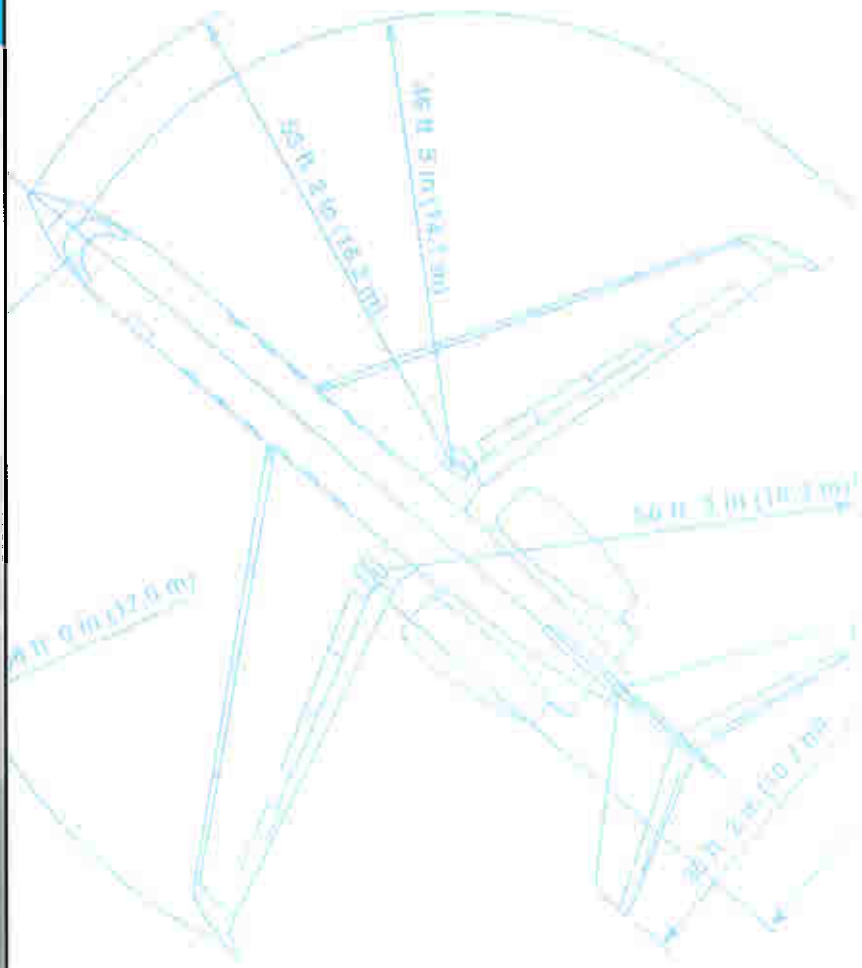
EASTERN OREGON REGIONAL AIRPORT AT **PENDLETON**

MASTER PLAN UPDATE



Eastern Oregon Regional Airport at Pendleton **Master Plan Update**

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Airport Layout Plans

A reduced version of Airport Layout Plan set is included in Appendix B.

Chapter One
Inventory of Existing Facilities

As outlined in Federal Aviation Administration (FAA) Advisory Circular 150/5070-6A, *Airport Master Plans*, the initial step in the Master Plan Update process for the Eastern Oregon Regional Airport at Pendleton is the collection and evaluation of information about the Airport and the area it serves. The inventory task for the Eastern Oregon Regional Airport at Pendleton is accomplished through physical inspection of the facilities, field interviews and surveys, telephone conversations, review of previous Airport studies, and review of appropriate Airport management records.

The objective of the inventory task is to provide the background information which is essential to the completion of the Master Plan Update. The inventory information covers a broad spectrum and includes information on the following elements of the Airport:

- Airside and landside facilities and their uses
- Surface transportation data
- Air traffic activity data
- Airport support facilities
- Weather data
- Other airport studies
- Airspace structures
- Navigational aids

A large volume of data was collected, reviewed, and analyzed during the inventory effort at Eastern Oregon Regional Airport at Pendleton. Much of the detailed information will be presented in the subsequent chapters of this Master Plan Update, as appropriate, to support the various technical analyses required as part of this project. This chapter presents an overall summary of the Airport facilities and the community it serves. The chapter is organized in the following sections:

- General Airport Description and Location
- Existing Airport Facilities
- Airspace and Air Traffic Control
- Existing Landside Facilities
- Meteorological Data
- Non-Aviation Facilities and Land Uses
- Airport Activity Statistics
- Socioeconomic Data
- Financial Data
- Tenant and User Surveys
- Summary of Existing Planning Documents

1.1 General Airport Description and Location

The Eastern Oregon Regional Airport at Pendleton is a commercial service airport providing scheduled air carrier and general aviation services. It is the only scheduled air carrier airport in northeast Oregon and serves the Counties of Baker, Grant, Umatilla, Morrow, and Union. Air carrier activity incorporates all airline activity performed by airlines certified under Federal Aviation Regulations Part 121. General aviation activity includes all civil aviation activity except that of certified air carriers and includes air charter, air taxi, aerial application, corporate, business, and recreational activity. The Airport is owned and operated by the City of Pendleton.

The Airport opened in 1934. During World War II the Airport was used as a training base for military pilots and significantly expanded in size, acquiring much of the property that comprises the Airport today. In addition, some of the Airport structures and facilities in existence today were constructed during this same period. The existing airport terminal/administration building was constructed in 1953 and has been expanded over the years. A two-bay fire station was constructed in 1961. A six-bay maintenance facility was constructed in 1984.

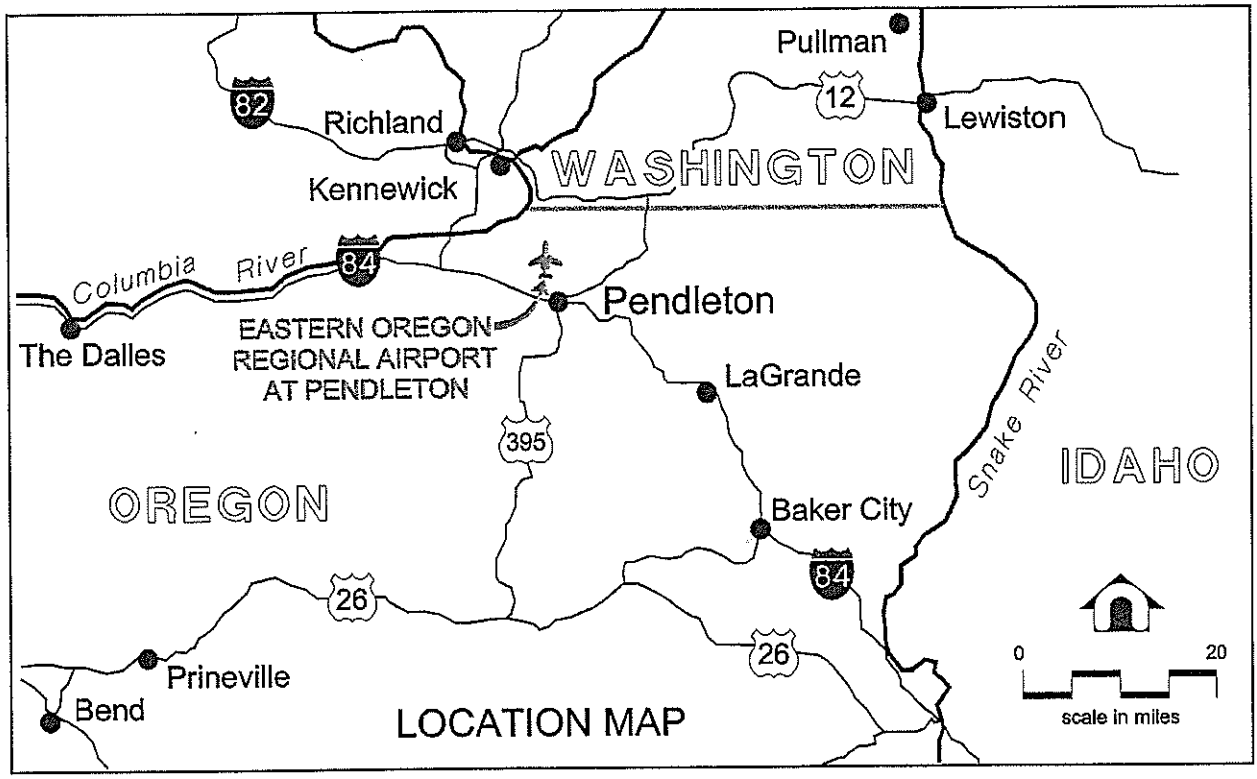
Scheduled passenger service at the Airport was established in 1934 by United Airlines, which flew tri-engine, 10-passenger aircraft between Pendleton and Portland. By the mid-1970's, scheduled passenger service had expanded to three arrivals and departures per day by United Airlines. UAL used B727 and B737 aircraft at the Airport. Regional service was started by Air Oregon which provided the Airport with six daily flights. In 1981, United Airlines discontinued service at the Airport. Currently, the Airport is served by Horizon Air, which has five daily flights.

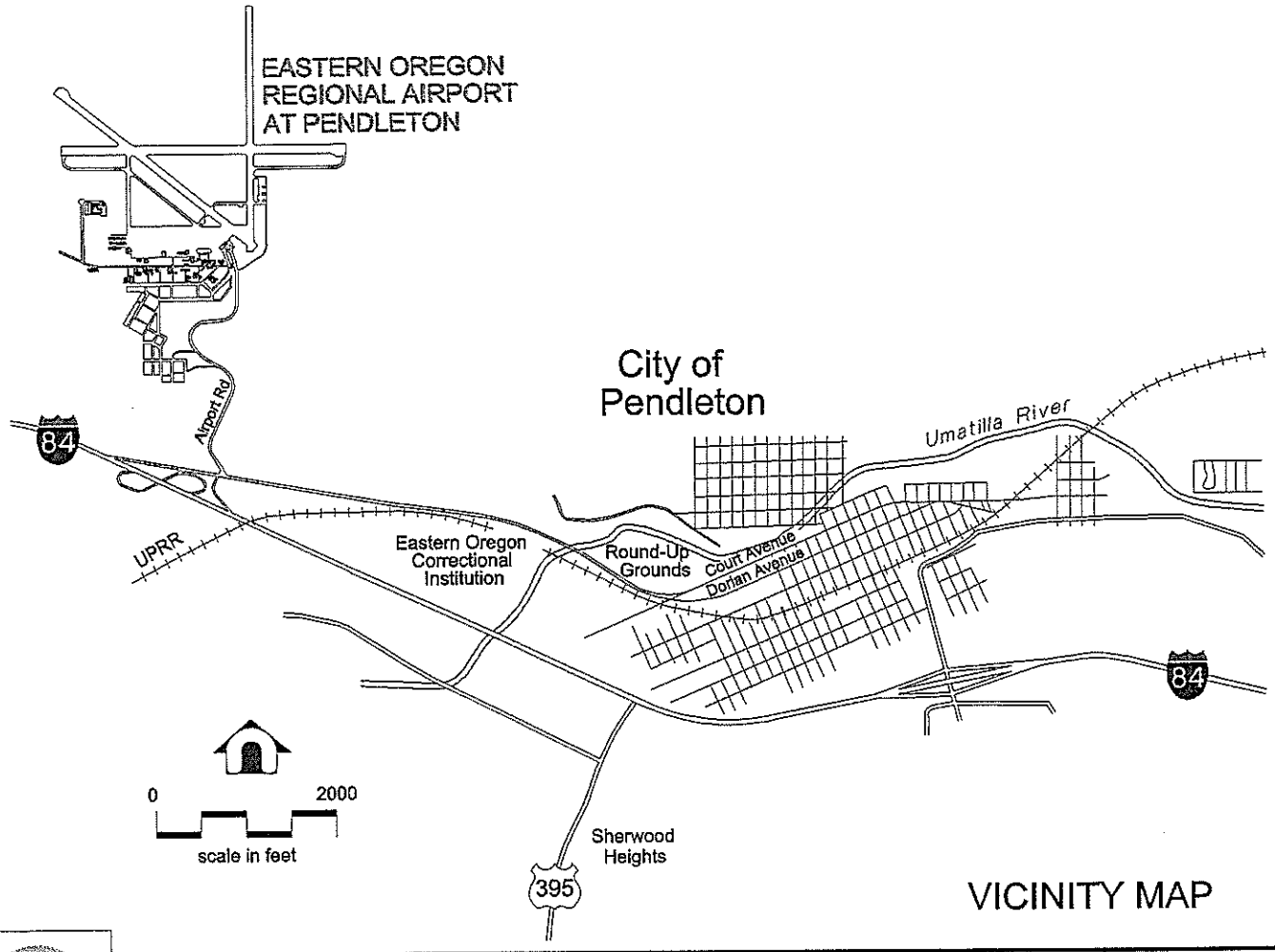
Through all this development Eastern Oregon Regional Airport at Pendleton has remained and will continue to remain an important link in the transportation network of northeastern Oregon. The existing facility consists of a 6,300-foot primary runway and two crosswind runways. A passenger terminal provides facilities for airlines, rental cars, concessions, and airport administration. Associated with the Airport is the Pendleton Air-Industrial Park. The Airport is comprised of approximately 2,273 acres.

The City of Pendleton is located in the southeastern part of the Columbia River Basin in the foothills of the Blue Mountains and is the County seat of Umatilla County. It is centrally located between the cities of Portland, Seattle, Spokane, and Boise. The region is rural and sparsely populated with a largely resource-based economy. The Airport is located within the city limits approximately three miles northwest of the city center. **Exhibit 1-1** depicts the airport location in relation to the city.

1.2 Existing Airport Facilities

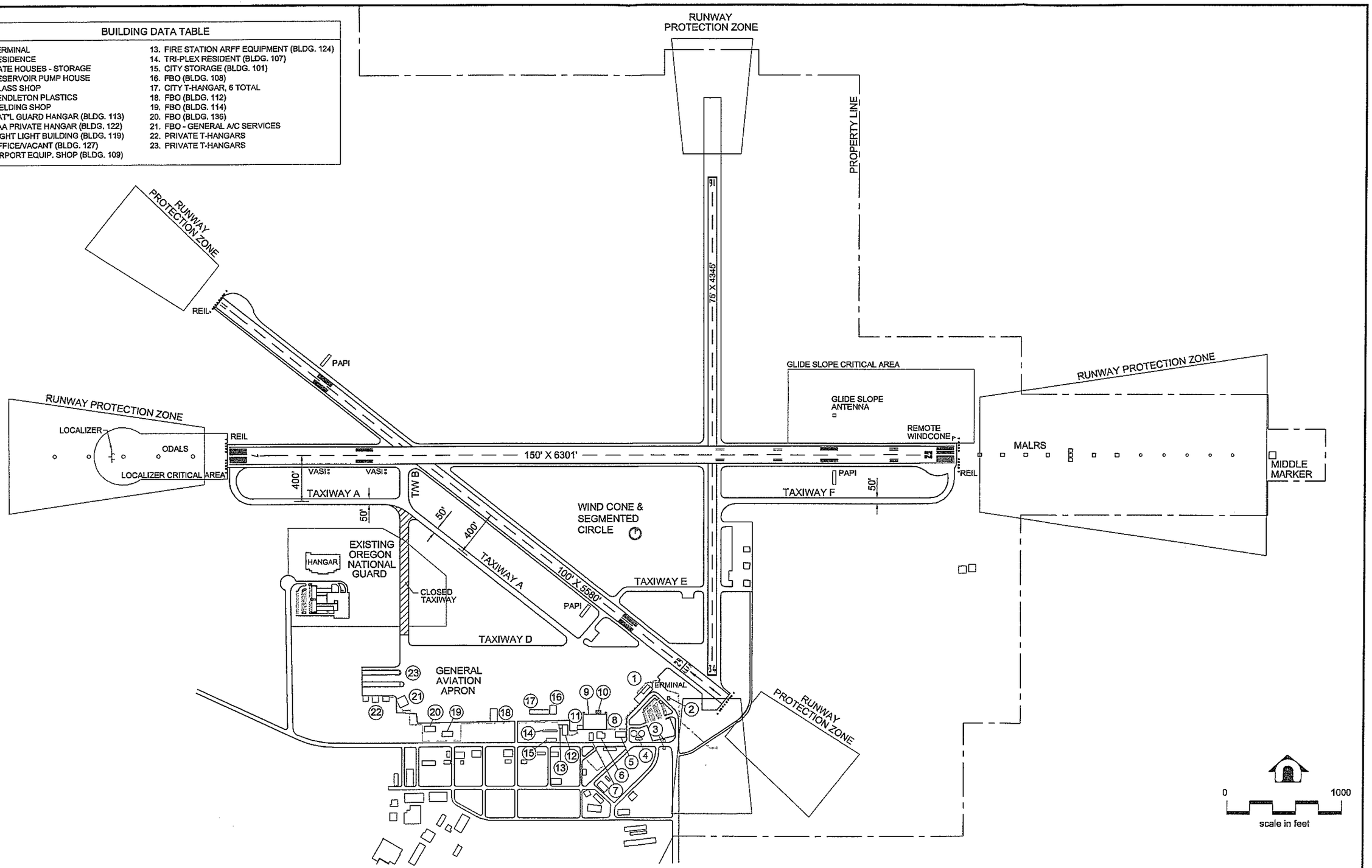
Existing airport facilities are presented in two categories: airfield and landside. The airfield facilities include such areas as the runways, taxiways, and aprons. The landside facilities include such items as the airport terminal building, vehicular access, and automobile parking. The airfield and landside facilities are detailed below. The current airport facilities are depicted in **Exhibit 1-2**.





Eastern Oregon Regional Airport at Pendleton Master Plan Update	**AIRPORT LOCATION MAP**	Exhibit 1-1

BUILDING DATA TABLE	
1. TERMINAL	13. FIRE STATION ARFF EQUIPMENT (BLDG. 124)
2. RESIDENCE	14. TRI-PLEX RESIDENT (BLDG. 107)
3. GATE HOUSES - STORAGE	15. CITY STORAGE (BLDG. 101)
4. RESERVOIR PUMP HOUSE	16. FBO (BLDG. 108)
5. GLASS SHOP	17. CITY T-HANGAR, 6 TOTAL
6. PENDLETON PLASTICS	18. FBO (BLDG. 112)
7. WELDING SHOP	19. FBO (BLDG. 114)
8. NAT"L GUARD HANGAR (BLDG. 113)	20. FBO (BLDG. 136)
9 EAA PRIVATE HANGAR (BLDG. 122)	21. FBO - GENERAL A/C SERVICES
10. NIGHT LIGHT BUILDING (BLDG. 119)	22. PRIVATE T-HANGARS
11. OFFICE/VACANT (BLDG. 127)	23. PRIVATE T-HANGARS
12. AIRPORT EQUIP. SHOP (BLDG. 109)	



Eastern Oregon Regional Airport at Pendleton Master Plan Update

EXISTING AIRPORT FACILITIES

Exhibit 1-2

1.2.1 Airfield Facilities

The airfield consists of many components which are required to accommodate safe and efficient aircraft operations. This consists of runways, taxiways, and an apron network; the visual and electronic navigational aids associated with runways; the runway protection zones; and the area airspace.

Runways. The Airport has three asphalt runways and numerous taxiways. The primary Runway 7-25 is 6,300 feet long and 150 feet wide. This is the predominant runway used by both general aviation and air carrier aircraft during instrument meteorological conditions (IMC). The two crosswind runways at the Airport include a 5,581-foot by 100-foot Runway 11-29 and the 4,341-foot by 75-foot Runway 16-34. Runway 16-34 is used primarily by the aerial applicators based at the Airport. Runway 11-29 is used by air carriers for convenience or when conditions aren't favorable for the use of Runway 7-25.

Two of the runway pavements are rated for single wheel, dual wheel, and dual tandem, while Runway 16-34 is only rated for single wheel. The gear type and configuration that an aircraft is equipped with dictates how that aircraft's weight is distributed to the pavement and also determines pavement responses to loading. Examination of gear configuration, tire contact areas, and tire pressure in common use indicate that pavement strength is related to aircraft maximum take-off weight. The pavement strengths for each runway are presented in **Table 1-1**. The Airport's pavement maintenance/management plan is being updated as part of this master plan project. Data from that analysis will be incorporated into the capital improvement plan for the Airport.

Table 1-1
Runway Pavement Strengths

Criteria	Runway 7-25	Runway 11-29	Runway 16-34
Single Wheel	115,000	70,000	20,000
Dual Wheel	132,000	80,000	-
Dual Tandem	210,000	122,000	-

Source: Airport/Facility Directory, Northwest US, July 1993, NOAA.

Taxiways. An extensive taxiway system supports aircraft operations at Eastern Oregon Regional Airport at Pendleton. The designation, width, orientation, and description of all existing taxiways at the Airport are summarized in **Table 1-2**.

Table 1-2
Taxiway Inventory

Designation	Width	Orientation	Comment
"A"	50'	NW-SE	Parallels Runway 11-29 in front of terminal before turning west to parallel 7-25 to the Runway 7 end.
"B"		N-S	Connects Taxiway A to Runway 7-25.
"D"		E-W	Parallels the terminal and general aviation aprons.
"E"		E-W	Connects Runway 11-29 with Runway 16-34.
"F"	50'	E-W	Parallels Runway 7-25 between Runway 16-34 and Runway 25 end.

Source: David, Evans, and Associates, *Airport Layout Plan*, 1996.

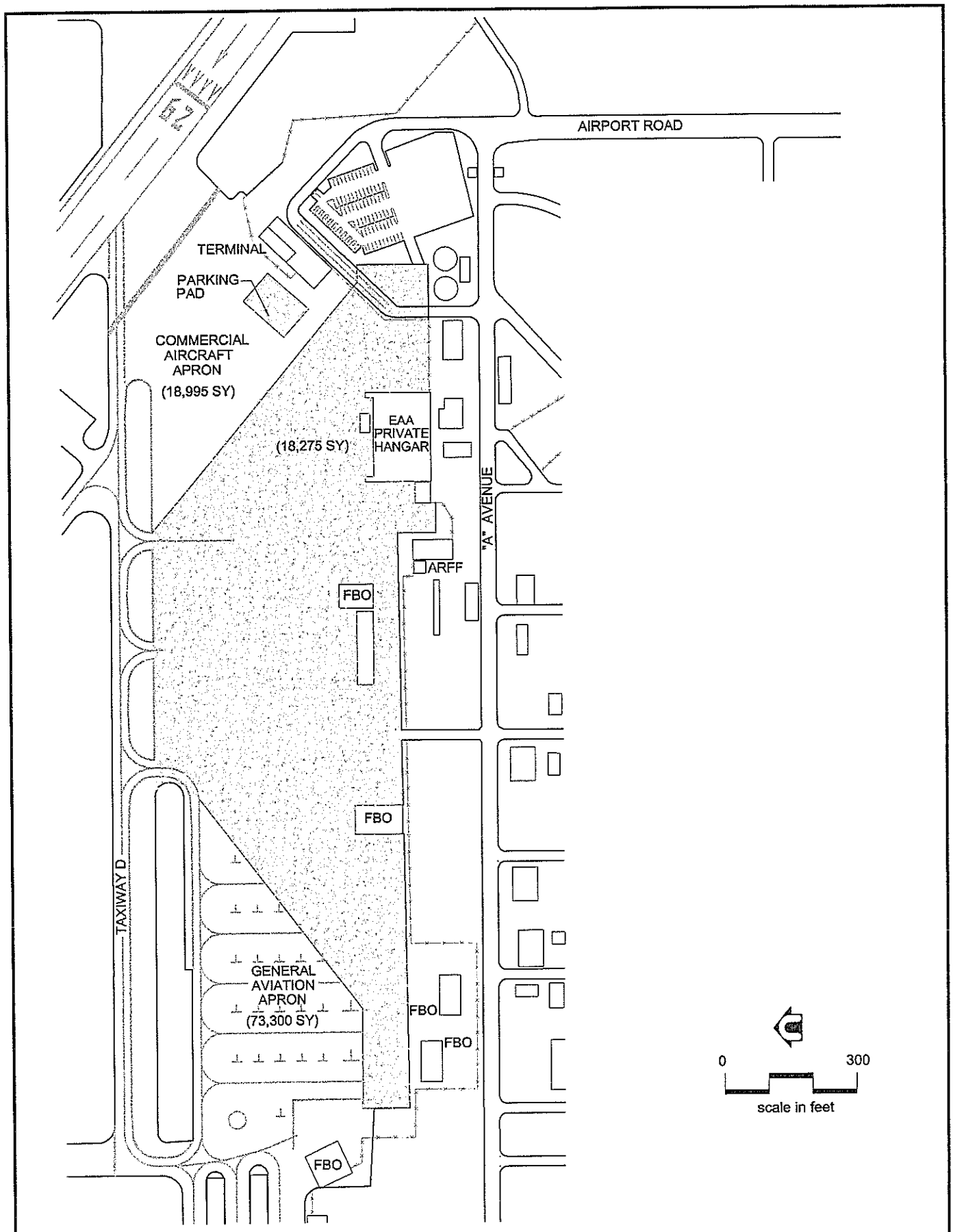
Aprons. The apron network at Eastern Oregon Regional Airport at Pendleton is extensive. It serves the needs of the various aviation segments which use the Airport. The total apron available at the Airport is 110,570 square yards with 200 tie-downs available. The air carrier apron, or main apron is approximately 18,995 square yards and is located directly in front of the airport terminal. The general aviation apron is located west of the terminal area and is approximately 91,875 square yards. The location of the aprons is presented in **Exhibit 1-3**.

Airfield Lighting. Lighting aids at an airport are used to facilitate identification, approach, landing, and taxiing at night and in adverse weather conditions. Eastern Oregon Regional Airport at Pendleton is identified at night by a rotating beacon, which is located west of the airport terminal building adjacent to the large WWII era hangar. The rotating beacon located at the Airport is an optical system that provides two beams of light (one clear and one green) 180 degrees apart.

Runway edge lighting is used to outline runways during periods of darkness and/or restricted visibility. Runway edge lights are white, except for the last 2,000 feet which are yellow for precision approach runways. These lights can be seen several miles from the airport under good visibility conditions. Lighting systems are classified in accordance to their intensity and brightness. At Eastern Oregon Regional Airport at Pendleton, Runway 7-25 has High Intensity Runway Lights (HIRL) and Runway 11-29 has Medium Intensity Runway Lights (MIRL). Runway 16-34 is not lighted.

Runway 7 has a 4-box Visual Approach Slope Indicator (VASI) and an omnidirectional approach lighting system (ODALS) and a Precision Approach Path Indicator (PAPI). Runway 25 is equipped with a medium-intensity approach lighting system with runway alignment indicator lights (MALSR). Runway 11-29 is equipped with PAPIs on both ends as well as Runway End Identifier Lights (REILs) on both ends.

Taxiway edge lights are installed on Taxiways A, F, and B (north of Taxiway A). Taxiway B south of Taxiway A is not lighted and is operated by the military. Taxiway D is equipped with reflectors.



Eastern Oregon Regional Airport at Pendleton Master Plan Update	**AIRPORT APRONS**	Exhibit 1-3

1.3 Air Space and Air Traffic Control

This section describes the various navigational aids (NAVAIDs) available at the Eastern Oregon Regional Airport at Pendleton as well as the airspace structure which surrounds the Airport.

1.3.1 Navigational Aids

NAVAIDs at the Airport provide visual and electronic guidance and are categorized as precision or non-precision. Precision NAVAIDs provide azimuth (left/right of centerline) and glide path information. Non-precision NAVAIDs provide only azimuth information. A precision NAVAID at the Airport is the Instrument Landing System (ILS). Non-precision NAVAIDs at the Airport include Very High Frequency Omnidirectional Range with Distance Measuring Equipment (VOR/DME), Non-Directional Beacon (NDB), and Global Positioning System (GPS) with a VOR/DME overlays to VOR/DME and/or NDB approaches. The Airport also has a windsock, a ceilometer, and an Automated Surface Observing System (ASOS).

The Runway 25 ILS approach plate is depicted in **Exhibit 1-4**, Runway 7 VOR or GPS approach plate is depicted in **Exhibit 1-5**, and additional NDB or GPS approach plate is depicted in **Exhibit 1-6**.

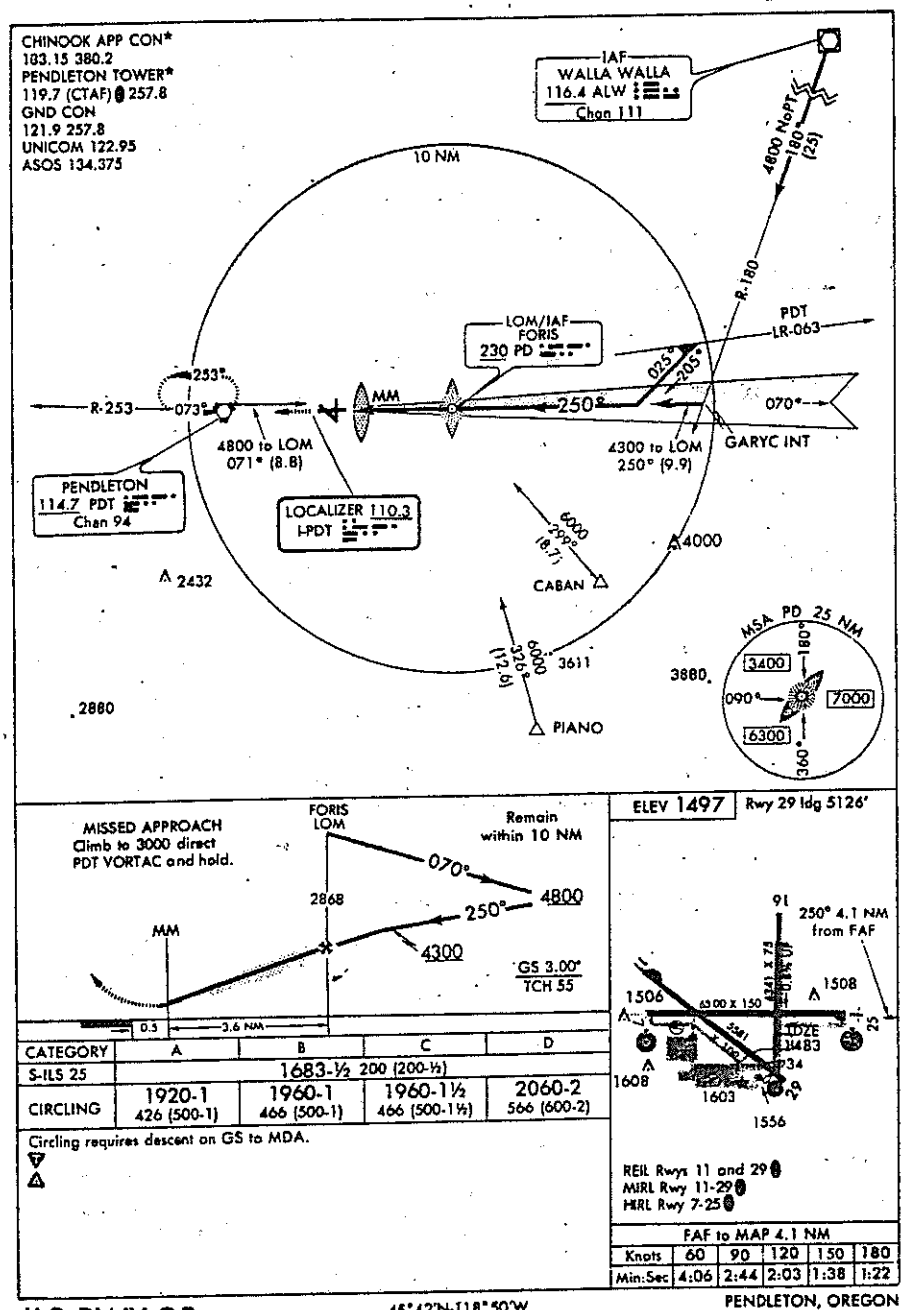
Runway 25 is equipped with an Instrument Landing System (ILS) that allows aircraft approaches with minimums of ½ mile visibility and a 200-foot ceiling.

1.3.2 Airspace

The Federal Aviation Administration Act of 1958 established the FAA as the responsible agency for control and use of navigable airspace within the United States. An analysis of airspace use is critical in determining the capacity and the operational interaction of the Airport with surrounding airports. Flights into the Airport are conducted using both Instrument Flight Rules (IFR) and Visual Flight Rules (VFR). Instrument flight rules are those that govern procedures for conducting operations primarily during adverse weather conditions. Visual flight rules govern the procedures for flight under visual conditions. Published procedures for instrument (precision and non-precision) approaches outline the aircraft's required flight path and altitude.

Eastern Oregon Regional Airport at Pendleton is depicted on the Seattle sectional chart published by the U.S. Department of Commerce, National Oceanic and Atmospheric Association, National Ocean Service. The airspace is depicted in **Exhibit 1-7**.

The Airport is in the contract air traffic control tower program. The tower is open from 6 a.m. to 8 p.m. daily. The airfield is open for use 24-hours a day. The Eastern Oregon Regional Airport at Pendleton falls under the jurisdiction of the Seattle Air Route Traffic Control Centers (ARTCC) and the Chinook Approach/Departure Control Center.



CATEGORY	A	B	C	D
S-ILS 25	1683-½ 200 (200-½)			
CIRCLING	1920-1 426 (500-1)	1960-1 466 (500-1)	1960-1½ 466 (500-1½)	2060-2 566 (600-2)

Circling requires descent on GS to MDA.

ILS RWY 25
Amdt 23 00167

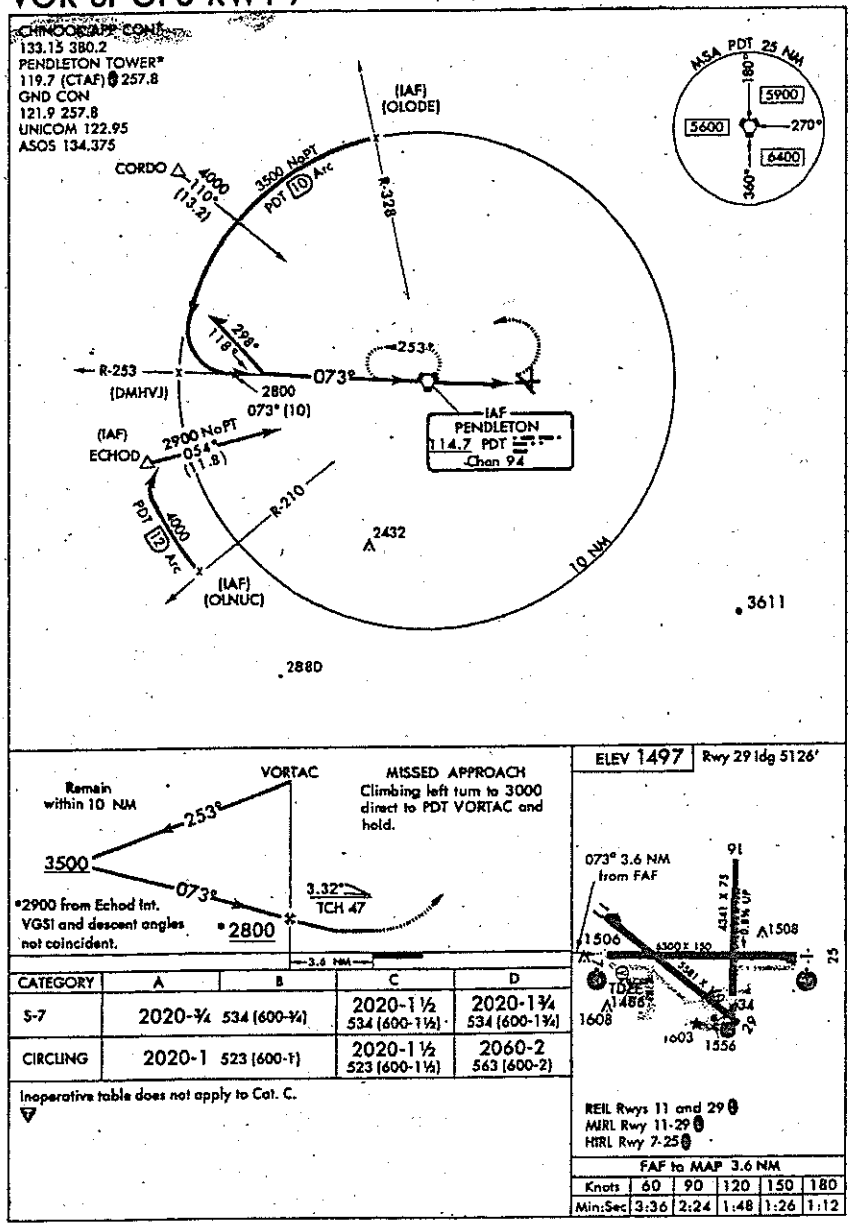
45°42'N-118°50'W
PENDLETON, OREGON
PENDLETON/EASTERN OREGON REGIONAL AT PENDLETON (PDT)

Source: National Ocean Service, June 15, 2000.

Amdt 14B 00167

VOR or GPS RWY 7

PENDLETON/EASTERN OREGON REGIONAL AT PENDLETON (PDT)
AL-316 (FAA)
PENDLETON, OREGON



MISSED APPROACH
Climbing left turn to 3000 direct to PDT VORTAC and hold.

CATEGORY	A	B	C	D
S-7	2020-¾ 534 (600-¾)		2020-1½ 534 (600-1½)	2020-1¾ 534 (600-1¾)
CIRCLING	2020-1 523 (600-1)		2020-1½ 523 (600-1½)	2060-2 563 (600-2)

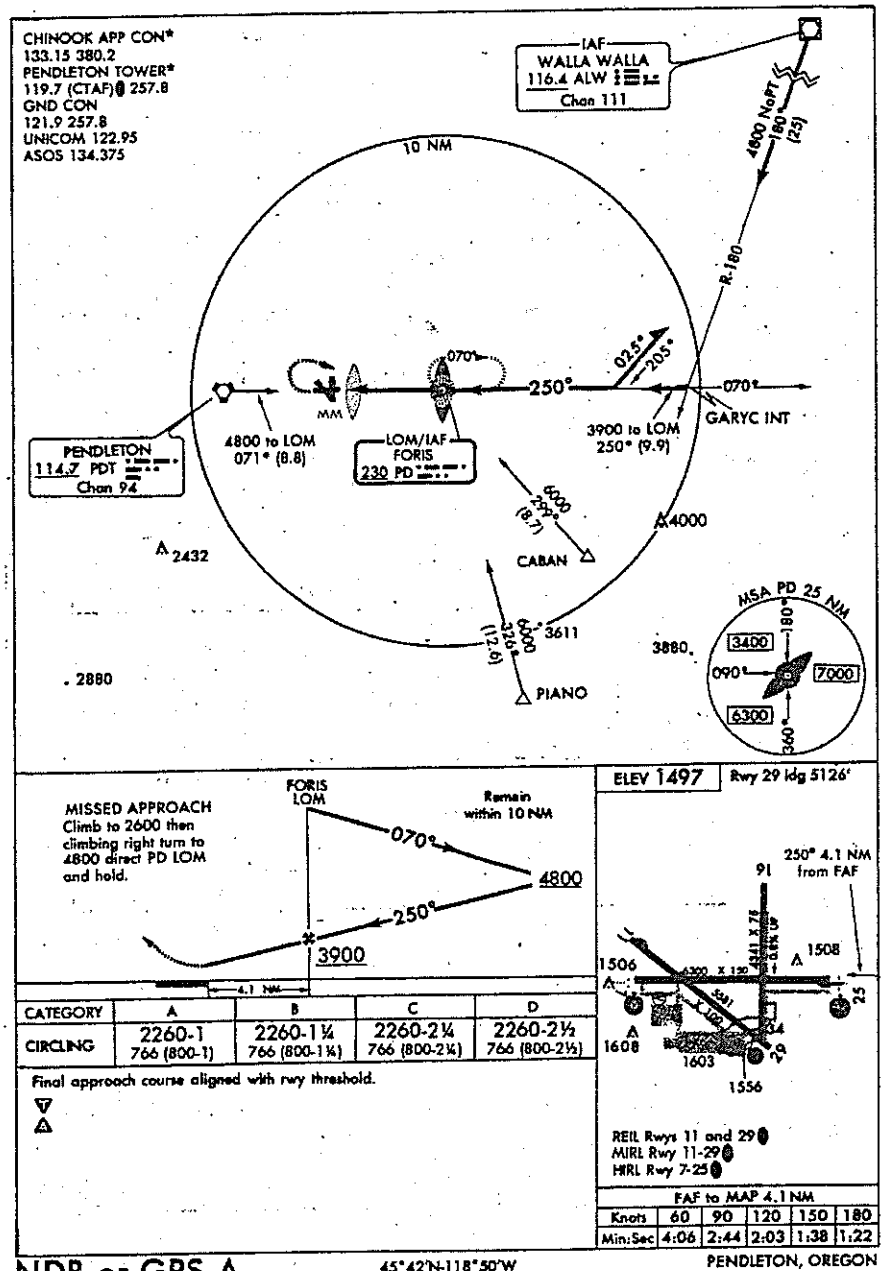
Inoperative table does not apply to Cat. C.

ELEV 1497 Rwy 29 ldg 5126'

REIL Rwys 11 and 29
MIRL Rwy 11-29
HIRL Rwy 7-25

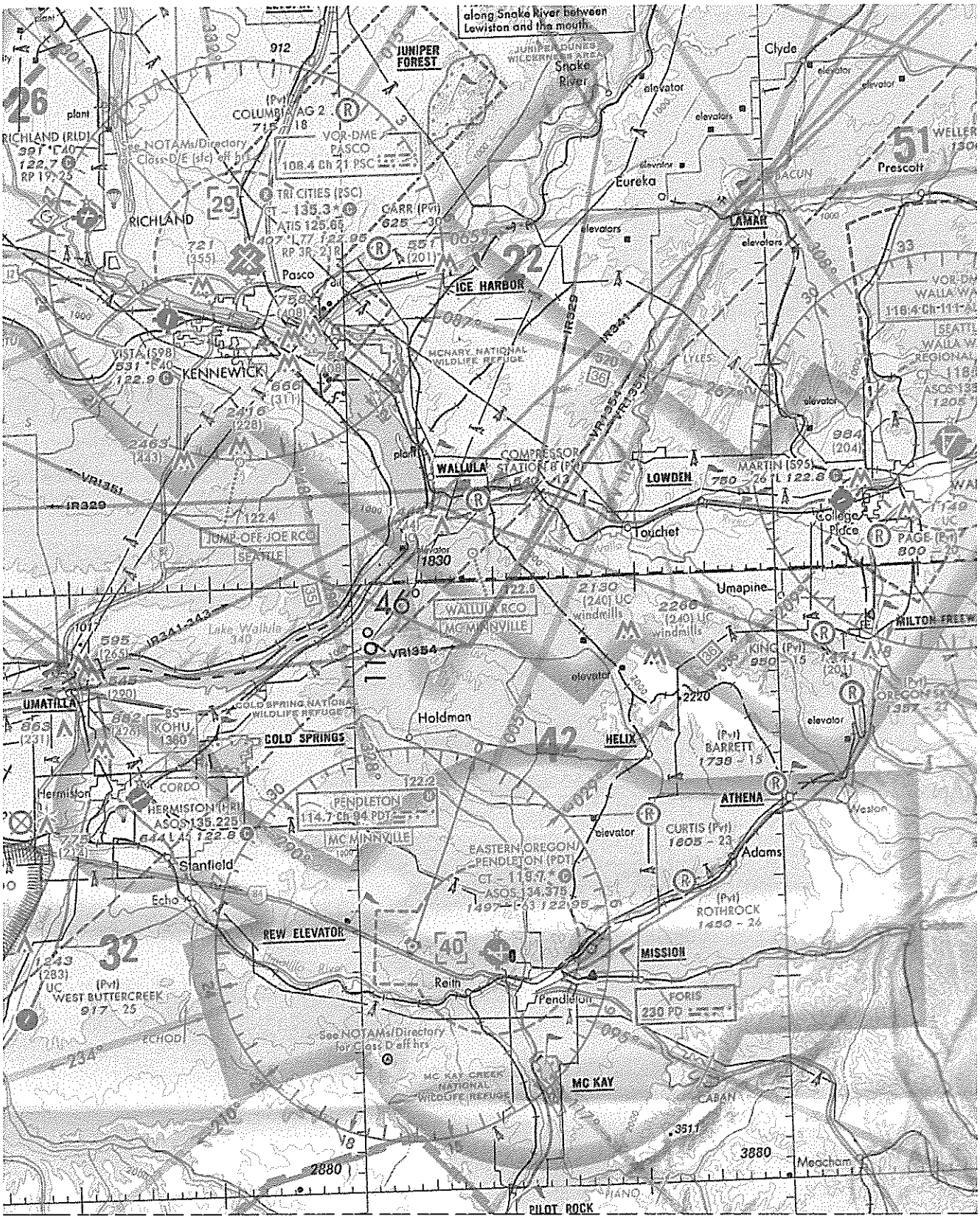
FAF to MAP 3.6 NM					
Knots	60	90	120	150	180
Min:Sec	3:36	2:24	1:48	1:26	1:12

Source: National Ocean Service, June 15, 2000.



Source: National Ocean Service, June 15, 2000.

Eastern Oregon Regional Airport at Pendleton Master Plan Update	**NDB or GPS-A APPROACH PLATE**	Exhibit 1-6



Source: National Ocean Service, *Seattle Sectional Aeronautical Chart*, June 15, 2000.

Eastern Oregon Regional Airport at Pendleton Master Plan Update	**AIRSPACE**	Exhibit 1-7

1.4 Existing Landside Facilities

Eastern Oregon Regional Airport at Pendleton has approximately 2,273 acres of land. The land which the Airport owns is categorized as airport activity by the City of Pendleton zoning map. However, the land around the airport is categorized as light industrial and farm use.

Landside facilities are considered all those facilities at the Airport which do not fall into the airside facilities category as previously discussed. The existing landside uses at the Airport include the airport terminal building, automobile parking and vehicular access, general aviation facilities, industrial park, and other support facilities as outlined in this section.

1.4.1 Airport Terminal Building

The existing Eastern Oregon Regional Airport at Pendleton terminal was constructed in 1953 and has since been expanded and remodeled, most recently in 1996. The terminal building is contained on two floors. The first floor houses the airline ticketing counters, airline management offices, rental car counters, baggage claim, a passenger holdroom, a waiting area, a restaurant, and restrooms. The second floor has the airport administration and the Greater Eastern Oregon Development Corporation offices.

Renovations to the terminal building are planned to take place in Fall 2000.

1.4.2 General Aviation Facilities

The general aviation inventory is organized as follows:

- Tenants and services
- Aircraft storage facilities

Tenants and Services. There are ten aviation-related businesses providing a range of services to general aviation pilots and the public. These services include hangar, fueling, aircraft maintenance and repair, airframe and powerplant repairs, flight instruction, aircraft charter, and agricultural aerial application service. Airport businesses and the primary services they provide are listed below:

- General Aircraft Services - Full-service fixed based operators
- Pendleton Flight Services - Instruction, charter, rental
- Pendleton Aircraft Services - Airframe and powerplant repair
- Duane Thul (dba Diamond Aviation) - Aircraft maintenance
- Songbird Aviation - Air charter services
- Pendleton Ag Services - Aerial spraying
- NYSSA Air - Aerial spraying
- West Flying Service - Aerial spraying
- Wildhorse Helicopters - Aerial spraying
- Hart's Aircraft Hangars

Other aviation-related airport tenants include the Oregon National Guard Limited Army Aviation Support Facility, National Guard Armory, and the Hart T-hangar complex at the west end of the aircraft apron and tie-down area.

Aircraft Storage Facilities. The Airport has a variety of aircraft storage facilities. There are 28 T-hangars and two conventional hangars on the airport, providing space for approximately 43 aircraft to be stored on the Airport.

1.4.3 Support Facilities

Airport Maintenance and Snow Removal Equipment. The Airport maintenance and snow removal equipment building is located west of the passenger terminal building and is approximately 4,700 square feet in size. The building has six bays for storing vehicles.

Aircraft Rescue and Firefighting Facilities (ARFF). The ARFF building is located next to the SRE building, which houses two ARFF trucks. ARFF services at the Airport are rated an Index A standards.

Fuel Facilities. Fuel services at the Airport are provided by Pendleton Aircraft. They provide 100LL Avgas, Jet A, and Mogas. Currently, the Airport does not have a fuel farm located on Airport property, so fuel services are provided by fuel trucks. The fuel used at the Airport is currently stored off site in fuel tanks.

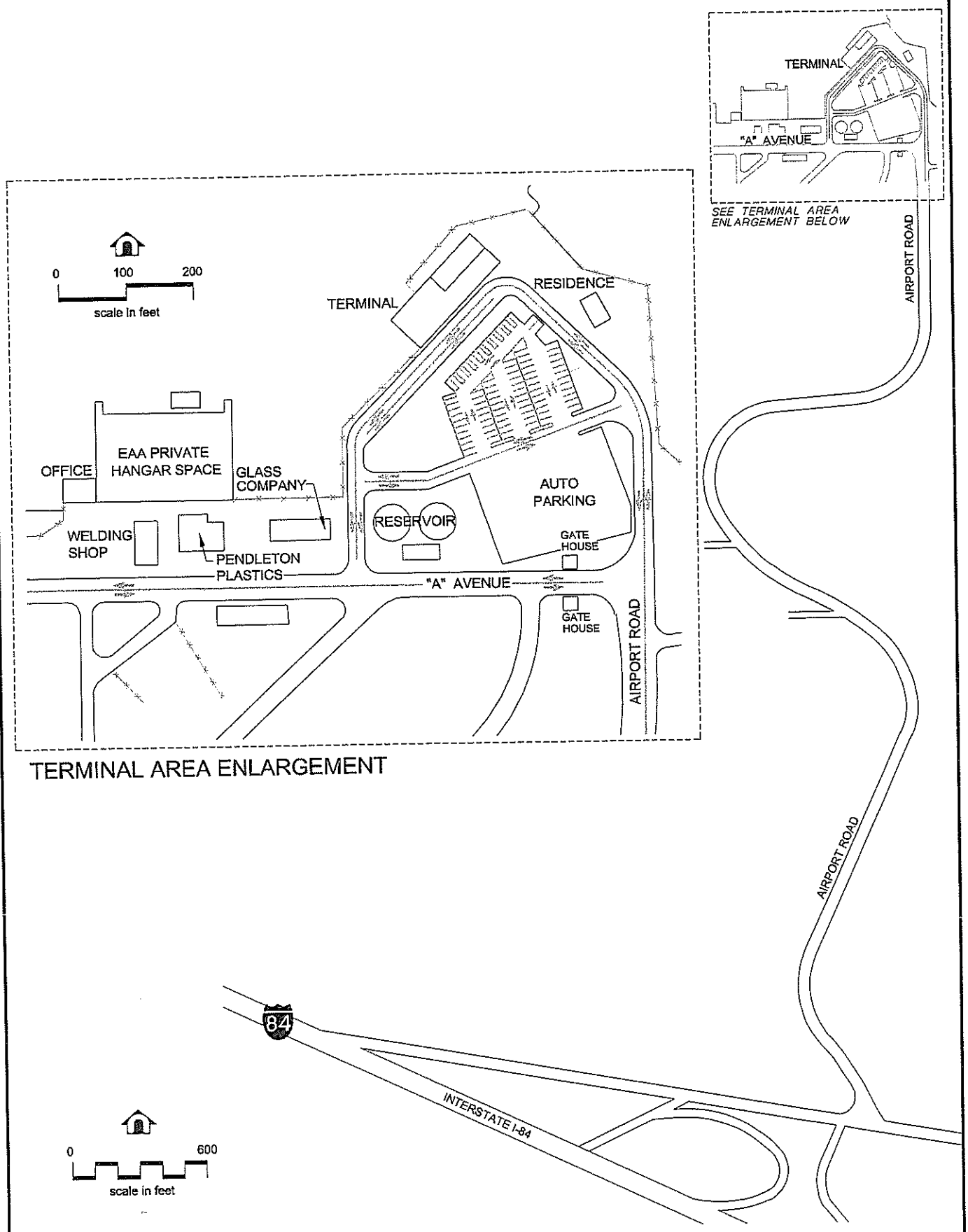
1.4.4 Airport Access and Parking

Ground Access. Vehicular access to the Eastern Oregon Regional Airport at Pendleton is via Airport Road. The Airport can be accessed from Interstate 84 to Westgate Road to Airport Road. The Airport's only access road is Airport Road, which has an excessively steep grade that limits its use by various trucks. Airport access is shown in **Exhibit 1-8**.

Automobile Parking. Automobile parking at the Airport is in a surface lot located directly in front of the airport terminal building. The Airport has approximately 177 parking spaces for long-term, short-term, and employees in the lot directly in front of the airport terminal building. Rental cars are parked on the west edge of the terminal parking lot (and includes 18 parking spaces. Parking at the Airport is currently free.

