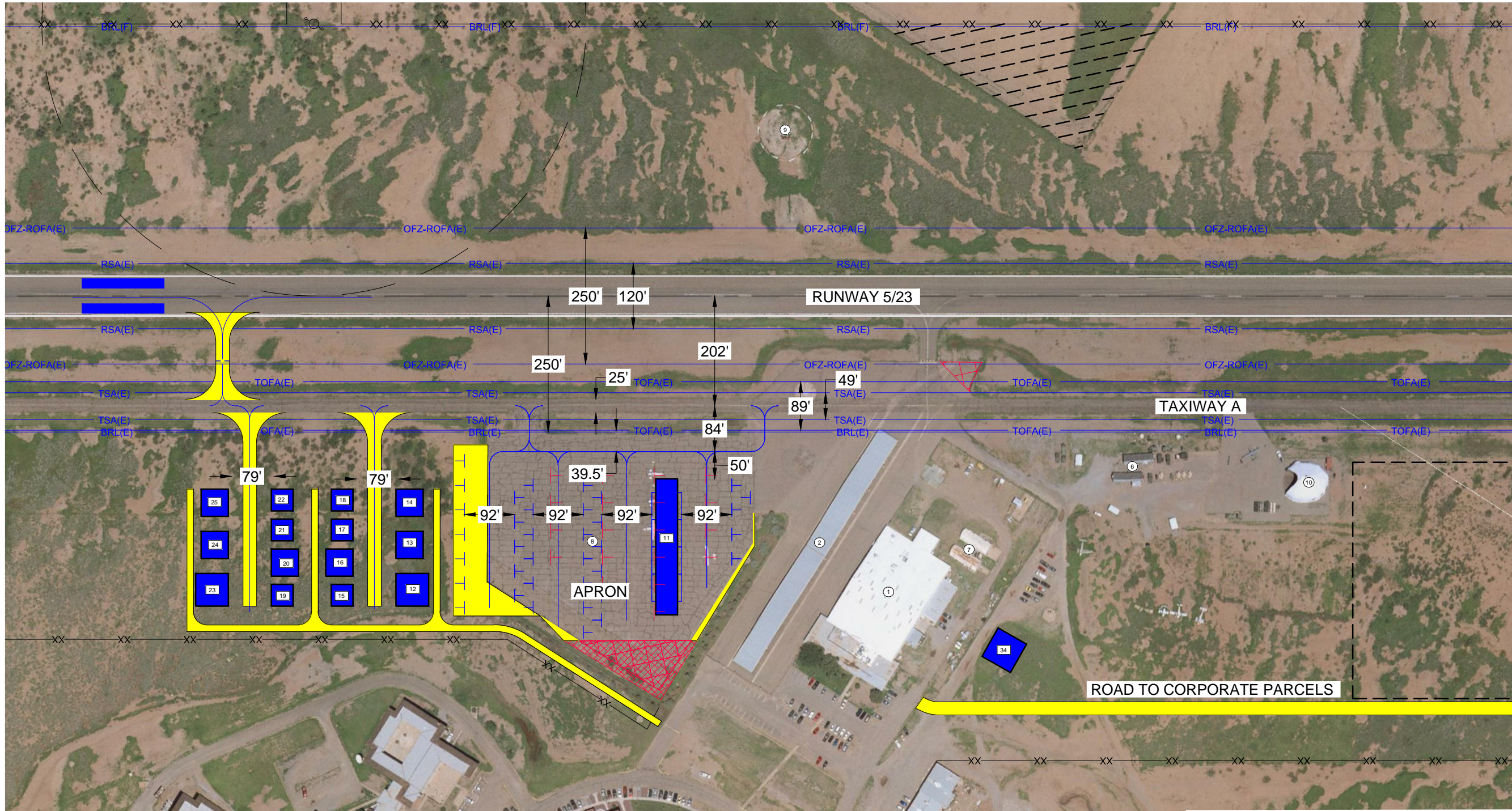
No	Project No.	Date	Revision / Description	File	Drawn	Chkd.	Approved
0	116035	02/20/14			JOS	JZP	
1							
2							

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RECOMMENDED  
DEVELOPMENT

Figure 4-4





AIRPORT FACILITIES LIST		
EXISTING	FUTURE	FACILITY DESCRIPTION
(1)		HANGAR / CLASSROOMS
(2)		AIRCRAFT SHELTER
(3)		CAMPUS/AIRPORT MAINT.
(4)		QUANSETS
(5)		FUEL STORAGE
(6)		MILITARY TRAILERS
(7)		QUANSETS
(8)		AIRCRAFT PARKING APRON
(9)		LIGHTED WINDCONE, TETRAHEDRON & SEGMENTED CIRCLE
(10)		MILITARY AIRCRAFT SHELTER
	(11)	AIRCRAFT SHELTER
	(12)	HANGAR
	(13)	HANGAR
	(14)	HANGAR
	(15)	HANGAR

	(16)	HANGAR
	(17)	HANGAR
	(18)	HANGAR
	(19)	HANGAR
	(20)	HANGAR
	(21)	HANGAR
	(22)	HANGAR
	(23)	MAINTENANCE EQUIPMENT BUILDING
	(24)	HANGAR
	(25)	HANGAR

SCALE IN FEET  
0 100 200

LEGEND		
EXISTING (E)	FUTURE (F)	DESCRIPTION
		AIRFIELD DEVELOPMENT (ASPHALT)
		STRUCTURE/FACILITIES (BUILDING)
		AIRPORT PROPERTY LINE (APL)
		TO BE REMOVED

No.	Project No.	Date	Revision / Description	File	Drwn.	Chkd.	Apprvd.
0	116035	02.2014		8036518	JOS	JZP	