1.5 Meteorological Data

Wind and weather conditions influence Airport operational capacity by impacting the percentage of time traffic can operate under VFR, or the more stringent, capacity-reducing IFR. Weather conditions can be divided into two categories: Visual Meteorological Conditions (VMC), conditions that are required when operating under VFR, and Instrument Meteorological Conditions (IMC) conditions that require adherence to IFR. A pilot can operate under VFR or IFR during VMC, but can only operate under IFR in IMC. Eastern Oregon Regional Airport at Pendleton operates under VMC approximately 90 percent of the time and under IMC approximately 10 percent of the time.



Eastern Oregon Regional Airport at Pendleton Master Plan Update	**AIRPORT ACCESS**	Exhibit 1-8

Observations regarding meteorological conditions including wind directions, speed, cloud ceiling, and visibility at the Airport were used to evaluate weather conditions. Annual wind data were used to calculate the wind coverage of the Airport's runways.

Runway wind coverage, the percentage of time a runway can be used without exceeding allowable crosswind velocity, is based on 10.5 knots and 13 knots crosswind limitations. During periods when wind conditions on a runway exceed crosswind limitations, traffic must be diverted from that runway to a crosswind runway. Under IFR conditions, Runway 7-25 at Eastern Oregon Regional Airport at Pendleton has a wind coverage of 96.2 percent at 10.5 knots crosswind coverage and 98.5 percent at 13 knots crosswind coverage. Runway 11-29 at the Airport has a wind coverage of 97.3 percent at 10.5 knots crosswind coverage and 98 percent at 13 knots crosswind coverage under IFR conditions. Runway 16-34 at the Airport has a wind coverage of 93.3 percent with a 10.5 knot crosswind and 96.1 percent with a 13 knot crosswind. Wind coverage of the Airport's runways under all weather conditions is illustrated in **Exhibit 1-9**.

Other weather conditions at the Airport include precipitation and temperature. The average precipitation at the Eastern Oregon Regional Airport at Pendleton is approximately 13 inches a year. The normal maximum temperature of the hottest month is 88 degrees F.

1.6 Non-Aviation Facilities and Land Use

Non-aviation facilities and land uses are those which are not required for the aviation component of operating the Airport. Airport's such as Eastern Oregon Regional Airport at Pendleton have industrial parks on airport land, lease non-aviation land for agricultural purposes and other uses as seen fit for the Airport and community. Part of maintaining a friendly airport environment is done through proper land use planning and zoning.

1.6.1 Industrial Park

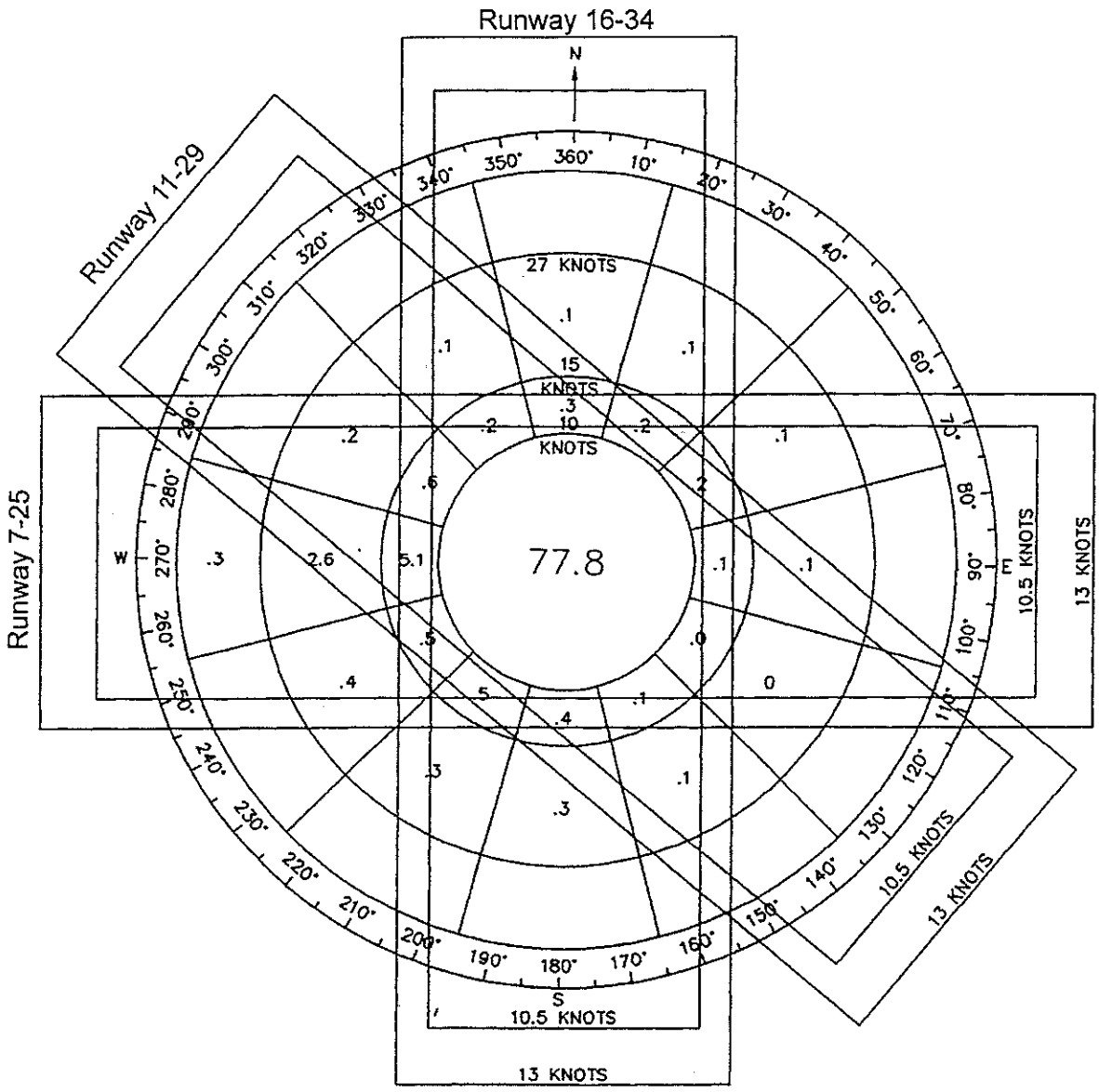
The industrial park comprises approximately 435 acres and is located to the south of the passenger terminal building. The industrial park is currently home to 71 businesses. Over the last several years the Airport has been renovating and remodeling buildings in the industrial park. The industrial park has received several new tenants as a result of this renovation process.

1.6.2 Land Use and Zoning

The Eastern Oregon Regional Airport at Pendleton is located partially inside and partially outside of the urban growth boundary of the City of Pendleton, however, the City has zoned the Airport property as Airport Activity. The current zoning around the Airport is depicted in **Exhibit 1-10**.

1.6.3 Runway Protection Zones and Obstructions

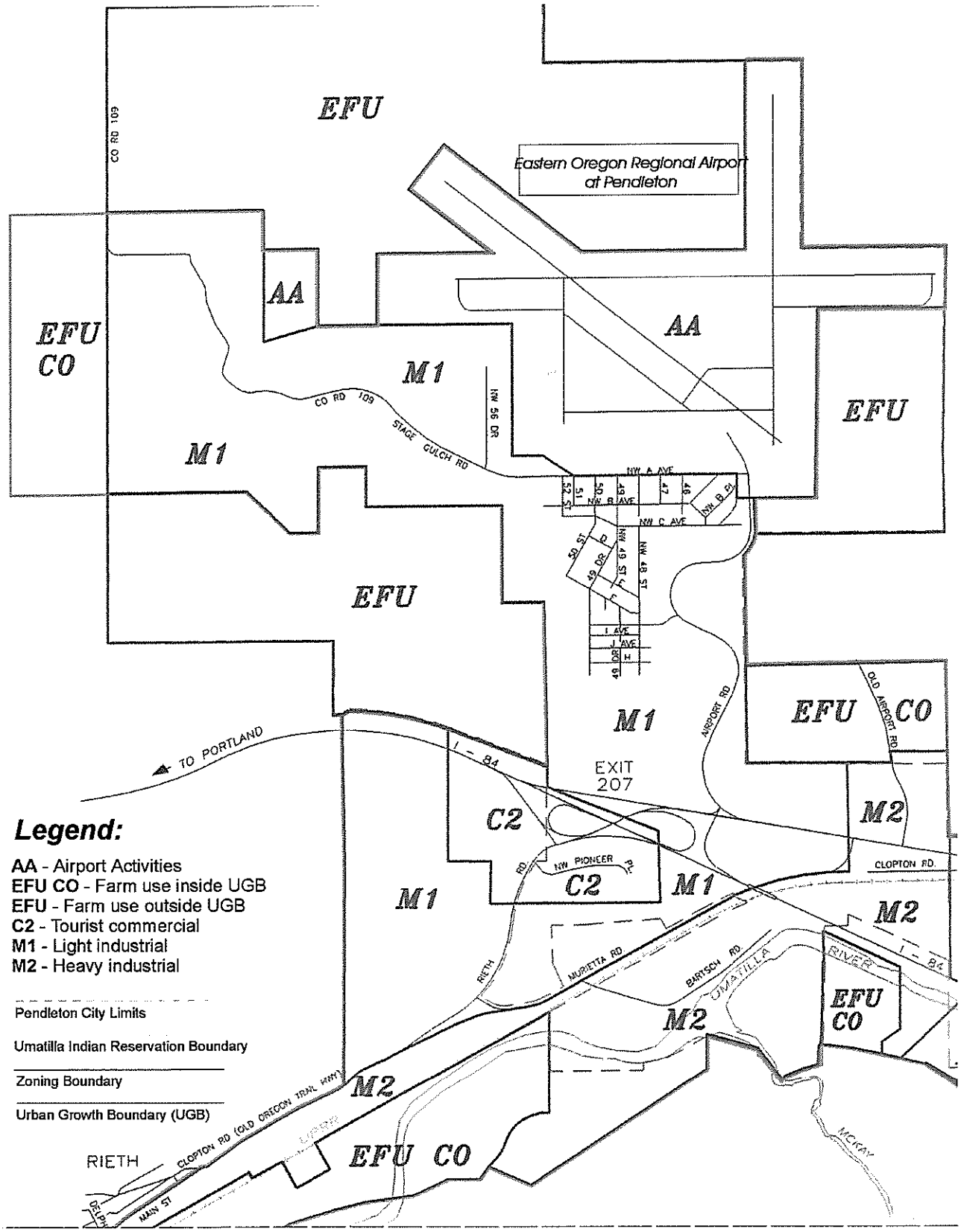
Approach protection zones were originally established to define land areas beneath aircraft approach paths in which control by the airport operator was highly desirable to prevent the creation of airport



Wind coverage in percent

	Knots VFR		Knots IFR		All	
	10.5	13.0	10.5	13.0	10.5	13.0
Runway 7-25	97.2	98.7	96.2	98.5	95.9	98.0
Runway 11-29	85.9	92.8	97.3	98.0	87.8	93.1
Runway 16-34	78.1	83.4	93.3	96.1	82.6	92.9

Source: National Oceanic and Atmospheric Administration, 14,608 observations.



Source: City of Pendleton, *Zoning Map*, April 21, 2000.

Eastern Oregon Regional Airport at Pendleton Master Plan Update	**ZONING MAP**	Exhibit 1-10

hazards. The creation of these clear areas was not only to preclude obstructions potentially hazardous to aircraft, but also to control building construction as a protection from nuisance and hazards to people on the ground. Guidelines were developed recommending that runway protection zones (RPZs) be kept free of structures and any development which would create a place of public assembly. Where practical, airport owners should own property under the runway protection zones since it is desirable to keep the entire RPZ clear of above ground objects.

The size of an RPZ is based upon the type of approach to a specific runway. The smallest RPZ is associated with a visual approach and the largest RPZ is applied to a precision instrument approach. As the use of the Global Positioning System (GPS) becomes more prevalent for precision instrument approaches, it is expected that more airports will develop these GPS approaches to assist aircraft with landing. GPS approaches are more economical than the existing forms of instrument approaches (ILS's) since there is less costly physical equipment necessary for the approach. This reduces initial installation and continual maintenance costs. The implementation of GPS precision approaches, while more economical, will require the same physical areas as an ILS. This includes the larger RPZ area with the shallower 50:1 approach slope versus the 34:1 non-precision approach slope and the 20:1 visual approach slope. The shallower approach requires additional air rights to insure that airport hazards at the Airport do not exist.

The Eastern Oregon Regional Airport at Pendleton Obstruction Chart, compiled by the National Oceanic and Atmospheric Administration, was reviewed to identify current and potential obstructions. The most recent chart (field surveyed July 1997 and published June 1998) was consulted for this review.

1.7 Airport Activity Statistics

Historical passenger enplanements are presented in **Table 1-3**. This data will be used as a basis to complete passenger enplanement projections in Chapter Two: *Projections of Aviation Demand.* As seen from the historical data, the Airport has seen a steady increase in passenger enplanements over the past 10-year period. Passenger enplanements have increased from 9,630 in 1990 to 14,007 in 1999, representing a compounded annual growth rate of 3.8 percent.

The Airport recently had an air service analysis study completed by Sixel-Boggs. The study looked at the potential catchment area from which the Airport could draw passenger enplanements and the overall rate structure of airline tickets at the Airport. Also included in the study were recommendations for acquiring additional air service.

Table 1-3
Historic Levels of Passenger Enplanements

Year	Passenger Enplanements
1990	9,630
1991	11,056
1992	10,454
1993	9,681
1994	11,265
1995	12,022
1996	13,368
1997	9,324
1998	13,372
1999	14,007

Source: Airport management records.

Historical aircraft operations at the Airport are presented in **Table 1-4** and are primarily comprised of general aviation and commuter/regional operations. The regional/commuter traffic has an overall increasing trend over the last ten years.

General aviation operations have increased over the ten year period. Military operations have not shown any strong trends of either decreasing or increasing over the 10-year period. However, because the Airport is home to a division of the Oregon National Guard, the needs for training and thus flight operations make it hard to draw any conclusions of the historical trends in military operations at the Airport. Aircraft operations projections will be completed in Chapter Two: *Projections of Aviation Demand.*

Table 1-4
Historic Levels of Aircraft Operations

Year	Regional/ Commuter	General Aviation		Military	Total Operations
		Itinerant	Local		
1990	6,713	16,224	12,598	4,008	39,543
1991	5,471	15,786	7,098	1,906	30,261
1992	5,768	16,317	6,001	2,072	30,158
1993	6,542	20,499	7,224	2,907	37,172
1994	7,107	20,664	6,608	1,664	36,043
1995	8,181	20,017	7,263	3,605	39,066
1996	8,755	18,382	7,759	3,164	38,060
1997	7,629	21,481	7,274	1,883	38,267
1998	8,091	22,232	8,754	2,316	41,393
1999	7,155	17,262	8,870	1,250	34,537

Source: Airport management records.

Based aircraft at the Eastern Oregon Regional Airport at Pendleton have increased over the last 10 years. In 1999, the Airport had 73 single engine aircraft, 2 multi-engine aircraft, 14 helicopters, and 8 military aircraft based at the Airport. Historical based aircraft are presented in **Table 1-5**.

Table 1-5
Historic Levels of Based Aircraft

	Single Engine	Multi Engine	Helicopter	Military	Total Based Aircraft
1990	68	2	6	6	82
1991	68	2	5	5	80
1992	45	2	5	5	57
1993	57	2	5	5	69
1994	57	1	8	10	76
1995	65	2	8	10	85
1996	68	2	8	8	86
1997	68	2	14	8	92
1998	65	2	14	8	89
1999	73	2	14	8	97

Source: Airport management records.

1.8 Socioeconomic Data

Socioeconomic data provides an independent variable for observing the trends at the Airport and the community as a whole. Population estimates obtained from the Portland State University, Center for Population Research and Census are presented in **Table 1-6**. The County of Umatilla has been experiencing a steady increase in population since 1990. The historical data, as well as projections, will be used in Chapter Two: *Projections of Aviation Demand* for various enplanement and based aircraft projections.

Table 1-6
Historic Levels of Population

Year	Umatilla County Population
1990	59,805
1991	60,540
1992	61,706
1993	62,799
1994	63,689
1995	64,592
1996	65,015
1997	65,277
1998	67,100
1999	68,000

Source: Portland State University, Center for Population Research and Census.

1.9 Financial Data

1.9.1 Airport Management Structure

Eastern Oregon Regional Airport at Pendleton is owned and operated by the City of Pendleton. The Airport Manager is a department head in the organizational structure of the City of Pendleton and reports to the City Manager.

1.9.2 Passenger Facility Charges

The Passenger Facility Charge (PFC) was created in 1991 as a means for Airports to collect additional monies for projects which would benefit the airport and the community in the areas of safety, security, capacity, or noise. Eastern Oregon Regional Airport at Pendleton currently imposes a $3 PFC, which at the time of the PFC application approval, was the highest amount allowed. Recent legislation allows airports to apply for up to $4.50 under certain circumstances. The current condition of the PFC application at the Eastern Oregon Regional Airport at Pendleton is described below.

The Eastern Oregon Regional Airport at Pendleton applied for the authority to impose and use a passenger facility charge in 1995. The first PFC application was approved by the FAA and the Airport is currently collecting on that application. A total of $182,801 was approved for collection and use through the original application and subsequent amendments. Recently (June 2000), the Airport received a Record of Decision for its second PFC application. The Airport was approved to collect $303,739 to help fund six projects under this new PFC application. The earliest charge effective date for this new application is December 1, 2002. The estimated charge expiration date is January 1, 2012. The projects approved in the second PFC application are:

- Replace Aircraft Rescue and Firefighting (ARFF) Vehicle
- Rehabilitate Pavement on West General Aviation Apron A
- Rehabilitate Pavement of Taxiway D
- Install Precision Approach Path Indicator (PAPI) on Runway 25
- Rehabilitate Runway 11-29
- Rehabilitate Terminal Apron

1.10 Summary of Existing Planning Documents

A number of studies and planning documents have been initiated over time relating to the growth and development of the Eastern Oregon Regional Airport at Pendleton. Listed below is a summary of those that are related to the master planning process. They are presented in chronological order starting with the most recent plan.

Air Service Analysis Study. The Air Service Analysis Study was recently completed. The purpose of the study was to examine the catchment area the Airport serves and compare its potential for passenger enplanements with its actual passenger enplanements. The study also included an in-depth analysis of passenger leakage, passenger market potential, and possible service opportunities. The study recommended that the Airport work on securing improved and increased service to Portland, new service to Seattle/Tacoma, and new service to Boise.

Eastern Oregon Regional Airport at Pendleton Master Plan Update. This plan was completed in December 1996. This update recommended the narrowing of Runway 11-29 to 75 feet and the narrowing of Runway 16-34 to 60 feet. The plan also recommends that new taxiways from the general aviation area to Runway 11-29 and Runway 7-25 be constructed. Lastly, terminal and parking expansions were recommended, as well as a new alignment for the access road. A pavement maintenance/management plan was also completed as part of this Master Plan Update.

The State of Oregon/Airport Requirements and Roles. This plan was completed in November 1992. This report recommended that the Airport plan for the construction of a full-length parallel taxiway to serve the primary Runway 7-25.

Oregon Aviation System Plan/Commercial Air Service and Facility Needs Study. This plan was completed in August 1991. This plan recommended a modest expansion of the terminal building, a significant increase in automobile parking, the construction of a parallel taxiway for primary Runway 7-25, and various apron and pavement related projects.

Pendleton Municipal Airport Layout Plan Report. This plan was completed in August 1984. The ALP Update Report made the following recommendations for the Airport. Construct a parallel taxiway for Runway 7-25 and 11-29, decommission Runway 16-34, shorten Runway 11-29, abandon the westerly north-south taxiway after construction of the parallel taxiways. Other airside improvements include the expansion of the general aviation T-hangars and corporate hangar facilities. Improvements to the landside include terminal building improvements to improve efficiency, comfort, and convenience.

Pendleton Municipal Airport Master Plan. This plan was completed in January 1979. This plan was created for the 20-year planning horizon and had the following recommendations to improve the airport: lengthen and strengthen the primary runway and upgrade airfield facilities to better handle the large air carrier aircraft.

Chapter Two
Projections of Aviation Demand

This element of the Eastern Oregon Regional Airport at Pendleton Master Plan Update provides estimates of future aviation demand at the Airport. Projections of short-, intermediate-, and long-term activity at the Airport are based on 6-, 11-, and 21-year milestones (2005, 2010, and 2020), using 1999 as the base year of analysis. Projections of aviation demand are an important element of the master planning process as they provide the basis for several key analyses, including:

- *Determining the role of the Airport and the type of aircraft to be accommodated in the future*
- *Evaluating the capacity of existing Airport facilities and their ability to accommodate projected aviation demand*
- *Estimating the extent of airside and landside facilities required in future years*

This chapter will use the most recent available data regarding aircraft activity at Eastern Oregon Regional Airport to project future levels of aviation activity through the year 2020. The forecast analysis contained in this chapter includes methodologies based on historical aviation trends at the Airport, as well as other socioeconomic trends in the City of Pendleton and the County of Umatilla. National and regional projections of aviation activity documented by the Federal Aviation Administration (FAA), as well as information from similar airports, and information from the Sixel, Bogss, and Associates air service analysis are used to supplement data collected from the Eastern Oregon Regional Airport at Pendleton.

The ability to accurately forecast future aviation activity levels at an airport is impacted to a certain degree by the amount and validity of historical information that is available regarding that airport. In the case of Eastern Oregon Regional Airport at Pendleton, a contract tower airport (with limited hours of operation), a combination of FAA and Airport records provide accepted and valid information. Information from previous planning studies was also reviewed.

This chapter provides discussions of the methodologies and findings used for projecting passenger enplanements, aircraft operations, air cargo activity, and based aircraft for Eastern Oregon Regional Airport at Pendleton. The projections of aviation demand are documented in the following sections:

- *Role of the Airport*
- *Industry Trends*
- *Projections of Passenger Enplanements*
- *Projections of Aircraft Operations*
- *Based Aircraft Projections*
- *Projections of Air Cargo Activity*
- *Activity Peaking Characteristics*
- *Projections Summary*

2.1 Role of the Airport

In order to develop projections of aviation demand at Eastern Oregon Regional Airport at Pendleton with some certainty, it is important to understand the role of the Airport. This section presents historical data that define the Airport's role, including the geographical area served by the Airport and the airlines that have provided service.

2.1.1 Air Trade Area

An airport's air trade area (i.e., the geographical area it serves) is defined by several factors, including geographical and access considerations, as well as by the proximity of alternative commercial service facilities. The Airport's market is comprised primarily of Wallowa, Union, Umatilla, and Morrow counties, which are all located in northeastern Oregon. The presence of Portland International Airport, a medium-hub airport, located approximately two hours drive to the west and Boise Air Terminal located approximately two hours drive to the east, causes significant leakage of the air passengers from the area. Eastern Oregon Regional Airport at Pendleton is also in close proximity to Tri-Cities Airport in Pasco, Washington (the airports currently share Dash-8 service by Horizon Air to Portland).

Population data provided by Portland State University, Center for Population Research and Census and the Oregon Department of Administrative Services, Office of Economic Analysis indicate that Umatilla County, the primary market area of the Airport had a population of approximately 68,000 in 1999. The population of this area is projected to increase at a modest growth rate, with a projected increase to 81,964 in 2020, representing a compounded annual growth rate of 0.89 percent.

As of September 2000, one airline - Horizon Air - provides commercial passenger service at the Airport. Horizon Air currently operates as a commuter affiliate to Alaska Airlines and also partners with American, Canadian, Continental, and Northwest Airlines. Horizon Air currently provides service to Portland, OR, Pasco, WA, and Seattle, WA. The Airport currently has five daily flights to Portland.

Eastern Oregon Regional Airport at Pendleton has experienced a change in the types of service offered by airlines. The shift to regional/commuter airline service is a trend that has affected many small-to-medium-size airports across the country. The level of service offered by regional/commuter airlines, however, is increasing.

2.1.2 Air Service Analysis Report Summary

The Eastern Oregon Regional Airport at Pendleton recently retained the services of Sixel, Boggs, and Associated to complete an air service analysis for the Airport. The report was completed recently and a summary of those findings are presented below.

The Eastern Oregon Regional Airport at Pendleton is one of 44 non-subsidized airports in the northwest region with scheduled service, however, the scheduled service which the Airport enjoys is Seattle/Portland service and twelve airports, like Eastern Oregon Regional Airport at Pendleton, in the

region have this service. The other regional airports are provided with services beyond the Seattle/Portland airports.

The Airport enjoys a catchment area of approximately 101,000 residents, which are located in the counties of Wallowa, Union, Umatilla, and Morrow Counties (all located in northeastern OR). The catchment area is depicted in **Exhibit 2-1**. Combined, these residents will earn approximately $1 billion in the year 2000.

Various passenger market potential scenarios were completed as a part of this study. It was calculated that the actual origin and destination passenger production per resident is only 0.28 trips per person. Compared to the other Northwest Region Airport Catchment Areas, which averages 3.87 trips per person, places the Airport well below the average. If these averages area applied to Pendleton, then there is a potential for 391,000 passenger trips annually. However, the U.S. average is 2.94, which when applied to Pendleton's potential presents a potential annual passenger O&D based of 297,000 passengers. These numbers are quite large so a passenger leakage analysis was completed to gauge the potential use of the Airport.

The passenger leakage analysis garnered the following results: the Airport retains only 19 percent of its passenger traffic to cities other than Portland; passengers from Pendleton use Portland 39 percent of the time and Boise 29 percent of the time. After analyzing the leakage pattens at the Airport it is estimated that the Airport has a passenger potential of 168,000 O&D passengers. This number is considered a more accurate look at passenger potential in the northeast Oregon region.

The Air Service Analysis report made the following recommendations to improving service at the Eastern Oregon Regional Airport at Pendleton:

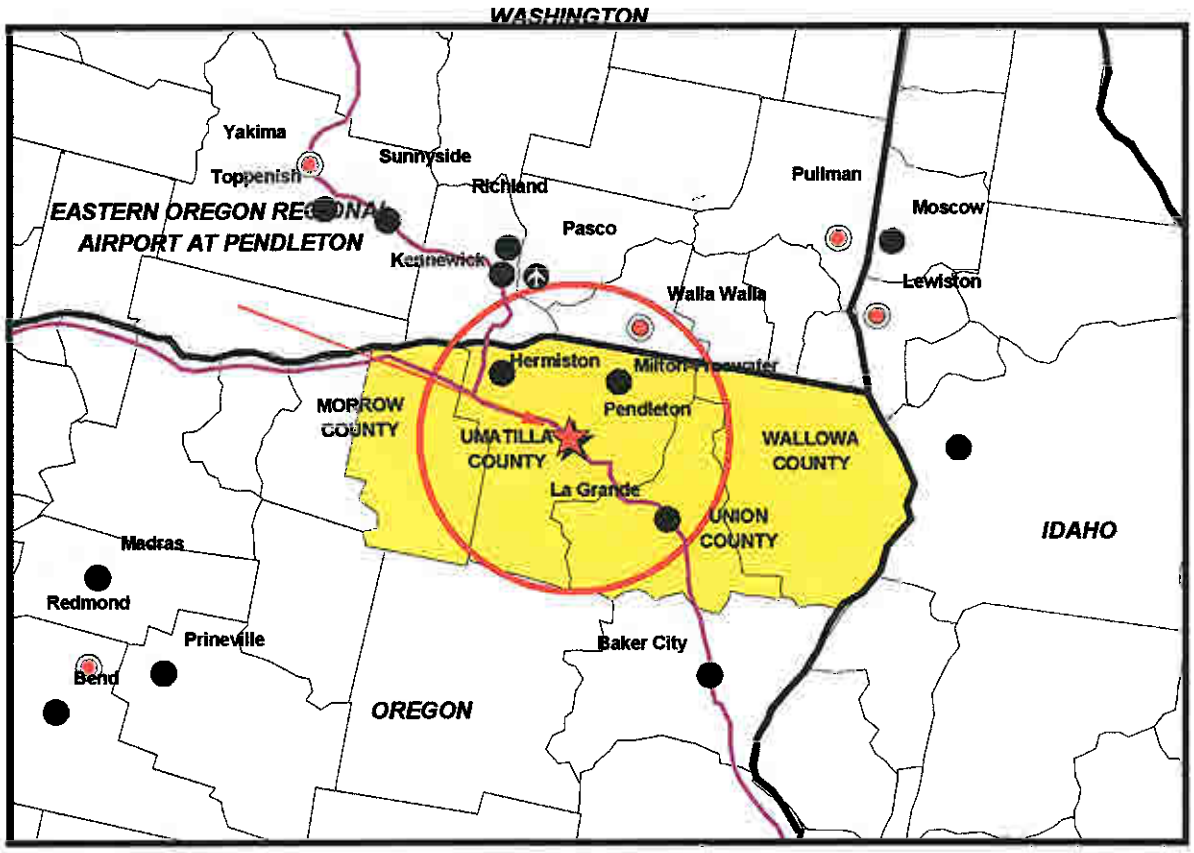
- *The Airport should pursue additional non-stop dedicated service to Portland (the Airport will be receiving one additional flight to Portland starting in October, however, the service is shared with Pasco).*

- *The Airport should explore non-stop service by Horizon Air to Seattle/Tacoma, including the possibility of sharing service with Pasco for this additional service.*

- *The Airport should pursue other airlines, such as United Express (SkyWest Airlines) to Portland or Seattle/Tacoma.*

2.2 Industry Trends

Notable changes have occurred in both the commercial and general aviation industries over the past 10 years. These industry trends have, to varying degrees, influenced aviation demand components at the Airport. To produce viable demand projections for the Airport, it is important to have an understanding of these trends. It is also important to relate how national trends are most likely to influence aviation demand at the Airport over the planning period. The following sections present a summary of trends for the regional/commuter and general aviation industries.



Source: Sixel, Boggs Associates, Inc., *Air Service Analysis*, 2000.

Eastern Oregon Regional Airport at Pendleton Master Plan Update	**PRIMARY AIR SERVICE CATCHMENT AREA**	Exhibit 2-1

2.2.1 Regional/Commuter Carrier Trends

While a great deal of consolidation has occurred among the major/national carriers, the regional/commuter air carrier industry has flourished. Once the hub-and-spoke system was fully established, major airlines began depending on regional/commuter carriers to provide traffic feed. At first, this was in the form of interline agreements whereby the major/national and regional/commuter carriers could easily accept tickets from one another. Eventually, these arrangements evolved into code sharing agreements, offering passengers single ticketing, short connecting times, and close gate proximity between flights. At first, regional/commuter airlines were independently owned. However, with the establishment of regional connecting hub complexes, carriers began to realize the benefits of such alliances. Thus, a growing trend in the industry has been for major/national airlines to acquire an equity interest in their code-sharing partners, sometimes even purchasing them outright.

According to the FAA, in recent years, the growth of the regional/commuter market has outpaced that of the major airlines. This trend is projected to continue, as major airlines transfer many short-haul routes to their regional partners. In conjunction with this trend, regional/commuter aircraft manufacturers are continuing to introduce larger, more technically advanced aircraft into the marketplace. Many of these aircraft offer amenities found on larger jet aircraft, including stand-up cabins, food and beverage service, and lavatories. One such aircraft, the Canadair Regional Jet (CRJ), is a 50 passenger jet aircraft. Based on the prevalence of larger commuter aircraft, such as the CRJ, the average number of seats per departure (capacity) for regional/commuter carriers is expected to increase during the planning period. Horizon Air currently uses DeHaviland Dash-8 turboprop aircraft at Eastern Oregon Regional Airport at Pendleton. Horizon Air has CRJ's ordered to add to their current fleet as well as additional Dash-8's to increase the capacity the airline can handle.

It is anticipated that the regional airline component of the airline industry will continue to be one of the most dynamic. This fact has long-range implications for commercial air service in general and for the Pendleton region's air service in particular. The well-established process in which the major airlines have favored longer-range routes and denser markets and have contracted with regional carriers for their short-haul operations is anticipated to continue. The impact of regional jets and their continued acquisition by the regional carriers is also anticipated to continue to change the airline industry as the competition between carriers and operating these smaller jets becomes more intense.

2.2.2 General Aviation Industry Trends

The general aviation industry has begun to turn the corner after experiencing a decline that lasted throughout much of the 1980s and 1990s. Prior to 1994, declines in the number of manufacturers and shipments of single-engine aircraft continued to indicate a sagging general aviation aircraft industry. Other indicators such as active aircraft, hours flown, and active pilots, all of which are important indicators of the health of the general aviation industry, also declined annually. The enactment of the General Aviation Revitalization Act of 1994, which established an 18-year Statute of Repose on all general aviation aircraft and components, in terms of liability to the manufacturer, signaled a significant change in the industry. This Act spurred manufacturers such as Cessna and Piper Aircraft to re-enter the single-engine piston manufacturing sector. Cessna's first new single-engine aircraft was produced

in January 1997; this aircraft is the first new piston engine aircraft Cessna has produced since 1986. New piston aircraft are also being produced by Lancer International, Diamond Aircraft, Mooney, and others.

General aviation aircraft shipments declined from a high in excess of 18,000 units in 1978 to a low of 928 in 1994. Approximately 1,962 general aviation aircraft were shipped in the first three quarters of 1999, an increase of over 13.4 percent over the same period in 1998. Billings were also up in 1999; the billings for the first three quarters of 1999 ($5.5.B) are well on their way to exceeding the record $5.9B billed in 1998

During the five-year period following the passage of the General Aviation Revitalization Act, the industry has witnessed the following: the creation of 25,000 new jobs; a 100 percent increase in the production of general aviation aircraft; a doubling of revenues from the export of general aviation aircraft; a 1150 percent increase in investment into research and development by general aviation companies; and increased numbers of student pilots.

2.3 Projections of Passenger Enplanements

This section of the chapter presents projections of passenger enplanements for the Airport. Passenger enplanements are effected by many factors. It is important to understand these factors and how they shape commercial passenger traffic at the Airport before discussing the enplanement projections for the Airport.

The demographic characteristics of an airport's market area, including population, employment, tourism, and per capita income, often impact that market area's demand for scheduled commercial air service. Increasing socioeconomic and demographic factors in a market usually result in a corresponding increase in that market's demand for commercial air travel. Discretionary or pleasure travels tend to increase as travelers in the market have mor disposable income. Certain types of employers, such as universities and high tech manufacturers, and certain types of activity, such as tourism, that may be prevalent in an area, also tends to generate higher demand for commercial air service.

It is these factors, considered in combination, that can be used to identify a particular area's demand for commercial air service. Theoretically, in a deregulated environment, the level of commercial air service that will be provided in an area will fluctuate in correlation to changes in the actual demand for commercial air service in that market. In the real world environment, however, service in any given market is most closely driven by an airline's ability to make (or maximize) a profit on that service. The number of passengers that any given airport can capture is closely aligned with the proximity of larger competing commercial service airports, such as Portland International and Boise.

Many factors were considered during the development of enplanement projections for Eastern Oregon Regional Airport at Pendleton including: historic passenger enplanements, population growth in Umatilla County, and other factors. Commercial passenger enplanement projections were based on a 10-year historic stream of information obtained from the Airport. The following methodologies were used to develop enplanement projections at the Airport:

- Linear Trend Methodology
- Socioeconomic Methodology
- Trend Analysis with Exponential Smoothing Methodology

2.3.1 Linear Trend Methodology

The linear trend methodology applies historic trends in an airport's activity in order to produce projections of future activity. This methodology assumes recent historic trends, and the factors that affected those trends, will continue to influence demand levels at similar rates in the future. Linear trend projections are typically used in planning studies to provide a baseline that represents stable market conditions.

To project passenger enplanements at Eastern Oregon Regional Airport at Pendleton, the average rate of growth/decline in enplanements experienced over the previous 10 years at the Airport was carried out through 2020. The projections of enplanements that result from the linear trend methodology are presented in **Table 2-1** As shown, under this methodology, passenger enplanements are projected to increase from 14,007 in 1999 to 20,965 in 2020, representing a compounded annual growth rate of 1.94 percent.

2.3.2 Socioeconomic Methodology

As stated earlier, changes in an area's population, employment, and income can affect the propensity of that area's residents to use air travel. Therefore, a socioeconomic methodology for the projection of enplanements was also used in this study. For Eastern Oregon Regional Airport at Pendleton, the population of Umatilla County is used as the independent variable. It is assumed under this methodology that as the County's population increases or decreases, the level of enplanements at the Airport will fluctuate in a corresponding manner.

Projected enplanement levels were derived based on the projected population levels for the Airport's market area, which includes primarily Umatilla County. Enplanement projections using the socioeconomic methodology indicate that passenger enplanements at the Airport can be expected to increase 14,007 in 1999 16,883 in 2020 (see **Table 2-2).** This methodology results in modest growth in the enplanement levels projected at the Airport for the future.

2.3.3 Trend Analysis with Exponential Smoothing Methodology

This trend-line methodology analyzes the past growth rate trends and applies reasonable growth rates to the future for passenger enplanement activity. At Eastern Oregon Regional Airport at Pendleton, it is expected that passenger enplanements will increase at a competitive growth rate (not as aggressive as the FAA's forecast for overall regional/commuter passenger enplanements) over the 20-year planning horizon. Annual growth rates of 4 percent through 2005, 3.5 percent from 2006 through 2010, and 3 percent from 2011 through 2020 were applied to 1999 baseline numbers.

Table 2-1

Projections of Passenger Enplanements
Linear Trend Methodology

Year	Pendleton Enplanements	Annual Growth Rate
Historical:		
1990	9,630	
1991	11,056	14.81%
1992	10,454	-5.45%
1993	9,681	-7.39%
1994	11,265	16.36%
1995	12,022	6.72%
1996	13,368	11.20%
1997	9,324	-30.25%
1998	13,372	43.41%
1999	14,007	4.75%
Average 1990-1999	*11,418*	*6.02%*
CAGR 1990-1999	*3.82%*	
Projected:		
2005	15,349	1.54%
2010	17,221	2.33%
2020	20,965	1.99%
CAGR 1999-2020	*1.94%*	

Sources: Historical PDT Enplanements - Airport management records.
Projected PDT Enplanements - Mead & Hunt, Inc., August 2000.

Note: CAGR = compounded annual growth rate.

Table 2-2

Projections of Passenger Enplanements
Socioeconomic Methodology

Year	Pendleton Enplanements	Enplanement Annual Growth Rate	Umatilla County Population	Population Annual Growth Rate
Historical:				
1990	9,630		59,805	
1991	11,056	14.81%	60,540	1.23%
1992	10,454	-5.45%	61,706	1.93%
1993	9,681	-7.39%	62,799	1.77%
1994	11,265	16.36%	63,689	1.42%
1995	12,022	6.72%	64,592	1.42%
1996	13,368	11.20%	65,015	0.65%
1997	9,324	-30.25%	65,277	0.40%
1998	13,372	43.41%	67,100	2.79%
1999	14,007	4.75%	68,000	1.34%
Average 1990-1999	*11,418*	*6.02%*		*1.44%*
CAGR 1990-1999	*3.82%*		*1.44%*	
Projected:				
2005	15,010	1.16%	72,870	1.16%
2010	15,628	0.81%	75,869	0.81%
2020	16,883	0.78%	81,964	0.78%
CAGR 1999-2000	*0.89%*		*0.89%*	

Sources: Historical PDT Enplanements - Airport management records.
Historical Population - Portland State University, Center for Populaton Research and Census.
Projected Population - Oregon Department of Administrative Services, Office of Economic Analaysis.
Projected PDT Enplanements - Mead & Hunt, Inc., August 2000.

Note: CAGR = compounded annual growth rate

Exponential smoothing is a technique used in forecasting which allows the forecaster to apply a damping factor or correction factor to the forecasts. The correction factor takes into account that as forecasts are projected further into the future (past 2005) that any error in the forecasts will be compounded and artificially inflate the projected numbers. Therefore, by applying the correction factor, the trend analysis is corrected for the mid- and long-range forecasts.

Table 2-3 presents the trend analysis with exponential smoothing. Under this methodology, it is projected that passenger enplanements at the Eastern Oregon Regional Airport at Pendleton will increase from 14,007 in 1999 to 25,460 in 2020, representing a compounded annual growth rate of 2.89 percent.

2.3.4 Enplanement Projection Comparison and Recommendation

To provide a more comprehensive comparison of trends and projection methodologies, previously prepared enplanement projections, including those from the 1996 Eastern Oregon Regional Airport at Pendleton Master Plan Update and the FAA's *Terminal Area Forecast*, were compared to the projections produced in this Master Plan Update (See **Table 2-4**).

Each year, the FAA prepares Terminal Area Forecasts (TAFs) for use in the FAA's decision making and planning process. The TAF includes all U.S. airports which have at least one of the following: an air traffic control tower; commercial airline service; 60,000 itinerant or 100,000 total annual operations; or at least 10 based aircraft. The current TAF for Eastern Oregon Regional Airport at Pendleton is based on 1999 data and forecasts annual activity through the year 2015. Forecasts for those years not included in the TAF were extrapolated using growth rates documented in the *FAA Long-Range Aeronautical Forecasts*.

Enplanement projections from the Airport's previous (1996) Master Plan Update were formulated for the 2000, 2005, and 2010 planning horizons. For a means of comparison, estimates for the years consistent with this study's forecast milestones were interpolated and extrapolated from the 1996 Master Plan's enplanement projections using implied growth rates.

The projections presented in Table 2-4 show a range of total enplanement projections. As shown, total 2020 enplanements range from a low of 16,883 in the socioeconomic methodology to a high of 25,460 under the trend line methodology. *The trend line analysis with exponential smoothing is recommended as the preferred enplanement methodology for use in this Master Plan.* It is believed that the enplanement projections produced using this methodology are realistic based on long term trends in aviation demand and the aviation industry. The enplanement projections developed using the trend line approach recognize that the market area can support reasonable growth in passenger demand but realizes that a correction factor applied to the enplanements in the long-range more accurately reflect the potential passenger enplanement growth at the Eastern Oregon Regional Airport at Pendleton.

Table 2-3

Projections of Passenger Enplanements
Trend Analysis

Year	Pendleton Enplanements	Annual Growth Rate
Historical:		
1990	9,630	
1991	11,056	14.81%
1992	10,454	-5.45%
1993	9,681	-7.39%
1994	11,265	16.36%
1995	12,022	6.72%
1996	13,368	11.20%
1997	9,324	-30.25%
1998	13,372	43.41%
1999	14,007	4.75%
Average 1990-1998	*11,418*	*6.02%*
CAGR 1990-1998	*3.82%*	
Trend Analysis Projections:		
2005	17,723	4.00%
2010	21,050	3.50%
2020	28,289	3.00%
Trend Analysis with Exponential Smoothing Applied:		
2005	**17,723**	
2010	**20,385**	
2020	**25,460**	
CAGR 1999-2020	*2.89%*	

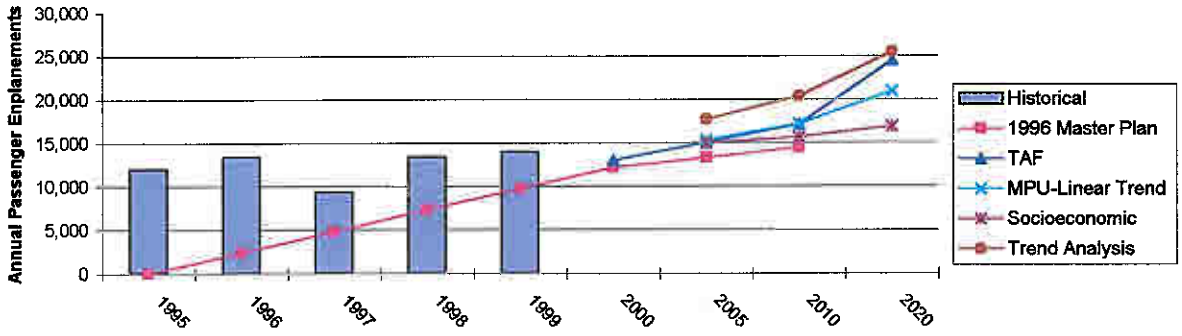
Sources: Historical PDT Enplanements - Airport management records.
Projected PDT Enplanements - Mead & Hunt, Inc., August 2000.

Note: CAGR = compounded annual growth rate

Table 2-4

Comparison of Passenger Enplanement Projections

Year	Historical PDT Enplanaments	1996 Master Plan	FAA Terminal Area Forecast	Master Plan Update		
				Linear Trend	Socioeconomic	Trend Analysis
Historical:						
1990	9,630					
1991	11,056					
1992	10,454					
1993	9,681					
1994	11,265					
1995	12,022					
1996	13,368					
1997	9,324					
1998	13,372					
1999	14,007					
Projected:						
2000		12,204	13,035			
2005		13,215	15,069	15,349	15,010	17,723
2010		14,476	17,103	17,221	15,628	20,385
2020		17,371	24,479	20,965	16,883	25,460
CAGR (1990 - 2010)		*0.57%*				
CAGR (1999 - 2020)			*2.69%*	*1.94%*	*0.89%*	*2.89%*



Sources: 1991 Master Plan - Coffman Associates (interpolated to match display years using implied growth rates).
TAF - FAA Terminal Area Forecast.
Master Plan Update - Mead & Hunt., Inc., August 2000.

Note: CAGR = compounded annual growth rate.

2.3.5 Commercial Airline Fleet Mix and Critical Aircraft

The existing and future fleet mix for commercial airliners at Eastern Oregon Regional Airport at Pendleton is presented below. Recently, the Airport has been served primarily by Dash-8 commuter turboprop aircraft. Looking at the current airline operating environment, as well as the fleet purchase plans of existing and potential airlines serving the Airport commuter aircraft should be considered in the projected operational fleet mix and critical aircraft. This is important in that the forecast acknowledges the current and potential "mergers and acquisition" environment in which the airlines are operating in, and the potential resulting changes in fleet that could result from such a deal.

Regional/commuter type aircraft will likely be a part of the passenger airline fleet through the planning period. Currently Horizon Air is the sole airline serving the Airport and they use Dash-8 aircraft. Horizon Air's fleet currently consists of Dash-8's and Fokker F-28's. Aircraft which the airline has on order include additional Dash-8's and the CRJ. It is important to note that other airlines could start serving the Pendleton market and therefore, it is prudent to plan for such introductions into the market by looking at potential airlines which could serve the Airport.

The critical, or design aircraft, is defined as the most demanding aircraft that operates at an airport on a regular basis. Typically, an aircraft must conduct 500 or more annual operations to be considered the critical aircraft. Based on the projected commercial airline fleet mix presented in previous discussions, the design aircraft for the Eastern Oregon Regional Airport at Pendleton through the 20-year planning period is the CRJ.

The FAA organizes airport design standards by Airport Reference Code (ARC) and the ARC is defined based on the airport's design aircraft. The ARC incorporates characteristics of the most demanding aircraft that operates at an airport on a regular basis and includes the following two components: Aircraft Approach Category and Airplane Design Group. The aircraft approach category, denoted by letter, represents the operational approach speed characteristics of the critical/design aircraft. The airplane design group, denoted by Roman numeral, is based on the wingspan and relates to the physical characteristics of the critical/design aircraft. The ARC for the Airport is C-III, based on an approach speed of 135 knots for the CRJ and a wingspan of 93.3 feet for the Dash-8.

2.4 Projections of Aircraft Operations

Operations projections were developed for commercial airline activity at the Airport, general aviation, and military activity.

2.4.1 Regional/Commuter Operations

To project regional/commuter air carrier operations, it is assumed that operations will grow in direct proportion to increases in passenger enplanements. **Table 2-5** presents projections of demand for regional/commuter aircraft operations at Eastern Oregon Regional Airport at Pendleton. As shown, aircraft operations are projected to increase from 7,155 in 1999 to 13,009 in 2020.

Table 2-5

Summary of Historical and Projected Aircraft Operations

Year	Regional/ Commuter	G.A. Itinerant	G.A. Local	Military	Total Operations	*TAF Forecasts*
Historical:						
1990	6,713	16,224	12,598	4,008	39,543	
1991	5,471	15,786	7,098	1,906	30,261	
1992	5,768	16,317	6,001	2,072	30,158	
1993	6,542	20,499	7,224	2,907	37,172	
1994	7,107	20,664	6,608	1,664	36,043	
1995	8,181	20,017	7,263	3,605	39,066	
1996	8,755	18,382	7,759	3,164	38,060	
1997	7,629	21,481	7,274	1,883	38,267	
1998	8,091	22,232	8,754	2,316	41,393	
1999	7,155	17,262	8,870	1,250	34,537	
Projected:						
2005	9,053	24,200	11,900	2,500	47,653	*42,116*
2010	10,414	25,200	12,400	2,500	50,514	*46,430*
2020	13,009	27,300	13,500	2,500	56,309	*51,237*
CAGR 1999-2020					*2.36%*	*1.90%*

Sources: Historical Data - FAA 5010 Forms, FAA Terminal Area Forecasts, and Airport Management Records.
Projections - Mead & Hunt, Inc., September 2000. TAF Forecasts - FAA August 2000.

Note: CAGR = compounded annual growth rate.

2.4.2 General Aviation Operations

General aviation aircraft operations are projected by comparing the number of general aviation aircraft based at an airport to the number of general aviation operations that occur at that airport on an annual basis. This is known as the operations per based aircraft (OPBA) methodology. The OPBA is recognized by the FAA as an accepted method to relate the number of operations to a known variable; in this case, based aircraft. OPBA is calculated by dividing the number of annual general aviation operations that occur at an airport by the number of general aviation aircraft based at that airport. The Airport's average OPBA from 1990 to 1999 was 334. An OPBA of 350 is used to project future general aviation operations. This figure is supported by planning studies at other airports similar to Pendleton's. **Table 2-6** presents historical and projected general aviation operations for Eastern Oregon Regional Airport at Pendleton using the OPBA methodology. As shown in Table 2-6 total general aviation operations are projected to increase from 26,132 in 1999 to 40,800 in 2020. This represents a compounded annual growth rate of approximately 2.14 percent.

For planning purposes, total annual general aviation operations are classified in two categories: local and itinerant. Local operations, as defined by the FAA, are performed by aircraft that:

- *Operate in the local traffic pattern or within site of the Airport*
- *Are known to be departing for, or arriving from, flight in local practice areas located within a 20-mile radius of an airport*
- *Are executing simulated or actual instrument or visual approaches or low passes at an airport (touch-and-go operations)*

Itinerant operations include all non-local operations. The recent historical local-itinerant split at Eastern Oregon Regional Airport at Pendleton is approximately 66 percent itinerant operations and 34 percent local operations. This ratio is expected to remain two-thirds itinerant and one-third local through 2020.

2.4.3 Military Operations

Military operations at Eastern Oregon Regional Airport at Pendleton includes training and other operations conducted by the various armed services. The Airport is currently home to a unit of the Oregon National Guard which operates helicopters out of the Airport for various training initiatives. **Table 2-7** presents historical and projected military operations for Eastern Oregon Regional Airport at Pendleton. As shown in Table 2-7, total military operations between 1990 and 1999 ranged from 1,250 to 4,008. In projecting military activity, it is important to recognize that an airport's military operations are not influenced by the same factors that affect civil aviation. Rather, military activity is subject to factors relating to national defense. Based on the assumption that future military activity at Eastern Oregon Regional Airport at Pendleton will likely resemble activity in the recent past, operations are projected to reflect the average of the military operations. Military operations are projected at a level of 2,500 annual operations through 2020.

Table 2-6

General Aviation Operations Projections

Year	PDT Based Aircraft	Operations per Based Aircraft	Total GA Operations	% Itinerant	Itinerant Ops	% Local	Local Ops
Historical:							
1990	82	351	28,822	56%	16,224	44%	12,598
1991	80	286	22,884	69%	15,786	31%	7,098
1992	57	392	22,318	73%	16,317	27%	6,001
1993	69	402	27,723	74%	20,499	26%	7,224
1994	76	359	27,272	76%	20,664	24%	6,608
1995	85	321	27,280	73%	20,017	27%	7,263
1996	86	304	26,141	70%	18,382	30%	7,759
1997	92	313	28,755	75%	21,481	25%	7,274
1998	89	348	30,986	72%	22,232	28%	8,754
1999	97	269	26,132	66%	17,262	34%	8,870
Average OPBA		*334*					
Projected:							
2005	103	350	36,100	67%	24,200	33%	11,900
2010	108	350	37,700	67%	25,200	33%	12,400
2020	117	350	40,800	67%	27,300	33%	13,500
CAGR 1999-2020			*2.14%*		*2.21%*		*2.02%*

Sources: Historical General Aviation Operations - FAA 5010 Forms, FAA Terminal Area Forecasts, Airport Management Records. Projections - Mead & Hunt, Inc., September 2000.

Notes: CAGR = compounded annual growth rate.

Table 2-7

Historical and Projected Military Operations

Year	Total Military Operations
Historical:	
1990	4,008
1991	1,906
1992	2,072
1993	2,907
1994	1,664
1995	3,605
1996	3,164
1997	1,883
1998	2,316
1999	1,250
Average	*2,478*
Projected:	
2005	2,500
2010	2,500
2020	2,500

Sources: Historical Data - FAA Terminal Area Forecats, and Airport Management Records.
Projections - Mead & Hunt, Inc., September 2000.

2.4.4 Summary of Aircraft Operations

Table 2-5 presents a summary of projected aircraft operations at Eastern Oregon Regional Airport at Pendleton. This includes operations by regional/commuter, general aviation, and military aircraft. As shown in Table 2-5, total aircraft operations at Eastern Oregon Regional Airport at Pendleton are projected to increase from 34,537 in 1999 to 56,309 in 2020. This represents an average annual growth rate of approximately 2.47 percent over the 20-year planning period.

2.5. Based Aircraft Projections

General aviation activity is, in part, a function of an airport's number of based aircraft; projections of based aircraft at Eastern Oregon Regional Airport at Pendleton are, therefore, an important element in this analysis. Two methodologies were used to develop based aircraft projections for the Airport. The first methodology projects the number of potential based aircraft as a percentage or "market share" of active aircraft in the U.S. The second methodology correlates the number of aircraft based at the Airport with the area's population. Based aircraft data from the period 1990 to 1999, as well as market area population and FAA registered aircraft data, were used as the basis for these projections.

2.5.1 Market Share Methodology

The market share approach assumes that Eastern Oregon Regional Airport at Pendleton will capture a percentage of the future market of active aircraft in the U.S. at least equal to the average percentage of the market the Airport has captured in the past. The FAA tracks the number of active general aviation aircraft (aircraft that have a minimum of one hour annual usage) and prepares projections of active aircraft for the U.S. Since current FAA projections are available through 2010, estimates through 2020 were derived by extrapolation using FAA growth rates.

As shown in **Table 2-8**, FAA projections of active general aviation aircraft indicate that the U.S. can anticipate an increase from 205,000 active general aviation aircraft in 1999 to 248,070 in 2020, representing an average annual growth rate of 0.88 percent over the 20-year planning period. If the historical relationship between active aircraft in the U.S. and based aircraft at the Airport continues, the number of based aircraft at the Airport will be expected to increase by the end of the planning period. By capturing a constant share of the U.S.'s active general aviation aircraft, the number of based aircraft at the Eastern Oregon Regional Airport at Pendleton is projected to increase from 97 in 1999 to 117 in 2020.

2.5.2 Socioeconomic Methodology

Local socioeconomic trends, such as population growth and increased income, can often provide a reliable method for projecting based aircraft activity. A population-based scenario, developed from population data supplied by the Portland State University, Center for Population Research and Census and the Oregon Department of Administrative Services, Office of Economic Analysis were used to project the Airport's future levels of based aircraft. This methodology calculates the ratio of persons

Table 2-8

Based Aircraft Demand Projections
Market Share Methodology

Year	PDT Based Aircraft	Total U.S. Based Aircraft	PDT Market Share (%)	TAF Forecast of Based Aircraft
Historical:				
1990	82	205,000	0.00040	
1991	80	198,000	0.00040	
1992	57	185,650	0.00031	
1993	69	177,120	0.00039	
1994	76	172,936	0.00044	
1995	85	188,089	0.00045	
1996	86	191,129	0.00045	
1997	92	192,414	0.00048	
1998	89	204,710	0.00043	
1999	97	206,530	0.00047	
Average PDT market share 1990-1999			*0.00042*	
Average PDT market share 1994-1999			*0.00045*	
Projected:				
2005	103	219,415	0.00047	95
2010	108	229,070	0.00047	101
2020	117	248,070	0.00047	115
CAGR	*0.88%*	*0.88%*		*0.81%*

Sources: Historical PDT Based Aircraft - Airport Management Records.
Historical U.S. Based Aircraft - FAA Aerospace Forecasts Fiscal Years 1999-2010.
Projected PDT Based Aircraft - Mead & Hunt, Inc., August 2000.
Projected U.S. Based Aircraft - FAA Aerospace Forecasts Fiscal Years 1999-2010 & Mead & Hunt (extrapolated for 2020).

Notes: CAGR = compounded annual growth rate.

per aircraft based at Eastern Oregon Regional Airport at Pendleton and then applies that number to the accepted population projections for the area. The average ratio of persons per based aircraft at Eastern Oregon Regional Airport at Pendleton was calculated for the period from 1990 to 1999. The socioeconomic method assumes that the future ratio of persons per Eastern Oregon Regional Airport at Pendleton-based aircraft maintain the average ratio from the last five years at the Airport. While holding the ratio of persons per based aircraft constant to the average of one aircraft per 701 persons, as shown in **Table 2-9**, the number of based aircraft at the Airport are expected to increase from 97 aircraft in 1999 to 109 aircraft in 2020, representing a compounded annual growth rate of 0.57 percent.

2.5.3 Preferred Based Aircraft Projection

The market share methodology provides the most reasonable projections of based aircraft for Eastern Oregon Regional Airport at Pendleton. Discussions with personnel at the FAA's Regional Office and Planning and Programming Branch indicate that in recent years there has not been a strong correlation between general aviation based aircraft and socioeconomic variables such as population. Therefore, the projections based on the market share methodology will be used for planning purposes within the context of this Master Plan Update.

2.5.6 Based Aircraft Fleet Mix

A based aircraft fleet mix projection was developed as part of the master planning effort for Eastern Oregon Regional Airport at Pendleton. Information regarding historical based general aviation fleet mix at the Airport was supplied by Airport management. Airport records indicated that in 1999, approximately 75 percent of the Airport's based aircraft fleet mix was comprised of single-engine piston aircraft, 2 percent were comprised of multi-engine aircraft, 14 percent were comprised of helicopter, and 8 percent were comprised of based military aircraft.

The existing and projected based aircraft fleet mixes are depicted in **Table 2-10**. Projections of a future general aviation fleet mix at the Airport were derived by applying FAA projections regarding trends in aircraft types to historical trends in based aircraft fleet mix at the Airport. Discussions with Airport Management were used in this process. In order to project the future based aircraft fleet, it was assumed that the percentage of single-engine and multi-engine aircraft would increase slightly over the 20-year planning period. Small increases in based jets were also projected. The helicopter and based military aircraft are projected to remain constant through the 20-year planning period. These projected trends at Eastern Oregon Regional Airport at Pendleton are consistent with FAA projections of nationwide trends regarding general aviation aircraft as businesses trade up to larger twins or small business jets once the useful life of their current aircraft is met. The single engine aircraft will remain a constant for recreational pilots.

Table 2-9

Based Aircraft Demand Projection
Socioeconomic Methodology

Year	PDT Based Aircraft	Umatilla County Population	Based Aircraft Per Capita
Historical:			
1990	82	59,805	0.00137
1991	80	60,540	0.00132
1992	57	61,706	0.00092
1993	69	62,799	0.00110
1994	76	63,689	0.00119
1995	85	64,592	0.00132
1996	86	65,015	0.00132
1997	92	65,277	0.00141
1998	89	67,100	0.00133
1999	97	68,000	0.00143
Average based aircraft per capita 1990-1999			*0.00128*
Average based aircraft per capita 1994-1999			*0.00133*
Projected:			
2005	97	72,870	0.00133
2010	101	75,869	0.00133
2020	109	81,964	0.00133
CAGR 1999-2020	*0.57%*	*0.89%*	

Sources: Historical Population - Portland State University, Center for Population Research and Census.
Projected Population - Oregon Department of Administrative Services, Office of Economic Analysis.
Historical Based Aircraft - Airport Management Records.
Projected Based Aircraft - Mead & Hunt, Inc., September 2000.

Notes: CAGR = compounded annual growth rate.

Table 2-10

Based Aircraft Fleet Mix Projections

Year	Single engine piston	Multi-engine piston	Jet	Helicopter	Military	Total
Historical:						
1990	68	2	0	6	6	82
1991	68	2	0	5	5	80
1992	45	2	0	5	5	57
1993	57	2	0	5	5	69
1994	57	1	0	8	10	76
1995	65	2	0	8	10	85
1996	68	2	0	8	8	86
1997	68	2	0	14	8	92
1998	65	2	0	14	8	89
1999	73	2	0	14	8	97
Projected:						
2005	76	4	1	14	8	103
2010	81	4	1	14	8	108
2020	89	5	1	14	8	117

Sources: Historical Based Aircraft - FAA 5010 Forms and Airport Management Records.
Projected Based Aircraft - Mead & Hunt, Inc., September 2000.

2.6 Projections of Air Cargo Activity

Air cargo is comprised of two categories: air mail, which is carried under contract to the U.S. Postal Service; and air freight, which includes all other cargo. Air cargo is carried either in the belly hold of an aircraft or, in the case of all-cargo carriers, in the aircraft cabin. Currently, air cargo into and out of the Airport is transported by the regional/commuter operator and by four contract carries. For example, Fed Ex uses Cessna Caravans to move their cargo and has one flight a day. Recently, Fed Ex has been adding a second flight a day to various days throughout the week. UPS, United Couriers, and Fleet Delivery each have one flight a day using twin Cessna's and currently contract with Ameriflight.

Historical and projected enplaned air cargo volumes for Eastern Oregon Regional Airport at Pendleton are presented in **Table 2-11** and **Table 2-12**, for the different projection methodologies. As shown in Table 2-11, historical enplaned cargo at the Airport peaked in 1996 at 76,228 pounds.

Projections of air cargo volume were developed using "linear trend" and "per capita" methodologies, as documented in Tables 2-11 and 2-12, respectively. As shown in Table 2-11, the linear trend methodology produces modest continued growth air cargo volume numbers, with an increase from 48,586 pounds in 1999 to 60,207 pounds in 2020.

Projections of air cargo volume were also developed using a per capita approach, with population being an independent variable. Under this methodology, ratios of air cargo volume (i.e., pounds) per person in the Airport's market area are determined. These ratios are increased in future planning years based on the historic trend as well as a projected increase in local industry's propensity to use air freight. As shown in Table 2-12, growth in the air cargo enplaned at the Airport is expected to increase over the 20-year planning period from 48,586 in 1999 to 122,946 in 2020, based on the projected increase in the population in the market area.

The air cargo projections based on the linear methodology are recommended for planning purposes since they represent the most reasonable and defensible projections of air cargo volume for the Airport. In these projections, air cargo is expected to grow. As the internet continues to become a medium for people to purchase goods, the goods will have to be delivered to the persons. Transporting goods purchased via the internet by air cargo is becoming one of the main methods of getting the internet consumer goods to the consumer. In planning the future of air cargo facilities at the Airport, special consideration will be given to preserving the ability to accommodate cargo activity beyond the volumes projected herein, based on the ever-present potential for an air cargo operator to bring a larger operation into the Airport.

2.7 Activity Peaking Characteristics

When projecting future activity levels at an airport, it is also important to identify and project peak period activity levels. These projections are important for various facility planning purposes. Since Eastern Oregon Regional Airport at Pendleton, similar to many non-hub small commercial service airports, must be designed to accommodate peak demand in some categories, these projections are

Table 2-11

Projections of Enplaned Cargo (lbs)
Linear Trend Methodology

Year	Enplaned Cargo (lbs)	Annual Growth Rate
Historical:		
1990	67,148	
1991	44,099	-34.33%
1992	40,404	-8.38%
1993	54,630	35.21%
1994	64,393	17.87%
1995	65,672	1.99%
1996	76,228	16.07%
1997	68,717	-9.85%
1998	46,923	-31.72%
1999	48,586	3.54%
Average 1994-1999	*61,753*	*-0.35%*
Projected:		
2005	52,186	-0.35%
2010	56,053	-0.35%
2020	60,207	-0.35%

Sources: Historical Cargo - Airport Management Records.
Projections - Mead & Hunt, Inc., September 2000.

Table 2-12

Projections of Enplaned Cargo (lbs)
Socioeconomic Methodology

Year	Enplaned Cargo (lbs)	Umatilla County Population	Cargo Volume Per Capita (lbs)
Historical:			
1990	67,148	59,805	1.12
1991	44,099	60,540	0.73
1992	40,404	61,706	0.65
1993	54,630	62,799	0.87
1994	64,393	63,689	1.01
1995	65,672	64,592	1.02
1996	76,228	65,015	1.17
1997	68,717	65,277	1.05
1998	46,923	67,100	0.70
1999	48,586	68,000	0.71
Average per capita cargo volume			*0.90*
Projected:			
2005	109,305	72,870	1.50
2010	113,804	75,869	1.50
2020	122,946	81,964	1.50

Sources: Historical Cargo - Airport Management Records.
Historical Population - Portland State University, Center for Population Research and Censu
Projected Population - Oregon Department of Administrative Services, Office of Economic A
Projected Cargo - Mead & Hunt, Inc., September 2000.

important to subsequent facilities planning. Peaking characteristics are developed for passenger enplanements and aircraft operations using the following methodologies:

- Monthly enplanement and operations data, supplied by the Airport, are analyzed to determine peak month percentages relative to the year's total activity.

- The analysis indicated that the peak month for passenger enplanements, historically August, consists of 31 days. The various components of Airport operations have historically peaked in different months during the year, generally ranging from April to November. For planning purposes, it is assumed that the peak month for Airport operations also consists of 31 days. To derive peak month average day (PMAD) estimates for the various demand components at the Airport, peak month estimates are, therefore, divided by 31.

- Peak hour percentages are then applied to projected PMAD estimates to derive peak hour operational levels. The following section documents peak hour demand factors as they relate to passenger enplanements and aircraft operations at the Airport.

Projections of peak demand characteristics for passenger enplanements and aircraft operations at the Airport are presented in **Table 2-13**. Relevant assumptions (e.g., peak month and peak hour percentages) are also included in Table 2-13. Peak hour enplanement percentages and peak hour air carrier operation percentages, as shown in Table 2-13, were projected based on historic and current air carrier schedules at the Airport. Peak hour military and general aviation operations percentages are based on estimates.

Peak hour enplanements at the Airport are projected to increase from a total of 37 in 1999 to 50 in 2020. Peak hour aircraft operations are projected to increase from 25 in 1999 to 38 in 2020.

2.8 Projections Summary

Table 2-14 presents a summary of aviation demand projections for Eastern Oregon Regional Airport at Pendleton. Included in this projection summary are passenger enplanements and aircraft operations, each of which are broken down into their subgroup components. As shown, total passenger enplanements are projected to increase from 14,007 in 1999 to 25,460 in 2020, representing a compounded annual growth rate of 2.89 percent. Total aircraft operations are projected to increase from 34,537 in 1999 to 56,309 in 2020, representing a compounded annual growth rate of 2.36 percent.

Table 2-13

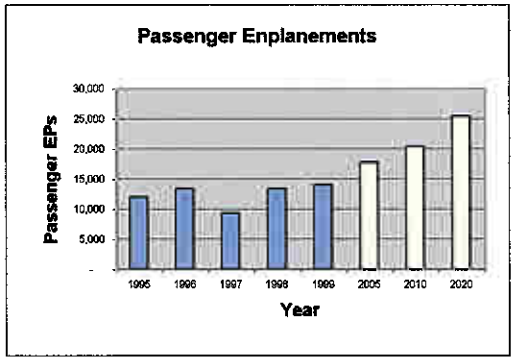
Peak Demand Characteristics

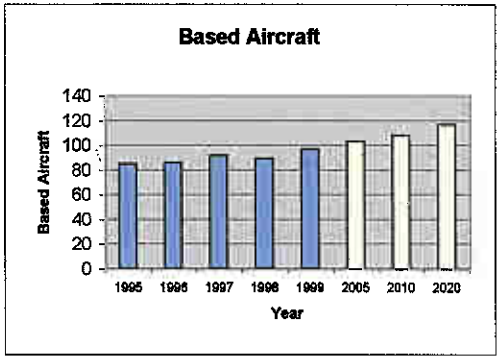
Year	Passenger Enplanements	Aircraft Operations			
		Regional/ Commuter	GA	Military	Total
1999					
Annual	14,007	7,625	28,624	1,250	37,499
Peak Month	1,345	635	2,862	125	3,623
Average Day	54	25	92	4	122
Peak Hour	37	1	23	1	25
2005					
Annual	17,723	9,053	36,100	2,500	47,653
Peak Month	1,701	754	3,610	250	4,614
Average Day	68	30	116	8	155
Peak Hour	50	1	29	4	34
2010					
Annual	20,385	10,414	37,700	2,500	50,614
Peak Month	1,957	868	3,770	250	4,888
Average Day	78	35	122	8	164
Peak Hour	50	1	30	4	35
2020					
Annual	25,460	13,009	40,800	2,500	56,309
Peak Month	2,444	1,084	4,080	250	5,414
Average Day	98	43	132	8	183
Peak Hour	50	1	33	4	38
Assumptions					
Peak Month	9.6%	8%	10%	10%	
Average Day	25	25	31	31	
Peak Hour		2%	25%	100%	

Sources: Historical Data - Airport Management Records.
Projections - Mead & Hunt, Inc., September 2000.

Table 2-14
Aviation Activity Projections Summary

Year	Passenger Enplanements	Aircraft Operations: Regional/ Commuter	GA	Military	Total	Air Cargo (lbs)	Based Aircraft
Historical:							
1995	12,022	8,181	27,280	3,605	39,066	65,672	85
1996	13,368	8,755	26,141	3,164	38,060	76,228	86
1997	9,324	7,629	28,755	1,883	38,267	68,717	92
1998	13,372	8,091	30,986	2,316	41,393	46,923	89
1999	14,007	7,155	26,132	1,250	34,537	48,586	97
Projected:							
2005	17,723	9,053	36,100	2,500	47,653	52,186	103
2010	20,385	10,414	37,700	2,500	50,614	56,053	108
2020	25,460	13,009	40,800	2,500	56,309	60,207	117
CAGR 1999-2020	*2.89%*				*2.36%*	*1.08%*	*0.88%*





Sources: Historical - Airport management records.
Projections - Mead & Hunt, Inc., September 2000.

Note: CAGR = compounded annual growth rate.

Chapter Three
Demand/Capacity Analysis and Determination of Facility Requirements

This chapter of the Eastern Oregon Regional Airport at Pendleton Master Plan Update identifies airside and landside facility requirements for the Airport through 2020. Existing and future facility requirements, as well as development standards, are identified by comparing the Airport's capacity, or its ability to process or accommodate demand, to the Airport's projected demand levels. The Airport's ability to accommodate existing and future aviation demand is analyzed in the following sections:

- Airfield Demand/Capacity Analysis
- Airfield Facility Requirements
- Passenger Terminal Facility Requirements
- Air Cargo Facility Requirements
- General Aviation Facility Requirements
- Military Facility Requirements
- Support Facility Requirements
- Surface Transportation and Auto Parking Requirements

3.1 Airfield Demand/Capacity Analysis

Airfield capacity at the Eastern Oregon Regional Airport at Pendleton is calculated using the FAA approved methodologies in FAA Advisory Circular 150/5060-5, *Airport Capacity and Delay*. Annual service volume (ASV) is a reasonable estimate of an airport's maximum annual capacity. The ASV calculations takes into account several factors, including runway use, aircraft fleet mix, and weather conditions.

3.1.1 Airfield Layout and Runway Configuration

Eastern Oregon Regional Airport at Pendleton has three runways. Runway 7/25 is the primary runway due to its length, orientation, and the available NAVAIDs (an ILS on Runway 25). Runway 11/29 and Runway 16/34 are the crosswind runways which are used during periods of high crosswinds by smaller aircraft or when the primary runway is closed for maintenance.

Runway 7/25 is 6,300 feet long by 150 feet wide and is served by partial parallel Taxiways A and F on both ends of the runway. Runway 11/29 is 5,580 feet long by 100 feet wide and is served by a partial taxiway on the middle of the runway. Runway end 11 cannot be accessed via taxiways, back taxi on the active runway is required to reach this end of the runway. Runway 16/34 is 4,345 feet long by 75 feet wide. This runway has no taxiways and thus the only way to reach the Runway 16 end is to back taxi on the runway and cross Runway 7/25. Runway 16/34 is primarily used by the agricultural operators at the Airport.

3.1.2 Weather Conditions

Weather conditions can impact an airport's capacity by causing conditions that require airport closure or slowing down aircraft operations at the Airport. There are two categories of weather conditions: instrument flight rules (IFR) and visual flight rules (VFR). VFR weather conditions exist when the cloud ceiling is 1,000 feet or greater and the visibility is three statue miles or greater. IFR conditions are those below the stated VFR minimums. For IFR conditions, navigation relies primarily on instruments.

IFR and VFR are important to differentiate because of the greater separation distances required for IFR traffic over VFR traffic. Because of the greater separation requirements for IFR fewer operations can take place at the Airport under IFR conditions. At the Eastern Oregon Regional Airport at Pendleton VFR conditions exist approximately 93 percent of the time and IFR conditions exist approximately 7 percent of the time.

3.1.3 Touch-and-Go Operations

Touch-and-go operations are defined as operations by a single aircraft that lands and departs on a runway without exiting. Touch-and-go operations usually remain in the local traffic pattern and are generally training or recurrency exercises. Generally, airport capacity increases with the ratio of touch-and-go operations to total operations because the aircraft remain in the pattern and are available for approaches. Changes in the use of the airport for training has not changed significantly since the last Master Plan Update (1996), therefore, approximately 60 percent of local operations are touch-and-go.

3.1.4 Aircraft Fleet Mix and Design Hour Demands

Fleet mix or type of aircraft forecasted to use the airport is an important consideration in determining an airport's capacity. To calculate capacity, aircraft are categorized based on their size and approach speeds, as shown in **Table 3-1**. The operational capacity at an airport decreases as the variety of aircraft with different approach speeds increase.

Table 3-1

Aircraft Classifications

Aircraft Classifications	Take-off Weight (Pounds)	Types of Aircraft	Estimated Approach Speed
A	12,500 or less	Small single-engine aircraft	95
B	12,500 or less	Small multi-engine aircraft	120
C	12,500-300,000	Large aircraft	130
D	300,000 or more	Heavy aircraft	140

Source: FAA Advisory Circular 150/5060-5, *Airport Capacity and Delay*, December 1, 1995.

Fleet mix projections are developed and used for a variety of purposes in the master planning process. The projected operational fleet mix and critical aircraft were presented in Chapter Two: *Projections of Aviation Demand.* The critical aircraft and group of aircraft it represents and the activity peaking characteristics which were documented in Chapter Two are used to identify design hour demand.

3.1.5 Peak Hour Airfield Capacity

Airfield capacity is defined as the maximum number of aircraft operations that can be accommodated through the airport in an hour. Guidelines presented in FAA AC 150/5060-5, *Airport Capacity and Delay* were used for the Eastern Oregon Regional Airport at Pendleton. For calculations of the Airport's hourly airfield capacity, the FAA's capacity diagrams for long-range were consulted as was the previous Master Plan Update to gauge the validity of the numbers presented and the likelihood that the capacity numbers have remained relatively unchanged since the last Master Plan Update.

In the 1996 Master Plan Update, it was projected that airport capacity for VFR would be 98 hourly operations and for IFR would be 59 hourly operations. Comparing these numbers to the FAA guidance, it can be concluded that the capacity numbers documented in 1996 are still valid for the Airport. Based on peak hour demand of 25 operations in 1999; 34 operations in 2005; 35 operations in 2010; and 38 operations in 2020, the Airport is expected to have sufficient airfield capacity for the 20-year planning horizon.

3.1.6 Annual Service Volume

Annual service volume (ASV) is a reasonable estimate of an airport's annual capacity. It encompasses the differences in runway use, aircraft mix, weather conditions, and other factors an airport experiences over a year. As an airport's annual aircraft operations increase and approach the airport's ASV, aircraft delays will increase rapidly with relatively small increases in aircraft operations.

Planning standards indicate that when airfield demand reaches 60 percent of its capacity (the ratio of annual demand to ASV), new airfield facilities should be planned. When annual airport demand reaches 80 percent of its capacity, new airport facilities should be constructed or demand management strategies should be implemented.

Again, the calculations completed in 1996 were compared to FAA guidance for their validity for use in this Master Plan Update. In 1996, ASV at the Airport was estimated to be 230,000. This projected ASV is in line with the FAA recommendations for an airfield layout such as Eastern Oregon Regional Airport. With projected demand at the Airport to be approximately 56,609 annual operations in 2020, the current airfield would be utilized at approximately 25 percent of its potential capacity. From this perspective, therefore, airfield capacity is adequate in the long-term.

3.1.7 Range of Delay

The next factor in this analysis is to determine the amount of average and peak delay an aircraft may experience at the Airport. This is expressed in minutes per aircraft operation, as shown in **Table 3-2.**

Table 3-2

FAA Estimated Delay Ranges

Ratio of Annual Demand to ASV	Average Aircraft Delay (min.)	Peak Delay Range for Individual Aircraft (min.)
0.1	0.0	0.0 - 0.5
0.2	0.1	0.5 - 1.0
0.3	0.2	1.0 - 2.0
0.4	0.3	1.5 - 3.0
0.5	0.4	2.0 - 4.0
0.6	0.5	2.5 - 5.0
0.7	0.7	3.5 - 7.0
0.8	0.9	4.5 - 9.0
0.9	1.4	7.0 - 14.0
1.0	2.6	13.0 - 26.0
1.1	5.5	27.0 - 54.0

Source: FAA Advisory Circular 150/5060-5, *Airport Capacity and Delay*, December 1, 1995.

As the ratio of annual demand to ASV increases and exceeds one, the estimated average aircraft delay and the estimated peak delay range for individual aircraft both increase rapidly and with relatively small increases in the annual demand. The Airport's projected annual demand to ASV ratio and delay information for the study period is presented in **Table 3-3**. The Airport's ratio of annual demand to ASV is 15 percent for 1999 and 24 percent for 2020. Average aircraft delay ranges from 0.1 minutes to 0.2 minutes. Peak individual delay is projected to increase from 0.5 - 1.0 minutes in 1999 to 1.0 - 2.0 minutes in 2020.

Table 3-3

Demand/Capacity and Delay Summary

Year	Projected Annual Demand	Ratio of Annual Demand to ASV	Average Aircraft Delay (min.)	Peak Individual Aircraft Delay (min.)
Historical:				
1999	34,537	15%	0.1	0.5 -1.0
Projected:				
2005	47,653	21%	0.1	0.5 - 1.0
2010	50,514	22%	0.1	0.5 - 1.0
2020	56,309	25%	0.2	1.0 - 2.0

Sources: FAA Advisory Circular 150/5060-5, *Airport Capacity and Delay*, December 1, 1995.
Mead & Hunt, Inc., December 2000.

3.1.8 Airfield Demand/Capacity Summary

As presented and analyzed in this section and accompanying tables, it is summarized that the airfield for Eastern Oregon Regional Airport at Pendleton will have adequate operational capacity through 2020.

3.2 Airfield Facility Requirements

Airfield facility requirements/standards are addressed for the following areas:

- Design Standards
- Runway Length Analysis
- Runway Width
- Pavement Strength
- Taxiway System
- Airfield Safety Areas

3.2.1 Design Standards

FAA Advisory Circulars provide guidance for the design, construction, financing, and safety of an airport. Each runway has a different Airport Reference Code (ARC). The design aircraft for Runway 7/25 is C-III; Runway 11/29 is B-II, and Runway 16/34 is B-I. The ARC is a coding system that relates the airport design criteria to the operational and physical characteristics of aircraft that are intended to operate at an airport. The ARC has two components related to an airport's design aircraft. The first component, the letter, references the approach speed of the design aircraft. The second component, the Roman numeral, references the wingspan of the design aircraft. Aircraft approach speed is used for the planning and design of runways and runway related facilities. Aircraft wingspan relates primarily to separation criteria involving runways, taxiways, and taxilanes.

Each of the three runways at the Airport fall under different design criteria requirements. Therefore, **Table 3-4** presents the design standards set forth in AC 150/5300-13, Change 6, *Airport Design*, for each runway and each runway's current design standard at the Airport. Deficiencies in design standards will be addressed in the appropriate subsection of this chapter.

3.2.2 Runway Length Analysis

Runway length requirements are determined by analyzing the needs of the Airport's design aircraft(s). The recommended length for the primary runway is determined by considering a specific airplane type projected to use the Airport on a regular basis or by considering a family, or group of aircraft having similar performance characteristics and requirements. FAA standards consider the threshold for the critical aircraft to be at least 500 itinerant operations per year. One operation is either a takeoff or a landing. **Table 3-5** presents the runway requirements for aircraft currently using and projected to use the Airport over the long-term.

Table 3-4

FAA Design Criteria

Criteria	Runway 7/25		Runway 11/29		Runway 16/34	
	Required	Actual	Required	Actual	Required	Actual
Airport Reference Code	C-III		B-II		B-I	
Runway Width	100	150	75	100	60	75
Runway Centerline to:						
-Taxiway Centerline	400	400	240	400	225	N/A
-Aircraft Parking Area	500		250		200	
-Holdline						
Runway Safety Area (Width)	500	500	150	150	300	120
-Length Beyond Runway End	1000	1000	300	300	600	240
Runway Object Free Area (Width)	800	800	500	500	400	400
-Length Beyond Runway End	1000	1000	300	300	240	240
Precision Object Free Area (width)	800	800	n/a		n/a	
-Length Beyond Runway End	200	200	n/a		n/a	
Runway Obstacle Free Zone (Width)	400	400	400	400	250	250
-Length Beyond Runway End	200	200	200	200	200	200
Taxiway Width	50	50	35	50	25	n/a
Taxiway Object Free Area (Width)	186		131		89	
Taxiway Safety Area (Width)	118		79		49	

Source: FAA Advisory Circular 150/5300-13, Change 6, "Airport Design," September 30, 2000.
Notes: n/a=not applicable to the runway.

Table 3-5

Runway Length Requirements

Aircraft	Maximum Take-off Weight (pounds)	Runway Length Requirements (feet) 80 Percent Max. Take-off Weight	90 Percent Max. Take-off Weight	100 Percent Max. Take-off Weight
Dash 8 - 100	34,500	2,800	4,200	4,500
Dash 8 - 300	41,100	4,300	5,200	6,800
Dash 8 - 400	60,250	3,400	4,500	5,000
CRJ - 100 ER	51,000	4,500	5,800	7,100
DC 9/51	121,000	4,600	6,100	8,400
A 319	149,914	N/A	5,600	8,200
B737 - 300	138,500	5,100	6,900	12,100
B737 - 400	150,000	5,100	6,900	10,000
B727 - 100	142,500	N/A	4,800	6,100
B727 - 200	154,500	N/A	6,600	7,600

Notes: Runway length requirements are based on the following assumptions:
- 1497 feet (mean sea level) Airport elevation.
- Standard day + 27 degrees F (hot day).
- Zero wind.
- Zero runway gradient.
- Stage length 500-1000 NM.
- N/A = information not available for scenario specified.

Sources: Bombardier Aerospace Airport Planning Brochures for Dash-8 100/300/400.
Canadair Regional Jet Airport Planning Brochure.
Boeing Commercial Airplane Group Airport Planning Manuals - B737, B727, DC 9.
Airbus Industries Airport Planning Brochures - A319.

As presented in Table 3-5 a variety for turbo-prop, regional jets, and narrowbody aircraft were evaluated for runway length requirements. This includes a wide variety of aircraft, both in the current fleet mix and potential aircraft which could use the Airport for cargo operations.

The Airport's primary runway is 6,301 feet long. As shown in the table, a mix of aircraft presented can be accommodated under at least one of the take-off operating configurations. Therefore, it is concluded from this analysis that the runway length at the Eastern Oregon Regional Airport is adequate through the 20-year planning horizon.

There are several issues addressed here related to Runway 16/34, with the primary issue being the needed length for the users of this runway. Although the FAA will not fund a third runway at PDT, they will maintain a 60-foot wide pavement (south of Runway 7/25) for use as a taxiway. The City of Pendleton would like to maintain this as an active runway, primarily for use by agricultural spraying operators. Aircraft typically using this runway (AgCat's) require approximately 3,000 feet of runway to operate. The City of Pendleton desires to maintain the Runway at the current thresholds and at the length of 4,345 feet. Funding improvements/maintenance on the portion of the runway north of 17/25 would be the responsibility of the City.

3.2.3 Runway Width

Runways 7/25 is currently 150 feet; Runway 11/29 is 100 feet wide, and Runway 16/34 is 75 feet wide. FAA AC 150/5300-13, Change 6, *Airport Design*, recommends that aircraft in Design Group III have runway widths of 100 feet, therefore, the runway width for Runways 7/25 meets the recommendations of the FAA. Runway width for Runway 11/29 should be 100 feet and for Runway 16/34 should be 60 feet. Therefore, the existing runway widths on Runway 11/29 and 16/34 meet or exceed the requirements of the FAA.

However, Design Group III aircraft which have a certificated take-off weight of more than 150,000 pounds should have runway widths of 150 feet. Based on the projected fleet mix, which could include the B737-400 or B727-200 (150,000 pounds and 154,500 pounds, respectively) maintaining a runway width of 150 feet on the primary runway protects the Airport's ability to accommodate heavier Design Group III aircraft.

3.2.4 Runway Pavement Strength and Condition

Pavement strength for the runways at the Airport is rated for single wheel, dual wheel, and dual tandem. The gear type and configuration that an aircraft is equipped with dictates how that aircraft's weight is distributed to the pavement and also determines pavement response to loading. Examination of gear configuration, tire contact areas, and tire pressure in common use indicate that pavement strength is related to aircraft maximum take-off weight. The pavement strength ratings are presented in **Table 3-6.**

Table 3-6

Runway Pavement Strength (pounds)

Criteria	Runway 7/25	Runway 11/29	Runway 16/34
Single wheel	115,000	70,000	20,000
Dual wheel	132,000	80,000	n/a
Dual tandem wheel	210,000	122,000	n/a

Source: Airport Layout Plan.

Pavement Management Report. In 2000, Pavement Services, Inc. updated the 1996 micro PAVER based management plan for maintenance and rehabilitation of the airport pavement network between 1996 and 2000. This plan reviewed the existing document and updated the pavement management plan to take into account changes in pavement conditions and to include new pavement at the airport which was not a part of the 1996 plan. A pavement management plan for the airport to implement between 2001 and 2005 was the result of this study.

The work completed for this study includes:

- The 1996 mirco PAVER database was updated to reflect the maintenance and rehabilitation (M & R) work that has been accomplished since 1996.
- The pavement network was visually inspected in November 2000 to identify and measure pavement surface distress using the Pavement Condition Index methodology.
- Current pavement conditions were analyzed to identify work needs during 2001 through 2005.
- The 1996 M & R work costs and work policies were updated and alternative budget levels for M& R work were analyzed to determine the annual budget level required to accomplish the work that is needed during 2001 through 2005.
- The pavement management plan presented herein for 2001 through 2005 was prepared based on the lowest annual budget level required to accomplish the needed M & R work.

In 1996, the area weighted average Pavement Condition Index (PCI) for the airport pavement was 62 corresponding to the middle of the pavement condition rating (PCR) category for Good condition. Projects since then, including the overlay of Taxiway D and the general aviation apron, the overlay of Runway 11/29 and holding aprons, and the overlay of Taxiway E and portions of Taxiway B improved the current PCI to 78, which corresponds to the middle of the PCR category for Very Good condition.

The existing backlog of M & R work amounts to about $2.8 million, with significant major rehabilitation and strengthening projects required over the next 5 years for the terminal apron, strengthening the west side and ends of Runway 7/25, and the strengthening of Runway 16/34.

3.2.5 Taxiway System

FAA AC 150/5300-13, Change 6, *Airport Design*, recommends that Airports serving C-III aircraft should have taxiway widths of at least 50 feet. The Airport's taxiways are not all 50 feet wide, Taxiway D is only 35 feet wide.

Runway 16/34 is served by Taxiway D and E. Taxiway E provides access from the apron to the agricultural spraying operations area. Aircraft using this runway must taxi on the active runway (back taxi) to reach the end of the runway or the aircraft apron. It also requires that aircraft cross Runway 7/25 which could also be active at the time.

Taxiway A, which is a partial parallel for Runway 11/29, does not extend the length of the runway, therefore, aircraft which need to reach the Runway 11 end must back taxi on the active runway, but first must cross Runway 7/25 which could be active at the same time. Therefore, a full parallel taxiway is recommended.

Aircraft movements from Runway 11/29 are currently compromised by insufficient taxiway width at the intersection of Taxiways A and D (35 feet wide, as opposed to the required 50 feet wide). This is based on the presence of stormwater drainage infrastructure. The taxiways should either be widened at this point to allow free flow of traffic, or an alternate taxiway should be constructed from Runway 11/29. These options will be detailed and evaluated in Chapter Four: *Alternative Plan Concepts*.

3.2.6 Airfield Safety Areas

This section presents FAA design standards for various safety areas as they relate to the Eastern Oregona Regional Airport at Pendleton. It is important to note, that recently (September 30, 2000) the FAA approved and released its newest version of the FAA AC 150/5300-13, Change 6, *Airport Design*. Many of the changes incorporated into this advisory circular address airfield safety areas.

The following airfield safety areas are reviewed in this section:

- Runway Protection Zone (RPZ)
  - Runway Object Free Area
  - Controlled Activity Area
  - Precision Object Free Area
- Runway Safety Area (RSA)
- Obstacle Free Zone (OFZ)
  - Runway OFZ

- Inner-Approach OFZ
- Inner-Transitional OFZ

Runway Protection Zone. The RPZ is trapezoidal in shape and centered about the extended centerline. The controlled activity area and a portion of the Runway OFA are the two components of the RPZ. These two areas are further explained in this subsection. The RPZ dimension for a particular runway end is a function of the type of aircraft and approach visibility minimums associated with that runway end. The existing and ultimate RPZ dimensions for Runway 7/25, 11/29, and 16/34 are presented in **Exhibit 3-1**. The RPZ begins 200 feet beyond the end of the runway usable for take-off or landing.

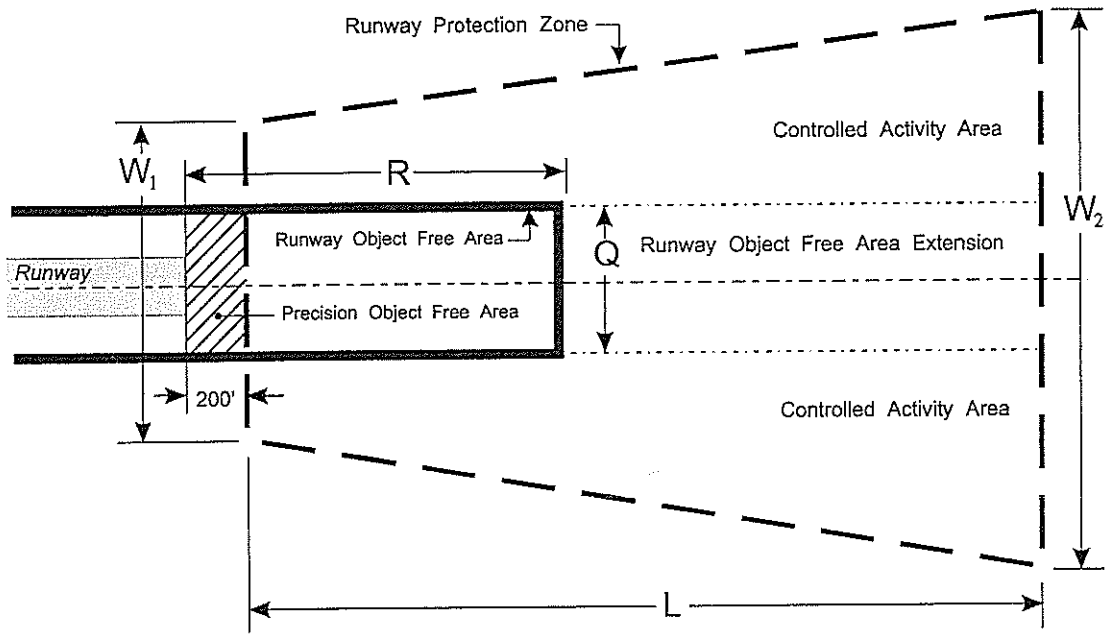
RPZ's were originally established to define an area underneath aircraft approach paths in which control by the airport operator was highly desirable to prevent the creation of airport hazards. Therefore, the main function is to enhance the protection of people and property on the ground. The most effective way to enforce this type of protection is for the Airport to own the land in the RPZ in fee simple. Guidelines established by the FAA recommend that runway protection zones be kept free of structures and any development which would create a place of public assembly. The FAA further recommends that, where practical, airport owners should own the property under the runway protection zones since it is desirable to clear the entire RPZ of above ground objects. This gives the airport owner the control over maintaining the surface of incompatible land uses such as objects and/or activities in the RPZ. Some of the uses are permitted, however, they should not attract wildlife (airports should take into consideration the relative location of bird sanctuaries, sanitary landfills, and other areas which may attract birds or other wildlife) and remove those attractants. Land uses which are prohibited from the RPZ include residences and places of public assembly (i.e., churches, schools, hospitals, office buildings, shopping centers, and other uses with similar concentrations of persons).

Portions of the RPZ for Runway 16 and Runway 25 are not owned by the Airport. It is recommended that the Airport acquire this land in fee simple so the Airport can control the land uses within the RPZ. There are no incompatible land uses within the existing or planned RPZ's. The Airport should protect the land for each RPZ to the maximum extent possible for future implementation of precision GPS approaches on each runway end.

Controlled Activity Area. The controlled activity area is a portion of the RPZ as stated above, which extends beyond the end and the sides of the OFA, which is described below.

Object Free Area. The object free area is a two dimensional surface comprising both the runway object free area (ROFA) and the precision object free area (POFA). The OFA clearing standard requires that the OFA be cleared of all above ground objects which exceed the runway safety area edge elevation. The only objects allowed in the OFA are those which are required for air navigation or the movement or taxiing of aircraft on the airfield. All other objects are prohibited from being in the OFA, including parked aircraft and agricultural operations.

The runway object free area is centered on the runway centerline and is 800 feet wide for Runway 7/25, 500 feet wide for Runway 11/29, and 400 feet wide for Runway 16/34. The length of the ROFA beyond the runway end is 1,000 feet for Runway 7/25, 300 feet for Runway 11/29, and 240 feet for Runway



Existing:

Runway	W_1	W_2	L	R	Q
7	500 ft	1,010 ft	1,700 ft	1,000 ft	800 ft
25	1,000 ft	1,750 ft	2,500 ft	1,000 ft	800 ft
11	500 ft	700 ft	1,000 ft	300 ft	500 ft
29	500 ft	700 ft	1,000 ft	300 ft	500 ft
16	500 ft	700 ft	1,000 ft	240 ft	400 ft
34	500 ft	700 ft	1,000 ft	240 ft	400 ft

Ultimate:

Runway	W_1	W_2	L	R	Q
7	1,000 ft	1,510 ft	1,700 ft	1,000 ft	800 ft
25	1,000 ft	1,750 ft	2,500 ft	1,000 ft	800 ft
11	500 ft	1,010 ft	1,700 ft	1,000 ft	800 ft
29	500 ft	1,010 ft	1,700 ft	1,000 ft	800 ft
16	500 ft	700 ft	1,000 ft	240 ft	400 ft
34	500 ft	700 ft	1,000 ft	240 ft	400 ft

Legend:

W_1 = RUNWAY PROTECTION ZONE - Inner width
W_2 = RUNWAY PROTECTION ZONE - Outer width
L = RUNWAY PROTECTION ZONE - Length
R = OBJECT FREE AREA - Length beyond runway end
Q = OBJECT FREE AREA - Width

Sources: FAA Advisory Circular 150/5300-13, *Airport Design*, September 30, 2000.
Mead & Hunt, Inc., 2000.

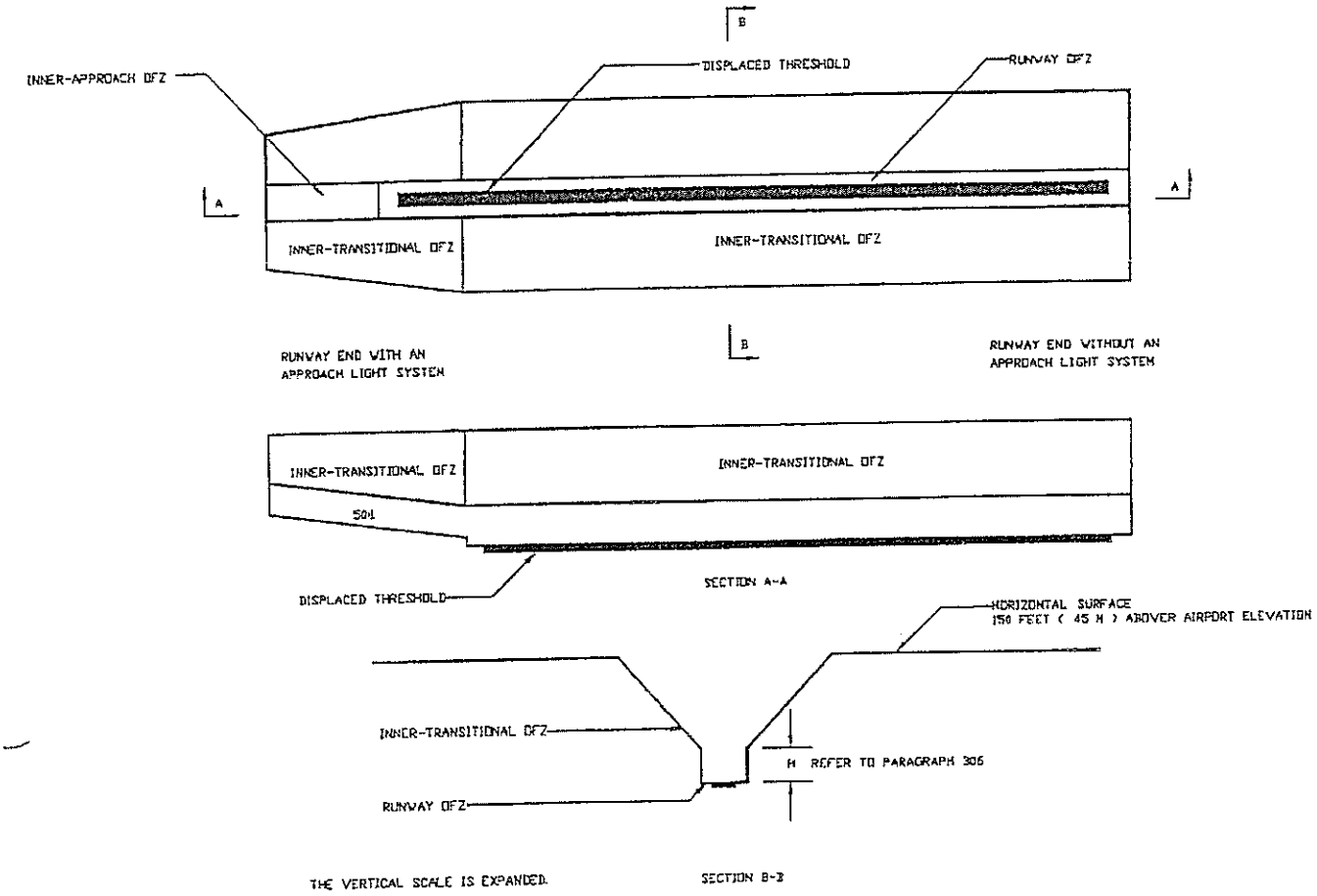
16/34. The Object Free Areas for each of the three runways are in compliance with FAA design criteria. Lastly, the FAA encourages the extension of the ROFA to the maximum length feasible.

The precision object free area (POFA) is also centered on the extended runway centerline. It begins at the runway threshold and is 200 feet long and 800 feet wide. This area applies to all newly approved precision approaches with visibility less than 3/4 miles and would be applicable if the Airport received another precision approach in the future on Runway 11/29. If a new precision approach was installed on Runway 11/29 then the terminal building would have to be relocated to another area of the airfield to meet this requirement. The practicality for the Airport to preserve the land and approach surfaces for an additional precision approach will be addressed in Section 3.3, *NAVAIDs*.

Runway Safety Area. The RSA is a critical two-dimensional area surrounding the runway. The RSA must be capable under dry conditions to support aircraft which undershoot, overshoot, or veer off the runway, from serious structural damage or injury to the occupants and support aircraft rescue and firefighting equipment during such incidents.

Based on criteria established in FAA AC 150/5300-13, Change 6, *Airport Design*, the RSA for Runway 7/25 should be 500 feet wide, centered on the runway centerline and should extend 1,000 feet beyond the ends of the runway; for Runway 11/29 should be 150 feet wide, centered on the runway centerline, and extend 300 feet beyond the ends of the runway; and for Runway 16/34 should be 120 feet wide, centered on the runway centerline, and extend 240 feet beyond the ends of the runway. All runways meet FAA design criteria for RSA's. It was determined that fixing these problems is practical. In 2000, the Airport undertook a RSA improvement project on runway 7/25 which included improving the grading of the RSA to meet the FAA design requirements for runway 25.

Obstacle Free Zone. The OFZ is a three-dimensional volume of airspace that supports the transition of ground to airborne operations or vice versa (**Exhibit 3-2**). The OFZ must remain clear of taxiing aircraft, parked airplanes, and other objects which may penetrate this space. Only frangible mounted NAVAIDs which are required to be there because of their function and use are permitted in the OFZ. The dimensions of the OFZ, as recommended by the FAA, were calculated using the collision risk model, which was developed from observations of approaches and missed approaches. The model factors the probability of an airplane passing through any given area along the flight path. Thus, the following dimensions were calculated and recommended by the FAA. For Runways 7/25 and 11/29, the width of the OFZ should be 400 feet, centered on the runway centerline, and 200 feet beyond the end of the runway ends. For Runway 16/34, the RSA should be 250 feet wide, centered on the runway centerline and 200 feet beyond the runway end for Runway 16/34. The OFZ is comprised of the following components: the runway OFZ, the inner-approach OFZ, and the inner-transitional OFZ.



Source: FAA Advisory Circular 150/5300-13, *Airport Design*, September 30, 2000.

Eastern Oregon Regional Airport at Pendleton Master Plan Update	OBSTACLE FREE ZONE	Exhibit 3-2

The inner-approach OFZ is a defined volume of airspace centered on the approach area to the runway. It applies only to runways which have an approach lighting system, and thus currently only applies to Runway 25 at Eastern Oregon Regional Airport. The inner-approach OFZ begins 200 feet from the runway threshold at the same elevation as the runway threshold and extends 200 feet beyond the last light unit in the approach lighting system (2,500 feet from the runway end). The width of the inner-approach OFZ is the same width of the OFZ (400 feet) and raises at a slope of 50 (horizontal) to 1 (vertical) from the beginning of the surface (200 feet from the runway threshold).

The inner-transitional OFZ is the last component of the entire OFZ safety area. It is a volume of airspace along the sides of the runway OFZ and the inner-approach OFZ. It only applies to runways with lower than 3/4 mile statute mile visibility and therefore, only applies to Runway 25 at Eastern Oregon Regional Airport. The approach to Runway 25 is a CAT I ILS approach with ½ mile visibility minimums, and thus the following criteria apply to establishing the boundaries of the inner-transitional OFZ. The inner-transitional OFZ begins at the edges of the runway OFZ and the inner-approach OFZ and rises vertically to a height of 45.27 feet. Then the surface slopes at 6 (horizontal) to 1 (vertical) until it reaches a height of 150 feet above the established airport elevation (1497 feet MSL) to a height of 1647 feet MSL.

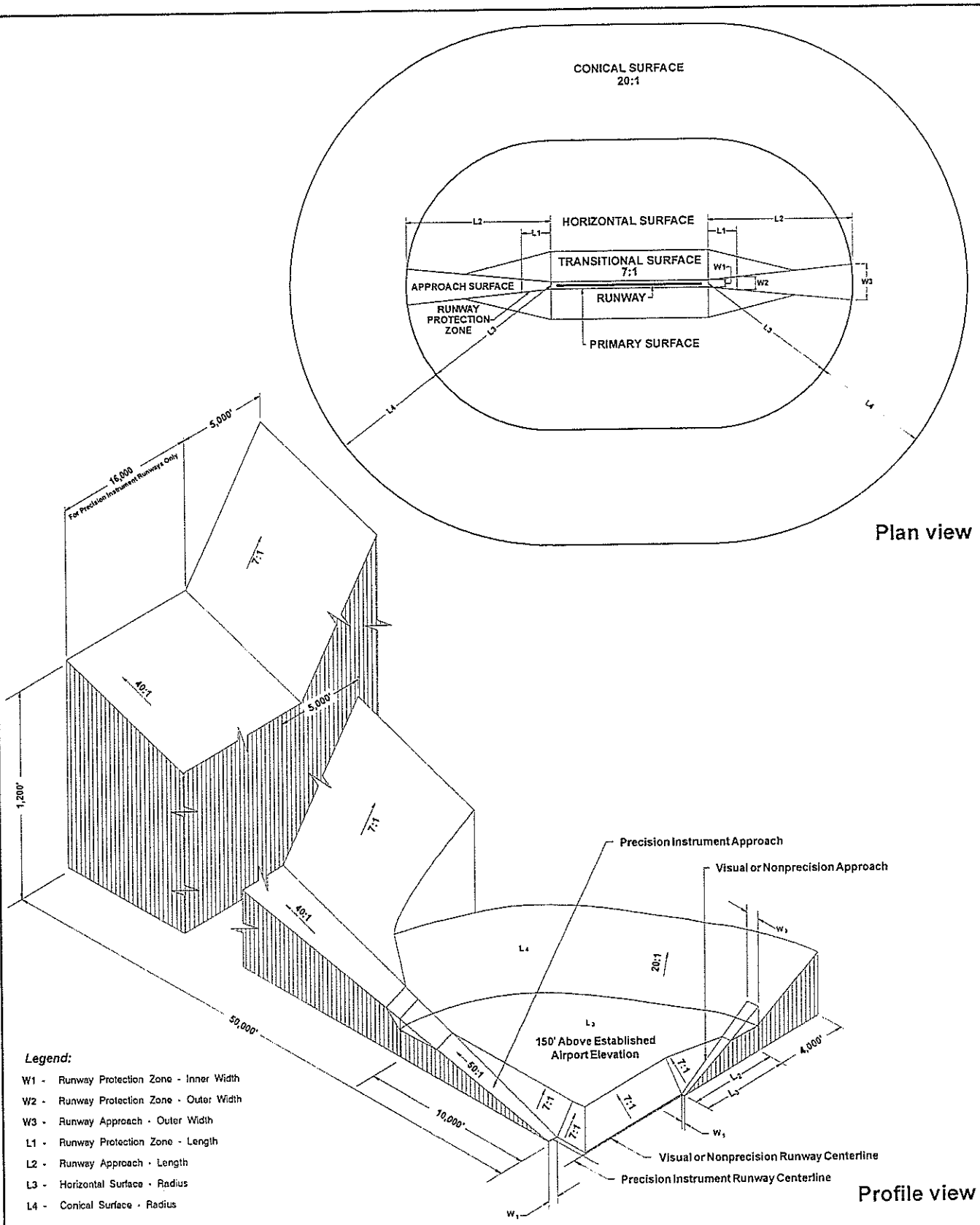
3.2.7 FAR Part 77 Surfaces

Federal Aviation Regulation Part 77, *Objects Affecting Navigable Airspace*, establishes the standards for determining which structures pose as existing or potential obstructions to air navigation. This is accomplished by defining specific airspace areas in the environs of an airport that cannot contain any protruding objects. These airspace areas are referred to as "imaginary surfaces" (See **Exhibit 3-3**). Objects affected include existing or proposed objects of natural growth, terrain, or permanent or temporary construction, including equipment which is permanent or temporary by nature. The imaginary surfaces outlined in this regulation include:

- Primary Surface
- Transitional Surface
- Horizontal Surface
- Conical Surface
- Approach Surface

Like the RPZ's described in the previous section, the dimensions of the primary surfaces vary depending on the type of runway approach being affected. The existing approaches at Eastern Oregon Regional Airport at Pendleton are: precision instrument for Runway 25; non-precision instrument for Runway 7; and visual for Runway 11/29 and Runway 16/34.

Although the FAA can determine which structures are obstructions to air navigation, the FAA cannot regulate tall structures - the local community has this authority. Under FAR Part 77, an aeronautical study can be undertaken by the FAA to determine whether the structure in question would be a hazard to air navigation. The FAA as part of the aeronautical study cannot authorize which structures should be lighted or marked or limit structure heights. This responsibility falls within the local or state jurisdiction on how the use of property beneath the Airport's airspace is going to be used.



Source: Federal Aviation Regulations Part 77.

Eastern Oregon Regional Airport at Pendleton Master Plan Update	FAR PART 77 SURFACES	Exhibit 3-3

Eastern Oregon Regional Airport is zoned by the City of Pendleton and located in the urban growth boundary. The Airport is zoned for airport activities. The surrounding land uses around the airport are zoned for compatible uses such as farm use and light industrial. The Airport is currently completing a goal exception statement which will allow the Airport to acquire land for a future project (an access road with a right-of-way) which would be located outside of the urban growth boundary. The zoning of the land would not change.

Primary Surface. The primary surface is a surface longitudinally centered on a runway. A runway with a hard surface has a primary surface extending 200 feet beyond the end of the runway. The width of the primary surface ranges from 250 feet to 1,000 feet depending on the existing or planned approach (visual, non-precision, precision). Runway 7/25 has a primary surface width of 1,000 feet based on existing approach minima. Runway 11/29 and Runway 16/34 have primary surface widths of 500 feet because the runways have visual approaches and are classified as 'other than utility' runway per FAR Part 77.25(c)(3)(i).

Transitional Surface. The transitional surface extends outward and upward at right angles to the runway centerline at a slope of 7 (horizontal) to 1 (vertical) from the sides of the primary and approach surfaces. The transitional surfaces extend to where they intercept the horizontal surfaces at a height of 150 feet above the runway elevation.

Horizontal Surface. The horizontal surface is a horizontal plane located 150 feet above the established airport elevation, covering an area from the transitional surface to the conical surface. The perimeter is constructed by swinging arcs from the center of the primary surface and connecting the adjacent arcs by lines tangent to those arcs. The radius of the arcs are 10,000 feet for all runway ends designated for approaches that serve larger aircraft.

Conical Surface. The conical surface extends outward and upward from a periphery of the horizontal surface at a slope of 20 to 1 for a horizontal distance of 4,000 feet.

Approach Surface. The approach surface is longitudinally centered on the extended runway centerline and extends outward and upward from each end of the primary surface. An approach surface is applied to each end of the runway based on the type of approach NAVAIDs. The approach slope for Runway 25 is 50:1; Runway 7 is 34:1; and for Runways 11/29 and 16/34 is 20:1. Airports should protect the approach surfaces to the maximum extent possible. However, increasing the approach surface for Runway 11/29 to 50:1 for a precision approach is not feasible, given the existing locations of the buildings on the southeast end. The buildings, including the terminal, would have to be relocated to accommodate this upgrade. Upgrading the approach on Runway 7 from 34:1 to 50:1 (based on a future precision approach) is practical and should be preserved for a future precision approach.

The inner edge of the approach surface for Runway 7/25 is the same width as the primary surface (1,000 feet) and it expands uniformly to a width of 16,000 feet. The approach surface extends for a horizontal distance of 10,000 feet at a slope of 50:1 with an additional 40,000 feet at a slope of 40:1. The outer width of the approach surface is 16,000 feet for Runway 7/25.

The inner edge of the approach surface for Runway 11/29 and 16/34 is the same width as the primary surface (500 feet) and it expands uniformly to a width of 1,500 feet. The approach surface extends for a horizontal distance of 5,000 feet at a slope of 20:1 for Runways 11/29 and 16/34. The outer width of the approach surface is 1,500 feet.

For all of the approaches at the Airport, in order to allow for the heights of vehicles on roadways, the approach surface must clear all rail lines by 23 feet, interstate highways by 17 feet, and all other roads by 15 feet.

According the Airport's most recent Obstruction Chart published in 1998 (field surveyed in July 1997) by the National Oceanic and Atmospheric Administration, the published chart shows that there are seven obstructions to the approach of Runway 7, one obstruction to the approach of Runway 25, one obstruction each to the approaches of Runway 11 and Runway 29, two obstructions on Runway 16, and no obstructions on Runway 34.

Additional surveying should be conducted to verify the obstructions and to identify any recent obstructions which might not be recorded on the Obstruction Chart. Issues relating to the obstructions documented in the approaches to the runways will be discussed in Chapter Four: *Alternative Plan Concepts*.

3.3 Navigational Aids (NAVAIDs)

NAVAID requirements for the Eastern Oregon Regional Airport at Pendleton are based on guidance contained in Advisory Circular 150/5300-13, Change 6, *Airport Design* and FAA Order 7031.2C, *Airway Planning Standards Number One-Terminal Air Navigation Facilities and Air Traffic Control Services.*

NAVAIDs provide services related to airport operations, precision guidance to a specific runway end, and non-precision guidance to a runway or an airport itself. The distinction between a precision and non-precision NAVAID is that a precision approach provides the pilot with electronic glide slope (descent) and distance information, while a non-precision approach does not offer glide slope and may or may not offer distance information. Safety considerations and an airport's operations role determine whether an airport is equipped with precision or non-precision approach capability. The type, mission, and volume of aeronautical activity, used in association with meteorological, airspace, and capacity data determine an airport's eligibility and need for various NAVAIDs.

For this study, NAVAIDs are divided into three general categories: terminal area NAVAIDs, electronic approach NAVAIDs, and visual NAVAIDs. These three categories of NAVAIDs are discussed in the following subsections.

3.3.1 Terminal Area NAVAIDs

NAVAIDs classified in this category provide positive control to aircraft and maintain an orderly flow of air traffic within a specified area. Terminal area NAVAIDs are provided to prevent collisions between aircraft during the landing and take-off sequence as well as to support sufficient maneuvering.

Terminal area NAVAIDs currently available to the Eastern Oregon Regional Airport at Pendleton are an airport traffic control tower, the Seattle air route traffic control center (ARTCC), and the Chinook Approach/Departure Control Center. It is anticipated that the Airport will have adequate terminal area NAVAIDs for the planning period.

3.3.2 Electronic Approach NAVAIDs

This category of NAVAIDs assists aircraft executing an instrument approach to an airport. An instrument approach is a series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from an en route or local flight to a point from which landing may be made visually.

The availability of instrument approach procedures at an airport permits aircraft landing during periods of low visibility. The extent to which approach minimums, in terms of ceiling and visibility, can be lowered is dependent on a number of factors. These include the instrumentation available upon which the approach procedure may be developed and obstructions in the approach and/or missed approach areas. At times, instrument approaches are restricted to certain aircraft and flight crews which have been certified to conduct the procedure by the FAA.

Eastern Oregon Regional Airport at Pendleton is currently equipped with a Category I instrument landing system on Runway 25. The current minimums for this approach are 200-foot ceiling and ½ mile visibility. The Airport also offers a non-precision VOR-GPS approach to Runway 7. Lastly, the Airport has a NDB/GPS approach.

Prudent planning dictates that the Airport protect the approach surfaces to each runway to the maximum extent allowable in anticipation of establishing improved approaches. Analysis of the approach to Runway 7, indicates that the Airport should protect that approach for a 50:1 precision approach in the future. Approaches to Runway 11/29 are currently 20:1 but should be protected for 34:1 for future non-precision GPS approaches. Upgrading to more than a 34:1 approach on Runway 11/29 would require the Airport to relocate the buildings located on the southeast corner of the runway and terminal area. Upgrading the approach on Runway 16/34 to greater than its current 20:1 would require the terminal building and buildings located in the west of the runway to also be relocated.

3.3.3 Visual NAVAIDs

Visual NAVAIDs provide aircraft guidance once the aircraft is within sight of the Airport, and they aid aircraft maneuvering on the ground. The following visual NAVAIDs are provided at the Eastern Oregon Regional Airport at Pendleton:

- Visual approach slope indicator (VASI) - Runway 7
- Precision approach path indicator (PAPI) - Runways 25, 11, and 29
- Medium approach lighting system with runway alignment indicator lights (MALSR)- Runway 25
- Runway end identifier lights (REIL) - Runway 11/29

- Omnidirectional approach lighting system (ODALS) - Runway 7
- Wind Cones and Segmented Circle
- Rotating Beacon

It is projected that the Airport will have adequate visual NAVAIDs through the planning period. However, when the VASI on Runway 7 reaches the end of its useful life, it should be replaced with a PAPI. **Exhibit 3-4** presents a summary of the existing and projected NAVAIDs needs at the Airport for the planning period.

3.4 Passenger Terminal Facility Requirements

Passenger terminal facility requirements were developed as a part of this Master Plan Update using demand-based scenarios. The scenarios are defined in terms of realistic potential air service possibilities that the Airport may experience. The facility needs are then defined based on the peak hour demands under the various scenarios, as opposed to defining them based on arbitrary dates. By defining demand in this manner, the Airport can know what facilities are needed to accommodate realistic passenger demand scenarios, regardless of the time frame in which those scenarios materialize, if in fact they do materialize. Defining demand scenarios in this manner establishes the "triggers" for facility improvements.

Passenger demand scenarios established for this portion of the analysis are defined as follows:

1999 Baseline. This scenario represents the actual demand scenario in the baseline year, 1999, and includes one DeHaviland Dash-8 in the peak hour at a 90 percent passenger load factor.

Existing Market. This scenario establishes facility requirements that the Airport needs to meet under the baseline demand scenario. It is used as a comparison to highlight the current deficiencies in the passenger terminal building.

Additional Airline. This demand scenario represents the requirements the passenger terminal building would have to meet in order to meet the requirements of a new airline. This would include two commuter turboprop aircraft with load factors of 70 percent (stretch Dash-8) and 50 percent (Dash-8), respectively. Given the Airport's active role in recruiting another airline to the Airport, this demand scenario is quite possible.

Expanded Air Service. This demand scenario represents the Airport acquiring expanded air service to areas not currently served. Under this demand scenario the Airport would see one regional jet (70 seats) at an 80 percent load factor and one turboprop (Dash-8) at an 80 percent load factor.

Based on the above assumptions, an analysis of terminal building requirements was completed for Eastern Oregon Regional Airport at Pendleton. **Table 3-7** presents the results of that analysis, in terms of square footage requirements for functional areas of the terminal building, number of gates, etc. As shown in Table 3-7, the passenger terminal building has a total of approximately 23,147 square feet,

	NAVAIDS/LIGHTING										
RUNWAY	ILS	LOC	GPS	MALSR	VOR	VASI-4	PAPI	HIRL	MIRL	REIL	ODALS
7		■	■		■	■	□	■			■
25	■		□	■			■	■			
11			□				■		■	■	
29			□				■		■	■	
16											
34											

■ Existing

□ Future

ILS: Instrument Landing System
LOC: Localizer
GPS: Global Positioning System
MALSR: Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights
VOR: Very High Frequency Omni Directional Range
VASI-4: Visual Approach Slope Indicator (4 Boxes)
PAPI: Precision Approach Path Indicator
HIRL: High Intensity Runway Lights
MIRL: Medium Intensity Runway Lights
REIL: Runway End Identifier Lights
ODALS: Omni Directional Approach Lighting System

Source: Mead & Hunt, Inc.

Table 3-7
Terminal Space Requirements

		Requirements by demand scenario		
	1999 Baseline	Existing Market	Additional Airline	Expanded Air Service
Air service/aircraft scenarios (peak hour demand)	*(1) Commuter turboprop @ 90% load factor*	*(1) Commuter turboprop @ 90% load factor*	*(2) Commuter turboprops @ 70% and 50% load factor*	*(1) Regional jet @ 80% load factor; (1) turboprop at 80%*
Peak hour enplaned passengers (PHEP)	*33*	*33*	*67*	*85*
Peak hour deplaned passengers (PHDP)	*33*	*33*	*67*	*85*
Peak hour total passengers	*66*	*66*	*134*	*170*
	Existing functional areas	*Functional area requirements*		
Airline space				
Ticketing counter (LF)	25	15	30	30
Airline office 1/	1,152	1,095	1,650	1,650
Ticketing queue area	120	180	360	450
Baggage make-up	980	561	1,139	1,445
Baggage input	231	440	634	793
Baggage claim area	328	600	864	1,080
Baggage shelf/device (LF)	19	50	72	90
Passenger hold room	710	965	1,960	2,486
Aircraft gates	1	1	2	2
Subtotal airline space	**3,521**	**3,841**	**6,607**	**7,904**
Concessions				
Rental car counter (LF)	26	20	20	20
Rental car office	540	400	400	400
Rental car queue area	270	200	200	200
Restaurant	3,643	2,796	4,203	4,742
Other lease space	2,443	2,243	3,243	3,243
Subtotal concessions	**6,896**	**5,639**	**8,046**	**8,585**
Public Space				
Public meeting rooms	0	300	300	300
Public circulation/seating	3,733	3,498	5,091	6,358
Restrooms	556	427	576	694
Subtotal public space	**4,289**	**4,225**	**5,967**	**7,352**
Support Space				
Airport administration	1,628	1,628	1,900	1,900
Airport security	150	200	200	200
Mechanical/electrical/janitorial	859	859	1,250	1,561
Storage	485	1,000	1,000	1,000
Basement circulation	136	136	198	247
Subtotal support space	**3,258**	**3,823**	**4,548**	**4,908**
Building structure/non-usable space	**5,183**	**1,216**	**3,040**	**4,515**
Total Gross SF	**23,147**	**18,744**	**28,208**	**33,264**

Sources: Terminal floor plans.
Mead & Hunt, Inc., December 2000.

Notes: 1/ Airline office space includes Horizon Air reservation office.
All figures represent square feet (SF) unless otherwise noted.
Existing data from 1999 peaking calculations.

which is currently adequate for the Existing Market scenario. However, many functional areas lack adequate space under the Existing Market demand scenario and will be addressed in this section. Under the Additional Airline and the Expanded Air Service scenarios the Airport will not have adequate terminal space.

3.4.1 Existing Passenger Terminal Facility

The existing Eastern Oregon Regional Airport terminal building is two stories high with a partial basement. The Air Traffic Control Tower (ATCT) is located on the third and fourth floors; occupying 950 SF and 400 SF, respectively. These ATCT functions are independent from airport operations and will be analyzed separately.

The existing gross square footage for the two floors and basement of the Passenger Terminal Facility totals 23,147 SF, with the first floor occupying 12,869 SF, the second floor occupying 9,220 SF, and the basement occupying 1,058 SF. The second floor houses the airport's administration office and other rental offices. The basement houses mechanical rooms. A large, successful restaurant catering to passengers and local clientele is located on the first floor. All passenger related activities are conducted on the first floor of the terminal building.

Space requirements, in terms of size and layout, contribute to the efficiency of an airport's operations and have to be analyzed prior to development. The space requirements of a terminal facility are dependent on peak hourly demand activity, which is determined from the seating capacity of aircraft serving the airport. Presently, the Dash 8, with a seating capacity of 37 seats, is the sole aircraft type being used at the Airport. The possibility of a stretched Dash 8 with 70 seats entering the market within the next few years is accounted for in these projections.

The presence of a second flight in the peak hour is taken into account in these projections as the possibility of having an additional airline joining the market has been indicated. Given the size and operation of the Eastern Oregon Regional Airport, the baseline required number of peak hour total passengers was determined using 90 percent of the Dash 8's (37 seats) maximum seating capacity. This ratio, which is higher than the FAA's guideline[2] of 60 percent to 70 percent, was used as there is indication that a 70 seat aircraft will be introduced into the market in the near future. Current peak hour total passengers equal 66, of which 33 are peak hour enplaning passengers (PHEP) and 33 are peak hour deplaning passengers (PHDP). The various demand scenarios PHEP and PHDP are presented in Table 3-7. Terminal expansions should coincide with these peak hourly demand scenarios.

With the above assumptions, Table 3-7 was developed to quantitatively show the current and projected square footage requirements for the Passenger Terminal Facility. Approximately 18,744 gross square feet was calculated to be the required for Existing Market scenario and the projected square footage requirements at the various peak hourly enplanement levels for the various demand scenarios range up

[2] FAA Advisory Circular 150/5360-13, *Planning and Design Guidelines for Airport Terminal Facilities*, 1994

to 33,264 SF. Detailed descriptions of the individual spaces and the methodologies used to calculate the projected space requirements are further elaborated in the following section.

3.4.2 Airline Space

Depending on the demand scenario, airline space may require expansion from approximately 3,521 SF to 7,904 SF.

Airline Space. Airline space includes areas used by airlines to conduct passenger services as well as airline administrative functions. These include airline ticketing counters, airline ticketing and operations offices, baggage make-up, baggage claim input area and passenger hold rooms. Based on interviews with airport staff, provisions for a second air carrier were considered in our calculations for the planning period. The required airline space ranges from 3,521 SF to 7,904 SF.

Airline Ticketing Counter. Ticketing transactions and baggage check-in are conducted at the airline ticketing counter prior to enplanement. Airlines have exclusive use of these spaces and any renovations will involve coordination with the respective airlines.

The existing airline ticketing counter is 25 lineal feet (LF) in length and accommodates two service positions. There is currently only one active air carrier, Horizon Air, servicing this market. The FAA's recommended counter length for a two position, multipurpose service counter is 15 lineal feet, which is also the baseline required counter length. In order to provide for an additional airline entering the market, a second ticketing counter with 15 lineal feet of counter length is included in this analysis. Two counters totaling 30 lineal feet should be adequate for the scenarios defined.

Airline Ticketing and Operations (ATO) Office. Due to the size and operation of the Airport, these functions should be centralized behind the ticketing counter. Airline ticketing offices include the area behind the ticketing counter and the adjacent offices for use by staff to handle related administrative duties. Storage and break rooms are included in these spaces. The operation's office supports activities such as accounting, management, communications, and vehicle and equipment storage. The baseline required area was calculated using the length multiplied by a functional depth of 35 feet. This projection takes into consideration the addition of baggage conveyor belts within the space. This resulted in 1,095 SF of required Airline Ticketing and Operations office space for the baseline. Although the square footage for the existing ATO totals 1,152 SF, which is more than the required area for two ATOs, its configuration cannot accommodate a second ATO efficiently without major renovation work. The required airline office for the various demand scenarios would increase up to 1,605 SF.

Horizon Air is in a unique position in that it has a staffed reservation center located within the existing ATO area, which creates inefficiency of space and could hinder potential expansion. The addition of this reservation center along with potential expansion of the reservation center in the various demand scenarios would require reconfiguration of the current space to create a greater efficiency.

Passenger Queue Area. The queuing area is the area in front of the ticketing counters allowing passengers to wait their turn for the next available ticketing agent. A queuing depth of 12 feet is an

acceptable allowance for this activity at an airport of this size. The required area is a result of this number multiplied by the active counter length. For the baseline, 120 SF is provided and 180 SF is required. With the addition of another ticketing counter and projected growth, 360 SF to 450 SF will be required in other demand scenarios.

Baggage Make-up Area. The Baggage Make-up Area is used for sorting and loading of baggage onto carts to be towed to the enplaning aircraft. Baggage is manually carried between the ticketing counter and baggage make-up currently. Required square footage was calculated with the provision for a mechanical belt system to be added in the future. There is 980 SF of space currently but only 561 SF is required for the existing market scenario. This number was determined by applying a 17 SF per PHEP ratio. Actual area is limited to the length of the ticketing counter. The various demand scenarios require up to 1,445 SF.

Baggage Claim Area. The existing baggage claim device is a simple sloping shelf dividing the Baggage Claim Input Area and the Baggage Claim Area. The existing total shelf length is 19 LF. Upgrading to a baggage belt is highly recommended to reduce congestion and improve efficiency in the baggage claim area. The required length for the existing market, as calculated by using the FAA guideline[3] nomograph, assuming 80 percent of peak 20 minute deplaning passenger have 1.3 bags each, is approximately 50 LF of baggage belt frontage. The Airport currently has 19 LF, however, up to 90 LF will be required under the various demand scenarios.

The baggage claim passenger area provides circulation space for passengers to retrieve their bags from the baggage belt. This area is determined by using a ratio of 12 SF per lineal foot of belt frontage, which amounts to 600 SF of required area for the existing market scenario; the Airport currently has 328 SF under the baseline scenario, which indicates that the area is significantly undersized for its intended purpose and use. Furthermore, access to the baggage claim area currently creates a bottleneck due to conflict with the ATO passenger queuing area. The other demand scenarios would require up to 1,080 SF of baggage claim area.

Baggage Claim Input Area. The Baggage Claim Input Area includes baggage cart drop-off space and circulation on the non-public side of the this operation. Baggage claim input areas depend on the type of drop-off system used. For a simple baggage belt system, a depth of 22 feet per lineal foot of baggage claim input belt frontage is typically adequate. Therefore, the required space is 440 SF for the existing market, assuming an input belt frontage of 20 lineal feet. Existing facilities are undersized and do not allow for an efficient drive-thru operation. Under the various demand scenarios the area would need to be increased up to 793 SF.

Passenger Hold Room. Passenger hold rooms provide passenger seating, airline agent podiums for ticket collection, last minute baggage check-in, deplaning aisles and enplaning passenger queuing areas. Hold rooms are usually within secured areas of the Passenger Terminal Facility. The Baseline scenario has a secured hold room of 710 SF. All enplaning traffic exits through this secured hold room but

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[3]/ ibid

deplaning passengers enter through a separate area. Requirements for the existing market are based on all PHEP being in their respective hold rooms 15 minutes prior to departure with a 50 percent ratio added for meeters and greeters. Actual square footage numbers are the result of applying a 15 SF per person ratio to the resultant total. An additional 30 percent was then added to the total square footage for circulation, airline agent podium and queuing space. Therefore, the resulting hold room area required is 965 SF for the Existing Market scenario and increases up to 2,486 SF in the other demand scenarios. This common hold room can adequately service two gates with access to the various aircraft parking positions.

Gates. The existing Passenger Terminal Facility currently services five flights per day out of one gate. Future gate requirements are influenced by the number of aircraft using the gate during the peak hour, the types of aircraft serviced and the length of time occupied by an aircraft. Using the FAA guideline nomograph for airports with less than six daily departures per gate, the required number of gates for the baseline and existing market demand scenarios was one. Long term projections indicate a need for two gates when two carriers have services within the same hour. This scenario is likely to occur under the additional airline or expanded air service demand scenarios.

3.4.3 Concessions

Concession spaces include areas leased out by the airport to generate revenue and include car rental services, restaurants and other private businesses. Current total concession areas equal approximately 6,896 SF. Projected required concession space is estimated to be 8,585 SF.

Rental Car Space. Existing rental auto concession (RAC) offices and counter areas total 540 SF and are operated by two operators, Budget and Hertz. The total counter length equals 26 LF with the former occupying 12 feet and the latter, 14 feet. The Existing Market demand scenario RAC office and counter areas were calculated based on a minimum functional counter length of 20 feet, and a depth of 20 feet for office and counter space. This results in each RAC area being 200 SF, which should remain adequate throughout the planning period. Current space requirements are not divided equally, with the Budget rental station operating in an undersized area. Provisions for a future RAC counter should be considered in the conceptual design phase.

Queuing space was calculated using a 10-foot queuing depth, which resulted in 200 SF of space for the baseline. This requirement will depend on the addition of future RAC counters. The queuing area is considered a non-revenue generating public space.

Restaurant. Food and beverage services are provided by a single concessionaire. The restaurant, bar, lounge, kitchen, and restaurant support spaces currently occupy 3,643 SF of space, of which approximately 2,100 SF is public use space. The restaurant caters primarily to local customers and secondarily to passengers. It seats approximately 80 people and is an increasingly popular dining destination. There are two levels to the restaurant, with the upper level being the dining area and the lower level, a bar with a small dining area. A factor of 35 SF per customer was used to determine the Existing Market demand scenario required square footage of 2,796 SF. The number of customers are calculated using a daily utilization rate of 15 percent of peak hour total passengers in addition to a 70

person factor to account for local customers. Assuming that business at the restaurant continues to grow, an increase in square footage to 4,742 SF is conceivable. Current restaurant facilities are adequately sized for day to day dining activity, but are inadequate when catering for special occasions. The two leveled layout of the restaurant also hampers efficient use of the entire space when filled to capacity. Expansion options should be considered based on market demands.

Other Leased Space. The FAA and the Greater Eastern Oregon Development Corporation occupy approximately 1,800 SF of the second floor. Altogether, other leased spaces equal 2,443 SF, of which only approximately 200 SF of office space is vacant and is being used for airport storage space. Requirements for rental office space in the Baseline and Existing Market demand scenarios equal 2,243 SF. A need for additional office rental space was indicated by airport staff and an additional 800 SF of space should be considered during expansion to accommodate future tenants over the next 5-10 years. This would provide the Airport up to 3,243 SF of other lease space. Expansions beyond this period should be determined based on market conditions.

3.4.4 Non-Revenue Generating Space

FAA guidelines[4] indicate that 45 to 50 percent of a Passenger Terminal Facility's usable area is typically non-revenue generating. These areas include lobby and seating areas, public restrooms and circulation, passenger queuing areas, mechanical rooms, storage, circulation , airport administration, and security checkpoints. Total existing non-revenue generating space equals 7,547 SF, which is equivalent to 33 percent of the airport's usable area.

Public Circulation and Seating. Public circulation usually accounts for approximately 30 percent of the terminal building's usable area and consists of the lobby areas (including seating), public meeting rooms, passenger queuing areas and walkways connecting the various terminal spaces. This high ratio is typical as high volume traffic is sporadical and walkways have to be designed for these peak volumes. Lower ratios compromise the efficiency of passenger circulation. An elevator has been added recently, making the second floor accessible. Current total public areas for first and second floors equal 3,733 SF. If 30 percent of usable space is dedicated to public space, the 1999 required square footage should total 5,389 SF. In the other demand scenarios, approximately 6,358 SF of public circulation space will be required.

Current required lobby square footage equals approximately 2,215 SF, assuming 30 SF per peak total passenger. Seating within the lobby area is calculated using a ratio of 3.5 SF per PHEP in a lobby with hold room scenario. Given that this analysis assumes a separate hold room, 116 SF of seating should be provided under the Existing Market demand scenario.

Restrooms (Unsecured). Restrooms are located on the first floor near the restaurant and on the southwest end of the second floor. The total area occupied by restrooms equal 556 SF, of which 514 SF are for public use on the first floor. Restroom sizes are dependant on the number of fixtures dictated by

[4]/ ibid

local building codes. However, in airports they are typically sized more generously to facilitate peak traffic occurrences. Using the guidelines set within the FAA Advisory Circular 150/5360-13, *Planning and Design Guidelines for Airport Terminal Facilities,* a ratio of 1,650 SF per 500 peak hour total passenger was applied and yielded a requirement of 231 SF for the main restrooms. The existing market demand scenario total required square footage for all restrooms is427 SF where a factor of 1.5 was applied to accommodate general public use. The baseline demand scenario has 556 SF. While this is adequate for the existing market demand scenario for first floor restrooms, this is not adequate for the restrooms to be located on the second floor or for the two other demand scenarios which require up to 694 SF of restrooms. The square footage of the restroom requirements includes 100 SF for restrooms on the second floor which would be ADA compliant. This deficiency is in each of the demand scenarios and needs to be rectified under the Baseline, even though the Airport has enough restroom space.

3.4.5 Support Space

Airport support spaces include areas serving users indirectly, such as airport administration, security, janitorial and space for mechanical, HVAC, electrical, plumbing and communication equipment. Most of these spaces are in the basement and on the second floor, occupying a total of 3,258 SF or 14 percent of the Passenger Terminal Facility's usable area. FAA guidelines[5] suggest a 15 percent occupancy ratio of a building's usable area for support spaces.

Airport Administration Space. Airport administration handles the daily management activities of the airport and the spaces include conference rooms, offices, support and storage spaces. The existing 1,628 SF of space on the second floor is adequate for current operations. The required area will increase depending on the number of employees using the space and the addition of a conference room. Assuming the addition of an additional staff member in ten years, there will be a projected need of 1,900 SF total; this would be required with either the Additional Airline or Expanded Air Service scenarios.

Security. FAA guidelines[6] indicate that each set of equipment (magnetometer and x-ray machine) can process between 500 and 600 persons per hour. Currently, the security checkpoint is located at the entrance of the secured hold room space and occupies 150 SF. A minimum of 200 SF will be necessary for an efficient security checkpoint. This requirement should remain adequate through the planning period.

Mechanical, Maintenance, Storage Spaces and Circulation. Currently, these support spaces are located in the basement and first floor, and occupy 1,480 SF. The required square footage totals 1,995 SF for 1999, which includes additional storage space for the airport. These areas should grow accordingly with expansions and should total up to 2,809 SF under the various demand scenarios.

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[5]/ ibid

[6]/ ibid

3.4.6 Non-usable Space/ Building Structure

Building structure typically occupies five percent of the gross square footage of a building. This includes wall thicknesses, atriums and chases that were not accounted for in square footage take-offs for items described in the previous sections. The existing Passenger Terminal Facility has 5,183 SF of non-usable space. This is approximately 22 percent of the gross terminal square footage. Some of these deficiencies can be corrected during renovations. Based on the five percent FAA building structure ratio, non-usable space should total 1,261 SF in the Existing Market demand scenario, increasing up to 4,515 SF under the various demand scenarios.

3.4.7 Terminal Building Space Requirement Conclusions

Additional square footage is required for the Baseline scenario in certain areas where facilities are inadequate for efficient operations, including reconfiguring and enlarging the baggage claim input, baggage claim passenger and airport storage areas, adding a public conference room, expanding the ATO passenger queuing area, adding an ATO office, and adding restrooms to the second floor. Actual expansion square footage may depend on how large a percentage of the terminal area can be renovated for higher efficiency through renovation work of its interior layout. Airline operational demands, physical site restrictions and structural constraints are other factors that may influence renovation or expansion options. Actual time lines of renovation projects should respond to passenger load levels. Our recommendations for renovation and expansion of the Eastern Oregon Regional Airport at Pendleton, based on the analysis above, include:

- Upgrading the baggage claim shelf to a belt and renovating the baggage claim operational and passenger areas for greater efficiency. Existing passenger areas are accessed through doors from the lobby and conflict with the queuing space of the airline ticketing counters, causing congestion. The baggage shelf operational length is inadequate and the claim passenger area is undersized. Both should be rectified immediately.

- Expanding the baggage claim input area. Access to the baggage claim input area is through a single overhead door, which restricts maneuvering of baggage carts and causes inefficient circulation patterns. The existing baggage claim input area is undersized. Renovation of this area should be undertaken at the same time as the baggage claim area.

- Renovating the baggage make-up and airline ticketing office areas to allow for an additional air carrier. Airline ticketing spaces and baggage make-up are oversized currently but cannot accommodate the addition of another air carrier easily. Renovations of these spaces should account for future expansion possibilities.

- Adding a second floor restroom at the southeast wing. With the current addition of an elevator and connecting passageway between the two second floor office areas, an ADA compliant restroom should be included in the renovation plans.

- Adding a public general purpose room on a second floor for use as a conference room, press

room or emergency trauma room.

- As a service to business commuters, a small business area should be considered. This area would provide business related services such as data and phone links, and work surfaces. Fees for services could be implemented, depending on market conditions.

- Expanding the restaurant in response to market demands.

- Relocate the ATCT to another site on the Airport.

3.5 Air Cargo Facility Requirements

Eastern Oregon Regional Airport at Pendleton currently enplanes belly cargo from the airlines and cargo from all-air cargo companies. Currently, the trucks waiting for the cargo carriers park on the ramp and on-load or off-load from the plane to the truck and vice versa. The Airport does not have a centralized air cargo area set aside for the various operators. Setting aside such an area in close proximity to the terminal would provide the airlines and the cargo operators with a more efficient operation than currently being used.

Sizing future air cargo areas for airports such as Eastern Oregon Regional Airport at Pendleton presents challenges in that air cargo activity is difficult to predict. However, the Airport should set aside a piece of land for consolidated air cargo operations. The area should include, at a minimum, space for an apron which can accommodate a mix of narrowbody and multi-engine turboprop aircraft, a building for storing, sorting, and office functions, truck docks, and automobile parking for the facility. The Airport should set aside an approximate footprint of 30,000 square feet for a building that could be constructed in phases as the needs for various air cargo carriers arise (this would include truck bays and automobile parking functions), and approximately 10,000 square yards for an apron. The location should provide for adequate expansion for the apron, as narrowbody aircraft usually require approximately 4,500 square yards and smaller cargo aircraft require approximately 1,000 square yards. Various locations on the Airport will be analyzed in Chapter Four: *Alternative Plan Concepts*.

3.6 General Aviation Facility Requirements

General aviation (GA) facility requirements were developed for the Eastern Oregon Regional Airport based on projected general aviation demand. Possible options for accommodating the projected demand will be identified in Chapter Four: *Alternative Plan Concepts*. General aviation facility requirements were developed for the following functional areas:

- Aircraft Storage Buildings
- Transient/Based Aircraft Tie-Downs
- Agricultural Spraying Operations
- General Aviation Automobile Parking

The functional requirements for each component of GA facilities are presented in **Table 3-8**.

Table 3-8

General Aviation Requirements

General Aviation Facility	Existing	General Aviation Facility Requirements			
	1999	1999	2005	2010	2020
Based aircraft 1/	75	75	81	86	95
Aircraft in hangars	52	52	61	69	81
T-hangars					
Units	28	28	31	41	49
Square feet	42,000	42,000	51,600	55,200	58,800
Conventional hangars					
Number of aircraft stored	24	24	30	28	32
Building space (SF)	25,000	37,000	52,000	52,500	52,500
Based aircraft tied-down	23	23	20	17	14
Tie-downs 2/	0	23	20	17	14
Area (SY)	9,900	9,900	8,700	9,000	9,900
Itinerant AC ramp					
Tie-downs	60	20	27	28	30
Area (SY)	7,200	7,200	9,720	10,080	10,920
Total Tie-downs (spaces)	60	43	47	45	44
Total Tie-downs (apron SY)	18,275	14,100	15,720	15,180	15,120
Auto parking					
Spaces 3/	10	25	27	29	32
Agricultural Spraying Operations:					
Based helicopters	14	14	14	14	14
Number of ag spraying pads	3	5	5	5	5

Notes: 1/ The 1999 existing based aircraft, excludes 8 military and 14 helicopters for agricultural spraying operations.
2/ Tie-downs are located on the itinerant general aviation ramp; this shows tie-downs which should be reserved for based aircraft.
3/ Assumes that one auto parking space is required for every 3 based aircraft.

Source: Mead & Hunt, Inc., January 2001.

3.6.1 Aircraft Storage Buildings

Storage needs for general aviation aircraft typically depend on local weather conditions, the size and sophistication of the Airport's based aircraft fleet, and user's preferences. Usually, aircraft with higher values are more likely to be stored in larger, more secure facilities. Of the 75 general aviation aircraft (excluding military and agricultural spraying operators) currently based at the Airport, approximately 68 percent are stored in aircraft storage buildings and the remaining 32 percent are tied-down. It is assumed that through the planning period the Airport will see an increase in the percentage of aircraft stored in hangars versus the aircraft tied-down on the ramp. Aircraft are stored in two type of hangars: T-hangars, which usually only store one aircraft in a unit, or conventional hangars, which store numerous aircraft in one large open area. The Airport currently has a fairly even percentage of aircraft stored between T-hangars and conventional hangars. Over the planning period, it is assumed that the t-hangars will store approximately 60 percent of the aircraft and conventional hangars will store the remaining 40 percent.

Table 3-8 reflects total future aircraft storage requirements for the Airport. As seen in the T-hangar requirements, the Airport should plan for an increase in T-hangar units from 28 in 1999 to 49 in 2020. A typical T-hangar design is 30 feet by 40 feet. The T-hangar area requirements do not include the area required to provide access or lead-in taxiways to the T-hangar units, nor do they reflect spacing needs between groups of T-hangars. These additional requirements will, however, be incorporated into the recommended development plan which will be presented in Chapter Four.

The second type of hangar at the Airport, the conventional hangar currently stores 24 aircraft; the Airport currently has approximately 25,000 SF. It is anticipated that conventional hangars will store 32 aircraft and require a total of 52,500 SF by 2020. The square footage required for the conventional hangars do not include the taxilanes and aprons in front of the hangar, but will be included in the layouts in Chapter Four.

3.6.2 Transient/Based Aircraft Tie-downs

The Airport currently has one area devoted to tie-downs. This area is used by both based aircraft and itinerant aircraft. However, because of the different planning requirements, this section presents the tie-down area divided up between based aircraft and itinerant aircraft. The Airport currently has 60 tie-down spaces. The apron is approximately 18,275 square yards.

Based Aircraft Tie-Downs. FAA planning guidelines recommend that tie-down spaces be provided for all based aircraft not stored in hangar facilities. The Airport presently has 23 aircraft tied-down. Using the planning ratio of 300 square yards per tie-down, which includes taxilanes, a total of 14 based aircraft tie-down spaces using 4,200 square yards of apron will be required for 2020.

Transient Aircraft Tie-Downs. Many factors attract transient aircraft to an airport. Some of the most important factors include tourist activities, area businesses and industries, and the availability of maintenance and FBO services. Transient ramp areas are used for loading and unloading passengers, for short-term parking by aircraft utilizing the Airport's facilities, or for those visiting the area. Total

transient apron parking requirements, presented in Table 3-8 were developed based on the following approach.

- The number of annual general aviation itinerant operations was calculated for the Airport (Chapter Two: *Projections of Aviation Demand*).
- The number of annual itinerant operations was multiplied by 50 percent (50 percent of itinerant operations are departures), divided by 12 (12 months per year), divided by 30 (30 days per month), and then reduced by 20 percent to account for aircraft that do not remain at the Airport.
- 360 square yards of apron were then allocated to each itinerant aircraft on the ground during the peak day.[7]

Based on the itinerant GA operations, it can be anticipated that on a daily basis approximately 30 aircraft will require transient tie-down storage by 2020. It is estimated that approximately 10,920 square yards of ramp area will be required to accommodate these transient aircraft.

Total Required Tie-downs. The Airport will require a total of 44 tie-down spaces through 2020 and 15,120 square yards of apron. The Airport has 60 tie-downs and 18,275 square yards of pavement, therefore, the existing tie-downs and apron are adequate through 2020.

3.6.3 Agricultural Spraying Operations

The Airport has an active agricultural spraying operations business. Currently, the agricultural spraying operations is located east of Runway 16/34 and consists of three pads for the preparation of the aircraft/helicopters. This area does not have adequate room to accommodate all of the operators. The Airport should plan on adding two more pads in the near term.

3.6.4 General Aviation Automobile Parking

Auto parking at the Airport is provided in proximity to the some of the general aviation hangars and FBO facilities. It is estimated that there are currently 10 parking spaces used by the general aviation tenants at the Airport. It is a typical practice for some general aviation patrons to park their automobiles in the hangars while they are flying. This practice eliminates the need for additional parking spaces in some cases.

The FAA has developed a methodology that relates general aviation automobile parking demand to general aviation demand on the basis of one space per 400 annual general aviation operations. Using this methodology, future general aviation automobile parking needs for the Airport through the 20-year planning horizon will increase from 10 parking spaces in 1999 to 30 parking spaces in 2020 (Table 3-8).

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[7]FAA Advisory Circular 150/5300-13, *Airport Design.*

3.7 Military Facility Requirements

The Oregon National Guard is located on the west side of the Airport, south of Runway 7/25. There are currently eight based helicopters assigned to the Guard base. The facility was constructed in 1997 and provides the military with all the required functions. Discussions with the Commanding Officer indicate that the Guard's mission is not expected to change through the planning period. Therefore, no additional facilities for the military are required.

3.8 Support Facility Requirements

Ancillary facilities needed to support the operation of the Airport were also identified. Requirements were developed for the following support areas:

- Aircraft Rescue and Firefighting
- Fuel Storage
- Airport Maintenance and Snow Removal Equipment Buildings

3.8.1 Aircraft Rescue and Firefighting

Aircraft rescue and firefighting (ARFF) requirements for the Eastern Oregon Regional Airport at Pendleton are defined in FAR Part 139, *Certification and Operations: Land Airports Serving Certain Air Carriers*. The requirements for determining the ARFF index are based on the combination of the length of the air carrier aircraft and the average daily departures of the air carrier aircraft. The average daily departures is based on the longest aircraft that has a minimum of five daily departures at the Airport. The current ARFF index at the Airport is Index A, which includes aircraft less than 90 feet in length. Currently, the Airport is serviced by the Dash 8 aircraft which has a maximum length of 73 feet; this places the Airport in the Index A category. The equipment required for the Airport of an ARFF Index A is one vehicle carrying at least 500 pounds of sodium-based dry chemical or halon 1211 or 450 pounds of potassium-based dry chemical and water with a commensurate quantity of AFFF to total 100 gallons, for simultaneous dry chemical and AFFF foam application. The Airport currently has the appropriate equipment to maintain Index A standards as set forth by the FAA.

Based on the potential for the Airport to see larger aircraft on a varying basis, the following ARFF index criteria is presented:[8]

ARFF Index B
- aircraft at least 90 feet in length but less than 126 feet in length with a minimum of five daily departures (i.e., A 319, B737, DC 9, AVRO RJ 85).
- One ARFF vehicle carrying at least 500 pounds of sodium-based dry chemical or halon 1211, and 1,500 gallons of water, and the commensurate quantity of AFFF for foam

[8]It is significant to note that these criteria are presented for the Airports information, and is not meant as a hard recommendation for upgrading the ARFF Index.

production; ***or***
- Two ARFF vehicles: one carrying the extinguishing agents as described above and one vehicle carrying an amount of water and commensurate quantity of AFFF so that the total quantity of water for foam production carried by both vehicles is at least 1,500 gallons.

ARFF Index C
- aircraft at least 126 feet in length but less than 159 feet in length with a minimum of five daily departures (i.e., B727)
- Three vehicles with the following criteria:
- One vehicle carrying 500 pounds of sodium-based dry chemical or halon 1211 or 450 pounds of potassium based dry chemical and water with a commensurate quantity of AFFF to total 100 gallons, for simultaneous dry chemical and AFFF foam application ***and***;
- Two vehicles: one carrying an amount of water and the commensurate quantity of AFFF so that the total quantity of water for foam production carried by three vehicles is at least 3,000 gallons.

OR
- Two vehicles with the following criteria:
- One vehicle carrying the extinguishing agents as specified above and;
- One vehicle carrying water and the commensurate quantity of AFFF so that the total quantity of AFFF for foam production carried by both vehicles is at least 3,000 gallons.

The current location of the ARFF facility is adequate for the Airport based on response time requirements, however, expansion of the current facility should be evaluated in the alternative concepts analysis portion of this master plan update to determine the feasibility of the Airport increasing its ARFF index and accommodating the FAA requirements. Furthermore, the FBO and the T-hangar currently located in close proximity to the ARFF building should be evaluated and recommended for relocation so as to not impede on the airfield access required by the ARFF trucks. The current ARFF building barely accommodates the equipment the Airport currently owns. Furthermore, the ARFF building does not have space for shift crews or the facilities to implement a 24-hour manned fire station at the Airport. The ARFF building should be expanded to include vehicles bays for 2 ARFF trucks, a turnout gear storage area, a watch/alarm room, a fire department office, a training/study room, kitchen/dining room, mechanical room, lavatory/showers/lockers, dormitory, storage/hose-drying room, work shop room, and a day room. This ARFF station should be approximately 15,000 square feet.

3.8.2 Airport Maintenance and Snow Removal Equipment Buildings

The Airport maintenance and snow removal equipment building is located next to the ARFF building and is 4,700 square feet. The existing facility has six vehicle bays for storing maintenance vehicles, maintaining vehicles and performing the duties associated with airport maintenance. The current building cannot store all of the equipment and perform these duties. This is shown as there are currently four maintenance vehicles and a mower stored outside. The Airport should plan for expansion of the current maintenance building to accommodate the vehicles and their work related tasks. It is

recommended that the Airport should expand the facility to approximately 7,000 square feet. Lastly, sand and deicing materials are stored off-site, the Airport should preserve space near the maintenance facility to relocate these materials up to the Airport, this would increase efficiency by having the supplies at the Airport. Various alternatives will be developed in Chapter Four: *Alternative Plan Concepts.*

3.8.3 Fuel Storage Facilities

The Airport currently does not have a central fuel farm, however, there are various sized (usually around 300 gallons) portable fuel tanks located in the area of the agricultural spaying area and one 10,000-gallon below ground tank located near the GA apron. The military has 2-25,000 gallon tanks, which are not included in this analysis. Fuel trucks (totaling approximately 5,000 gallons) obtain their fuel from an off-site source. However, by looking at a 5-year trend of fuel sales, it can be projected what fuel sales will be like through the 20-year planning period and the Airport should plan for an on-site fuel farm because of increased activity and demand.

Table 3-9, presents the projected fuel usage at the Airport. Currently, the Airport's method of storing fuel off-site accommodates the needs of the Airport. However, in the future the Airport may wish to create greater efficiency in fuel handling operations, therefore, space should be set aside for future development of an on-site airport fuel storage facility.

3.9 Surface Transportation and Automobile Parking Requirements

The existing surface transportation features at the Eastern Oregon Regional Airport at Pendleton have been analyzed to determine their ability to meet anticipated demand for the planning period. Components analyzed include:

- Airport Access
- Airport Circulation
- Airport Parking

3.9.1 Airport Access

Ground access systems at airports serve the passengers, employees, and other airport users traveling to and from the airport. The ground access systems which extend beyond the airport boundaries must function within the context of the regional transportation system and the policies of the local government agencies (i.e., interstate highways, city and county roads).

There are four types of airport roads which make up the airport access system. They are the primary airport access roads, terminal area access roads, terminal frontage roads, and service roads. The primary airport access road provides access to the airport from the neighboring community road system. The access road should be provided at-grade. Currently, the primary airport access road to the Eastern Oregon Regional Airport at Pendleton is via Airport Road, which is exit 207 off of Interstate 84 (I-84). To access the Airport traffic must negotiate Reith Ridge before arriving at Airport Road, which then requires traffic to traverse a 6 percent grade to reach the Airport terminal and industrial park. This is

Table 3-9

Historical and Projected Fuel Sales

Year	Fuel Sales			Annual Operations	Gallons per Operation
	Jet A	AvGas	Total		
Historical:					
1995	73,357	96,860	170,217	39,066	4.4
1996	169,356	89,116	258,472	38,060	6.8
1997	46,144	33,339	79,483	38,267	2.1
1998	59,845	45,230	105,075	41,393	2.5
1999	86,435	34,954	121,389	34,537	3.5
Average gallons per operation					*3.9*
Projected:					
2005	114,367	76,245	190,612	47,653	4.0
2010	121,474	80,982	202,456	50,614	4.0
2020	135,142	90,094	225,236	56,309	4.0

Sources: Historical - Airport Management Records.
Projected - Mead & Hunt, Inc., November, 2000.

not in line with FAA recommendations in FAA AC 150/5360-13, *Planning and Design Guidelines for Airport Terminals*. The AC states that the primary access roads should be provided at grade for uninterrupted flow conditions. Furthermore, this is the only access point to the Airport terminal area. There are no alternative routes should something cause Airport Road to be closed (i.e., weather or an accident). Therefore, airport access at the Airport is deficient and alternatives to remedy this situation will be developed in Chapter Four: *Alternative Plan Concepts*.

3.9.2 Airport Circulation

Airport circulation within an airport's boundaries should minimize congestion and provide support of the efficient access to the passenger terminal building. The Eastern Oregon Regional Airport at Pendleton airport circulation is similar to the centralized layout. The centralized layout is generally the circulation layout used when the terminal area consists of a single building (such as at Pendleton). This type of system uses sequentially and centrally located components for public parking and rental car locations. At Eastern Oregon Regional Airport at Pendleton the airport circulation consists of the 2-lane Airport Road which traverses up to the terminal with a 6 percent grade. The road becomes one-way as it approaches the terminal. Persons can access the short- and long-term parking lots and the rental car lot via this road. Airport circulation at the Airport is adequate for the planning period.

3.9.3 Airport Parking

Airport parking at Eastern Oregon Regional Airport at Pendleton is located directly in front of the Airport terminal; parking at the Airport is free. The Airport is an origin and destination airport, meaning that passengers begin or end their flight at the Airport. Therefore, the Airport needs to provide adequate parking facilities for the passengers. Parking lots should be no greater than 1,000 feet from the terminal so that passengers do not have far to walk. The distance at the Airport is adequate. In sizing parking facilities at airports of this size, it is common to apply a factor such as 1.5 parking spaces times the peak passenger hourly demand. In applying this factor, public parking facilities are presented in **Table 3-10.** These spaces also include employee parking.

Table 3-10

Public Parking Facility Requirements

	Peak Hour Passengers	FAA Factor	Parking Spaces Required
1999 (Actual)			177
1999 (Required)	66	1.5	99
2005	96	1.5	144
2010	134	1.5	201
2020	170	1.5	255

Source: Mead & Hunt, Inc., December 2000.

According to the above table the Airport has adequate parking through 2005, however, additional parking facilities will be required for 2010 and 2020. Layouts for expanding the parking lots in their

present location will be developed in Chapter Four: *Alternative Plan Concepts*.

The rental car lot is located to the west of the public parking lot. There are currently 16 spaces in the lot, which is shared by both of the rental car agencies. Discussions with the rental car agencies indicated that an additional 10 spaces would be adequate for the planning period, however if a third rental car concession entered into the Airport, then an additional 10 spaces would be required in addition to the other 10 for a total of 20 additional rental car parking spaces. Expansion of the rental car parking lot will be evaluated in Chapter Four: *Alternative Plan Concepts*.

Chapter Four
Alternative Plan Concepts

Airfield and landside development alternatives were developed for the Eastern Oregon Regional Airport at Pendleton through 2020 based on the facility requirements developed in Chapter Three: *Demand/Capacity Analysis and Determination of Facility Requirements*. Alternative plan concepts were developed for many components of the airfield and landside areas of the Airport. After alternatives were developed, evaluation criteria were applied to assess the various operational, economic, environmental, and implementation feasibility factors.

The following sections of this chapter provide descriptions of the criteria that were considered in the evaluation of alternative plan concepts, outline alternatives that were evaluated in this analysis, and identify the preferred development alternatives recommended for major components of the Airport's facility requirements. This chapter is organized into the following sections:

- Summary of Airport Facility Needs
- Evaluation Criteria
- Airfield Facilities
- Passenger Terminal Building
- General Aviation Facilities
- Air Cargo Facility Considerations
- Support Facilities
- Surface Transportation and Automobile Parking Alternatives

4.1 Summary of Airport Facility Needs

Airfield and landside development alternatives were formulated for the Airport based on the long-range goals and objectives of the Airport and the determination of facility requirements which are documented in the previous chapter.

The specific planning factors that were considered in developing the alternatives include:

- Eastern Oregon Regional Airport will continue to serve as a key air carrier airport in the eastern Oregon region, with the primary long-range objective of providing uncompromising airfield safety for airfield operators and exceptional terminal facilities for the air passenger.

- General aviation activity and the managed/planned development of general aviation facilities at the Airport will continue to be supported.

- An additional goal of the Eastern Oregon Regional Airport at Pendleton is to provide adequate land areas to accommodate growth of air cargo facilities, adequate space in the terminal building to accommodate the growth of the successful restaurant, and future passenger demand scenarios.

- To resolve the existing design deficiencies related to FAA design standards.
- To provide a terminal building that is responsive to the changing airline market and the potential for a second air carrier to enter the Pendleton market.
- All existing Airport properties not used for aviation needs will be utilized for other appropriate development projects.

4.2 Evaluation Criteria

Alternative development concepts that were developed as part of this study were evaluated based on various aeronautic, environmental, and economic criteria. The specific criteria evaluated as part of this study are summarized as follows:

Operational/Safety Factors - Each alternative was evaluated to determine its ability to safely accommodate future demand for aircraft, passengers, vehicles, and other relevant factors based on the facility being evaluated. This evaluation criterion will identify any deficiencies in aircraft delay, airfield circulation, passenger convenience, and other relevant factors.

Cost Factors - Estimates of the development costs for major alternatives evaluated in this study were prepared. These cost estimates were then used as a basis for comparing the cost-effectiveness of various alternatives.

Environmental Factors - Environmental factors that were analyzed in this study focused on major issues such as noise, air quality, land use impacts, and various other factors, where they were deemed relevant. Evaluation of these environmental factors identified development alternatives that minimized environmental disruption.

Implementation Feasibility - There are often factors, both tangible and intangible, that impact an airport's ability to implement certain development schemes. Community and political acceptance are examples of just a couple of factors that were considered in this analysis. Alternatives for various facility requirements identified in this study were analyzed based on the relative feasibility of their implementation.

Alternative plan concepts were also evaluated based on long-range planning (i.e., beyond the 20-year planning horizon) benefits. Long-range planning benefits are factored in throughout the evaluations.

It is important to note that there are inherent contrasts among the evaluation criteria used in this analysis; for instance, those alternatives providing the most long-term operational flexibility at the Airport are frequently not the alternatives that are the most financially or politically feasible. Due to these contrasts, a composite evaluation of each alternative was developed based on the individual evaluation criterion presented above. The development recommendations contained in this chapter of the Master Plan Update represent the alternative plan concepts for each facility requirement, that based on the composite evaluation, were evaluated most favorably.

4.3 Airfield Facilities

Airfield requirements addressed in Chapter Three include the Runway 11/29 Terminal conflict, the Runway 11/29 and Runway 16/34 intersection, a requirement for additional taxiways, and an ultimate Runway 7/25 length of 7,300 feet. This section will present alternatives for each of the above mentioned airfield facility requirements as well as a summary of the associated cost estimates which are presented in **Tables 4-1** and **4-2**.

4.3.1 Runway 11/29 -Passenger Terminal Building Conflict

Airfield/terminal deficiencies were cataloged in Chapter Three. Given that the existing terminal building is currently located in the transitional surface of Runway 11/29, alternatives have been developed to remedy the situation. Furthermore, if Runway 11/29 were ever to be upgraded from a B-II runway to a C-II or C-III runway, the existing terminal building would encroach into the larger object free area.

Runway 11/29 Alternative 1 is shown in **Exhibit 4-1**. This alternative includes a Runway 11/29 shift of approximately 2,000 feet to the northwest along the existing runway centerline. It is important to note that the 2,000 foot shift is a 'worst-case' scenario and that a detailed terminal instrument procedures (TERPs) analysis will be completed during pre-design to evaluate the maximum runway shift required. The parallel taxiway is extended to the northwest along the existing taxiway; taxiway centerline to runway centerline separation would be 400 feet. This runway shift moves the Federal Aviation Regulation (FAR) Part 77 transitional surface, which allows the terminal building to remain in its existing location. Under the existing runway design criteria, the object free area for Runway 11/29 is 500 feet wide and 300 feet beyond the end of the runway. The OFA would remain 500 feet wide by 300 feet after the shift. However, there is sufficient room to accommodate expanding the OFA to 800 feet wide if a non-precision approach was installed on Runway 29 at a later date. The land to be used for this runway extension is currently owned by the Airport and is farmed. This land would be taken out of farming. The cost of implementing this alternative is $4,666,000.

Runway 11/29 Alternative 2 is shown in **Exhibit 4-2**. This alternative includes a runway shift of 100 feet to the northeast. The runway threshold would remain in the existing location, however, the shift to the northeast would remove the passenger terminal building outside of the transitional surface. This alternative would not provide the required room to expand the OFA to 800 feet wide, therefore, the runway would not be able to accommodate a future runway non-precision upgrade. The existing runway pavement would have to be removed. The existing taxiway system would remain and no changes or expansions to the taxiway system would be required. The land to be used for the runway shift is currently owned by the Airport and supports airfield operations. The cost of implementing this alternative is $3,999,000.

Runway 11/29 Alternative 3 is shown in **Exhibit 4-3**. This alternative includes a runway shift of 400 feet to the northeast. The existing runway would become the full length parallel taxiway for Runway 11/29 and provide 400-foot runway centerline to taxiway centerline separation. This alternative can support the existing OFA dimensions (500 feet wide) and an increased OFA (800 feet wide). The land

Table 4-1

Summary of Cost Estimates for Runway 11/29 Improvement Alternatives

Items	Alternative 1	Alternative 2	Alternative 3
Pavement Removal	$0	$608,000	$0
Asphalt Concrete Pavement	$543,000	$772,000	$841,000
Crushed Aggregate Base Course	$408,000	$579,000	$631,000
Sub Base Course	$245,000	$348,000	$379,000
Unclassified Excavation	$1,750,000	$248,000	$379,000
Drainage	$287,000	$196,000	$211,000
Electrical			
Runway lighting	$250,000	$250,000	$250,000
Taxiway lighting	$250,000	$0	$250,000
NAVAIDs	$0	$0	$0
Contingencies & Engineering (25%)	$933,000	$750,000	$735,000
TOTAL	$4,666,000	$3,999,000	$3,676,000

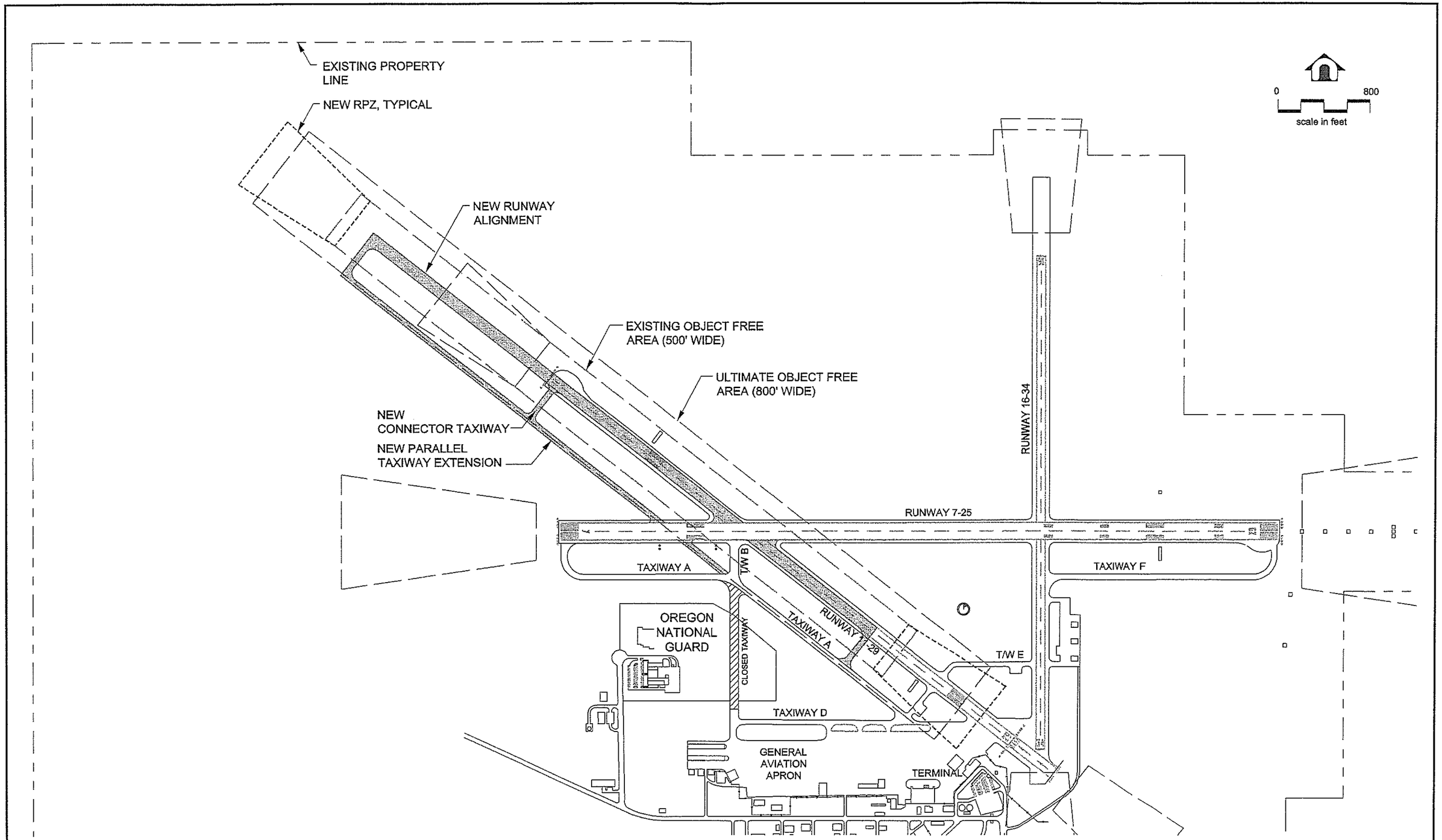
Source: David Evans and Associates Inc, 2001.

Table 4-2

Summary of Cost Estimates for Other Airfield Alternative Improvements

Items	Runway 11/29 & 16/34 Intersection Improvements	Taxiway Improvements	Ultimate Runway 7/25 Extension
Pavement Removal	$42,000	$0	$0
Asphalt Concrete Pavement	$45,000	$121,000	$434,000
Crushed Aggregate Base Course	$7,000	$91,000	$378,000
Sub Base Course	$4,000	$55,000	$160,000
Unclassified Excavation	$10,000	$48,000	$140,000
Drainage	$25,000	$62,000	$81,000
Electrical			
Runway lighting	$0	$0	$75,000
Taxiway lighting	$25,000	$44,000	$32,000
Sinage, hand holds, misc.	$0	$76,000	$107,000
NAVAIDs	$0	$0	$1,000,000
Contingencies & Engineering (25%)	$40,000	$124,000	$603,000
TOTAL	**$198,000**	**$621,000**	**$3,010,000**

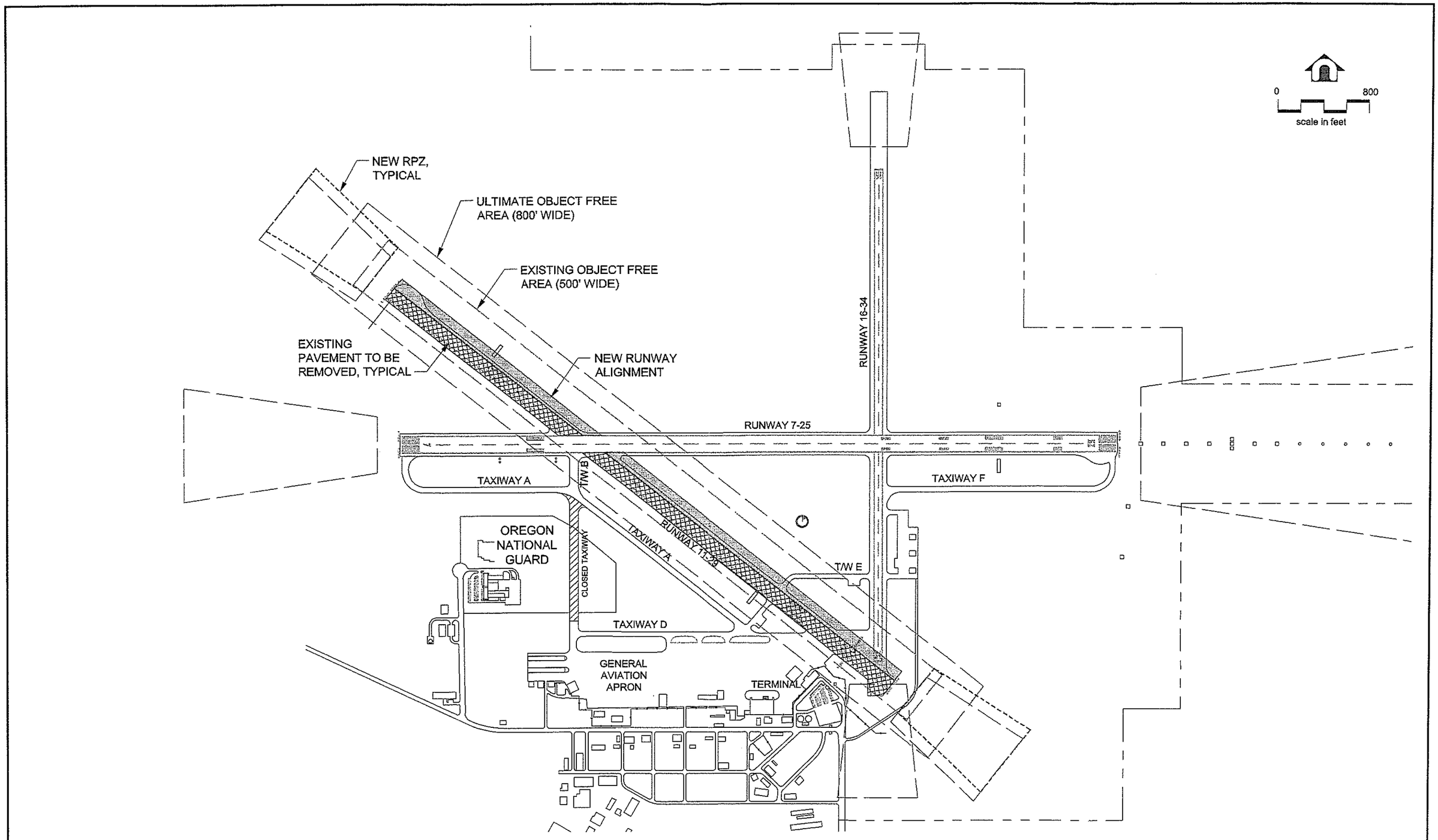
Source: David Evans and Associates, Inc., 2001



Eastern Oregon Regional Airport at Pendleton Master Plan Update

RUNWAY 11/29 ALTERNATIVE 1 - SHIFT 2000 FEET NORTHWEST

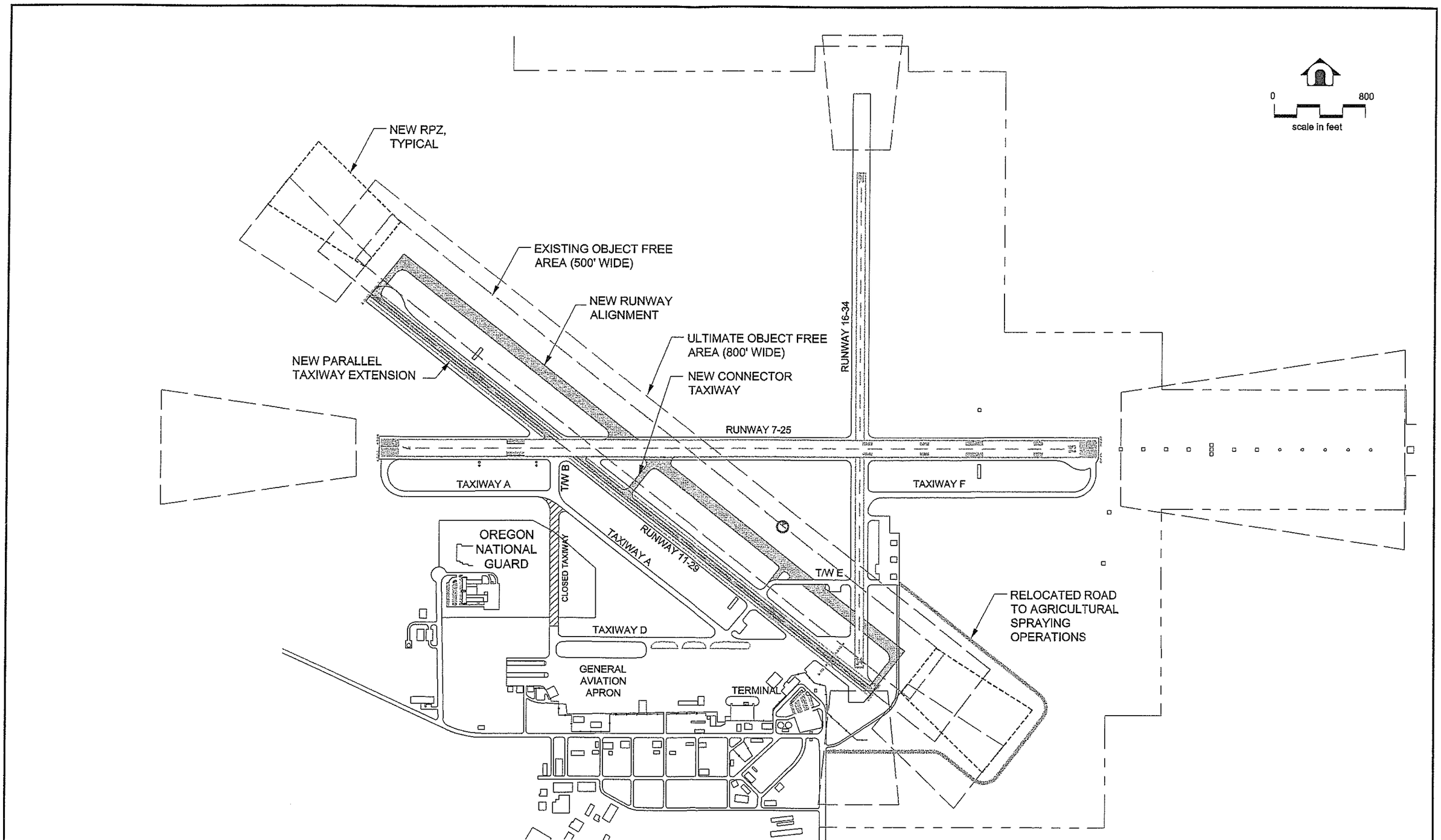
Exhibit 4-1



Eastern Oregon Regional Airport at Pendleton Master Plan Update

RUNWAY 11/29 ALTERNATIVE 2 - SHIFT 100 FEET NORTHEAST

Exhibit 4-2



Eastern Oregon Regional Airport at Pendleton Master Plan Update

RUNWAY 11/29 ALTERNATIVE 3 - SHIFT 400 FEET NORTHEAST

Exhibit 4-3

is currently used for airfield uses. The existing road to the agricultural spraying operations area would be required to be relocated to remove it from the relocated runway's existing and ultimate OFA. The cost of implementing this alternative is $3,676,000.

All three Runway 11/29 alternatives would likely require an Environmental Assessment (EA) be completed because of the magnitude of the project. FAA Order 5050.4A, Airport Environmental Handbook, requires an EA be completed if the project is a major runway extension or a new runway.

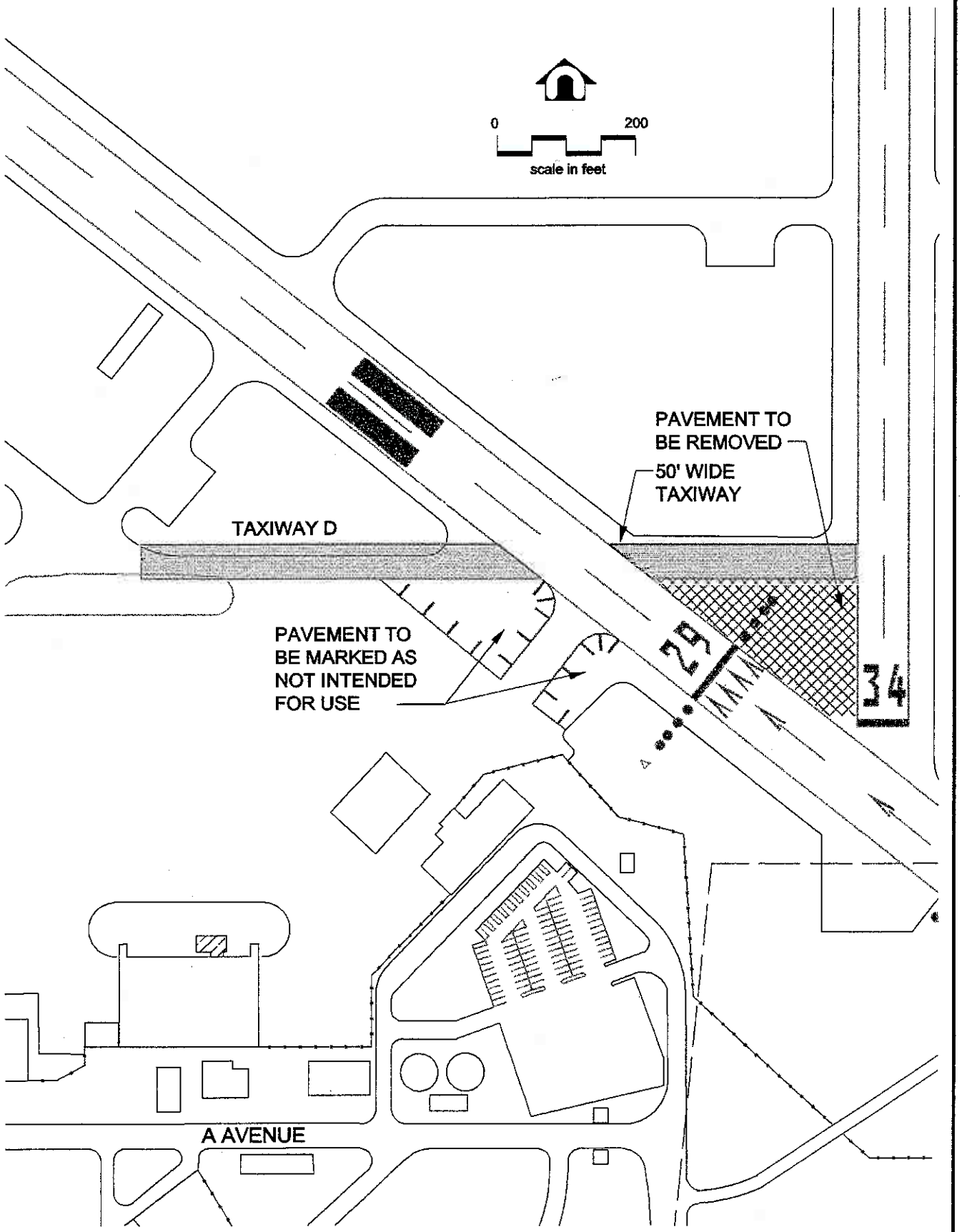
It is recommended that the Airport implement Alternative 1 to rectify the terminal/airfield conflict. Alternative 1 meets the objectives of removing the terminal building from the transitional surface and limiting the impacts to other facilities on the airfield while making maximum use of the existing alignment and pavement. Alternative 1 does not require the relocation of the service road to the agricultural spraying operations area like Alternative 3 or complete removal of pavement of the existing runway like Alternative 2. The Airport has adequate land for the extension to the northwest.

4.3.2 Taxiways

The Taxiway D and Runway 11/29 intersection is quite large and has potential to allow runway incursions to occur. Proposed improvements to this intersection are depicted in **Exhibit 4-4**. It is recommended that the excess pavement located to the southwest of Runway 11/29 be removed and Taxiway D be constructed to a 50-foot wide taxiway from Taxiway E to Runway 34. A 50-foot wide taxiway on this portion of the Airport is applicable because air carrier aircraft would use this portion of the airfield to conduct their operations. By removing the excess pavement south of Taxiway D the taxiway system would be improved to provide a clear and concise taxiway system to and from the runways and terminal area. This would also reduce pilot confusion and the potential for runway incursions, making the airfield a safer operating environment. The cost of implementing this alternative is $198,000.

The second part of improving the taxiway system at the Eastern Oregon Regional Airport would include the construction of a new taxiway, east of the Oregon National Guard facility (see **Exhibit 4-5**). Taxiway B was closed when the Oregon National Guard relocated to this part of the airfield, however, Taxiway B was used by the general aviation pilots to reach the general aviation development area. Constructing a new taxiway to the east of the closed taxiway would open up taxiway access to the general aviation hangars, FBO's, and apron. This would reduce the need of the general aviation pilots to traverse the entire length of Taxiway A (heading towards the passenger terminal and air carrier apron) and then taxi on Taxiway D to the general aviation area. This would effectively serve to segregate air carrier and general aviation taxiing operations.

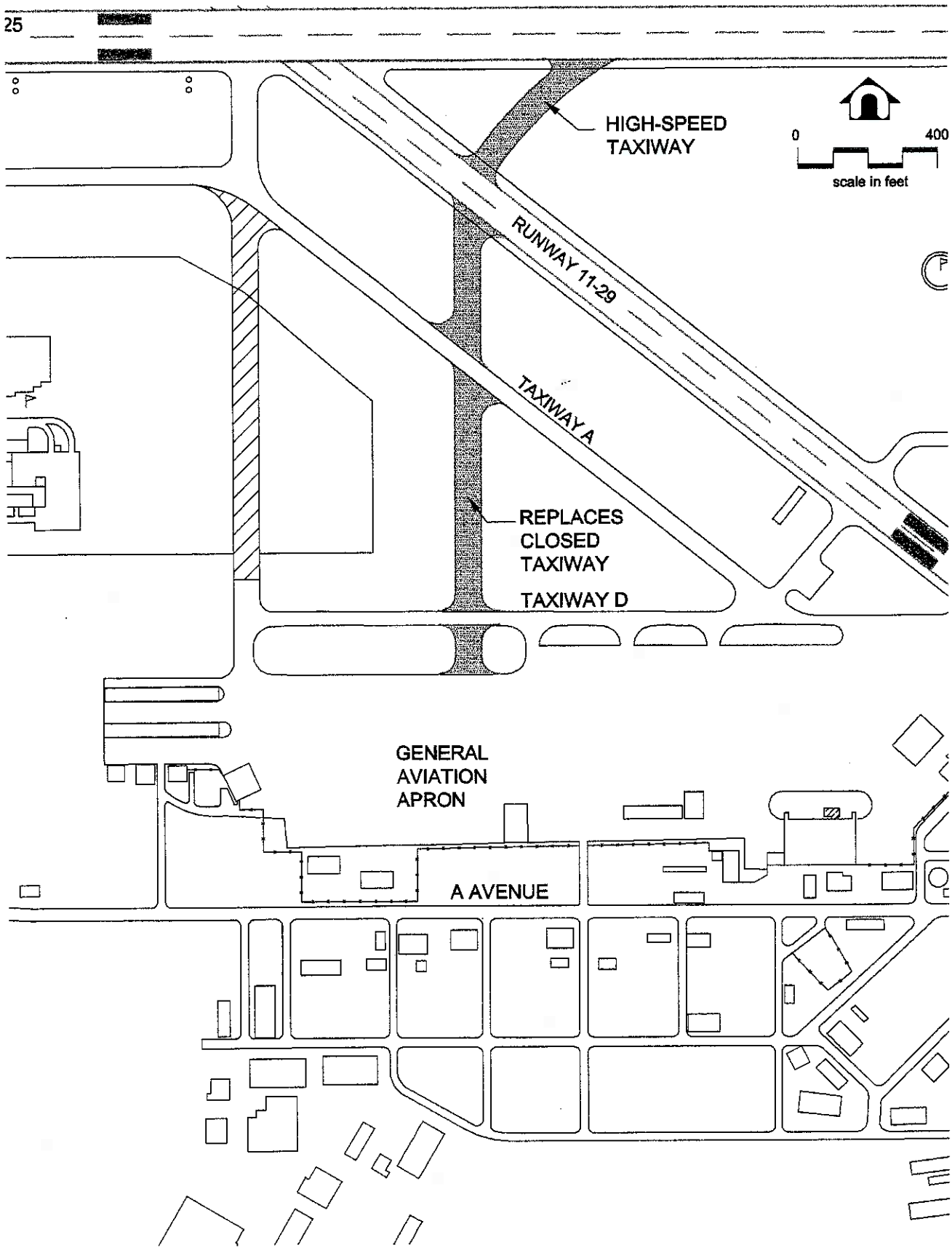
Another phase of creating a more efficient taxiway system would be the construction of a high speed taxiway off of Runway 25 (see Exhibit 4-5). This taxiway exit aircraft from Runway 25, across Runway 11/29 to Taxiway A, at which point aircraft could traverse Taxiway A to the air carrier terminal on the new taxiway (described in the above paragraph) to the general aviation development area. The cost of implementing the two taxiway improvements shown in Exhibit 4-5 is approximately $621,000.



Eastern Oregon Regional Airport at Pendleton Master Plan Update

RUNWAY 11/29 - RUNWAY 16/34 INTERSECTION IMPROVEMENTS

Exhibit 4-4



Eastern Oregon Regional Airport at Pendleton Master Plan Update	**TAXIWAY IMPROVEMENTS**	Exhibit 4-5

4.3.3 Ultimate Runway Length for Runway 7/25

As documented in Chapter Three, the existing runway lengths at the Airport are adequate for the planning period. However, to accommodate ultimate aircraft demand, the Airport is preserving the land to the west of Runway 7/25 to allow for a runway length of 7,300 feet (see **Exhibit 4-6**). One of the limiting factors in extending the runway to the west is the likely location of a secondary access road from I-84 (to be discussed in Section 4.8) to the Airport.

Extending Runway 7 1,000 feet to the west requires the relocation of the ODALS and the localizer. Also, Taxiway A would be extended to the west so the runway end would continued to be accessed by a parallel taxiway. The estimated cost to implement this project is $3,010,000.

4.4 Passenger Terminal Building

Expansion of the passenger terminal building is physically restricted to the east by Runway 11/29 and to the south by the automobile parking lot. The terminal building could be expanded to the north into the existing air carrier apron and to the west towards the old Oregon National Guard hangar. The Airport has sufficient room to expand the air carrier apron to the west, should it be required with any of the passenger terminal building alternatives.

Four alternatives were considered to address the long-term passenger terminal building requirements. The advantages and disadvantages of each alternative are discussed in the following sections. Expansion flexibility, construction costs, operational efficiency, operational disruptions, and physical limitations are the main criteria in determining the expansion alternatives of the passenger terminal building. Costs associated with each of the Passenger Terminal Buildings Alternatives are presented in **Table 4-3**. The alternatives are presented below.

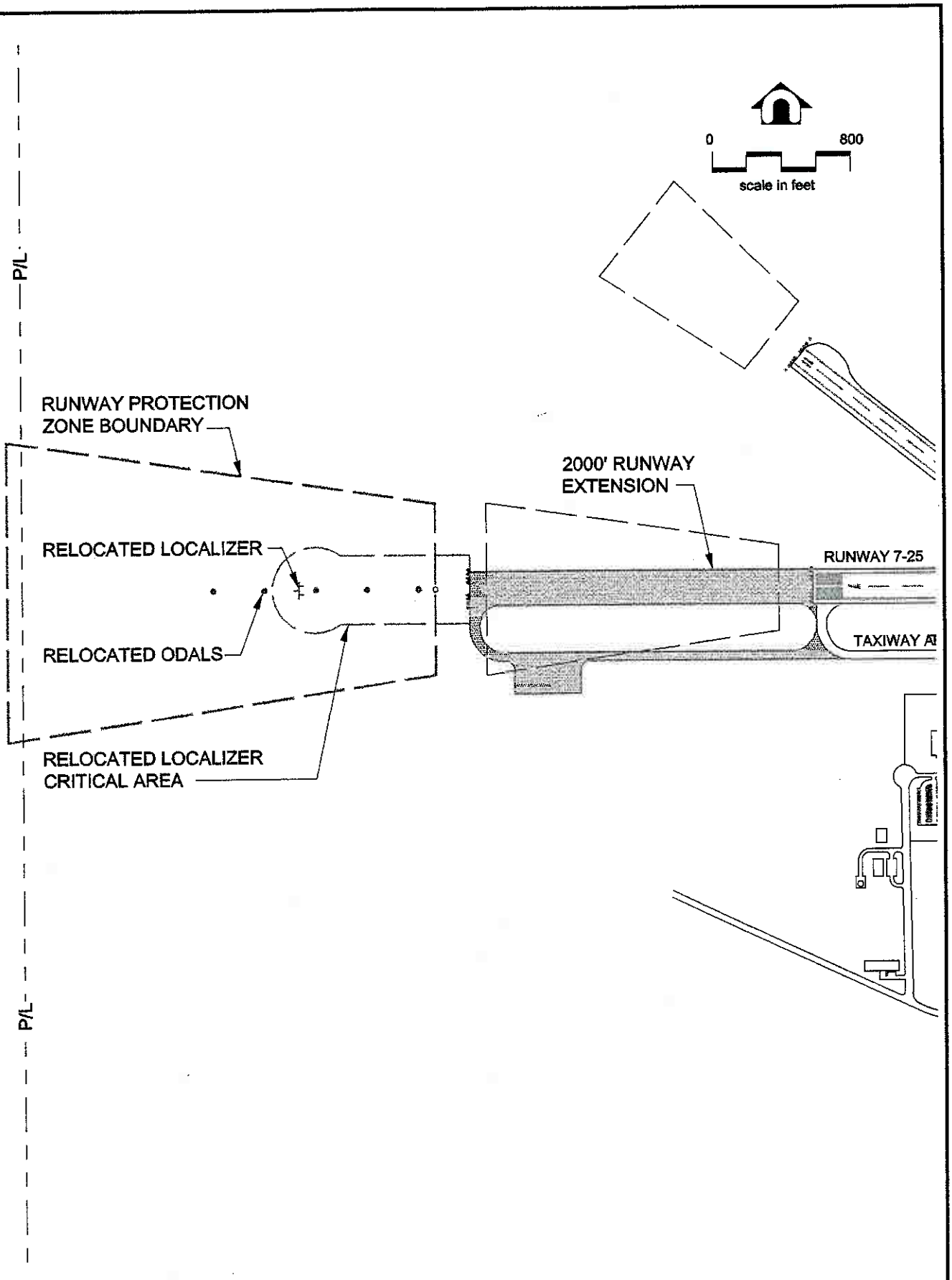
4.4.1 Passenger Terminal Building Alternative 1

Passenger Terminal Building Alternative 1, depicted in **Exhibit 4-7** keeps the terminal building in its existing location. The eastern portion of the terminal building that impacts the existing FAR Part 77 transitional surface for Runway 11/29 (as well as the ultimate OFA) is removed and these functions in that space are added to the western side of the building or as a second floor. This alternative allows space for three airlines and two rental car agencies to operate at the airport. The baggage claim area is expanded to include a conveyor belt type baggage system. Furthermore, the passenger holdroom is expanded.

Under this alternative the restaurant would be relocated to the second floor, overlooking the airfield. This alternative provides six leased areas in the terminal for various businesses.

Advantages to this alternative include:

- Future baggage claim expansion to the west is possible
- Expansion of the hold room is possible.



Eastern Oregon Regional Airport at Pendleton Master Plan Update

RUNWAY 7-25 ULTIMATE EXTENSION

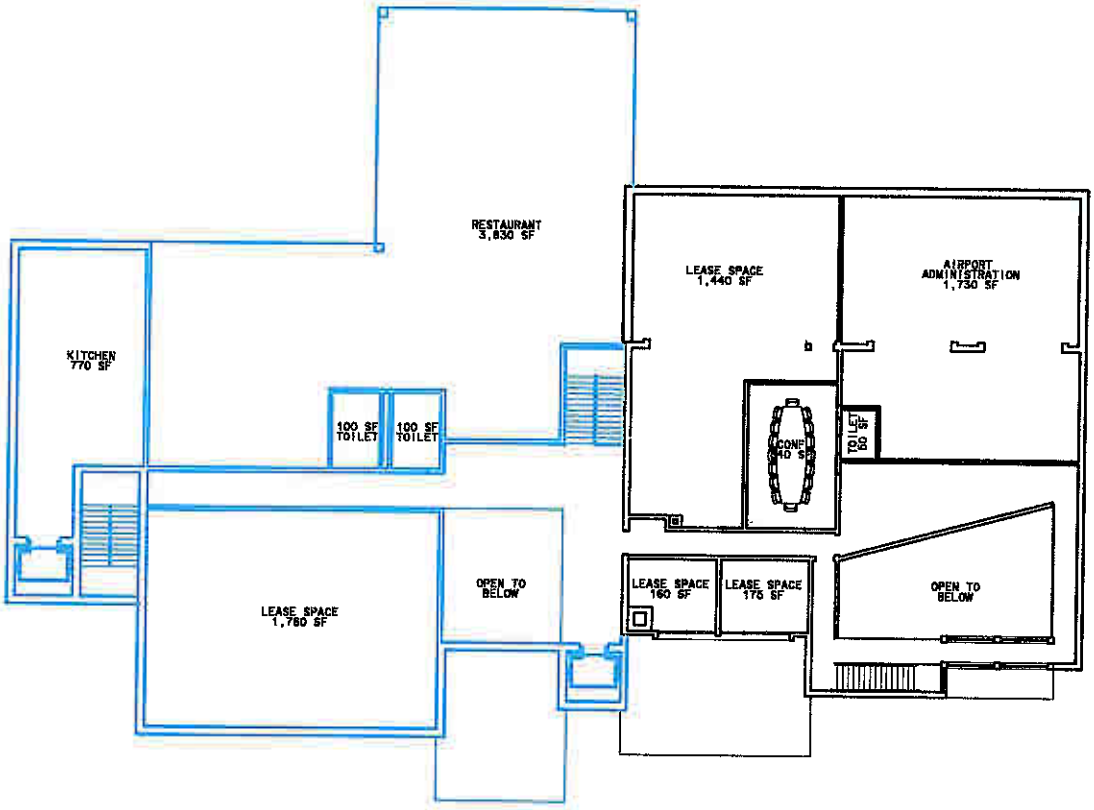
Exhibit 4-6

Table 4-3

Summary of Cost Estimates for Passenger Terminal Building Alternatives

Items	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Demolition of Building	$504,000	$504,000	$0	$819,000
Remodel of Building	$858,000	$858,000	$1,485,000	$0
Existing Structure Modifications				
New terminal construction	$3,855,250	$3,830,750	$1,017,800	$5,136,250
New kitchen construction	$173,250	$204,750	$0	$202,500
New tower construction	$0	$0	$0	$400,000
New elevators	$130,000	$130,000	$0	$65,000
Contingency & Engineering (25%)	$1,766,560	$1,768,800	$800,896	$2,675,591
TOTAL	$7,287,060	$7,296,300	$3,303,696	$9,298,341

Source: David Evans and Associates, Inc., 2001.



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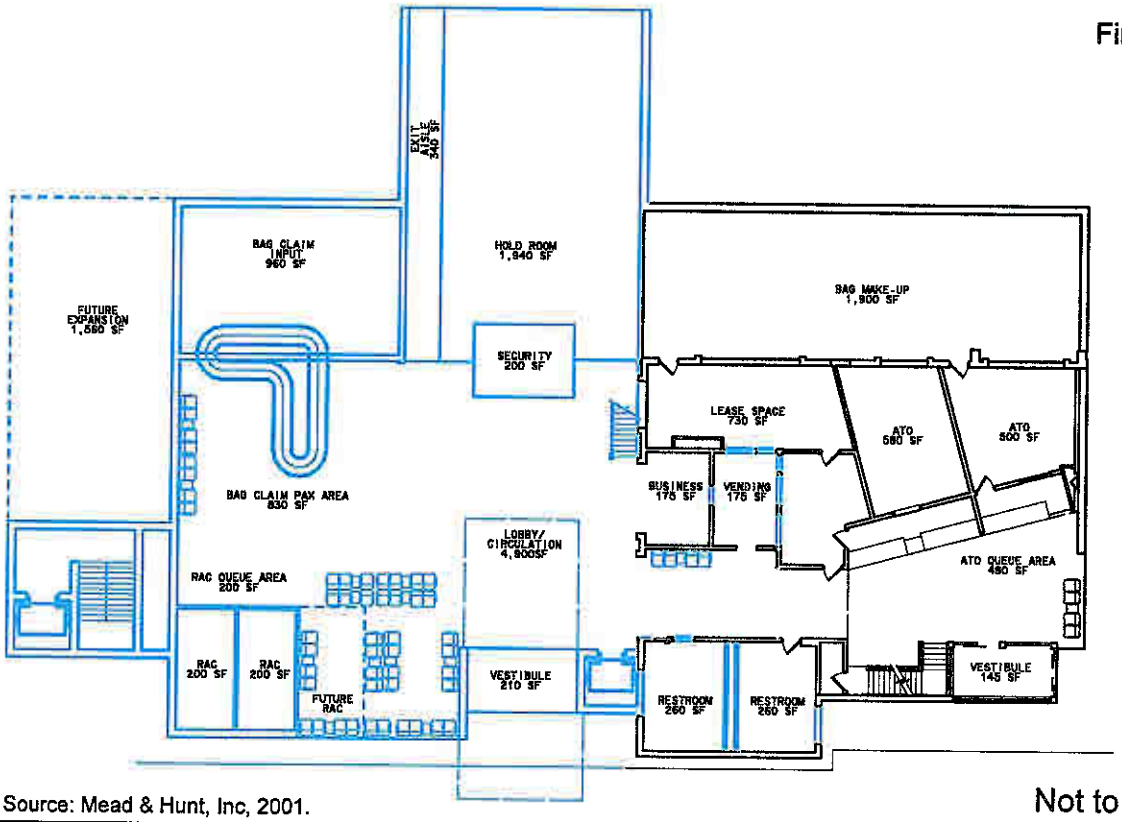


First Floor

Source: Mead & Hunt, Inc, 2001.

Not to scale.

Eastern Oregon Regional Airport at Pendleton Master Plan Update	**PASSENGER TERMINAL BUILDING ALTERNATIVE 1**	Exhibit 4-7

- Although limited, expansion of renal car space is possible.
- The compact configuration of the existing terminal is maintained, as are short walking distances.
- Increased leased space in the terminal, potential increasing revenue generation for the Airport.

Disadvantages to this alternative include:

- The third and fourth floors of the existing terminal building would be required to be removed.

Expansion options for this alternative would be bounded to the west by existing buildings and hangars, to the east by Runway 11/29, to the north by the aircraft apron, and to the south by the parking lot. However, buildings to the west could be relocated if the terminal building needed to be expanded beyond the projected expansion for the 20-year program. Phasing the terminal renovation would be critical so as to ensure seamless operational flow. The estimated cost for this alternative is $7,300,000.

4.4.2 Passenger Terminal Building Alternative 2

Passenger Terminal Building Alternative 2 seeks to provide similar use of the existing western portion of the terminal building (**Exhibits 4-8**). The main differences in this alternative as compared to Passenger Terminal Building Alternative 1 is the increase in leased space on the first floor, the decrease in airline ticket office total square footage, and the decrease in the hold room area. The restaurant would be relocated to the second floor and face the airfield. The dining area of the restaurant would be smaller than compared to Alternative 1, however, the kitchen space would be greater. Airport administration and leased spaces would be larger than that of alternative 1.

The advantages to this alternative are:

- Future baggage claim expansion to the west is possible.
- Expansion of the hold room is possible.
- Although limited, expansion of RAC is possible.
- The compact configuration of the existing terminal is maintained, as are short walking distances.
- Increased leased space in the terminal, potential increasing revenue generation for the Airport.

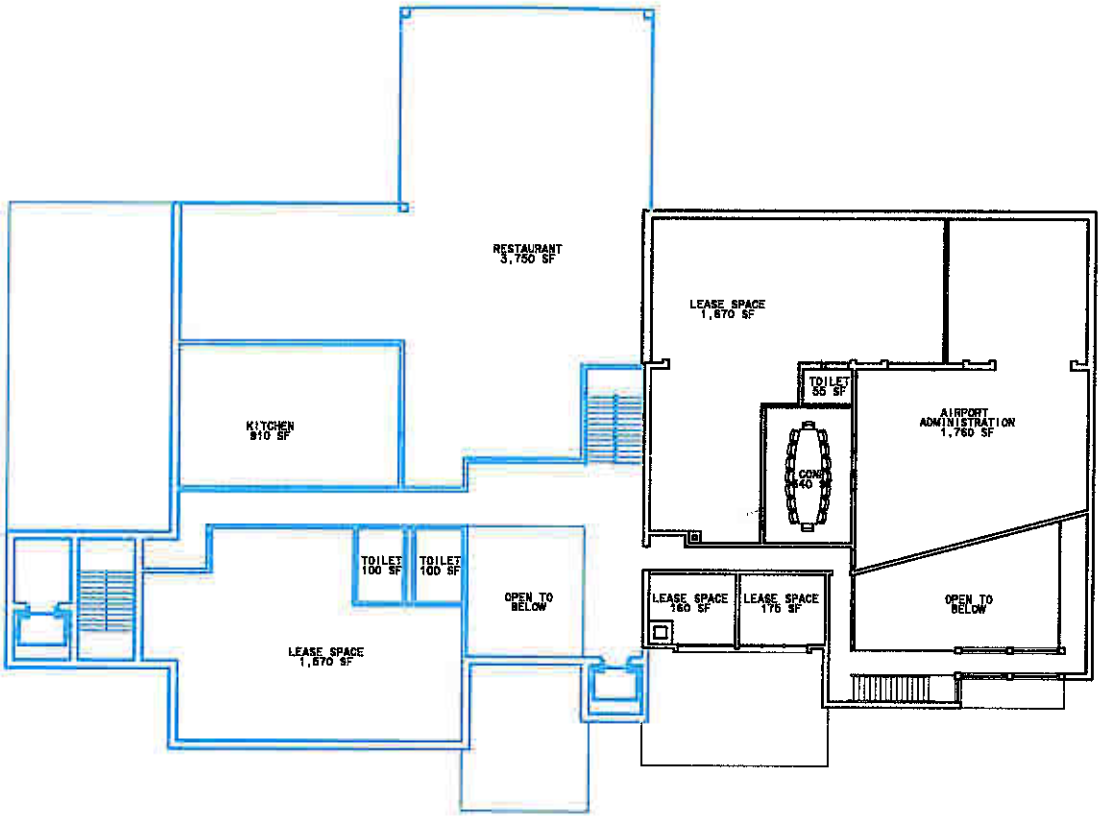
The disadvantages to this alternative are:

- The third and fourth floors of the terminal building would have to be removed.
- The airline ticket offices are smaller than in Alternative 1

Long-range expansion options for alternative 2 would be similar to those of alternative 1. Phasing the terminal renovation would be critical to ensure seamless operational flow. The estimated cost for this alternative is $7,300,000.

4.4.3 Passenger Terminal Building Alternative 3

This alternative for the passenger terminal building takes into account that the airfield/terminal conflict



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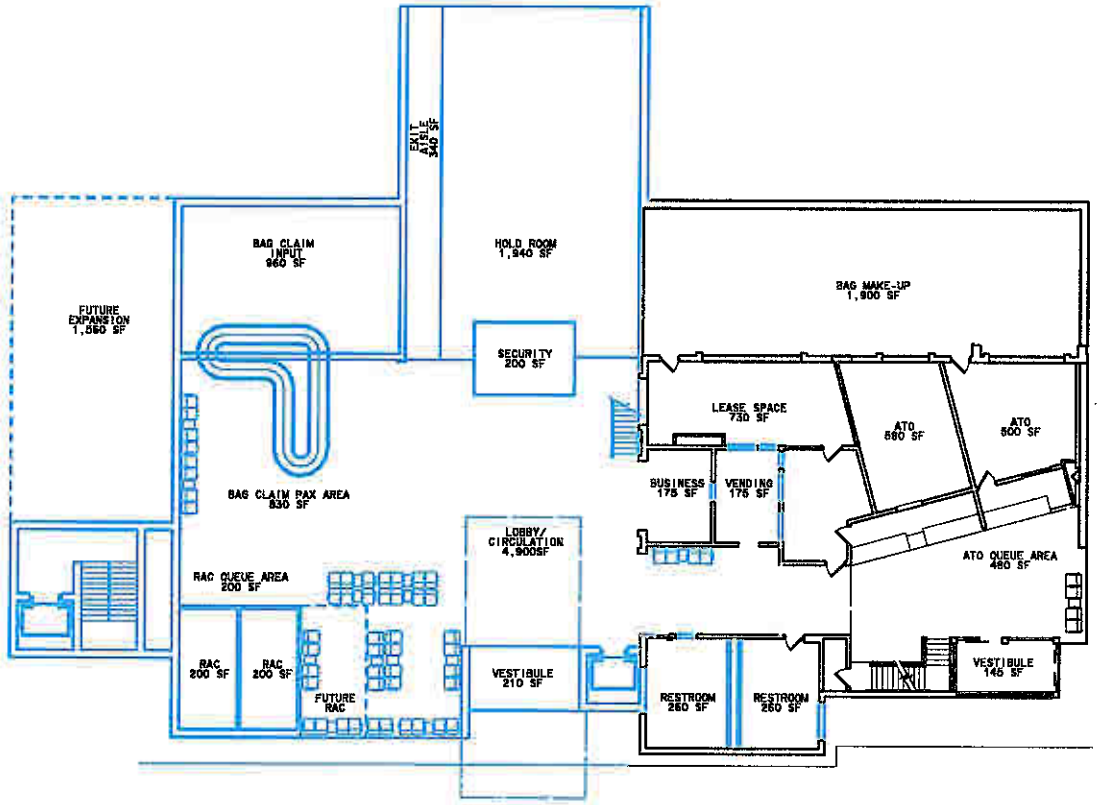

First Floor

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Source: Mead & Hunt, Inc, 2001.

Eastern Oregon Regional Airport at Pendleton Master Plan Update	**PASSENGER TERMINAL BUILDING ALTERNATIVE 2**	Exhibit 4-8

would be remedied by shifting Runway 11/29 as presented in Exhibit 4-1, therefore, the existing terminal building could remain in its existing location and configuration. This alternative presents a layout for providing for terminal facility requirements as presented in Chapter Three.

The existing footprint of the building would remain, however, the floor plan as presented in **Exhibit 4-9**, would reconfigure the western portion of the building to allow for two airline ticket office areas; two rental car counters, and a new baggage claim area. There would be expansion capabilities to the north to accommodate a third airline ticket office or an expansion of the hold room. The existing rental car counters would be relocated to the south wall of the existing terminal building. These relocations would provide adequate space for the restaurant to be expanded in the future. Also, some additional lease space would be added to the first floor. the airline ticket offices to the western side of the terminal building. This area would also have a new baggage claim area added with a baggage belt.

The second floor would accommodate the airport administration, the Greater Eastern Oregon Economic Development Corporation and lease space for a potential business. The second floor would also include a conference room.

Long-range expansion of the existing terminal site could proceed towards the west. The phasing and construction of this alternative would require careful consideration and timing to minimize the inconvenience to the passengers. The estimated cost for this alternative is $3,300,000.

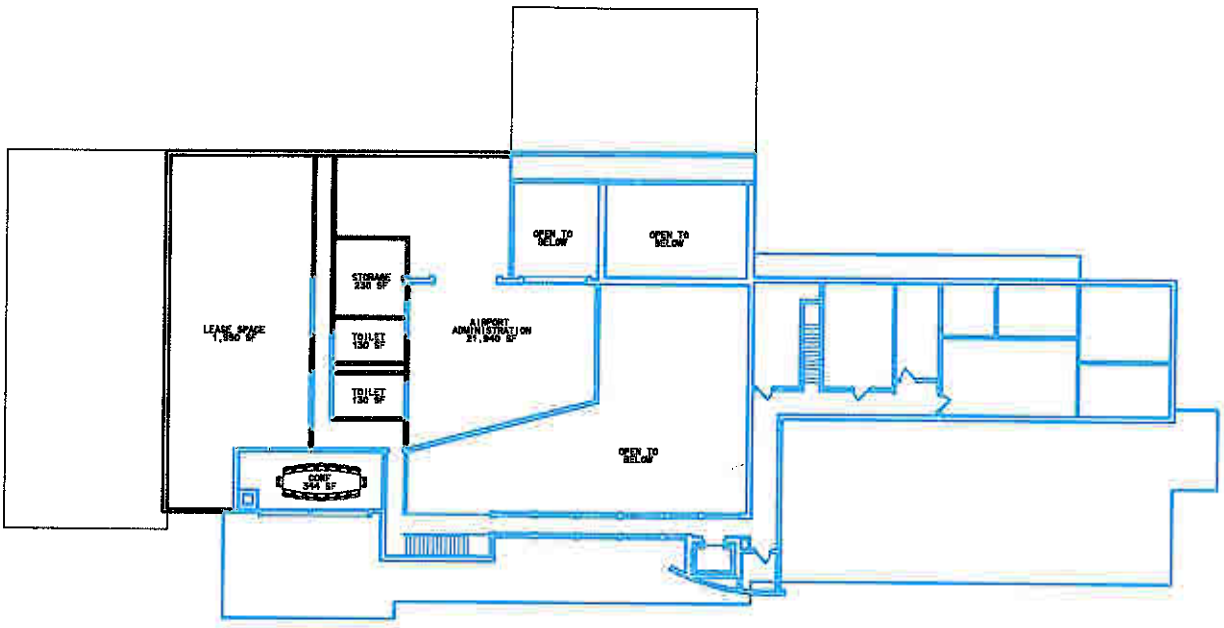
4.4.4 Passenger Terminal Building Alternative 4

This alternative for the passenger terminal building would relocate the passenger terminal building to a new area of the airfield. **Exhibit 4-10** and **4-11** depicts the location, along with the necessary infrastructure, such as a new terminal loop road and public parking facilities.

The advantages of this alternative area:

- The new terminal would be designed to fit the program and needs of the Airport and the projected growth under the various demand scenarios.
- The new terminal area would not impact the design standards and protected surfaces for the runways at the Airport; Runway 11/29 would not be hampered by the terminal building if the Airport wanted to upgrade the approach surface.
- Buildings costs can be better controlled and evaluated with new construction.
- The Airport could maintain operations at the existing terminal while the new terminal was being constructed; this would segregate aircraft operations and construction equipment.
- Future expansions for the terminal building would not be hindered by airfield or existing landside constraints.
- A cohesive and regional architectural concept could be employed.
- The ATCT would be separated from the passenger terminal building.

The disadvantages to relocating the terminal building include:



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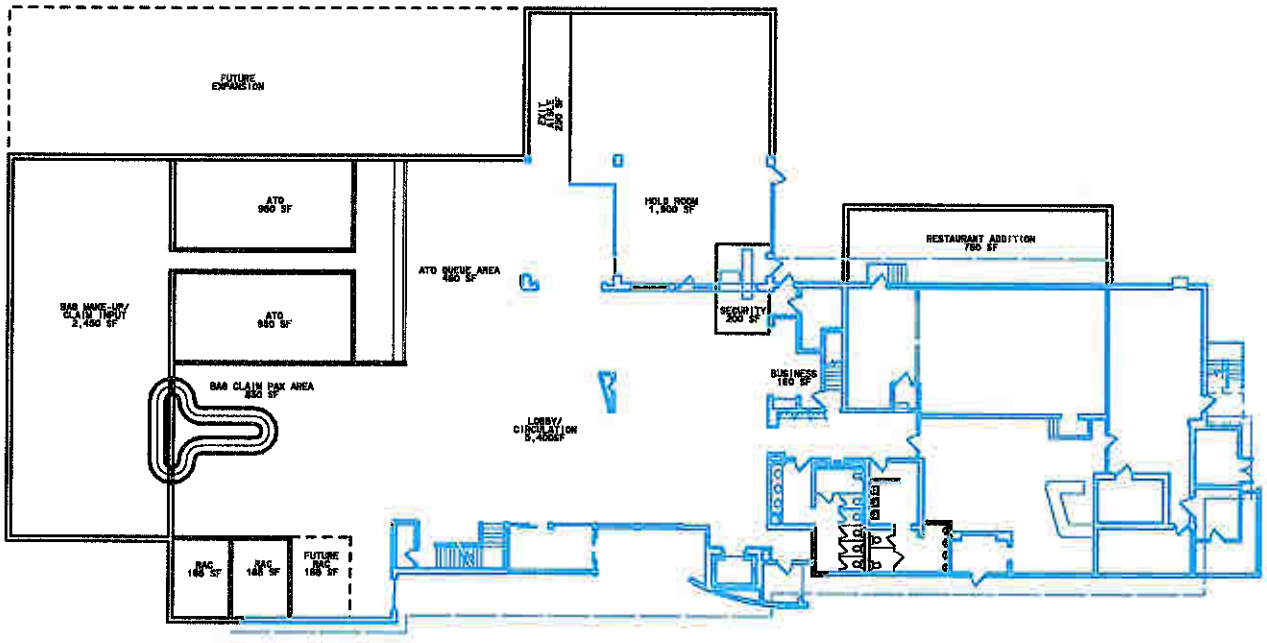

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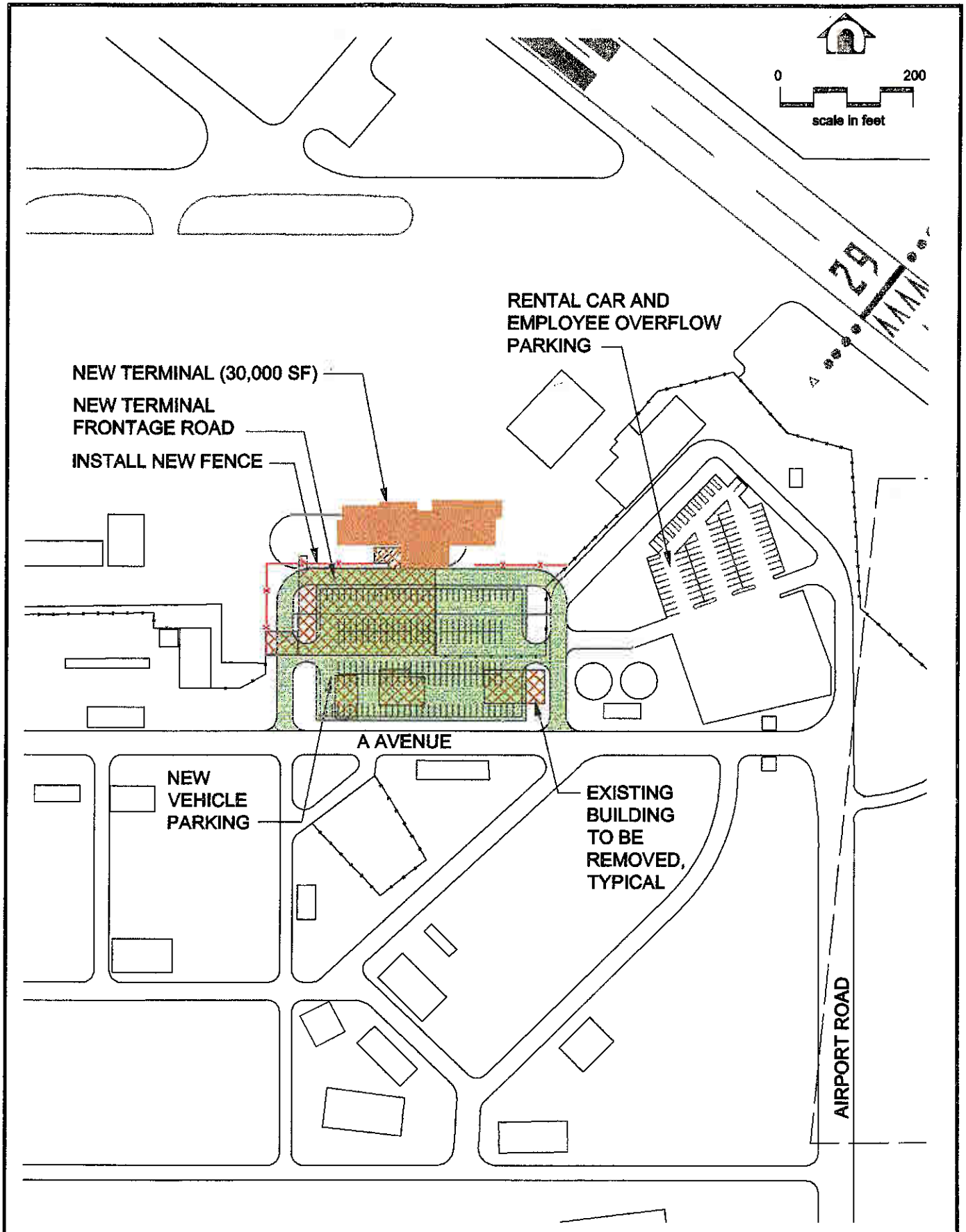
Source: Mead & Hunt, Inc, 2001.

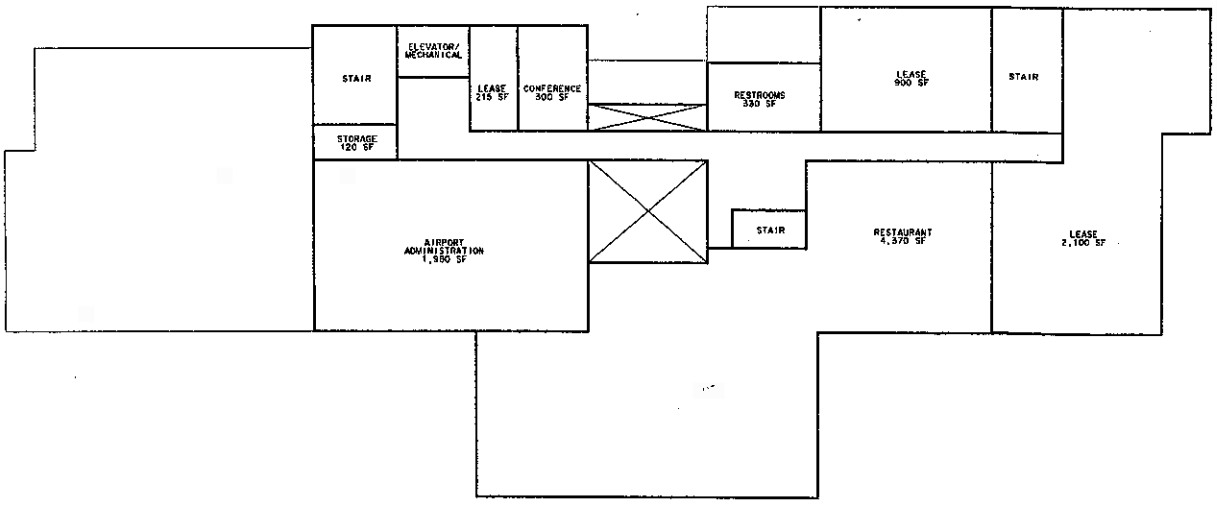
Eastern Oregon Regional Airport at Pendleton Master Plan Update	**PASSENGER TERMINAL BUILDING ALTERNATIVE 3**	Exhibit 4-9



Eastern Oregon Regional Airport at Pendleton Master Plan Update

PASSENGER TERMINAL BUILDING ALTERNATIVE 4

Exhibit 4-10



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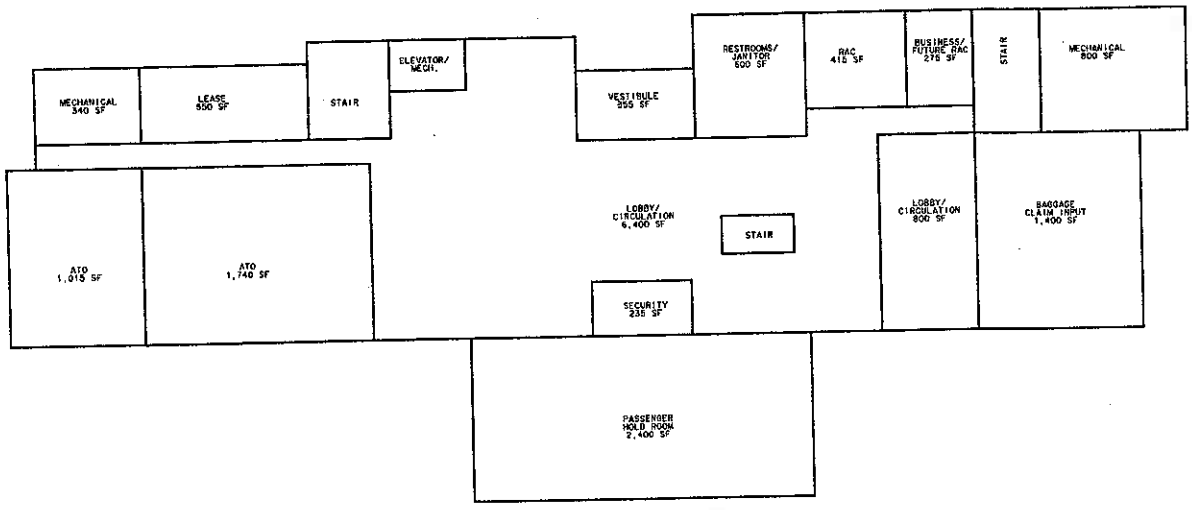

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Source: Mead & Hunt, Inc, 2001.

Eastern Oregon Regional Airport at Pendleton Master Plan Update	**PASSENGER TERMINAL BUILDING ALTERNATIVE 4**	Exhibit 4-11

- Federal funding for a new terminal building would be less than federal funding for the airfield alternatives.
- Infrastructure to the new terminal would need to be constructed or reconstructed.
- Buildings removed from the site would have to be relocated to other areas on the Airport.

The cost to implement this alternative would be $9,300,000.

The recommended passenger terminal alternative is Alternative 3. The costs associated with the large areas which need to be remodeled or removed from the airfield/terminal conflict are greater than the costs of the runway project. Furthermore, the Airport has recently undertaken various improvements to the existing terminal building. These improvements to the terminal building would need to be removed to accommodate the runway remaining in its existing location.

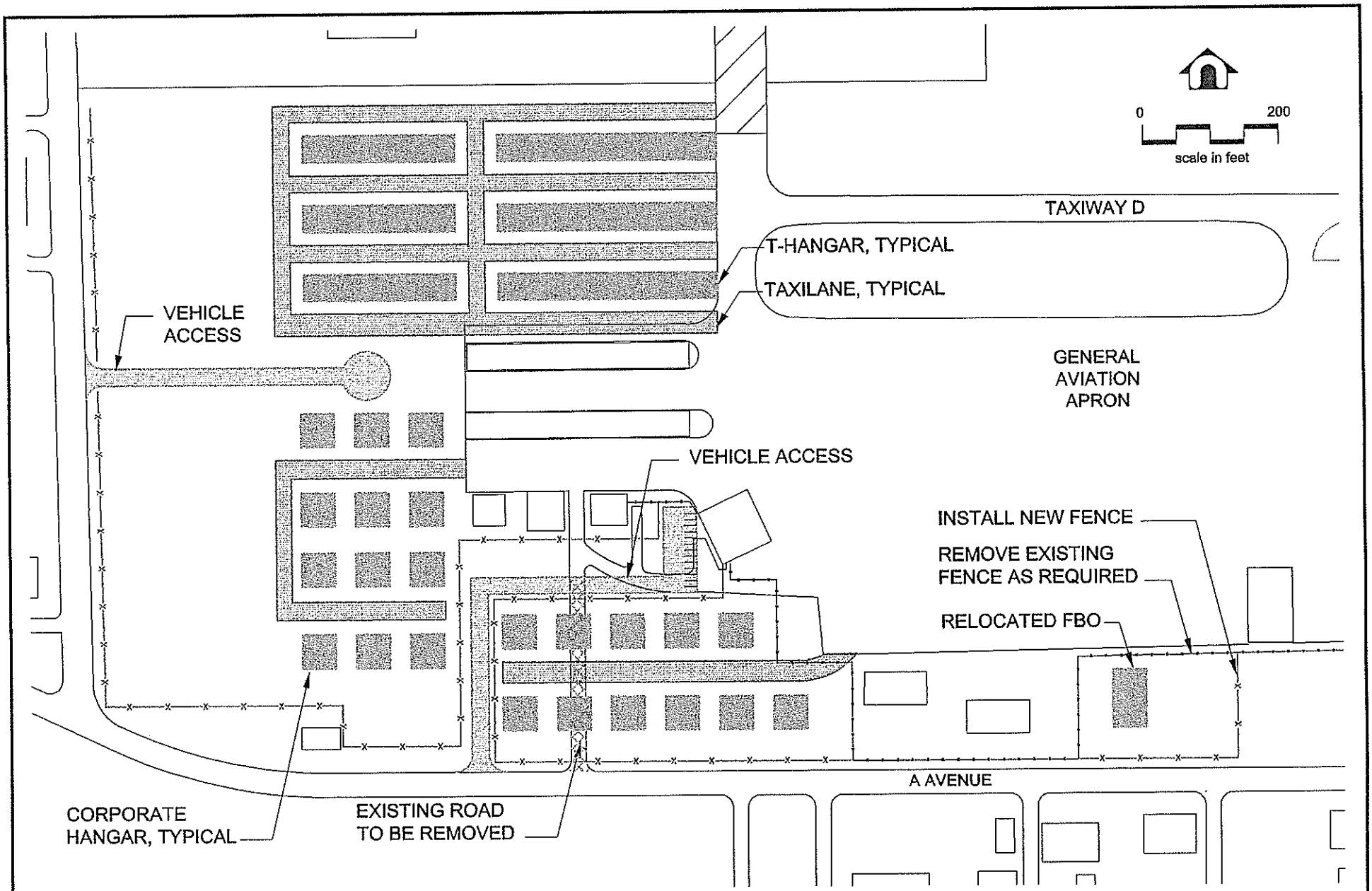
4.5 General Aviation Facilities

Development of general aviation facilities such as T-hangars and conventional hangars has occurred on the southwest side of the Airport. There are currently 28 T-hangar units and five conventional hangars located in this area. The area has adequate open land to accommodate the hangar needs at the Airport for the long-term. General Aviation Development Alternatives 1 through 3 are presented in **Exhibits 4-12** thru **4-14**, respectively. The costs for developing each alternative are presented in **Table 4-4**.

Each of the general aviation development alternatives keep the general aviation area in its present location. There is adequate land and airfield access to accommodate more than what is projected to be needed for the 20-year planning period. Alternative 1 provides for 11 additional T-hangar buildings; 38 additional conventional hangars; and approximately 12 automobile parking spaces. Alternative 2 provides for 11 T-hangar buildings; 32 conventional hangars; and approximately 52 automobile parking spaces. Alternative 3 (which reflects what is shown on the current ALP) provides space for 2 additional T–hangar buildings, 17 additional conventional hangars, and approximately 13 automobile parking spaces.

In general, it is recommended that all aircraft storage hangars be consolidated at the southwest GA site. GA alternatives 1 and 2 maximize the utilization of the site, while Alternative 3 does not (since a proposed vehicular access road bisects the site). Furthermore, there is one FBO located on the ramp area near the ARFF/SRE development area. This FBO should be relocated further west to allow this apron to remain open for ARFF/SRE operations and provide adequate space between air carrier and general aviation operations as the terminal building expands towards the west. Relocating this FBO is depicted in Alternatives 1 and 2. Lastly, there is currently one city-owned T-hangar located just to the north of the existing ARFF building. With the proposed expansion of the ARFF/SRE development area, it is recommended that the T-hangar be relocated to the general aviation development area, which is depicted in all three alternatives. This would further consolidate the general aviation operations at the Airport.

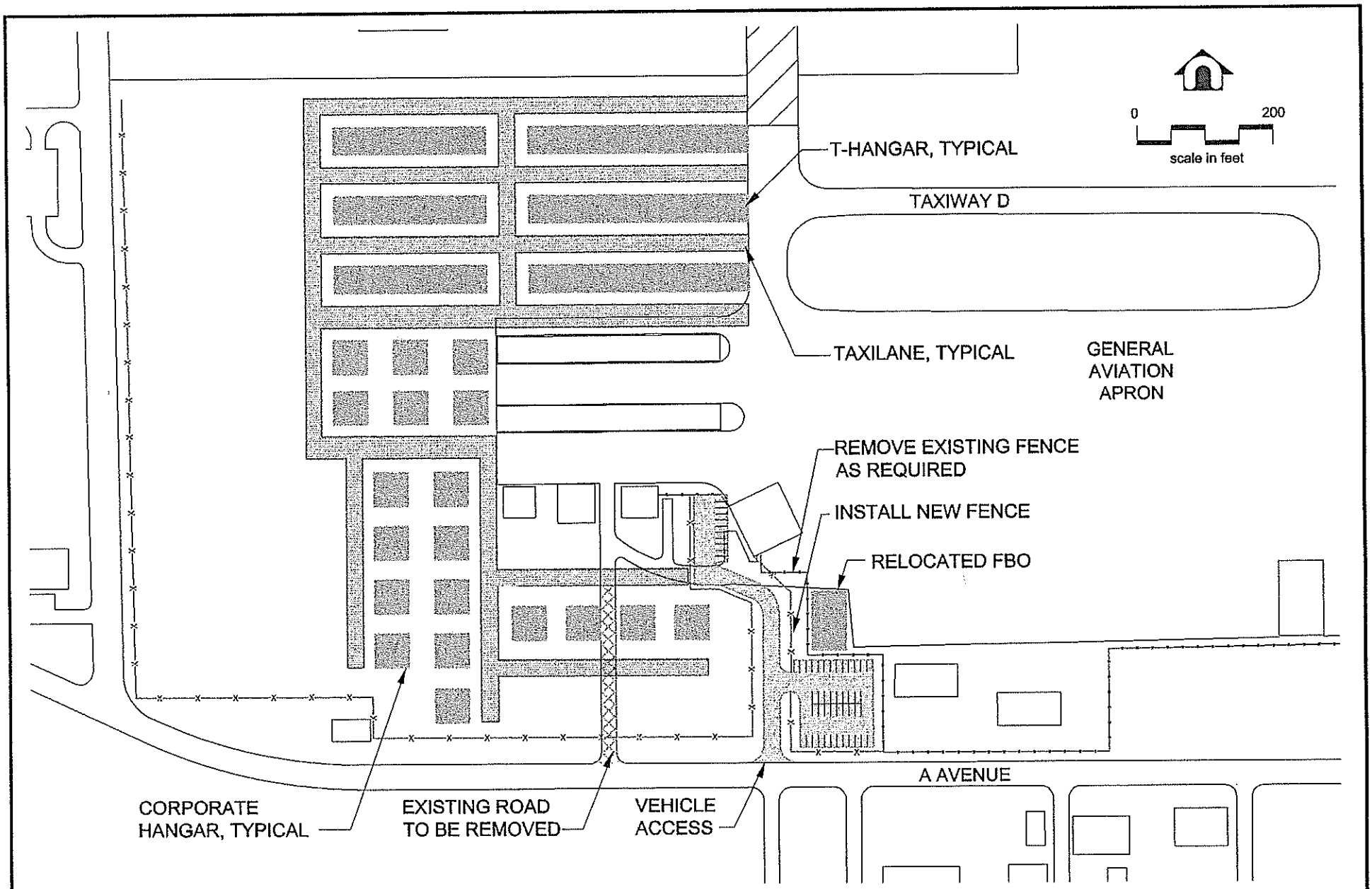
The relative advantages of the GA development alternatives are discussed below.



Eastern Oregon Regional Airport at Pendleton Master Plan Update

GENERAL AVIATION DEVELOPMENT ALTERNATIVE 1

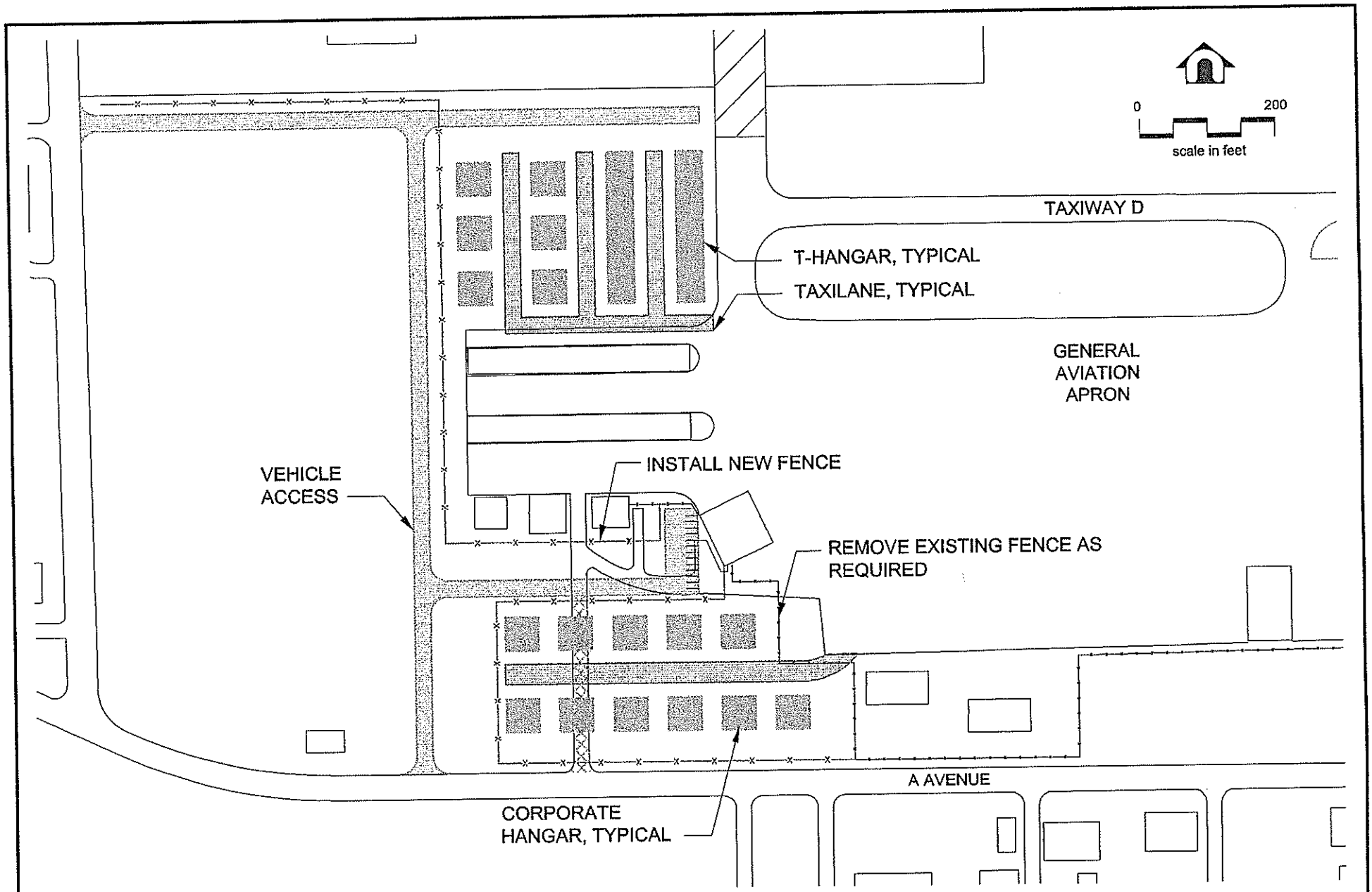
Exhibit 4-12



Eastern Oregon Regional Airport at Pendleton Master Plan Update

GENERAL AVIATION DEVELOPMENT ALTERNATIVE 2

Exhibit 4-13



Eastern Oregon Regional Airport at Pendleton Master Plan Update

GENERAL AVIATION DEVELOPMENT ALTERNATIVE 3

Exhibit 4-14

Table 4-4

Summary of Cost Estimates for General Aviation Development Alternatives

Items	Alternative 1	Alternative 2	Alternative 3
Taxilane Development			
Pavement Removal	$10,700	$10,700	$0
Taxilane/Road/Apron	$278,000	$318,000	$345,000
Fencing	$56,000	$42,000	$41,000
Utilities	$35,000	$35,000	$30,000
Drainage	$125,000	$175,000	$150,000
Relocated FBO			
Building	$600,000	$600,000	$0
Contingencies & Engineering (25%)	$276,000	$295,000	$142,000
TOTAL	$1,380,700	$1,475,700	$708,000

Source: David Evans and Associates, Inc., 2001.

Table 4-5

Summary of Cost Estimates for Agricultural Spraying Operation Pads Alternatives

Items	Alternative 1	Alternative 2	Alternative 3
Asphalt Concrete Pavement	$95,000	$69,000	$103,000
Crushed Aggregate Base Course	$71,000	$52,000	$78,000
Sub Base Course	$43,000	$31,000	$47,000
Unclassified Excavation	$38,000	$27,000	$41,000
Drainage	$23,000	$23,000	$23,000
Containment	$50,000	$100,000	$100,000
Contingencies & Engineering (25%)	$80,000	$76,000	$98,000
TOTAL	$400,000	$378,000	$490,000

Source: David Evans and Associates Inc., 2001.

Alternative 1 provides for maximum use of the area, by laying out 11 T-hangar buildings and 37 corporate hangar layouts. Alternative 3 provides for two T-hangar buildings and 17 corporate hangar layouts. Alternative 2 provides the greatest amount of automobile parking spaces, whereas, Alternatives 1 and 3 provides approximately the same number of automobile parking spaces. The estimated cost of implementing Alternative 1 is $1,380,700; Alternative 2 is $1,475,700; and Alternative 3 is $708,000.

General Aviation Development Alternative 2 is recommended for the general aviation development area. This alternative provides ample automobile parking spaces and relocates the FBO to within closer proximity to the entire GA development area. It is important to note that the cost of the three general aviation alternatives is not an equal comparison. Alternatives 1 and 2 make maximum use of the existing land available for general aviation development and thus the cost estimates provide for the maximum build out of the area. Alternatives 1 and 2 can be built out in a phased manner that allows the Airport to tailor the needs of the general aviation development area in response to the needs of the tenants and remain compatible with the surrounding land uses.

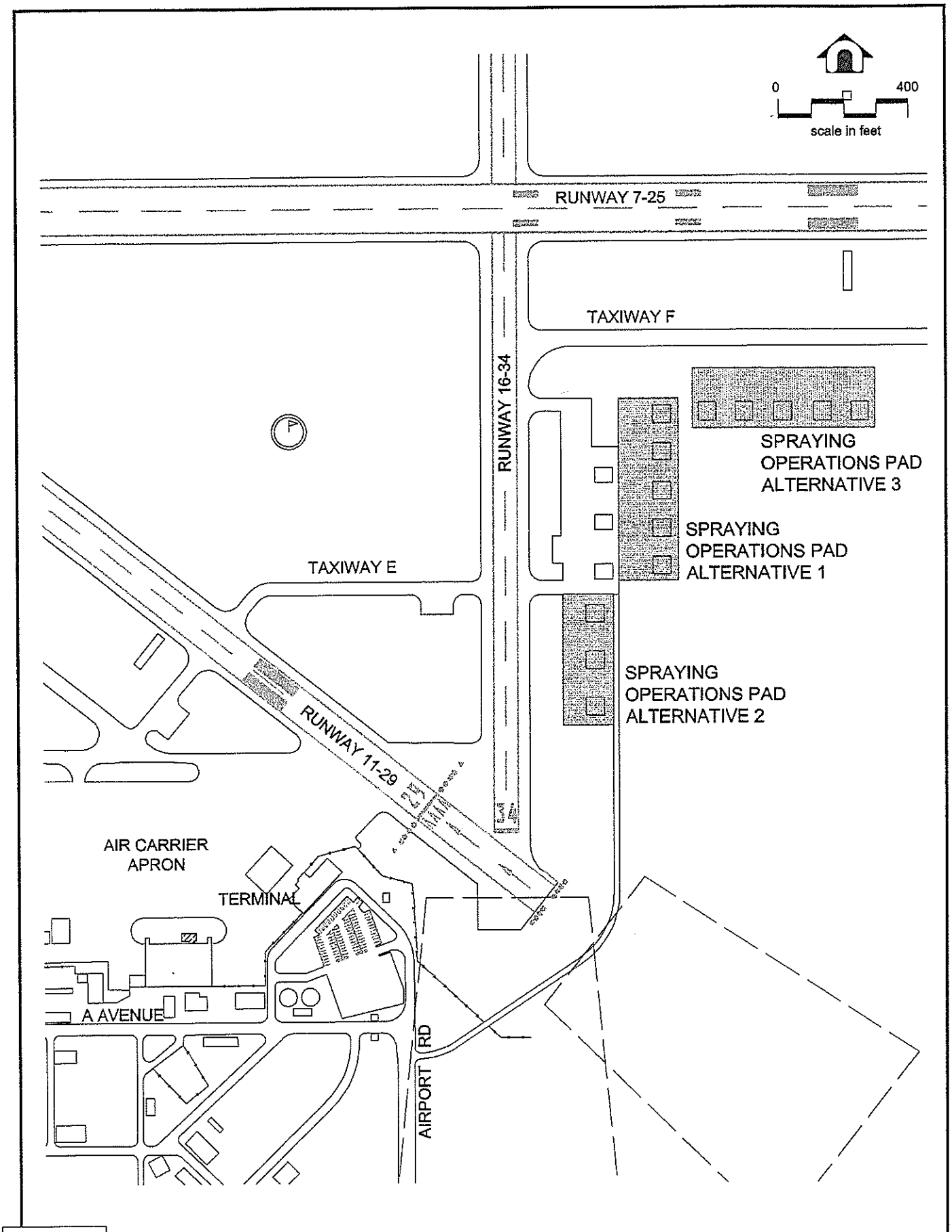
4.5.2 Agricultural Spraying Operations

The agricultural spraying operations at the Airport require a consolidated area on the airfield to conduct their operations. This is based on issues related to segregating rotor-craft from fixed-wing, as well as environmental issues. Currently, the three pads available to the agricultural spaying operators are not adequate for the amount of activity, however, the location is a good one for them. Therefore, alternatives to expand the existing agricultural spraying operations area are presented in **Exhibit 4-15**. Cost estimates for each alternative are presented in **Table 4-5**. Alternative 1 is a mirror image of the existing agricultural spraying pads (to the east) and would accommodate an additional five pads. Alternative 2 is an extension of the existing agricultural spraying pads to the south to accommodate an additional three pads. Given the terrain in this area, these alternatives show the maximum expansion available for the agricultural spraying operations area, without requiring large quantities of fill to bring the terrain up to grade with the existing facilities.

Each alternative meets the facility requirements for the agricultural spraying operations. However, other facility recommended alternatives play an important part in determining which agricultural spraying pads to recommend. Alternative 1 would provide the maximum flexibility regardless of the Runway 11/29 alternative chosen. Alternative 2 would provide conflicts with Runway 11/29 Alternative 3 because of the runway shift and object free area. The road to the spraying pad area would be required to be relocated for either option if Runway 11/29 Alternative 3 is chosen. The cost for implementing Alternative 1 is $400,000, Alternative 2 is $378,000 and Alternative 3 is $490,000. It is recommended that the Airport expand the agricultural spraying operations area as shown in Alternative 1 because it allows for maximum flexibility in regards to the Runway 11/29 alternatives and does not impact other Airport facilities.

4.6 Air Cargo Facilities

The Airport currently does not require a dedicated air cargo area on the airfield, however, it should plan for one should the Airport begin to receive larger aircraft or more air cargo service. This Master Plan



Eastern Oregon Regional Airport at Pendleton Master Plan Update	**AGRICULTURAL SPRAYING OPERATIONS PAD ALTERNATIVES**	Exhibit 4-15

Update recommends that the Airport set aside land specifically for an air cargo development operation. **Exhibit 4-16** presents a typical air cargo layout. This alternative provides the cargo operators with good airside and landside access. The apron would be approximately 10,000 SY, with a 30,000 SF building, truck dock, and automobile parking facilities. Furthermore, landside access would be improved with the construction of the secondary access road which would be connected to I-84 to the west. This area also provides adequate space to the west for cargo apron and truck dock expansion.

The estimated cost estimates for this development are presented in **Table 4-6.**

Table 4-6

Summary of Cost Estimates for Air Cargo Development Alternative

Roadway	$45,000
Taxiway	$45,000
Apron	$256,500
Drainage	$36,000
Electrical	$60,000
Building Construction/Expansion	$6,600,000
Contingencies & Engineering (25%)	$1,700,000
TOTAL	**$8,742,000**

Source: David Evans and Associates, Inc., 2001.

4.7 Support Facilities

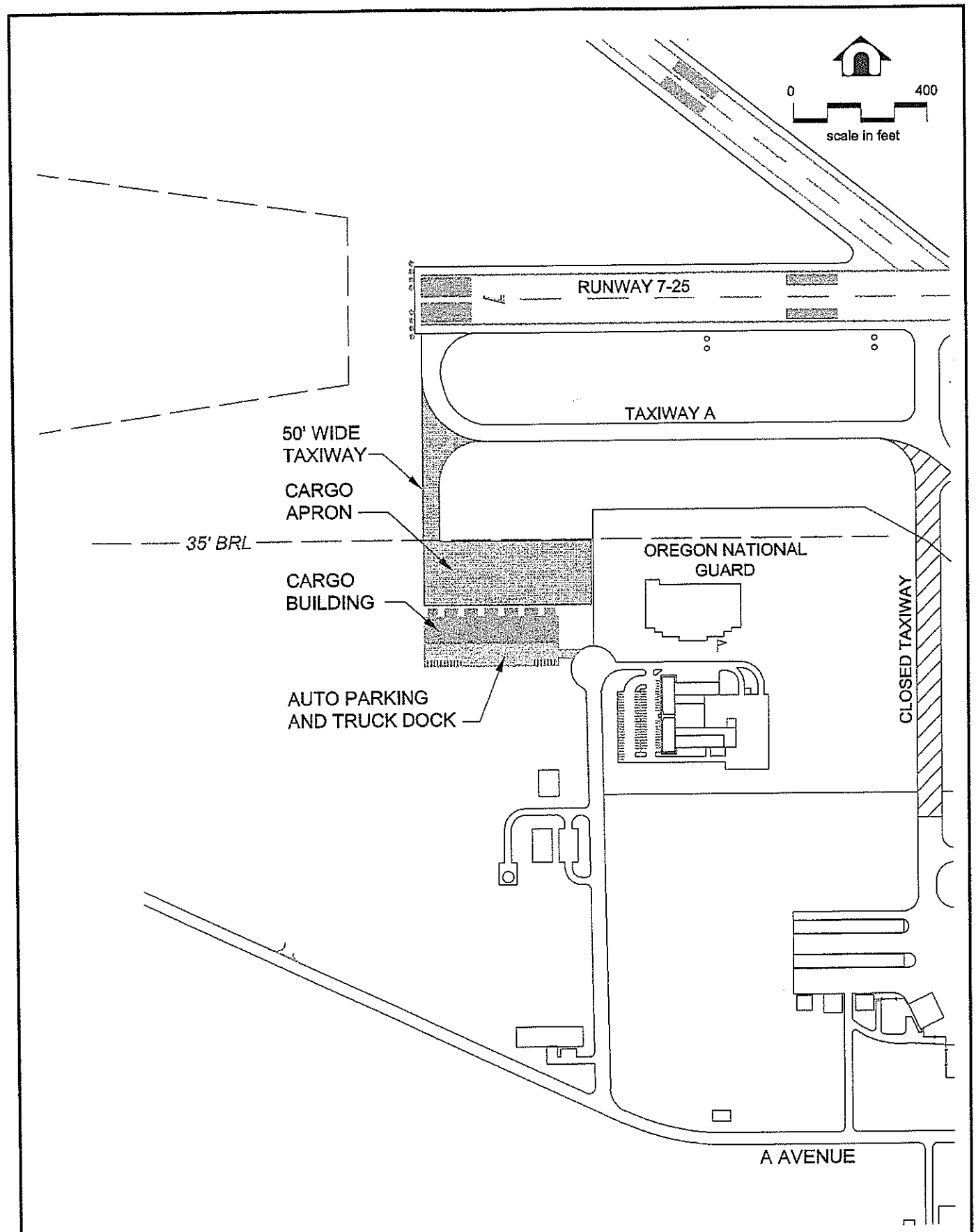
A variety of support facilities at the Airport were analyzed in Chapter Three. This section will detail alternatives for an on-site fuel farm, relocation of the airport traffic control tower, and expansion of the Aircraft Rescue Fire Fighting/Snow Removal Equipment (ARFF/SRE) facility. Cost estimates for the support facilities are shown in **Table 4-7.**

4.7.1 Fuel Farm

The Airport does not currently have an on-site fuel farm. **Exhibit 4-17** presents three alternative locations for an on-site fuel farm. It is assumed that one-20,000 gallon Avgas fuel tank and one 20,000-gallon Jet A fuel tank would provide adequate capacity.

Fuel Farm Alternative 1 is located north of A Avenue and west of the general aviation development area. This location would provide good access by the tractor trailers once the secondary access road was completed. There is adequate room for expansion, should that be required in the future. Development of the industrial park would not be impacted by this location.

Fuel Farm Alternative 2 is located west of the Oregon National Guard unit. This area has adequate land



Eastern Oregon Regional Airport at Pendleton Master Plan Update

CARGO DEVELOPMENT AREA

Exhibit 4-16

Table 4-7

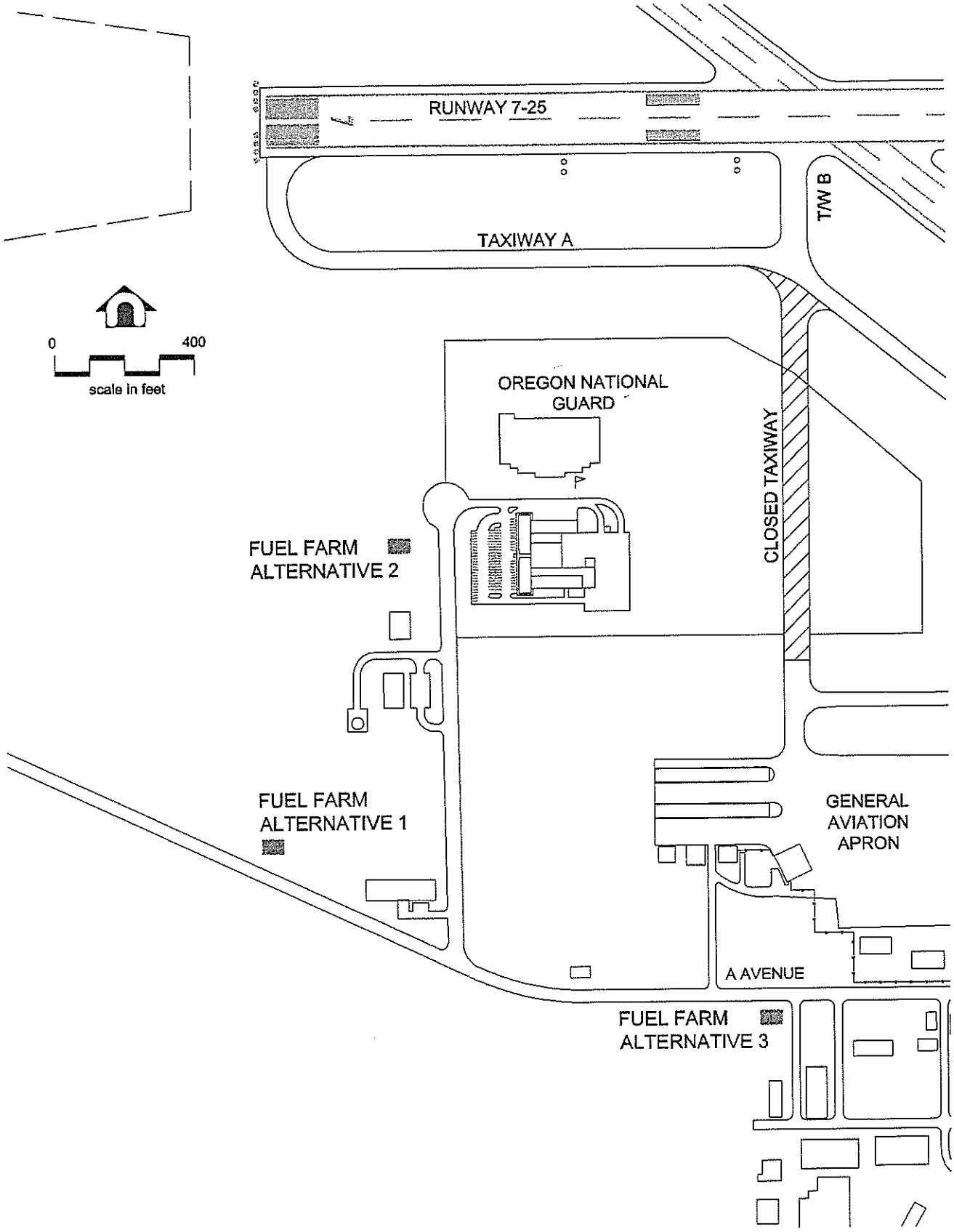
Summary of Cost Estimates for Airport Support Facilities

Fuel Farm Alternatives	Alternative 1	Alternative 2	Alternative 3
Item			
Base Cost	$400,000	$400,000	$400,000
Contingencies & Engineering (25%)	$100,000	$100,000	$100,000
TOTAL	$500,000	$500,000	$500,000

ATCT Relocation Alternatives	Alternative 1	Alternative 2	Alternative 3
Item			
Base Cost	$5,000,000	$5,500,000	$6,000,000
Contingencies & Engineering (25%)	$1,250,000	$1,375,000	$1,500,000
TOTAL	$6,250,000	$6,875,000	$7,500,000

ARFF/SRE Building Expansion Alternative	Alternative 1
Item	
Asphalt Concrete Pavement	$51,000
Crushed Aggregate Base Course	$26,000
Sub Base Course	$16,000
Unclassified Excavation	$14,000
Drainage	$25,500
Electrical	$15,000
Fencing	$2,600
Building Removal	$609,500
Building Construction/Expansion	$2,595,000
Contingencies & Engineering (25%)	$838,000
TOTAL	$4,192,600

Source: David Evans and Associates Inc., 2001.



Eastern Oregon Regional Airport at Pendleton Master Plan Update

FUEL FARM ALTERNATIVE LOCATIONS

Exhibit 4-17

for future expansion. Also, given the proximity to the Oregon National Guard unit, the Airport and the Guard could share a joint fuel facility, if desired. This location also provides good access for the tractor trailers, once the secondary access road is completed. This location would also be in close proximity to the future air cargo development area.

Lastly, Fuel Farm Alternative 3 is located south of A Avenue and on the western edge of the existing industrial park. This location could impact future development of the industrial park to the west. Lastly, the location is in close proximity to the FBOs.

The cost of the fuel farm alternatives is $500,000. It is recommended that the Airport plan on locating the fuel farm as shown in Alternative 1. This alternative provides good landside and airside access for the FBOs and trucks. Lastly, expansion in this area could be accommodated without regard to impacting future GA or industrial park development.

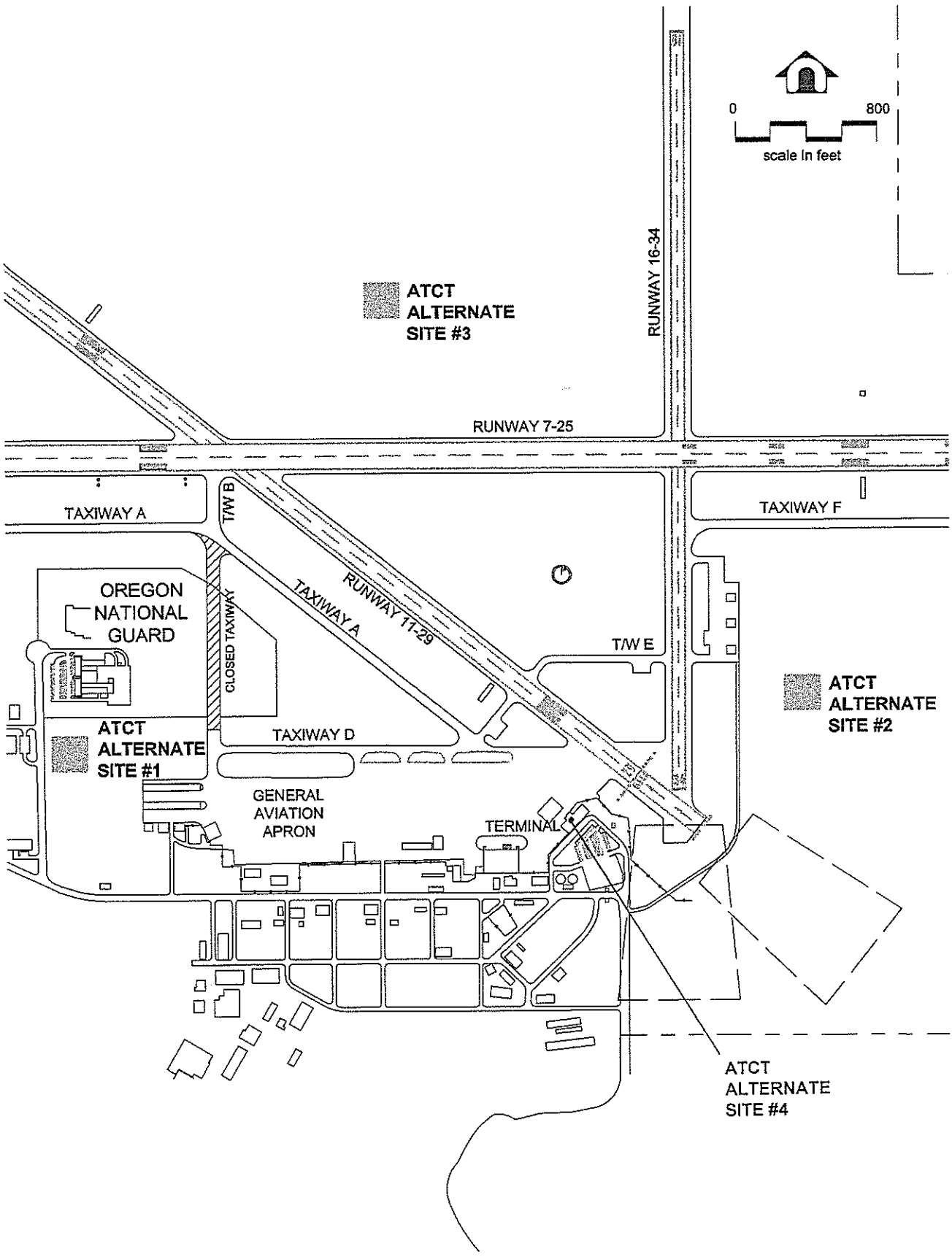
4.7.2 Airport Traffic Control Tower (ATCT)

FAA AC 150/5300-13, *Airport Design*, provides some general guidance on the siting of air traffic control towers (ATCT). This ATCT siting effort is considered a preliminary step in a more formalized analysis process that ultimately would need to be completed. A site for the ATCT is typically one to four acres and must meet the following siting requirements:

- there must be maximum visibility of the airport's traffic patterns;
- there must be a clear, unobstructed, and direct line of site to the approaches, to all runway or the landing areas, and to all runway and taxiway surfaces;
- the ATCT should be sited so as not to penetrate the FAR Part 77 surfaces, however, an obstruction study by the FAA may need to be completed;
- the ATCT must not derogate the signal generated by any existing or planned electronic NAVAID or ATC facility;
- the proposed site must be large enough to accommodate current and future building needs, including employee parking requirements (usually 1-4 acres total space).

Potential locations for the relocated ATCT are depicted in **Exhibit 4-18**. ATCT Alternative Site 1 is located south of the Oregon National Guard area, on the northwestern edge of the general aviation development area. If the ATCT were to be relocated to this area, the Airport would lose space to develop approximately nine T-hangars as shown in Exhibits 4-12 and 4-13. This is not considered a major, adverse situation as there would still be more than adequate aircraft storage space. Landside access to the new ATCT would be via Avenue A to the road that accesses the Oregon National Guard. The new facility would have to be high enough to provide a clear view to the Runway 7 end, which is northwest of the Oregon National Guard hangar. The preliminary screening analysis indicates that a control tower at this site would need to be rather tall (approximately 250') to offer clear line-of-site over the Guard hangar, to Taxiway A. Landside access would be provided from the road that currently goes to the Guard unit. Utilities to the area could be taken from the general aviation development area.

ATCT Alternative Site 2 is located east of the existing agricultural spraying operations area. This area of the Airport experiences significant terrain changes and therefore, the placement of the ATCT in this



Eastern Oregon Regional Airport at Pendleton Master Plan Update	**ATCT RELOCATION ALTERNATIVES**	Exhibit 4-18

area would require careful consideration. This area would provide clear views to all the approaches. Landside access would be provided by the existing roadway to the agricultural spraying operations area. Utilities would most likely be taken from the terminal area.

ATCT Alternative Site 3 is located north of Runway 7/25 and west of Runway 16/34. This area is currently undeveloped and has no utilities located in the vicinity. Furthermore, landside access would require the upgrade of the existing dirt and gravel roads to this area. Lastly, the area would be facing south which could create issues for the controllers by looking in the sunlight for a majority of the day.

Lastly, ATCT Alternative Site 4 is the current ATCT location (as part of the passenger terminal building complex).

Cost estimates for the ATCT site are based on cost estimates from similar airports in the region, adjustments were made in regard to the proximity to existing access roads, electrical power, and other utilities, etc. The cost estimates for the ATCT site range from $6,250,000 to $7,500,000.

It is recommended that a full ATCT site selection study be completed to further evaluate these sites, and possibly others.

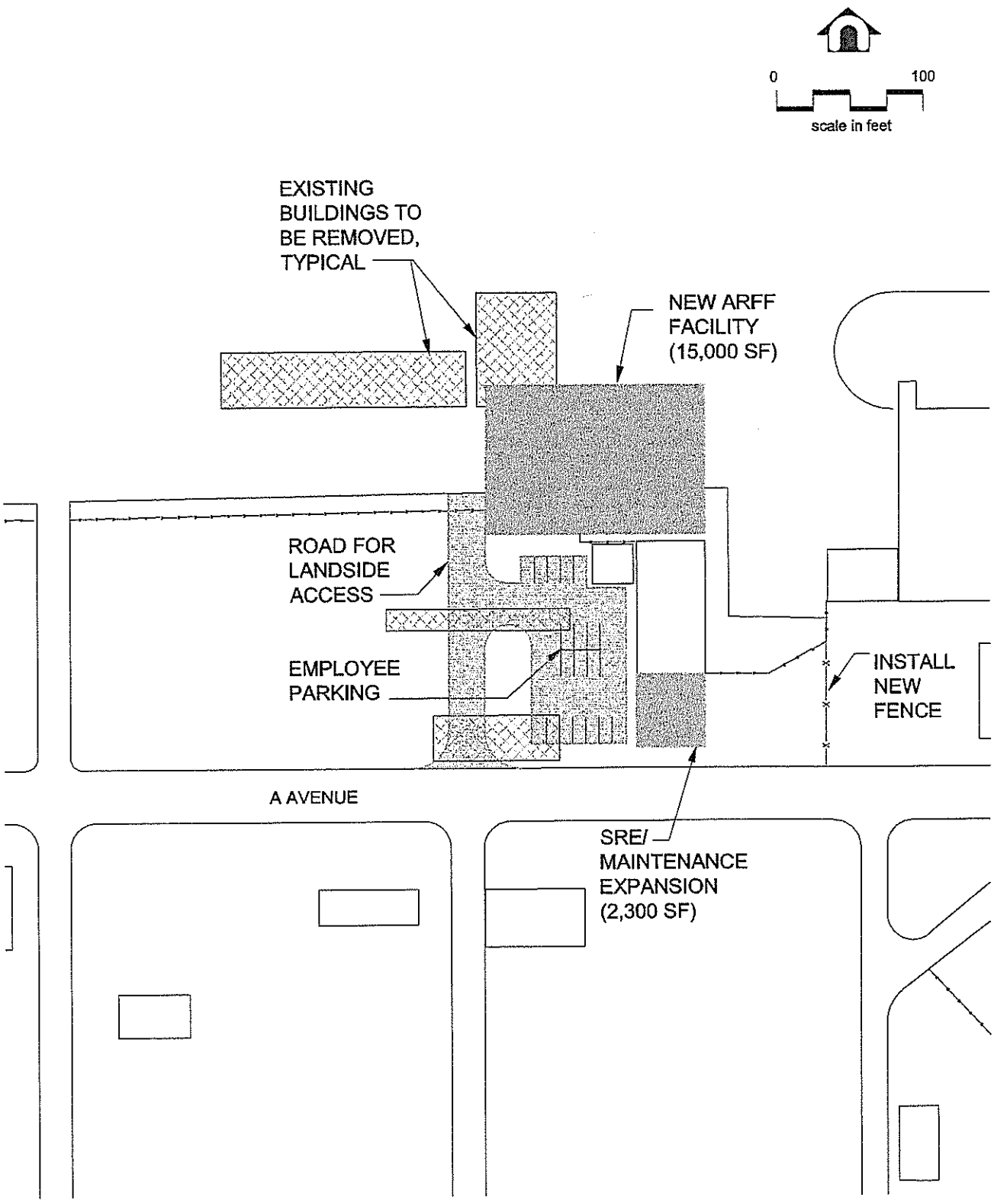
4.7.3 Aircraft Rescue and Firefighting and Snow Removal Equipment/Maintenance Building

The ARFF/SRE building will need to be expanded in the 20-year planning horizon. An expansion alternative is depicted in **Exhibit 4-19**. Currently, expansion of both facilities is restricted by an existing residence and business. When the time comes for the ARFF/SRE expansion, the residence and business will need to be relocated. The existing location of the ARFF/SRE building allow for meeting the required ARFF response time and provide good landside and airside access. The driving force for expanding the ARFF facility will be the expansion of the industrial park to warrant more fire protection services in the area. The expansion of the SRE/maintenance building will likely occur sooner than expansion of the ARFF building. The SRE/maintenance building would be expanded to the south by approximately 2,300 SF. The existing Airport perimeter fence would have to be relocated to the east to accommodate the building expansion. The cost estimate for implementing this alternative is $4,192,600.

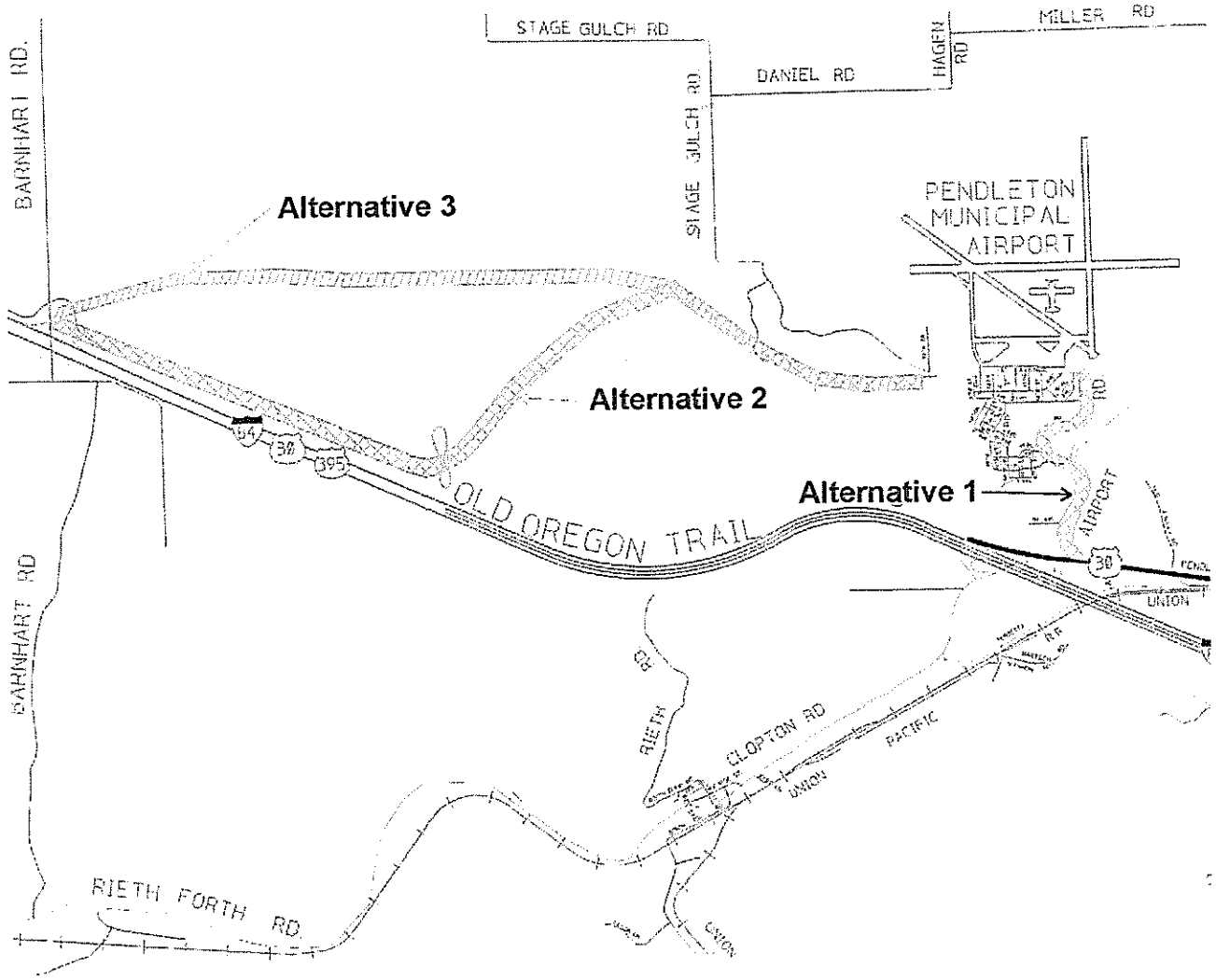
4.8 Surface Transportation and Automobile Parking Facilities

4.8.1 Access Road

Access road improvements at the Airport are needed to accommodate both the Airport and the industrial park. Three alternatives have been identified to improve the current access road situation and are depicted in **Exhibit 4-20**. These alternatives are:



Eastern Oregon Regional Airport at Pendleton Master Plan Update	**ARFF/SRE EXPANSION**	Exhibit 4-19



Source: David Evans and Associates, Inc., 2001.

Eastern Oregon Regional Airport at Pendleton Master Plan Update	**AIRPORT SECONDARY ACCESS ROAD ALTERNATIVES**	Exhibit 4-20

- **Alternative 1 Airport Road Improvement** - This alternative would consist of widening and improving the existing Airport Road from Highway 30 to the Airport terminal area.
- **Alternative 2 Frontage Road** - This alternative would be similar to Alternative 3, however, the new road would intersect with existing frontage road near the Barnhart Road/I-84 interchange.
- **Alternative 3 Barnhart Road Extension** - This alternative would consist of constructing a new road extending from Avenue A, west of the Airport terminal complex, to the west to Barnhart Road/I-84 interchange.

Each of the above alternatives do not conflict with the other development presented in this Master Plan Update. It is recommended that the Airport pursue the Barnhart Road extension alternative. This will require a Goals Exception Analysis be completed because the new road will be located outside of the City of Pendleton's existing Urban Growth Boundary. The Airport is currently working on the Goals Exception Analysis, which is anticipated to be completed in May 2002.

4.8.2 Automobile Parking

Future automobile parking at the Airport is based on the demand scenarios that were presented in Chapter Three in regards to the terminal building needs. The Airport currently has a surplus of parking spaces for the existing market scenario, however, under the additional airline and expanded airline service scenarios the Airport will need additional parking. It is recommended that the Airport expand the automobile parking to the west and relocate the rental car area further west of the existing location.

4.9 Recommended Development Plan

The following recommended 20-year development plan is presented below (see **Exhibit 4-21**) :

- Shift Runway 11/29 approximately 2,000 feet northwest along the existing alignment, also extend the parallel taxiway.
- Improve taxiway intersection between Runway 11/29 and Runway 16/34; construct a new Taxiway B to replace the one that was closed by the Oregon National Guard.
- Preserve land and airspace for the ultimate Runway 7/25 runway extension.
- Expand the passenger terminal building in its existing location to accommodate projected passenger demand.
- Expand the general aviation area to accommodate projected general aviation based aircraft growth.
- Expand the agricultural spraying operations area to accommodate an additional five pads.
- Set aside an area on the west side of the airport to accommodate an all air cargo operation.
- Relocate the fuel farm to an the Airport.
- Relocate the ATCT to another location on the airfield; conduct a ATCT Siting Study to refine the alternatives presented and recommended in this report.
- Expand the existing ARFF/SRE building to accommodate a combination airfield and

structural fire fighting department.

- Construct a second access road, at grade from the I-84 Barnhart Road exit.

NEW RPZ, TYPICAL
NEW RUNWAY ALIGNMENT
EXISTING PROPERTY LINE
0
800
scale in feet
EXISTING OBJECT FREE AREA (500' WIDE)
ULTIMATE OBJECT FREE AREA (800' WIDE)
RUNWAY PROTECTION ZONE BOUNDARY
NEW PARALLEL TAXIWAY EXTENSION
NEW CONNECTOR TAXIWAY
2000' RUNWAY EXTENSION
RUNWAY 11-29
RUNWAY 16-34
RELOCATED LOCALIZER
HIGH-SPEED TAXIWAY
RUNWAY 7-25
RELOCATED ODALS
RELOCATED LOCALIZER CRITICAL AREA
TAXIWAY A
T/W B
TAXIWAY F
50' WIDE TAXIWAY
35' BRL
OREGON NATIONAL GUARD
CLOSED TAXIWAY
SPRAYING OPERATIONS PAD
CARGO APRON
CARGO BUILDING
AUTO PARKING AND TRUCK DOCK
T/W E
PAVEMENT TO BE MARKED AS NOT NTENDED FOR USE
50' WIDE TAXIWAY
PAVEMENT TO BE REMOVED
TAXIWAY D
35' WIDE TAXIWAY
T-HANGAR, TYPICAL
EXISTING BUILDINGS TO BE REMOVED, TYPICAL
FUTURE DEICING FACILITY
FUEL FARM
RELOCATED FBO
TERMINAL
CORPORATE HANGAR, TYPICAL
ROAD FOR LANDSIDE ACCESS
NEW ARFF FACILITY (15,000 SF)
EXISTING ROAD TO BE REMOVED
VEHICLE ACCESS AND PARKING
SRE / MAINTENANCE EXPANSION (2,300 SF)

Eastern Oregon Regional Airport at Pendleton Master Plan Update

RECOMMENDED 20-YEAR DEVELOPMENT PLAN

Exhibit 4-21

Chapter Five
Environmental Overview

This element of the Master Plan Update provides the foundation for preliminary environmental analysis of the proposed development projects at the Eastern Oregon Regional Airport. Environmental impacts require analysis at the local, state, and federal level and should be accomplished in accordance with FAA and other pertinent guidance. The information gathered for this Environmental Overview will be used to identify any impact categories which could require an environmental assessment (EA) or an environmental impact statement (EIS). The Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (40 CFR Part 1500-1508), issued by the President's Council on Environmental Quality, provides for three categories of environmental actions: actions normally requiring an EA; and actions normally requiring an EIS, and those which are normally categorically excluded.

It is significant to note that this environmental overview does not constitute agency approval or approval of federal funding. However, it does provide the environmental resource agencies an opportunity to comment on the proposed airport improvements recommended in the Master Plan Update. This gives the Airport the opportunity to foresee proposed projects which might cause environmental impacts so that appropriate project planning can occur.

Categorical exclusions are actions which have been found, in normal circumstances, to have no significant environmental impact. Actions normally requiring an environmental assessment are actions which have been found by experience to sometimes have significant environmental impacts, and sometimes not to have environmental impacts. The final environmental assessment produces either a Finding of No Significant Impact (FONSI) or a request by the FAA for an EIS to be prepared. Actions normally requiring an EIS are those in which the environmental impacts are believed or known to be significant.

This chapter is organized into three sections: project description, environmental analysis, and environmental overview summary.

5.1 Project Description

The recommended facility improvements at the Eastern Oregon Regional Airport, as identified in Chapter Four: *Alternative Plan Concepts*, are included as part of this environmental overview. The following projects, which represent needs through 2020, are addressed in this overview.

- Shift Runway 11/29 approximately 2,000 feet northwest along the existing alignment, also extend the parallel taxiway.
- Improve taxiway intersection between Runway 11/29 and Runway 16/34; construct a new Taxiway B to replace the one that was closed by the Oregon National Guard.
- Preserve land and airspace for the ultimate Runway 7/25 runway extension.
- Expand the passenger terminal building in its existing location to accommodate projected passenger demand.

- Expand the general aviation area to accommodate projected based aircraft growth.
- Expand the agricultural spraying operations area to accommodate an additional five pads.
- Set aside an area on the west side of the airport to accommodate an all air cargo operation.
- Develop the fuel farm at the Airport.
- Relocate the ATCT to another location on the airfield (siting study required).
- Expand the existing ARFF/SRE building to accommodate a combination airfield and structural fire fighting department.
- Construct a second airport access road, at grade from the I-84 Barnhart Road exit.

5.2 Environmental Analysis

The FAA requires that 22 impact categories be analyzed for an environmental assessment. Proposed airport development actions which require an environmental assessment are stated in the related impact categories.

The impact categories are addressed and supported with documentation from FAA Order 5050.4A, *Airport Environmental Handbook* and agency coordination letters at the local, state, and federal levels. Agency coordination letters were sent out as a part of the Environmental Overview to obtain preliminary feedback on potential for the projects to impact the natural and human environment. Agency responses to the coordination letters are presented in *Appendix A*. The various impact categories are discussed and supported through the use of calculation, observation, measurement, or correspondence. The 22 impact categories include:

- Noise
- Compatible Land Use
- Social Impacts
- Induced Socioeconomic Impacts
- Environmental Justice
- Air Quality
- Water Quality
- Section 303(c) of Title 49, U.S.C. (DOT 4(f) lands)
- Historic, Architectural, Archaeological, and Cultural Resources
- Biotic Communities
- Endangered and Threatened Species of Flora and Fauna
- Wetlands
- Flood plains
- Coastal Zone Management
- Coastal Barriers
- Wild and Scenic Rivers
- Farmland
- Energy Supply and Natural Resources
- Light Emissions
- Solid Waste Impacts
- Construction Impacts
- Hazardous Materials/Contamination

5.2.1 Noise

Noise at an airport is simply defined as "unwanted sound." Noise compatibility planning is essential for an airport to maintain a positive relationship with its airport neighbors. This section of the Master Plan Update presents a brief summary of the noise impacts at the Eastern Oregon Regional Airport for the existing conditions and 2005. **Exhibits 5-1** and **5-2** present the results of the noise analysis.

The noise modeling was completed using the most recent version of the FAA's Integrated Noise Model (INM). The INM is an accepted industry tool for evaluating aircraft noise impacts in the vicinity of airports. The INM has many analytical uses, such as assessing changes in noise impacts resulting from new or extended runways or runway configurations, assessing new traffic demand and fleet mix, assessing alternative flight profiles, and assessing modifications to operational procedures.

The INM 6.0 aircraft profile and noise calculation algorithms are based on three documents prepared by the Society of Automotive Engineers (SAE) Aviation Noise Committee (A-21). The three relevant documents to INM are:

SAE-AIR-1845	*Procedures for the Calculation of Airplane Noise in the Vicinity of Airports*
SAE-AIR-1751	*Prediction Method for Lateral Attenuation of Airplane Noise During Take-off and Landing*
SAE-AIR-866A	*Standard Values of Atmospheric Absorption as a Function of Temperature and Humidity*

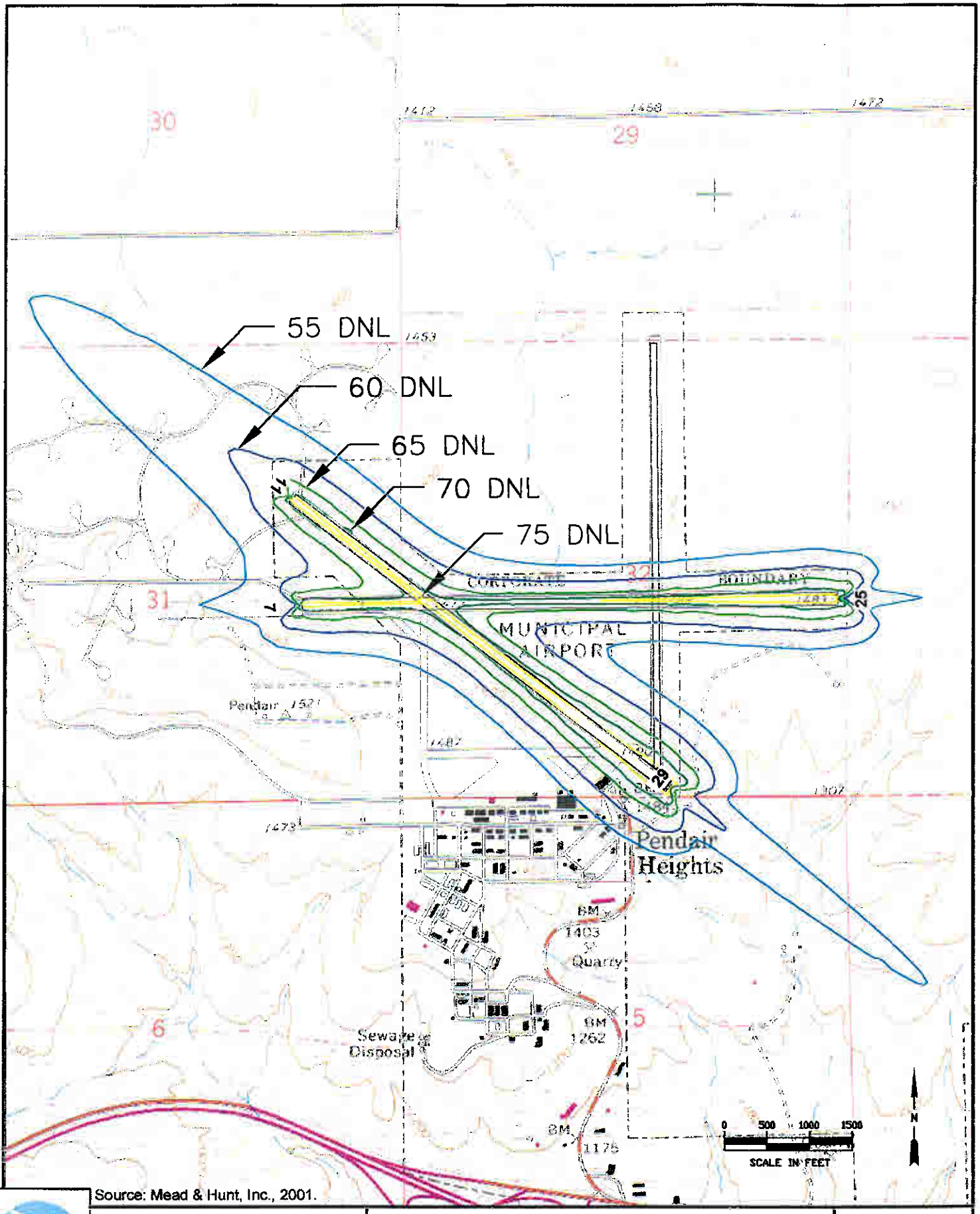
This section presents a summary of the noise modeling which was conducted for this master plan update and is broken into the following subsections: average annual day, flight tracks, day-night split, and the noise contours.

Average Annual Day. INM is an *average-value model* and is designed to estimate the long-term effects of noise using average annual input conditions. The model uses the annual day-night average sound level for quantifying airport noise. Federal Aviation Regulation (FAR) Part 150 defines it as the yearly day-night average sound level (DNL) which is the 365-day average, in decibels, day-night sound level. The average annual day activity for PDT includes 93 aircraft operations in 1999 and 133 aircraft operations in 2005.

Flight Tracks. Each airport has its own distinctive set of flight tracks. Flight tracks are the footprints the aircraft leaves on the ground when it is arriving or departing from the airport. Aircraft arriving or departing from an airport with an airport traffic control tower, usually receive guidance from the controllers regarding the path their aircraft flies. The flight tracks for this analysis were determined through discussions with airport management and airport traffic control tower personnel.

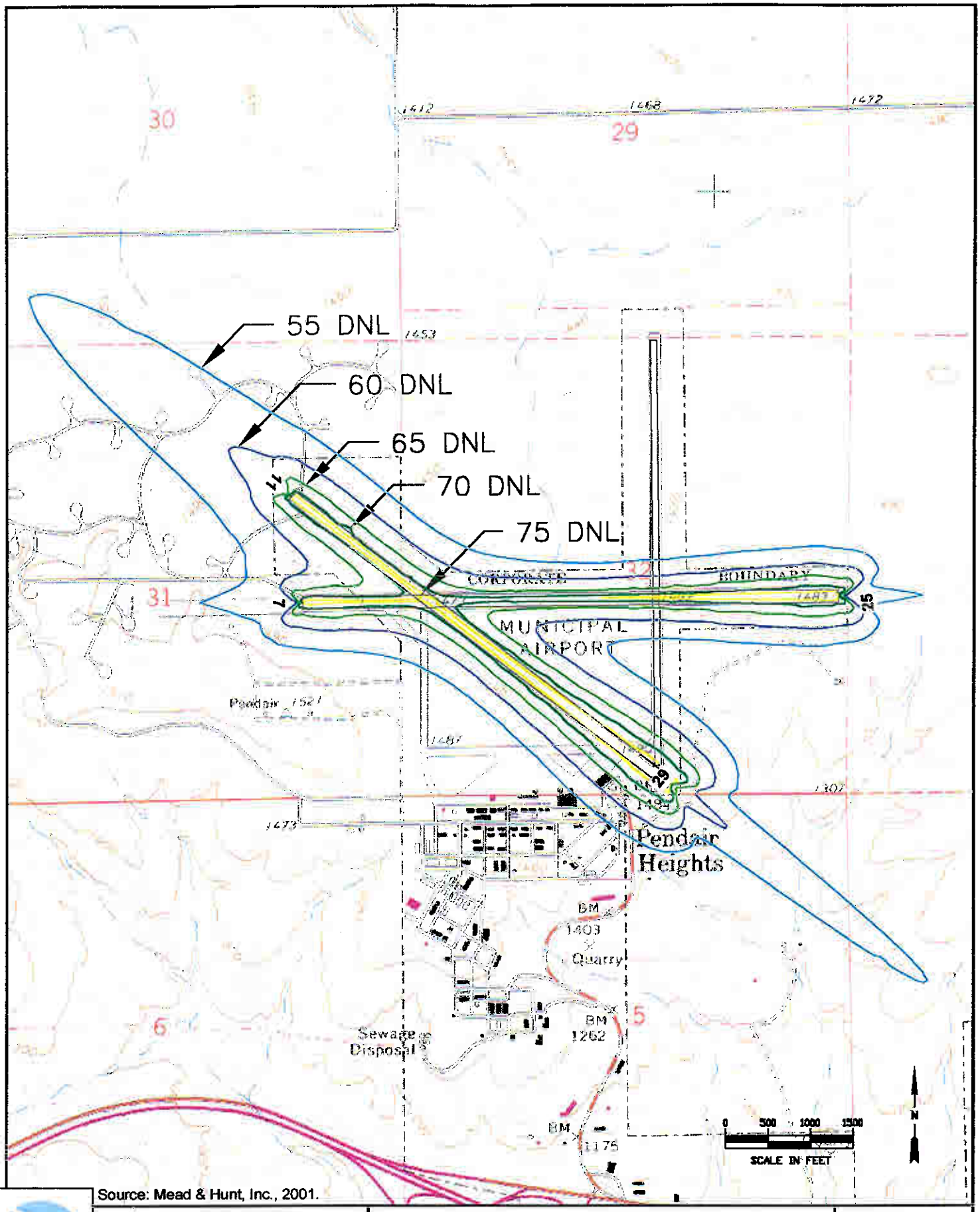
At PDT, the departure runway of choice for the existing air carrier is Runway 11/29. Approximately 60 percent of the air carrier operations use Runway 11/29.

Day-Night Split. The INM realizes that aircraft operations which occur at night are perceived to be



Source: Mead & Hunt, Inc., 2001.

Eastern Oregon Regional Airport at Pendleton Master Plan Update	**1999 NOISE ANALYSIS CONTOURS EXISTING CONDITIONS**	Exhibit 5-1



Source: Mead & Hunt, Inc., 2001.

Eastern Oregon Regional Airport at Pendleton Master Plan Update	**2005 NOISE ANALYSIS CONTOURS**	Exhibit 5-2

louder to the surrounding environment due to the reduction of "white noise" (i.e., automobile traffic and other daily noises) which is a part of our daily routine. To account for nighttime operations at an airport and to more accurately "weigh" the amount of noise they contribute to the noise contours, the INM assigns a "penalty" of 10 decibels to each nighttime operation which occurs between the hours of 10 p.m. and 7 a.m. local time. The INM then adjusts the noise contours accordingly to represent the impact of the nighttime operations to the vicinity of the Airport.

Conversations with airport management and the airport traffic controller tower indicate that the day-night split is approximately 90-10 percent.

Noise Contours. The noise contours are generated after all the above mentioned data is collected, analyzed, and entered into the model. The INM then generates the noise contours from the entered data by plotting points of the noise level events which represents the *average-annual day*. The points are then connected to graphically depict the noise contours which the aircraft generate. The noise contours are depicted in Exhibits 5-1 and 5-2. The impacts of the noise contours are analyzed and presented in the next section, *Compatible Land Use*.

5.2.2 Compatible Land Use

Compatible land use is described in FAA Order 5050.4A, *Environmental Handbook*, as "the compatibility of existing and planned land uses in the vicinity of an airport is usually associated with the extent of the noise impacts related to that airport." The noise contours generated in the above section *Noise* are used in this section to analyze the compatible land use impacts associated with the proposed airport development.

No houses or other noise sensitive areas are located in the 55, 60, 65, 70, or 75 DNL contours for the scenarios evaluated. The land uses impacted by aircraft noise in the 55 DNL are farming operations.

5.2.3 Social Impacts

Social impacts are associated with the acquisition and relocation of residences or businesses; altering surface transportation patterns; dividing or disrupting established communities; or disrupting orderly, planned development.

Social impacts could be associated with the construction of the secondary access road. The road will not disrupt existing communities; it will alter the surface transportation patterns by providing an additional route to the airport terminal and industrial park.

5.2.4 Induced Socioeconomic Impacts

Major airport development projects can impact socioeconomic conditions in the surrounding communities. Induced socioeconomic impacts address such issues as population movement and growth, public service demands, and changes in the business and economic activity to the extent of the proposed airport development. Induced socioeconomic impacts are further impacted by significant impacts in the

noise, land use, and direct social impact categories.

There could be positive induced socioeconomic impacts associated with the secondary access road. It would provide an at-grade access to the airport industrial park, thus opening up valuable industrial land for development. There are no anticipated negative induced socioeconomic impacts associated with the other recommended development projects.

5.2.5 Environmental Justice

The purpose of Executive Order 12898 is to identify, address, and avoid disproportionately high and adverse human or environmental effects on minority and low-income populations. There are no environmental justice impacts anticipated with the recommended development plan.

5.2.6 Air Quality

An air quality analysis is required for airport development projects which involves airport location, runway development, or other physical airside and/or landside improvements which increase airport capacity. An air quality analysis is also required for any proposed development that does not conform to an approved state implementation plan for controlling area-wide pollution impacts such as indirect source review.

FAA Order 5050.4A, requires the following conditions for a project to be exempt from an air quality analysis:

- Conformance with approved state implementation plans
- Passengers not in excess of 1.3 million at commercial service airports
- Operations not in excess of 180,000 forecasted annually at general aviation airport

The State of Oregon Department of Environmental Quality (DEQ) states in a letter that "any asphalt plant, redi-mix plant, or rock crusher operating in the State of Oregon supplying materials for the airport expansion must be in possession of an active Air Containment Discharge Permit (ACDP) in accordance with Oregon Administrative Rules (OAR) 340-216-0090 (34, 39, & 42)." This would apply to projects which are related to airfield or landside pavements.

Furthermore, it states that "if buildings are to be demolished or disturbed for the expansion project, under the Federal NESHAP they are required to undergo a survey by a legitimate asbestos consultant. An Oregon-licensed asbestos abatement firm must remove any friable (easily broken or shattered) asbestos found during this survey. Any nonfriable asbestos must be removed, handled and disposed of in accordance with OAR 340, Division 248 (this requirements will be added to the revised OAR Division 248 pending legislative approval)." This requirement applies to the ARFF/SRE building which will require the removal of buildings.

The letter also states that "open burning of clean land clearing debris or woody construction or demolition of debris at this site is prohibited without an open burn letter permit from DEQ in accordance

with OAR 340-264-0100-(4)(1). Also, "during land clearing and construction all dust must be adequately suppressed in order to minimize the nuisance dust conditions for nearby neighbors." All efforts will be made during the construction of the projects to minimize dust and construction impacts.

Additionally, "new fuel tanks installed should be or a type that will minimize emissions of fuel vapors (volatile organic compounds) to the atmosphere." This will be evaluated for the new fuel farm.

Lastly, the Clean Air Act Amendments of 1990 state that the Federal government should not approve, take, or support actions that are in any way inconsistent with a State's plan to attain and maintain the National Ambient Air Quality Standards for criteria pollutants. Development actions in any area that is designated as a non-attainment area need further air quality analysis to demonstrate "conformity" with the NAAQS. Pendleton is considered to be in attainment with the NAAQS for all pollutants; therefore, further analysis to demonstrate conformity is not required.

5.2.7 Water Quality

The quality of ground and surface water must not be degraded by planned construction or operations associated with the proposed development. Three potential sources of water pollutants are sewage generated by the terminal and associated facilities, surface water run-off, and any existing underground water contamination. Construction staging with appropriate erosion control measures will be taken.

The Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977 (Clean Water Act), provides the authority to establish water quality standards, control discharges into surface and subsurface waters, develop waste treatment management plans and practices, and issue permits for discharges (section 402) and for dredged or fill material (section 404). There are no known wetlands or other navigable waters located in the vicinity of the airport projects.

The DEQ states that "any construction that disturbs more than 5 acres requires a construction storm water permit (NPDES 1200-C). After March 2003, Phase II of the storm water rule lowers the minimum disturbance restriction to 1 acre." The projects will be evaluated for the storm water permit requirements, especially after the March 2003 date which lowers minimums.

The DEQ also states that "the Airport's Storm Water Pollution Control Plan (SWPCP), which is required by the industrial storm water permit (NPDES 1200-Z), should be reviewed to address best management practices for the proposed improvements." The Airport should continue to monitor its SWPCP and make appropriate changes as needed for each project.

5.2.8 Section 303(c) of Title 49, U.S.C. (DOT4(f) lands)

Section 4(f) of the DOT Act provides that the "Secretary shall not approve any program or project which requires the use of any publicly owned land from a public park, recreation area, or wildlife or waterfowl refuge of national, state, or local significance as determined by the officials having jurisdiction thereof unless there is no feasible or prudent alternative to the use of such land and such program or project includes all possible planning to minimize harm resulting from the use." There are no known DOT 4(f)

lands near the proposed airport projects.

5.2.9 Historic, Architectural, Archaeological ,and Cultural Resources

This impact category is governed by two laws. The first, the National Historic Preservation Act of 1966, as amended, "recommends measures to coordinate Federal historic preservation matters, to recommend measures to comment on Federal actions affecting properties included in or eligible for inclusion in the National Register of Historic Places." The second, the Archaeological and Historic Preservation Act of 1974, which provides the survey, recovery, and preservation of significant scientific, prehistorical, archaeological, or paleontological data when such data may be destroyed or irreparably lost due to Federal, federally licensed, or federally funded projects."

Correspondence was received by the Oregon State Historic Preservation Office which stated that "any development plans that will impact standing structures fifty years of age or older, or that involve ground disturbance, will be of interest to the Oregon SHPO.". Projects which will require coordination with the SHPO will normally include projects which include the disruption of previously undisturbed land as well as projects which will trigger an environmental assessment like the Runway 11/29 shift project or the Runway 7/25 extension. The network of aircraft parking pads located to the west and north of Runway 7/25 and 11/29 may require further analysis, given their age and potential historical significance. Coordination with the SHPO should be conducted for these projects.

Lastly, the Umatilla Tribe was represented on the Planning Advisory Committee and received working papers throughout the master planning process and were provided an opportunity to comment on recommended development plans. The Airport will continue to coordinate with the Umatilla Tribe as they begin the implementation of the recommended development plan.

5.2.10 Biotic Communities

Biotic communities include native and introduced plants and animals in the project area. There are several categories for biotic communities, vegetation, wildlife (including aquatic fauna), threatened and endangered species, and wetlands. Wildlife and threatened and endangered species are discussed in subsection 5.2.11 (Endangered/Threatened Species of Flora and Fauna), wetlands are discussed in subsection 5.2.12 (Wetlands), and farmlands will be discussed in subsection 5.2.13 (Farmlands).

There will be minimal disruption of the biotic communities located in the vicinity of the Airport, however, further analysis may be required for the Runway 11/29 shift or the Runway 7/25 extension.

5.2.11 Endangered and Threatened Species of Flora and Fauna

The Endangered Species Act, Section 7, as amended, requires each Federal agency to insure that "any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined by the Secretary, after consultation as appropriate with the affected States to be critical, unless such agency has been granted exemption for

such action. Furthermore, Section 7(a)(3) requires that each Federal agency shall confer with the proposed to be listed under Section 4 or results in the destruction or adverse modifications of critical habitat proposed to be designated for such species."

The Columbia River is located approximately 20 miles from the Airport. Furthermore, other streams, rivers, or other bodies of water are located at least two miles from the Airport. Coordination with the National Marine Fisheries Service (NMFS) may need to be accomplished to ensure that no salmon species (some of which are on the threatened list) are impacted.

The U.S. Fish and Wildlife Service provided correspondence dated August 21, 2001 regarding the status of endangered or threatened species which occur on or near the Airport. This list is provided in *Appendix A*. Projects which will require further coordination with the U.S. Fish and Wildlife Service include the Runway 11/29 shift, a new ATCT location (dependant on recommended location), and the new access road.

5.2.12 Wetlands

Wetlands are defined in Executive Order 11990, Protection of Wetlands, as "those areas inundated by surface or ground water with a frequency sufficient to support and under normal circumstances does not or would not support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflows, mud flats, and natural ponds."

The U.S. Army Corps of Engineers was contacted regarding preliminary comments on the 20-year development plan, however, no correspondence was received. There are no known wetlands in the vicinity of the proposed projects.

5.2.13 Flood plains

Flood plains are defined in Executive Order 11988, Flood plain Management, as "the lowland and relatively flat areas adjoining inland and coastal waters including flood prone areas of offshore islands, including at a minimum, that area would be inundated by a 100-year flood.

The Airport is not located in a 100-year flood area.

5.2.14 Coastal Zone Management

The National Coastal Zone Management (CZM) Program was developed under the Coastal Zone Management Act of 1972 and has voluntary participation between the Federal government and U.S. coastal states and territories.

The airport is not located in a coastal zone management area.

5.2.15 Coastal Barriers

Coastal barriers under the Coastal Barriers Resource Act of 1982, as amended in 1994, are located on the Atlantic coast, Gulf of Mexico, and the Great Lakes. The Eastern Oregon Regional Airport is not located in a coastal barrier area.

5.2.16 Wild and Scenic Rivers

The National Wild and Scenic River System lists those rivers that are defined by the Wild and Scenic Rivers Act as "outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural or other similar values."

There are no known wild or scenic rivers located on or near the Eastern Oregon Regional Airport.

5.2.17 Farmland

The Farmland Protection Policy Act (FPPA) PL-97-98, authorizes the Department of Agriculture (USDA) to develop criteria for identifying the effects of Federal programs on the conversion of farmland to non-agricultural uses. Federal agencies are directed to use the developed criteria below:

- Identify and take into account the adverse effects of Federal programs on the preservation of farmland;
- Consider appropriate alternative action which could lessen adverse effects;
- Assure that such Federal programs to the extent practicable, are compatible with state, unit, or local government, and private programs and policies to protect farmland.

Farmland will be taken out of use for the Runway 11/29 shift project. Coordination with the Natural Resources Conservation Service will be required, as will the completion of Farmland Form 1006 during the environmental assessment process.

5.2.18 Energy Supply and Natural Resources

Energy requirements associated with an airport usually fall into two categories, those which relate to changed demands for stationary facilities and those which involve the movement of air and ground vehicles. Examples of these are airfield lighting, terminal building heating and cooling systems, and aircraft and passenger vehicles.

Airfield lighting projects will consist of upgrading existing systems and new airfield lighting for the runway shift and runway extension. Other energy supply and natural resource impacts will be associated with the construction of the recommended development plan.

5.2.19 Light Emissions

Light emissions for the proposed airport development will be minimal for the recommended

development plan.

The Airport intends on replacing the high intensity runway lights on Runway 7/25, this will not increase energy output, however, it will provide the Airport with a more updated and efficient system as opposed to the one currently located on the runway.

5.2.20 Solid Waste Impacts

Solid waste impacts are not usually associated with the development of runways, taxiways, and other airfield improvements. Solid waste impacts, however, should be reviewed during the planning process of terminal area development if the projected quantity or type of solid waste generation or method of collection or disposal will be appreciably different than would be the case without the action.

For any proposed development, local officials should be consulted on the location of all waste disposal facilities within or planned within 5,000 feet of all runways planned to be used by piston-type aircraft and within 10,000 feet of all runways planned to be used by turbojet aircraft. There are no known waste disposal facilities within 10,000 feet of the airfield (existing and ultimate layout). The City of Pendleton waste disposal site was previously located on Pioneer Road and was closed. The City now uses a transfer station located on Reith Road.

The Oregon DEQ states that "to the extent practical, asphalt that is removed as part of any improvements should be recycled rather than disposed of." The Airport will take this under consideration when implementing projects included in the recommended development program.

5.2.21 Construction Impacts

Proposed airport development will have temporary and minimal construction impacts. Some of these impacts during the construction of the proposed improvements are noise (from earth moving machinery, blasting), dust generation, traffic disruptions, and air and water quality effect, and wildlife disturbances. These impacts will be temporary and minimized by using appropriate controls. All construction done with the associated proposed airport development will adhere to local and state construction standards and FAA Advisory Circular 150/5370-10, Standards for Specifying Construction of Airports. The Airport will adhere to all practical construction impact regulations as necessary during the construction of projects.

5.2.22 Hazardous Materials/Contamination

There are various laws that govern hazardous materials and contamination. Prior to development projects being completed, a Phase I hazardous materials survey should be conducted to determine the potential location of any hazardous materials in the area, which could have an impact on ultimate development plans.

The Oregon DEQ states that "in regard to expansion of agricultural spraying operations, the airport should consider moving the existing pesticide rinse pad to a remote location. The airport should ensure

that all pesticide spray equipment filling is done on the pad or an extension to the pad to contain any possible spills. Additionally, the rinse pad should not be connected to any storm water, drywells, drainfields, or sanitary sewers." The Airport will take this into account during the design phase of this project. Furthermore, "storage of pesticides should be done in accordance with the State and Local Fire Department and a "Community Right to Know" requirements. At a minimum the Airport should be in compliance with OAR Chapter 340, Division 109, Management of Pesticide Waste as it pertains to public use airports."

Lastly, under hazardous materials, in relation to the construct a fuel farm, a "Spill Prevention Control and Countermeasure (SPCC) requirements might be applicable depending on the anticipated capacity of the tank farm (an above ground fuel storage capacity of more than 660 gallons in a single container; or a total above ground fuel storage capacity of more than 1320 gallons or a total underground buried storage capacity of more than 42,000 gallons. Do not connect the containment discharge (storm water) to the storm water system in the event of a spill. It also should not be allowed to discharge to the ground. The SPCC requirements are administrated by the USEPA." The Airport will take these comments under consideration when designing the fuel farm to ensure that it meets the requirements set forth by the USEPA.

5.3 Environmental Overview Summary

This environmental overview is meant to highlight projects which may require additional environmental planning prior to project implementation. Table 5-1 provides a summary of anticipated environmental planning/coordination needed for each of the proposed projects. *It is significant to note that additional planning may include exploring additional alternatives to attempt to avoid environmental impacts.*

Table 5-1
Environmental Planning Summary

Project Name	Anticipated Environmental Planning/Agency Coordination Needed
Shift Runway 11/29 approximately 2000' NW	Environmental Assessment (USF&WS, SHPO, Oregon DEQ, COE)
Improve taxiway intersection between Runway 11/29 &16/34	Categorical Exclusion (may require updating of SWPCP, after 2003 requires NPDES 1200-C)
Replace Taxiway B	Categorical Exclusion (may requiring updating of SWPCP, after 2003 requires NPDES 1200-C)
Extend Runway 7/25 (to be implemented with proper justification	Environmental Assessment (USF&WS, SHPO, COE, Oregon DEQ)
Expand terminal building	Categorical Exclusion (may require updating of SWPCP, after 2003 may require NPDES 1200-C)
Expand general aviation area	Categorical Exclusion (may require updating of SWPCP, after 2003 requires NPDES 1200-C)
Expand agricultural spraying operations area	Categorical Exclusion (may require updating of SWPCP, requires a NPDES 1200-C, requires compliance with local fire regulations and OAR Chapter 340, Division 109)
Construct an all air cargo area	Categorical Exclusion (may require updating of SWPCP, after 2003 requires NPDES 1200-C)
Relocate fuel farm to the airport	Categorical Exclusion (SPCC requirements may be applicable, after 2003 requires NPDES 1200-C)
Relocate ATCT to another site on the airfield	Environmental Assessment or Categorical Exclusion dependent on outcome of ATCT Siting Study
Expand existing ARFF/SRE building	Categorical Exclusion (requires buildings to be demolished to be surveyed for asbestos, after 2003 requires NPDES 1200-C)
Construct Secondary Access Road	Environmental Assessment (USF&WS, USDA, SHPO)

Source: Mead & Hunt, Inc, 2001.

Chapter Six
Financial Analysis

This chapter presents an analysis to determine the financial feasibility of implementing the capital improvement program recommended by this Master Plan Update for the Eastern Oregon Regional Airport through 2020. The Airport's ability to generate future revenues sufficient to cover all future operating expenses, and its ability to fund the proposed capital projects through a combination of Federal, State, Airport, and other City of Pendleton funds is examined. The financial feasibility analysis was conducted as follows:

- The Airport's existing financial structure and historical financial performance were examined to determine its primary revenue generating sources and its major expenses. In addition, the Airport's existing debt obligations were reviewed.

- A schedule for the implementation of proposed capital projects was prepared to delineate the proposed staging of the projects recommended for the Airport through 2020, the end of the planning period.

- Projections of enplaned passengers at the Airport that were developed in Chapter Two were used to forecast Federal Aviation Administration (FAA) Airport Improvement Program (AIP) entitlement monies, and the FAA approved Passenger Facility Charges (PFCs). These projections of enplaned passengers assume a compounded annual growth rate of 2.89 percent through the 20-year planning period.

- Capital funding sources, such as the FAA's AIP and PFC programs, were examined. Projections of AIP entitlement and PFC funds over the proposed planning period were made based on passenger enplanement projections at the Airport.

- A funding plan for the CIP was developed using AIP funds, PFC collections, Airport and other City of Pendleton funds, and private funding.

- Historic revenues, expenses, and debt service for the Airport were examined for the period FY1996 through FY2000.

- Projections of revenues, expenses, and debt service for the operation of the Airport over the planning period of FY 2001 through FY2007 were developed based on historic and budgeted (FY2001 and FY2002) financial activity at the Airport.

- A simplified cash flow analysis was accomplished to provide the Airport with information regarding the funding of major capital improvement projects, as well as the day-to-day operation of the Airport.

- An update to the 1996 economic impact analysis conducted for the Airport is also provided.

The detailed financial projections of revenues and expenses included in this analysis focus on the short-term and mid-term planning periods. Detailed revenue and expense projections for each year of the long-term planning period were not performed as part of this feasibility study. However, a detailed analysis of the ability of AIP and PFC funds to finance projects in the near-term program (i.e., through FY 2007) were performed.

This chapter, which presents the results of this feasibility analysis, is organized into the following major sections:

- Airport Financial Structure
- Capital Improvement Program
- Funding for the Program
- Historic and Projected Airport Revenues
- Historic and Projected Airport Expenses
- Simplified Cash Flow
- Airport Economic Impact
- Major Assumptions and Statement of Risk

6.1 Airport Financial Structure

The Airport is city-owned and operated and run as a separate department in the city organizational structure. The City of Pendleton, and thus the Airport, operates on a fiscal year that runs July 1 to June 30. The Airport is run as an enterprise fund, which means that the Airport is financed and operated in a manner similar to private business enterprises. The intent of the governing body is that the cost (expenses, including depreciation) of providing goods or services to the general public on a continuing basis be financed or recovered primarily through user charges; or where the governing body has decided that periodic determination of revenues earned, expenses incurred and/or net income is appropriate for capital maintenance, public policy, management control, accountability, or other purposes.

6.2 Capital Improvement Program

All airports that receive federal funding must keep a Capital Improvement Program (CIP) on file with the FAA. The CIP identifies improvement projects that will be required at an airport over a specified period of time, estimates the order of implementation of the projects included in the plan, and estimates the total costs and funding sources of the projects. It is important to note that as the CIP progresses from projects planned in the current year to projects planned in future years, the plan becomes less detailed.

For purposes of this analysis, a CIP was developed that includes all new projects and facility expansion recommended within the context of this Master Plan Update. This CIP was developed based on the near-term (FY2002 -FY2005), mid-term (FY2006 - FY2010), and long-term (FY2011-FY2020) facility requirements documented in previous chapters of this Master Plan Update. In addition to those facility requirements identified in the Master Plan Update, the near-term planning period also includes rehabilitation projects as determined by the Pavement Management Plan and Airport management. For purposes of the cash flow analysis to be accomplished within the context of this Master Plan Update, required pavement rehabilitation (and maintenance) projects at the Airport are delineated in the CIP only through FY2007.

The CIP and its corresponding cost estimates are presented in Table 6-1. Cost estimates presented in Table 6-1 are based on a planning level of detail. While accurate for master planning purposes, actual project costs will likely vary from these planning estimates once project design and engineering estimates are developed. All costs developed for the CIP are presented in 2001 dollars. The costs include contingencies, design, and construction management. Each project was analyzed for AIP eligibility and a preliminary funding scenario was developed for each project from AIP, Airport/City, private, and other funding sources. Total cost of the CIP is estimated at $37,879,000. The anticipated funding breakdown is shown below:

AIP	$18,410,000
Airport/City	$ 3,265,000
Private	$ 8,178,000
Other	$ 8,026.000
Total	$37,879,000

The CIP shown in Table 6-1 includes certain projects, such as general aviation hangars and cargo development which would be funded by private sources. For purposes of this analysis, it was assumed that tenant-financed projects would not be constructed until demand warrants.

6.3 Funding for the Program

Based on the descriptions of the capital improvement projects presented in Table 6-1, the phasing of these projects, their associated costs, and eligible funding amounts as identified in the previous sections, a proposed funding plan for the Airport's CIP was developed. Federal participation in Airport capital development is based on the Airport Improvement Program as re-authorized in 2000. This analysis assumes continuance of AIP and PFC funding through the planning period without major changes. However, in the past, these programs have experienced fluctuations in levels of funding and interruptions in funding availability, therefore, it is important for financial management to consider maintaining reserve funds to support Airport activities should such fluctuations and interruptions occur in the future. In developing the funding plan, the controlling objectives were to maximize the use of resources from AIP and PFC funds and to minimize Airport/local funding requirements.

It is assumed that costs for the CIP will be generated from a combination of the following potential funding sources:

- Federal AIP Grants (both entitlement and discretionary)
- Passenger Facility Charges
- Airport/City Funds
- Private Funding

These funding sources are discussed in further detail in the following sub-sections.

Table 6-1

Capital Improvement Plan (page 1 of 2)

Year	Project	Total Cost	Project Funding Sources			
			FAA/AIP Grants	Airport/City	Private	Other
2002	Rehab Taxiway A/D	$350,000	$315,000	$35,000	$0	$0
	Rehab air carrier apron	$510,000	$459,000	$51,000	$0	$0
	Runway 16/34 Rehab - south of Runway 7/25 at a 60-foot width (includes re-marking of Runway 16/34 for the portion north of 7/25)	$260,000	$234,000	$26,000		
	Runway 16/34 Rehab (north of Runway 7/25)	$35,000		$35,000		
	T-hangar taxilane	$80,000	$72,000	$8,000		
	FY2002 Total Project Costs	**$1,235,000**	**$1,080,000**	**$155,000**	**$0**	**$0**
2003	Reconstruct Runway 7/25 (including 20' paved shoulders)	$2,475,000	$2,227,500	$247,500	$0	$0
	Misc. fog seal, localized preventive & stop gap pavement M&R	$89,996	$0	$89,996	$0	$0
	Agricultural Spraying Operations Pads, Design	$19,500	$17,550	$1,950	$0	$0
	FY2003 Total Project Costs	**$2,584,496**	**$2,245,050**	**$339,446**	**$0**	**$0**
2004	Runway 25 holding bay, 2" overlay	$31,976	$28,778	$3,198	$0	$0
	Runway 7/25 High Intensity Runway Lighting (HIRL) replacement	$425,000	$382,500	$42,500	$0	$0
	Misc. fog seal, localized preventive & stop gap pavement M&R	$112,592	$0	$112,592	$0	$0
	Agricultural Spraying Operations Pads (2 pads)	$130,000	$117,000	$13,000	$0	$0
	FY2004 Total Project Costs	**$699,568**	**$528,278**	**$171,290**	**$0**	**$0**
2005	Runway 11/29 (shift) Preliminary Design (to support EA)	$137,200	$123,480	$13,720	$0	$0
	Runway 11/29 (shift) Environmental Assessment	$200,000	$180,000	$20,000	$0	$0
	Taxiway B, 3" overlay (south of Runway 7/25, north of Guard unit)	$55,000	$49,500	$5,500	$0	$0
	Misc. slurry/fog seal, localized preventive & stop gap pavement M&R	$114,336	$0	$114,336	$0	$0
	Airport Traffic Control Tower Siting Study	$25,000	$0	$0	$0	$25,000 [1]
	FY2005 Total Project Costs	**$531,536**	**$352,980**	**$153,556**	**$0**	**$25,000**
2006	Runway 11/29 Shift 2000' NW Final Design	$548,800	$493,920	$54,880	$0	$0
	Secondary Access Road [2]	$4,000,000	$0	$0	$0	$4,000,000
	Phase I Air Cargo Improvements, Design	$33,900	$30,510	$3,390	$0	$0
	FY2006 Total Project Costs	**$4,582,700**	**$524,430**	**$58,270**	**$0**	**$4,000,000**
2007	Runway 11/29 Shift 2000' NW Construction	$3,354,000	$3,018,600	$335,400	$0	$0
	Passenger Terminal Building Improvements	$3,303,696	$2,642,957	$660,739	$0	$0
	Phase I GA Development (includes drainage and utilities for entire area)	$132,000	$118,800	$13,200	$0	$0
	Phase I GA Development (2-10-unit T-hangars, 2 conventional hangars)	$528,000	$0	$0	$528,000	$0
	Phase I Air Cargo Improvements	$226,000	$203,400	$22,600	$0	$0
	FY2007 Total Project Costs	**$7,543,696**	**$5,983,757**	**$1,031,939**	**$528,000**	**$0**

Table 6-1

Capital Improvement Plan (page 2 of 2)

Year	Project	Total Cost	Project Funding Sources: FAA/AIP Grants	Airport/City	Private	Other
2008	Airport Traffic Control Tower Improvements	$7,500,000 3/	$6,750,000	$750,000	$0	$0
	Master Plan Update	$200,000	$180,000	$20,000	$0	$0
	FY2008 Total Project Costs	**$7,700,000**	**$6,930,000**	**$770,000**	**$0**	**$0**
2010	Fuel Farm	$500,000	$0	$500,000	$0	$0
	Improvements for Deicing	$250,000	$225,000	$25,000		
	New FBO in GA Development Area	$600,000	$0	$0	$600,000	$0
	FY2010 Total Project Costs	**$1,350,000**	**$225,000**	**$525,000**	**$600,000**	**$0**
2011	Phase II GA Development (1-10 unit T-hangar, 2 conventional hangar)	$450,000	$0	$0	$450,000	$0
	Agricultural Spraying Operations Pads, Design	$33,000	$29,700	$3,300	$0	$0
	FY201 Total Project Costs	**$483,000**	**$29,700**	**$3,300**	**$450,000**	**$0**
2012	Agricultural Spraying Operations Pads (3 pads)	$220,000	$198,000	$22,000	$0	$0
	FY2012 Total Project Costs	**$220,000**	**$198,000**	**$22,000**	**$0**	**$0**
2014	ARFF/SRE Expansion Design 4/	$521,850	$0	$0	$0	$521,850
	Phase II Air Cargo Improvements, Design	$131,550	$118,395	$13,155	$0	$0
	FY2014 Total Project Costs	**$653,400**	**$118,395**	**$13,155**	**$0**	**$521,850**
2015	ARFF/SRE Expansion 4/	$3,479,000	$0	$0	$0	$3,479,000
	Phase II Air Cargo Improvements	$6,817,000	$195,300	$21,700	$6,600,000	$0
	FY2015 Total Project Costs	**$10,296,000**	**$195,300**	**$21,700**	**$6,600,000**	**$3,479,000**
	TOTAL PROJECT COSTS FY 2002-2015	***$37,879,396***	***$18,410,890***	***$3,264,656***	***$8,178,000***	***$8,025,850***

Sources: David Evans and Associates, Mead & Hunt, and Pavement Services Inc., 2001.
Airport Management, February 2003.
PDT ACIP 2002-2004

Notes:
1/ FAA Northwest Mountain Region practice is that ATCT siting studies are typically funded and contracted directly through Airways & Facilities.
2/ Further studies of the secondary access road, including financial feasibility and funding, will be required prior to implementation of this project.
3/ Estimated ATCT project cost based on a range of alternate sites; this CIP assumes the high end of the range.
4/ The ARFF/SRE expansion will be driven by the development of the industrial park being able to support the structural component, as well as the manning of the station. AIP-eligible portions of the ARFF/SRE project will be determined based on more detailed facility design.
** Cost estimates for smaller paving jobs assume that they would be combined with larger paving jobs to take advantage of mobilization "economies". If they require distinct mobilization efforts, total project costs could increase considerably.

6.3.1 Federal AIP Grants

In 2000, Congress enacted the Wendell H. Ford Aviation Investment and Reform Act for the 21st Century, commonly referred to as the "AIR-21" Bill. This sweeping legislation increased Airport Improvement Program money from $2.4 billion in 1999 to $3.4 billion in 2003. Airports such as PDT are apportioned $650,000 for fiscal year 2001 and $1 million dollars for fiscal years 2002 and 2003. This is an increase from the $500,000 the Airport has received in the past. For planning purposes it is assumed that after fiscal year 2003, AIP passenger entitlement monies for PDT will be $650,000 through the remainder of the planning period.

The AIP program also allows for discretionary funding to be made available from the FAA to provide financial support for major capacity or safety-related projects. AIP discretionary funding is not specifically broken out among the funding sources, since projects that may be funded in this manner would compete against other eligible projects in the (FAA Northwest Mountain) Region in the particular year of planned implementation.

6.3.2 Passenger Facility Charges

The Passenger Facility Charge (PFC) program was created with the passage of the Aviation Safety and Capacity Expansion Act of 1990 and later amended by the AIR-21 legislation in 2000, which allows for a maximum PFC of $4.50 per enplaned passenger to be collected. The program is designed to assist airports in obtaining additional funds needed for capital improvement projects. The PFC program and requirements are described in 14 CFR Part 158, *Passenger Facility Charges*. The PFC money collected by the airport can be used as the sponsor's share for a project. Like federal entitlement and discretionary money, certain criteria must be met before PFC funds can be imposed and used. Projects eligible to use PFC money are any AIP-eligible project, this includes development or planning projects, such as noise compatibility projects; gates related to areas for movement of passengers and baggage; on-airport ground access projects; all projects that preserve or enhance safety, security, or capacity; reduce/mitigate noise impacts; or enhance competition among carriers. Projects not eligible for PFC monies generally include any projects that do not fit the above description including but not limited to parking facilities (unless the airport does not charge for parking), rental car lots, restaurant facilities, rental car facilities, and other concession facilities.

The Eastern Oregon Regional Airport applied for the authority to impose and use passenger facility charges in 1995. The first PFC application was approved by the FAA and the Airport is currently collecting on that application. A total of $182,801 was approved for collection and use through the original application and subsequent amendments. In June 2000, the Airport received a Record of Decision for its second PFC application. The Airport was approved to collect $303,739 to help fund six projects under this new PFC application. The earliest charge effective date for this new application is December 1, 2002. The estimated charge expiration date is January 1, 2012. The projects approved in the second PFC application are:

- Replace Aircraft Rescue and Firefighting (ARFF) Vehicle
- Rehabilitate Pavement on West General Aviation Apron A

- Rehabilitate Pavement of Taxiway D
- Install Precision Approach Path Indicator (PAPI) on Runway 25
- Rehabilitate Runway 11-29
- Rehabilitate Terminal Apron

Future PFC collections are presented in **Table 6-2** and assume that the Airport will continue with the $3 PFC through 2002 before amending the existing charge level to the maximum amount allowed, which is $4.50. The typical time frame for implementing an amendment to the PFC to change the charge amount is presented below.

A letter of notification must be sent to the air carriers operating at the Airport no sooner than 30 days and no later than 45 prior to consultation meeting. The Airport must wait 30 days after the consultation meeting prior to submitting the amendment to the FAA for review. After submittal to the FAA, the FAA will have 30 days in which to issue its finding for the PFC amendment. Before collections can start at the new charge level the airport must send a notice to the air carriers at least 60 days prior to the new charge effective date. The entire process from sending the initial notice to the air carriers to starting collections takes approximately 150 to 165 days. Assuming the airport starts the PFC amendment process by the end of 2001, the Airport could be collecting at the new charge level, $4.50, by the middle of 2002. This will bring the anticipated charge expiration date of January 1, 2012 to June 30, 2007.

Based on this review of the Airport's current PFC program, PFC funds are not anticipated to be used to fund projects contained in the CIP through 2007. The City should periodically reevaluate the PFC program based on changes in passenger demand (which would affect collections) and future legislative changes.

6.3.3 Airport/City Funds

Airport/City funds include: Airport revenues, the Pendleton Airport Loan Program, and the City of Pendleton General Fund. These are discussed in the following subsections:

Airport revenues. Revenues are earned at the Airport from a variety of sources, including airline lease payments and landing fees, concession fees, rental income from the users of various airport facilities, and other sources. Airport management is continuously searching for ways to expand airport revenues, to help make the Airport more financially self-sufficient.

Pendleton Airport Revolving Loan Program (ARLP). This program is a revolving loan fund administered by the City of Pendleton in cooperation with the Oregon Economic Development Department (OEDD). The ARLP provides short-term, fixed rate financing for the rehabilitation of airport industrial buildings.

The ARLP was established to encourage and assist building owners and businesses in the Airport Industrial Area to improve and upgrade the appearance of their buildings, increase security, assist in business expansion and retention and promote new business opportunities. The ARLP is a condition of several grants awarded for building rehabilitation. This fund will collect the payments made from

Table 6-2

Projected Airport Entitlement Funds and Passenger Facility Charge Revenue

Fiscal Year	Projected Enplanements	Projected Enplanements (2 yrs. Prior)	Entitlement Funds 1/	Passenger Facility Charges 2/	Total Funds
1999	14,007	9,324	$500,000	$38,855	$538,855
2000	14,412	13,372	$500,000	$39,978	$539,978
2001	14,828	14,007	$650,000	$41,134	$691,134
2002	15,257	14,412	$1,000,000	$42,322	$1,042,322
2003	15,698	14,828	$1,000,000	$65,915	$1,065,915
2004	16,151	15,257	$650,000	$67,820	$717,820
2005	16,618	15,698	$650,000	$69,780	$719,780
2006	17,098	16,151	$650,000	$71,796	$721,796
2007	17,593	16,618	$650,000	$73,871	$723,871
2008	18,101	17,098	$650,000	$76,006	$726,006
2009	18,624	17,593	$650,000	$78,203	$728,203
2010	19,162	18,101	$650,000	$80,463	$730,463
2011	19,716	18,624	$650,000	$82,788	$732,788
2012	20,286	19,162	$650,000	$85,181	$735,181
2013	20,872	19,716	$650,000	$87,643	$737,643
2014	21,475	20,286	$650,000	$90,175	$740,175
2015	22,096	20,872	$650,000	$92,782	$742,782
2016	22,735	21,475	$650,000	$95,463	$745,463
2017	23,392	22,096	$650,000	$98,222	$748,222
2018	24,068	22,735	$650,000	$101,060	$751,060
2019	24,763	23,392	$650,000	$103,981	$753,981
2020	25,479	24,068	$650,000	$106,986	$756,986
Total Projected Revenue			***$14,700,000***	***$1,690,426***	***$16,390,426***

Source: Mead & Hunt, Inc., July 2001.

Notes: 1/ Entitlement dollars for FY2001-2003 reflect AIR-21 legislation and assumes that Congress will appropriate the monies. Entitlement monies for FY2004-2020 assumes that entitlement funding will be at $650,000.

2/ PFC monies assume a charge level of $3 through FY2002, and then an increase to a charge level of $4.50 through the remainder of the planning period.

airport rehabilitation loans and make the funds available for additional rehabilitation loans.

City of Pendleton General Fund. The Airport receives funds from the City of Pendleton general fund to pay for the airport portion of AIP-eligible capital projects, which is typically 10 percent of the total project cost. This is essentially treated as a loan to the Airport to help support the Capital Improvement Program, with the intent of the Airport to repay those monies borrowed from the City.

6.3.4 Private Funding

It is anticipated that certain types of development identified in the Master Plan Update CIP will be funded solely from private sources. Historically, conventional and T-hangar development projects at the Airport have been implemented by private individuals or businesses funding the construction of hangar facilities on lands leased to those parties by the Airport. It is anticipated that this practice will continue through the study period. It is also anticipated that the air cargo building development recommended in the Master Plan Update will be funded from private sources. This development could involve the Airport leasing an area of land set aside for air cargo development to a private developer, who would construct the cargo building on that site and oversee the operation of the building.

6.4 Historic and Projected Airport Revenues

Historic, budgeted, and projected airport revenues are presented in **Table 6-3** and **Table 6-4.** Historical and budgeted information related to airport revenues was received from the City of Pendleton and the Airport. Discussions with airport management and the City of Pendleton formed the basis for the projected airport revenues. Historic and budgeted airport revenues and projected airport revenues are detailed below.

6.4.1 Historical and Budgeted Airport Revenues

Table 6-3 depicts the Airport's historical revenues from FY1996 through FY2000, as well as budgeted revenues for FY2001 and FY2002. As shown in Table 6-4, the major source of revenues at the Airport in the years FY 1996 through FY 2000 has been commercial services under the charges for services, however for the entire airport revenues, grants are the largest generator of revenue for the Airport. Other areas that provide significant revenue streams include aviation rents, residential rents, and farm land operations. Revenues have increased from $1,614,363 in FY1996 to $2,297,522 in FY2000. Revenues are budgeted to be $2,792,430 in FY2002.

Revenues at the Airport are classified into six major categories. These categories beginning working capital, licenses and permits, intergovernmental revenues, charges for services, miscellaneous revenues, and transfers are presented in Table 6-3.

Beginning working capital is the amount of money that the Airport "borrows" from the City of Pendleton to balance its budget every year. Oregon tax laws require that the municipal funds have a starting balance of zero every year.

Table 6-3

Historical and Budgeted Airport Revenues

	Actual					Budgeted	
	FY1996	FY1997	FY1998	FY1999	FY2000	FY2001	FY2002
Beginning Working Capital	-$72,517	-$377,822	-$539,440	-$620,053	-$513,442	$0	$0
Licenses and Permits	$0	$0	$0	$0	$0	$0	$0
Intergovernmental Revenues							
Federal Revenues - Tower	$187,775	$183,894	$173,987	$202,738	$187,142	$190,000	$190,000
Federal Revenues - AIP Grants	$957,772	$206,646	$588,538	$681,271	$1,879,164	$1,153,000	$582,000
State Revenues - Grants	$0	$32,473	$112,042	$0	$0	$0	$0
Total Intergovernmental Revenues	$1,145,547	$423,013	$874,567	$884,009	$2,066,306	$1,343,000	$772,000
Charges for Services							
Residential Rents	$73,701	$66,984	$62,973	$56,602	$52,370	$50,000	$50,000
Aviation Rents	$72,573	$72,550	$56,111	$52,348	$49,568	$60,000	$50,000
Commercial Rents	$81,714	$100,681	$109,821	$169,383	$152,669	$120,000	$170,000
Landing Fees	$29,248	$21,225	$25,798	$32,615	$32,180	$30,000	$42,000
Terminal Rents	$34,404	$32,483	$34,724	$40,455	$36,498	$45,000	$40,000
Farm Land Operations	$71,607	$86,798	$7,747	$101,234	$47,351	$60,000	$60,000
Fuel Flowage Fees	$3,745	$3,379	$2,351	$3,757	$3,028	$12,000	$8,000
Security Deposits	$0	$0	$0	$75	$0	$0	$0
Passenger Facility Charge	$16,865	$32,052	$27,512	$38,882	$36,012	$45,000	$40,000
Total Charges for Services	$366,992	$416,152	$327,037	$495,351	$409,676	$422,000	$460,000
Miscellaneous Revenues							
Sale of Land/Buildings	$15,558	$9,877	$9,877	$9,877	$20,756	$10,000	$10,000
Telephone Excise	$683	$466	$239	$109	$103	$500	$300
Other Misc. Income	$8,090	$3,928	$11,924	$318,144	$12,675	$11,000	$9,000
Investment Income	$10	$28	$3,513	$70	$448	$3,500	$100
Sale of Bonds/Loan Proceeds	$0	$0	$0	$0	$0	$1,257,100	$1,480,030
Total Misc. Revenues	$24,341	$14,299	$25,553	$328,200	$33,982	$1,282,100	$1,499,430
Transfers							
Transfer from Fire Equipment Fund	$0	$0	$32,500	$0	$0	$0	$0
Transfer from General Fund	$150,000	$50,000	$94,945	$63,500	$301,000	$0	$61,000
Total Transfers	$150,000	$50,000	$127,445	$63,500	$301,000	$0	$61,000
TOTAL FUND RESOURCES	$1,614,363	$525,642	$815,162	$1,151,007	$2,297,522	$3,047,100	$2,792,430

Source: City of Pendleton

Table 6-4

Budgeted & Projected Revenues

	Budgeted		Projected				
	FY2001	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007
Beginning Working Capital	$0	$0	$0	$0	$0	$0	$0
Licenses and Permits	$0	$0	$0	$0	$0	$0	$0
Intergovernmental Revenues							
Federal Revenues - Tower	$190,000	$190,000	$190,000	$190,000	$190,000	$190,000	$190,000
Federal Revenues - AIP Grants	$1,153,000	$582,000	$1,000,000	$650,000	$650,000	$650,000	$650,000
State Revenues - Grants	$0	$0	$0	$0	$0	$0	$0
Total Intergovernmental Revenues	$1,343,000	$772,000	$1,190,000	$840,000	$840,000	$840,000	$840,000
Charges for Services							
Residential Rents	$50,000	$50,000	$48,000	$46,000	$44,000	$42,000	$40,000
Aviation Rents	$60,000	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000
Commercial Rents 1/	$120,000	$170,000	$178,500	$198,320	$229,390	$264,867	$297,984
Landing Fees	$30,000	$42,000	$43,260	$44,558	$45,895	$47,271	$48,690
Terminal Rents	$45,000	$40,000	$40,000	$40,000	$40,000	$40,000	$40,000
Farm Land Operations	$60,000	$60,000	$60,000	$60,000	$56,000	$50,400	$50,400
Fuel Flowage Fees	$12,000	$8,000	$8,228.80	$8,464	$8,706	$8,955	$9,211
Security Deposits	$0	$0	$0	$0	$0	$0	$0
Passenger Facility Charge	$45,000	$40,000	$65,915	$67,820	$69,780	$71,796	$73,871
Total Charges for Services	$422,000	$460,000	$493,904	$515,161	$543,771	$575,290	$610,156
Miscellaneous Revenues							
Sale of Land/Buildings	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000
Telephone Excise	$500	$300	$309	$317	$327	$336	$346
Other Misc. Income	$11,000	$9,000	$10,000	$10,000	$10,000	$10,000	$10,000
Investment Income	$3,500	$100	$100	$100	$100	$100	$100
Sale of Bonds/Loan Proceeds	$1,257,100	$1,480,030	$2,188,585	$2,372,426	$2,571,710	$2,787,734	$3,021,903
Total Misc. Revenues	$1,282,100	$1,499,430	$2,208,994	$2,392,844	$2,592,137	$2,808,169	$3,042,349
Transfers							
Transfer from Fire Equipment Fund	$0	$0	$0	$0	$0	$0	$0
Transfer from General Fund	$0	$61,000	$0	$0	$0	$0	$0
Total Transfers	$0	$61,000	$0	$0	$0	$0	$0
TOTAL FUND RESOURCES	$3,047,100	$2,792,430	$3,892,897	$3,748,005	$3,975,907	$4,223,459	$4,492,505

Sources: Budgeted - City of Pendleton.
Projected - Mead & Hunt and Airport Management.

Note: 1/ Projected revenues for FY2004 through FY2007 were increased (beyond an amount initially projected based on historical trends) to cover Airport operating expenses.

Licenses and permits is related to additional licenses and permits the Airport would need for operation. This fund has had a balance of zero for the past five years.

Intergovernmental revenues include federal grants for the contract tower program, airport improvement program monies, and state of Oregon grants.

The *charges for services* category in the airport revenues includes such line items as rents collected from aviation tenants, residential tenants, terminal tenants, and commercial tenants. Also included in this category are landing fees, fuel flowage fees, and farmland operations fees. Lastly, the passenger facility charge is in this category.

Miscellaneous revenues include the sale of land and buildings, a pay telephone excise, and other miscellaneous income. Other miscellaneous income has remained rather constant over the reviewed FY1996-FY2000, except for FY1999 which included an insurance payment for a building which burned.

Lastly, *transfers* included with the airport revenues are transfers from the fire equipment fund and transfers from the general fund. The transfers from the general fund are usually the Airport's 10 percent match required for FAA funded projects.

6.4.2 Projected Airport Revenues

Table 6-4 presents FY2001 and FY2002 budgeted revenues, as well as projected revenues for the Airport where projected through FY2007. Oregon State Budget laws require the beginning working capital be $0 for the start of each year. There are no license or permit fees projected through FY2007.

Intergovernmental revenues are related to the contract tower and the AIP program. The contract tower federal grant is projected to remain flat at $190,000 through FY2007, however this number could change depending on wage and salary classifications as approved by the FAA. AIP grants for the Airport are projected to be $1,000,000 for FY2003 (provided that the Congress appropriates the fully authorized amount in the AIR-21 legislation) and is projected to be $650,000 from FY2004 through FY2007.

As the Airport and the associated industrial park continues to transform from a residential area to a commercial area, the residential rents are projected to decrease approximately 4 percent each year between FY2002 and FY2007. Aviation rents are projected to remain flat for the planning period, while commercial rents are projected to increase[1]. Landing fees and fuel flowage fees are tied to the air carriers operations projections presented in Chapter Two, and therefore are projected to increase approximately 2.86 percent each year through FY2007. Farmland operations are projected to remain constant through FY2004 before decreasing approximately 10 percent to accommodate the Runway 11/29 runway improvements, and then to decrease another 10 percent in FY2006. After FY2006, farmland operations revenues are projected to remain stable. Lastly, Passenger Facility Charges are

[1]Projected "Commercial Rent" revenues for FY2004 through FY2007 were increased (beyond an amount initially projected based on historical trends) to cover Airport operation expenses. The additional amount of annual increases ranges from $5,800 in FY2004 to $81,000 in FY2007.

projected to increase from approximately $40,000 in FY2002 to $73,871 in FY2007.

Miscellaneous revenues are projected to remain constant through the planning period. Telephone excise will increase at a modest rate of approximately 2.9 percent from $300 in FY2002 to $346 in FY2007. The sale of bonds/loan proceeds at the Airport is used as an accounting line to balance the Airport's finances.

The *transfer* from the general fund reflects the Airport's 10 percent match for FAA AIP projects. It is assumed that the City of Pendleton will continue to support the improvements at the Airport by providing the 10 percent local match.

Total airport revenues are projected to increase from $2,792,430 in FY2002 (budgeted) to $4,492,505 in FY2007.

6.5 Historic and Projected Airport Expenses

Historic, budgeted, and projected airport expenses are presented in **Table 6-5** and **Table 6-6**. Historical and budgeted information was received from the City of Pendleton and the Airport. Discussions with airport management and the City of Pendleton formed the basis for the projected airport expenses. Historic and budgeted airport expenses and projected airport expenses are detailed below.

6.5.1 Historic and Budgeted Airport Expenses

The Airport's historical operating expenses for FY 1996 through FY 2000 and budgeted FY2001 and FY2001 are presented in **Table 6-5**. Expenses are presented in five major categories: personal services, materials and services, capital outlay, debt service, and transfer from the airport revolving fund.

Personal services includes the salaries and wages, insurance, public employee retirement, and other employer paid taxes.

Materials and services includes the contract tower, electricity and natural gas, marketing, repairs and maintenance, airport ARFF training, street lights, water and garbage, travel and training, and other (which includes such items that can't be categorized as above or were a one-time expense).

The *capital outlay* line is related to the capital improvement projects at the Airport.

Debt service is the City of Pendleton's contribution to airport capital improvement projects and operating expenses which allows t eh Airport to balance its budget.

Lastly, the *transfer to Airport Revolving Loan Fund* is administered by the Airport.

Total expenses, as shown in Table 6-5, expenses have increased from $2,009,049 in FY1996 to $2,792,430 in FY2002 (budgeted).

Table 6-5

Historical and Budgeted Expenses

	Actual					Budgeted	
	FY1996	FY1997	FY1998	FY1999	FY2000	FY2001	FY2002
Personal Services							
Salaries & Wages	$144,871	$148,429	$144,908	$158,360	$171,859	$170,250	$176,100
Insurance	$14,962	$15,874	$14,120	$16,157	$16,430	$23,000	$30,750
Public Employee Retirement	$11,984	$13,584	$15,402	$16,269	$18,232	$19,500	$22,350
Other Employer-Paid Taxes	$11,241	$13,129	$12,732	$16,004	$14,856	$16,950	$17,100
Total Personal Services	$183,058	$191,016	$187,162	$206,790	$221,377	$229,700	$246,300
Materials and Services							
Contract-Tower	$175,273	$197,253	$189,582	$187,143	$187,142	$190,000	$190,000
Electricity and Natural Gas	$27,183	$38,674	$38,858	$45,115	$44,123	$38,000	$46,500
Marketing	$688	$1,143	$893	$2,706	$3,452	$2,500	$5,000
Repairs and Maintenance	$51,027	$57,459	$73,755	$114,553	$82,668	$51,500	$49,500
Airport ARFF Training	$7,744	-$420	$0	$1,908	$1,031	$4,000	$4,000
Street Lights	$2,750	$3,000	$2,250	$3,000	$3,000	$3,000	$3,000
Water and Garbage	$15,509	$15,161	$14,636	$13,662	$15,879	$15,600	$15,600
Travel and Training	$3,168	$3,678	$5,372	$2,808	$5,305	$3,000	$3,000
Other Materials and Services	$86,741	$100,206	$60,316	$95,251	$117,979	$106,840	$112,240
Total Materials and Services	$370,083	$416,154	$78,640	$466,146	$460,579	$414,440	$428,840
Capital Outlay	$1,431,607	$43,683	$730,011	$958,225	$2,161,028	$1,703,500	$1,046,500
Debt Service	$24,301	$26,256	$44,740	$33,388	$52,522	$699,460	$1,070,790
Transfer to Airport Revolving Loan Fund	$0	$0	$9,000	$0	$0	$0	$0
Total Fund Expenses	$2,009,049	$677,109	$1,049,553	$1,664,549	$2,895,506	$3,047,100	$2,792,430

Source: City of Pendleton.

Table 6-6

Budgeted and Projected Expenses

	Budgeted		Proposed				
	FY2001	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007
Personal Services							
Salaries & Wages	$170,250	$176,100	$181,911	$187,914	$194,116	$200,521	$207,139
Insurance	$23,000	$30,750	$36,900	$44,280	$53,136	$63,763	$76,516
Public Employee Retirement	$19,500	$22,350	$25,032	$28,036	$31,400	$35,168	$39,388
Other Employer-Paid Taxes	$16,950	$17,100	$17,613	$18,141	$18,686	$19,246	$19,824
Total Personal Services	$229,700	$246,300	$261,456	$278,372	$297,337	$318,699	$342,866
Materials and Services							
Contract-Tower	$190,000	$190,000	$190,000	$190,000	$190,000	$190,000	$190,000
Electricity and Natural Gas	$38,000	$46,500	$49,290	$52,247	$55,382	$58,705	$62,227
Marketing	$2,500	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000
Repairs and Maintenance	$51,500	$49,500	$50,000	$50,000	$50,000	$50,000	$50,000
Airport ARFF Training	$4,000	$4,000	$4,000	$4,000	$4,000	$4,000	$4,000
Street Lights	$3,000	$3,000	$3,150	$3,308	$3,473	$3,647	$3,829
Water and Garbage	$15,600	$15,600	$15,600	$15,600	$15,600	$15,600	$15,600
Travel and Training	$3,000	$3,000	$3,150	$3,308	$3,473	$3,647	$3,829
Other Materials and Services	$106,840	$112,240	$117,852	$123,745	$129,932	$136,428	$143,250
Total Materials and Services	$414,440	$428,840	$438,042	$447,207	$456,860	$467,027	$477,735
Capital Outlay	$1,703,500	$1,235,000	$2,584,496	$699,568	$531,536	$4,582,700	$7,543,696
Debt Service	$699,460	$1,070,790					
Transfer to Airport Revolving Loan Fund	$0	$0	$0	$0	$0	$0	$0
Total Fund Expenses	$3,047,100	$2,792,430	$3,283,994	$1,425,147	$1,285,733	$5,368,426	$8,364,297

Sources: Budgeted - City of Pendleton.
Projected - Mead & Hunt, Inc. and Airport Management.

6.5.2 Projected Airport Expenses

Projections for airport expenses are presented in **Table 6-6**. An annual inflation rate of three percent is assumed for many of the expense categories.

Total *personal services* are projected to increase from $246,300 FY2002 (budgeted) to $342,866 in FY2007. Salaries and wages are projected to increase approximately 3.3 percent per year from $176,100 FY2002 (budgeted) to $207,139 in FY2007. Insurance is projected to increase approximately 20 percent per year from $30,750 in FY2002 (budgeted) to $76,516 in FY2007. Public employee retirement is projected to increase from $22,350 in FY2002 (budgeted) to $39,388.34 in FY2007. Lastly, under personal services, other employer paid taxes are projected to increase approximately 3 percent per year from $17,100 FY2002 (budgeted) to $19,824 in FY2007.

The next major category *materials and services* is projected to increase from $428,840 FY2002 (budgeted) to $477,735 in FY2007 and is broken out as follows. The contract tower program is projected to remain constant at $190,000 through FY2007. Electricity and natural gas are projected to increase approximately 6 percent from $46,500 (budgeted) FY2002 to $62,227 in FY2007. Marketing is projected to remain constant at $5,000 through FY2007. Repairs and maintenance are projected to remain constant at $50,000 through FY2007. Airport ARFF training is projected to remain constant at $4,000 through FY2007. Street lights are projected to increase 5 percent a year from $3,000 in FY2002 (budgeted) to $3,829 in FY2007. Water and garbage are also projected to remain constant $15,600 per year, respectively. Travel and training are projected to increase approximately 5 percent per year from $3,000 (budgeted) in FY2002 to $3,828 in FY2007. Other materials and services are projected to increase at approximately 5 percent per year from $112,240 (budgeted) in FY2002 to $143,250 in FY2007.

The *capital outlay* for the Airport is directly related to the capital improvement program presented in Table 6-1. Capital outlay is $1,235,000 for FY2002 (budgeted), $2,584,496 for FY2003, $699,568 for FY2004, $531,536 for FY2005, $4,582,700 for FY2006, and $7,543,696 for FY2007.

6.6 Simplified Cash Flow

State of Oregon budget laws require that the Airport not carry over debt. Therefore, the Airport needs to be able to balance the budget (or zero it out) every year. In order for the Airport to accomplish this, the City of Pendleton has a revolving loan fund for the Airport to cover a portion of the cost of capital improvements that the Airport undertakes. These facts drive the type of feasibility analysis for the near-term CIP which, in essence, results in the limited true assessment of feasibility.

The simplified cash flow analysis is presented in **Table 6-7** and is configured in the following manner. The beginning balance is $0 for each year (based on State of Oregon budget laws). The next section, *airport operating revenues,* including the intergovernmental loan for the ATCT program, charges for

Table 6-7
Simplified Cash Flow Analysis

	Budget	Projected				
	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007
Beginning Balance	$0	$0	$0	$0	$0	$0
Airport operating revenues						
Intergovernmental (Tower only)	$190,000	$190,000	$190,000	$190,000	$190,000	$190,000
Charges for Services	$460,000	$493,904	$515,161	$543,771	$575,290	$610,156
Miscellaneous (not including load proceeds)	$80,400 1/	$20,409	$20,417	$20,427	$20,436	$20,446
Subtotal airport operating revenues	$730,400	$704,312	$725,579	$754,197	$785,726	$820,602
Airport operating expenses						
Personal services	$246,300	$261,456	$278,372	$297,337	$318,699	$342,866
Materials & Services	$428,840	$438,042	$447,207	$456,860	$467,027	$477,735
Subtotal airport operating expenses	$675,140	$699,498	$725,579	$754,197	$785,726	$820,601
Operating revenues minus operating expenses - proceeds 2/	**$55,260**	**$4,814**	**$0**	**$0**	**$0**	**$0**
Capital expenses	$1,235,000	$2,584,496	$699,568	$531,536	$4,582,700	$7,543,696
Intergovernmental Revenues (FAA/other grant funds)	$1,080,000	$2,245,050	$528,278	$352,980	$4,524,430	$5,983,757
Capital funding shortfall (Capital expenses less operating rev/exp proceeds less FAA and other grant funds)	**$99,740**	**$334,632**	**$171,289**	**$178,556**	**$58,270**	**$1,559,939**
Accumulated Balance for Capital Funding	$1,480,030	$1,814,662	$1,985,951	$2,164,507	$2,222,777	$3,782,716

Source: Mead & Hunt, Inc., January 2002.

Notes: 1/ Includes $61,000 transfer from general fund (Budget 2002 only)
2/ Projected revenues for FY2004 through FY2007 were increased (beyond an amount initially projected based on historical trends) to cover Airport operating expenses. This essentially is used as a mechanism for "zeroing out" the operation side of the Airport's finances and underscores the need to boost revenues in the future.

services, and miscellaneous revenues (not including loan proceeds). The sum of these line items provides the subtotal for airport operating revenues. *Airport operating expenses* include personal services and materials and services. The *operating revenues minus operating expenses* figure shows that the Airport can cover all operating expenses. However, to do this commercial rent revenues were increased beyond an amount initially projected. The "additional" commercial rents revenues range from $5,800 in FY2004 to $81,000 in FY2007.

The next line item, *capital expenses*, is taken from the Capital Improvement Plan, which is documented in Table 6-1. The *intergovernmental revenues (FAA/other grants)* consists of FAA and other grant funds for the capital projects. The *capital funding shortfall* (equals capital expenses, less operating revenue/expense proceeds, less FAA/other grant funds) provides the amount of money the Airport would need to receive from the city to implement the Capital Improvement Program for that year.

The City currently provides a loan to the Airport to cover the local share of capital projects. This is with the intent that the loan would be repaid at a later date, when the Airport has operating revenues that exceed operating expenses. The *accumulated balance for capital funding* provides a running total of that loan balance. This is projected to increase from approximately $1,480,000 in FY2002 (budgeted) to approximately $3,783,000 in FY2007.

6.7 Airport Economic Impact

The final element of this financial feasibility is to update the economic impact numbers developed in a statewide economic impact analysis (1996). A summary of the economic impact numbers are presented in **Table 6-8.**

Economic impacts at an airport are measured through employment, payroll, and output (spending). On-airport businesses and government activities account for a significant portion of the direct or first round economic benefits associated with the Airport. Additional first round impacts are also linked with visitors (both commercial service and general aviation) which arrive in the Pendleton area. The spending of the visitors then supports additional employment and associated payroll. As the first round of impacts related to employment, payroll, and output ripple through the economy, additional spin-off impacts are created; these are the secondary impacts. This update used the same multipliers as the 1996 study, given that multipliers change very little over the course of time. Adding the direct and secondary impacts produces the total annual impact that the Airport has on the community which exceeds $20 million.

6.7.1 Direct Impact

In 2001, the Airport had approximately 5,930 commercial visitors and approximately 12,378 general aviation visitor days to the community. Direct data regarding employment, payroll, and output were obtained through discussions with airport management and the State of Oregon Wage Information Office. Discussions with airport management regarding airport tenant employment recommended an increase of approximately two percent per year from 1995 to 2001, this increased employees from 117.5 to 129.7.

Table 6-8
Economic Impact Analysis

	Direct Impacts	+ Secondary Impacts	= Total Impacts
Employment			
Airport Tenants	129.7	109.7	239.4
CS Visitors	78.1	87.1	165.2
GA Visitors	25.3	28.2	53.5
Total	233.1	225.0	458.2
Payroll			
Airport Tenants	$3,729,607	$2,797,205	$6,526,812
CS Visitors	$1,479,226	$1,434,849	$2,914,075
GA Visitors	$479,309	$464,930	$944,239
Total	$5,688,142	$4,696,984	$10,385,126
Output			
Airport Tenants	$7,493,503	$6,894,023	$14,387,526
CS Visitors	$2,708,223	$2,058,249	$4,766,472
GA Visitors	$804,192	$611,186	$1,415,378
Total	$11,005,918	$9,563,458	$20,569,376

Source: Mead & Hunt, Inc.
The Economic Impact of Airports in Oregon, AirTech, 1996.
Airport Management
Oregon Wage Information, 2001. Oregon Employment Department.

Payroll for direct impact was calculated using a combination of the existing data in the 1996 report and updating the expenditures per visitor by using the Consumer Price Index. The average visitor expenditure for commercial service visitors is $411 and for general aviation visitors is $64. It is assumed that $1 million dollars spent by visitors supports 32 direct jobs.

Direct impacts for employment for airport tenants, commercial service, and general aviation visitors accounted for approximately 233.1 employees, $5.6 million in direct payroll, and $8.9 million in direct output.

6.7.2 Secondary Impacts

Direct on-airport tenants, commercial service (CS), and general aviation (GA) visitor impacts also create secondary impacts throughout the region. Secondary benefits are made up of induced and indirect impacts calculated with multipliers. Multipliers used for this update were taken from the 1996 study. Secondary impacts are presented in Table 6-8 and include approximately 225 employees, a payroll of approximately $4.7 million, and output at $9.6 million.

6.7.3 Total Output

For 2001, the total output (direct plus secondary impacts) which includes all on-airport tenants, commercial service visitors, and general aviation visitors is approximately $20.6 million. Total full-time employment related to airport tenants, commercial service visitors, and general aviation visitors is 458 persons. A total annual payroll is estimated to be approximately $10.4 million with the associated jobs.

6.8 Major Assumptions and Statement of Risks

Great care was taken in formulating this financial analysis for the Pendleton Airport Master Plan Update; however many assumptions were made in order to complete the analysis. The purpose of this section is to reiterate some of the major assumptions and also to point out some of the risks inherent in this type of analysis and things that the various stakeholders should bear in mind as the Airport implements it's improvement program.

- The capital improvement program contains projects related to safety, capacity, and the efficient day-to-day operation of the airport. Significant events may alter the timing of certain improvements, especially those related to capacity enhancement. As a result, special care should be given by Airport management regarding continuous reevaluation and implementation of projects. Safety projects, and those projects required in order for the Airport to comply with FAA criteria, should continue to hold a high priority.

- There are major assumptions made with regard to the long-term continuation of Federal funding sources, including the Airport Improvement Program and the Passenger Facility Charge program. If any of these change materially, the Airport may have to revise its CIP.

- The repercussions of the September 11, 2001 terrorist bombings include a near-term reduction

in aviation activity, including passenger demand. It is believed that aviation demand will rebound as consumer confidence rises; however, many airlines have reduced capacity in response to this downturn in demand and at the time this document is printed, it is uncertain whether those changes are temporary. At a minimum, this issue will have an adverse impact on near-term Airport revenues. The long-term effect is unknown, but it's effect may be significant.

- There are two major assumptions made with regard to local monies and the use of those monies to pay for airport operations and the implementation of the CIP. To cover operating expenses at the Airport, it is assumed that the Airport will increase operating revenues by a significant amount. This amount (beyond what was initially projected using historical trends, and initially calculated as a shortfall beginning in FY2004) ranges from $5,800 in FY2004 to $81,000 in FY 2007. To help implement the CIP, it is assumed that the City of Pendleton will provide the local grant match (typically 10 percent of the total project cost).

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Oregon Fish and Wildlife Office
2600 S.E. 98th Avenue, Suite 100
Portland, Oregon 97266
(503) 231-6179 FAX: (503) 231-6195

Reply To: 8330.10211(01)
File Name: Sp1021.wpd
OARS Number: 01-3874

August 21, 2001

Katherine S. Jones
Mead & Hunt, Inc.
6600 City West Parkway, Suite 225
Minneapolis, MN 55344

Subject: Eastern Oregon Regional Airport Development Plan (1-7-01-SP-1021).

Dear Ms. Jones:

This is in response to your letter, dated July 18, 2001, requesting information on listed and proposed endangered and threatened species that may be present within the area of the Eastern Oregon Regional Airport Development Plan in Umatilla County. The U.S. Fish and Wildlife Service (Service) received your correspondence on July 23, 2001.

We have attached a list (Attachment A) of threatened and endangered species that may occur within the area of the Eastern Oregon Regional Airport Development Plan. The list fulfills the requirement of the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). Federal Aviation Administration (FAA) requirements under the Act are outlined in Attachment B.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems on which they depend may be conserved. Under section 7(a)(1) and 7(a)(2) of the Act and pursuant to 50 CFR 402 *et seq.*, FAA is required to utilize their authorities to carry out programs which further species conservation and to determine whether projects may affect threatened and endangered species, and/or critical habitat. A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) which are major Federal actions significantly affecting the quality of the human environment as defined in NEPA (42 U.S.C. 4332 (2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to the Biological Assessment be prepared to determine whether they may affect listed and proposed species. Recommended contents of a Biological Assessment are described in Attachment B, as well as 50 CFR 402.12.

If FAA determines, based on the Biological Assessment or evaluation, that threatened and endangered species and/or critical habitat may be affected by the project, FAA is required to consult with the Service following the requirements of 50 CFR 402 which implement the Act.

Attachment A includes a list of candidate species under review for listing. The list reflects changes to the candidate species list published October 25, 1999, in the Federal Register (Vol. 64, No. 205, 57534) and the addition of "species of concern." Candidate species have no protection under the Act but are included for consideration as it is possible candidates could be listed prior to project completion. Species of concern are those taxa whose conservation status is of concern to the Service (many previously known as Category 2 candidates), but for which further information is still needed.

If a proposed project may affect only candidate species or species of concern, FAA is not required to perform a Biological Assessment or evaluation or consult with the Service. However, the Service recommends addressing potential impacts to these species in order to prevent future conflicts. Therefore, if early evaluation of the project indicates that it is likely to adversely impact a candidate species or species of concern, FAA may wish to request technical assistance from this office.

Your interest in endangered species is appreciated. The Service encourages FAA to investigate opportunities for incorporating conservation of threatened and endangered species into project planning processes as a means of complying with the Act. If you have questions regarding your responsibilities under the Act, please contact Cindy Bright or Diana Hwang at (503) 231-6179. For questions regarding anadromous fish, please contact National Marine Fisheries Service, 525 NE Oregon Street, Suite 500, Portland, Oregon 97232, (503) 230-5400. All correspondence should include the above referenced file number.

Sincerely,

for Kemper M. McMaster
State Supervisor

Attachments
1-7-01-SP-1021

cc: OFWO-ES
ODFW (nongame)
cc: Calem Morgan FAA

ATTACHMENT A

FEDERALLY LISTED AND PROPOSED ENDANGERED AND THREATENED SPECIES, CANDIDATE SPECIES AND SPECIES OF CONCERN THAT MAY OCCUR WITHIN THE AREA OF THE EASTERN OREGON REGIONAL AIRPORT DEVELOPMENT PLAN
1-7-01-SP-1021

LISTED SPECIES[1/]

Birds		
Bald eagle[2/]	*Haliaeetus leucocephalus*	T
Fishes		
Steelhead (Middle Columbia River)[3/]	*Oncorhynchus mykiss*	**T
Bull trout (Columbia River pop.)[4/]	*Salvelinus confluentus*	T

PROPOSED SPECIES

None

CANDIDATE SPECIES[5/]

Mammals	
Washington ground squirrel	*Spermophilus washingtoni*
Birds	
Yellow-billed cuckoo[6/]	*Coccyzus americanus*
Amphibians and Reptiles	
Columbia spotted frog	*Rana luteiventris*

SPECIES OF CONCERN

Mammals	
Pale western big-eared bat	*Corynorhinus (=Plecotus) townsendii pallescens*
Silver-haired bat	*Lasionycteris noctivagans*
Small-footed myotis (bat)	*Myotis ciliolabrum*
Long-eared myotis (bat)	*Myotis evotis*
Fringed myotis (bat)	*Myotis thysanodes*
Long-legged myotis (bat)	*Myotis volans*
Yuma myotis (bat)	*Myotis yumanensis*
Birds	
Western burrowing owl	*Athene cunicularia hypugea*
Ferruginous hawk	*Buteo regalis*
Willow flycatcher	*Empidonax trailli adastus*
Yellow-breasted chat	*Icteria virens*
Mountain quail	*Oreortyx pictus*
Amphibians and Reptiles	
Northern sagebrush lizard	*Sceloporus graciosus graciosus*

Fish	
Pacific lamprey	*Lampetra tridentata*
Interior redband trout	*Oncorhynchus mykiss gibbsi*
Plants	
Laurence's milk-vetch	*Astragalus collinus* var. *laurentii*
Disappearing monkeyflower	*Mimulus evanescens*
Little mousetail	*Myosurus minimus* ssp. *apus* (= var. *sessiliflorus*)

(E) - Listed Endangered *(T) - Listed Threatened* *(CH) - Critical Habitat has been designated for this species*
(PE) - Proposed Endangered *(PT) - Proposed Threatened* *(PCH) - Critical Habitat has been proposed for this species*

Species of Concern - Taxa whose conservation status is of concern to the Service (many previously known as Category 2 candidates), but for which further information is still needed.

** *Consultation with National Marine Fisheries Service may be required.*

1/ *U. S. Department of Interior, Fish and Wildlife Service, October 31, 2000, Endangered and Threatened Wildlife and Plants, 50 CFR 17.11 and 17.12*
2/ *Federal Register Vol. 60, No. 133, July 12, 1995 - Final Rule - Bald Eagle*
3/ *Federal Register Vol. 64, No. 57, March 25, 1999, Final Rule - Middle Columbia and Upper Willamette River Steelhead*
4/ *Federal Register Vol. 63, No. 111, June 10, 1998, Final Rule-Columbia River and Klamath River Bull Trout*
5/ *Federal Register Vol. 64, No. 205, October 25, 1999, Notice of Review-Candidate or Proposed Animals and Plants*
6/ *Federal Register Vol. 66, No. 143, July 25, 2001, 12-Month Finding for a Petition To List the Yellow-billed Cuckoo*

Oregon
John A. Kitzhaber, M.D., Governor

Department of Environmental Quality
Eastern Region
700 SE Emigrant
Suite 330
Pendleton, OR 97801
(541) 276-4063 Voice/TTY
FAX (541) 278-0168

Katherine S. Jones
Mead & Hunt, Inc.
6600 City West Parkway, Suite 225
Minneapolis, Minnesota 55344

August 20, 2001

Dear Ms. Jones:

Your letter of July 18, 2001 to the Department requested feedback on environmental issues that the Eastern Oregon Regional Airport should be aware of during their master plan update. I have requested input from the programs within the Department that have an interest in the project and can offer the following:

Stormwater

Any construction that disturbs more than 5 acres requires a construction storm water permit (NPDES 1200-C). After March 2003, Phase II of the storm water rules lowers the minimum disturbance restriction to 1 acre.

The Airport's Storm Water Pollution Control Plan (SWPCP), which is required by the industrial storm water permit (NPDES 1200-Z), should be reviewed to address best management practices for the proposed improvements.

Disposal or discharge of industrial wastewater (e.g.. vehicle wash water) will require a permit from the Department, unless it is discharged to a permitted facility like the City of Pendleton's sewage treatment plant.

Solid Waste

To the extent practical, asphalt that is removed as part of any improvements should be recycled rather than disposed of.

Hazardous Waste

In regard to "expansion of agricultural spraying operations," the airport should consider moving the existing pesticide rinse pad to a remote location. The airport should ensure that all pesticide spray equipment filling is done on the pad or an extension to the pad to contain any possible spills. Additionally, the rinse pad should not be connected to any stormwater, drywells, drainfields, or sanitary sewers. Storage of pesticides should be done in accordance with the State and Local Fire Departments and a "Community Right to Know" requirements. At a minimum, the airport would need to ensure compliance

with Oregon Administrative Rule Chapter 340, Division 109, Management of Pesticide Waste, as it pertains to a "public use airport".

In regard to "construction of a fuel farm," Spill Prevention Control and Countermeasure (SPCC) requirements might be applicable depending on the anticipated capacity of the tank farm (an aboveground fuel storage capacity of more than 660 gallons in a single container; or a total aboveground fuel storage capacity of more than 1320 gallons or a total underground buried storage capacity of more than 42,000 gallons). Do not connect the containment discharge (stormwater) to the stormwater system in the event of a spill. It also should not be allowed to discharge to the ground. Note: the SPCC requirements are administered by the USEPA.

Air Quality

Any asphalt plant, redimix plant, or rock crusher operating in the State of Oregon supplying materials for the airport expansion must be in possession of an active Air Contaminant Discharge Permit (ACDP) in accordance with Oregon Administrative Rules (OAR) 340-216-0090 (34, 39 & 42).

If buildings are to be demolished or disturbed for the expansion project, under the Federal NESHAP they are required to undergo a survey by a legitimate asbestos consultant. An Oregon-licensed asbestos abatement firm must remove any friable (easily broken or shattered) asbestos found during the survey. Any nonfriable asbestos must be removed, handled and disposed of in accordance with OAR 340, Division 248 (this requirement will be added to the revised OAR Division 248 pending legislative approval).

Any open burning of clean land clearing debris or woody construction or demolition debris at the site is prohibited without an open burn letter permit from DEQ in accordance with OAR 340-264-0100(4)(l).

During land clearing and construction all dust must be adequately suppressed in order to minimize nuisance dust conditions for nearby neighbors.

New fuel tanks installed should be of a type that will minimize emissions of fuel vapors (volatile organic compounds) to the atmosphere.

I hope this information of value to you in the updating of the Eastern Oregon Regional Airport mast plan. Should you have any questions about this information please feel free to call us at (541) 276-4063 and ask for a representative of the appropriate program.

Sincerely,

Mitch Wolgamott
Land Application Manager

Oregon
John A. Kitzhaber, M.D., Governor

Parks and Recreation Department
State Historic Preservation Office
1115 Commercial St. NE
Salem, OR 97301-1012
(503) 378-4168
FAX (503) 378-6447

August 20, 2001

File Code: Umatilla

Katherine Jones
Mead & Hunt, Inc.
6600 City West Parkway, Suite 225
Minneapolis, MN 55344

RE: Development Plans
Eastern Oregon Regional Airport
Pendleton, Umatilla County, Oregon

Dear Ms. Jones:

Thank you for your submission of project documentation for the property referenced above. This information was submitted in compliance with the National Historic Preservation Act of 1966 (16 U.S.C. 470f), Section 106, and reviewed under criteria and procedures outlined in 36 CFR Part 800. Further consultation and comment was also solicited from appropriate SHPO program staff. This review resulted in the following determination:

Any development plans that will impact standing structures fifty years of age or older, or that involve ground disturbance, will be of interest to the Oregon SHPO. We look forward to receiving formal Section 106 submittals from the Federal Aviation Administration for each of these projects. Our submittal guidelines and forms for Section 106 review can be found on our web site, at: www.shpo.state.or.us. Click on "Publications" and scroll down to the Section 106 information.

If you have further questions or need additional assistance, please feel free to contact me at the SHPO, extension 229.

Sincerely,

Christine Curran
Preservation Specialist

Appendix B
Airport Layout Plan Set Description
Eastern Oregon Regional Airport at Pendleton

The purpose of the Airport Layout Plan set is to present the recommended development plan for the Eastern Oregon Regional Airport at Pendleton. It is intended to identify areas that must be reserved for aviation related development and to identify lands that can be developed for non-aviation purposes.

Airport plans at Pendleton consist of 13 separate drawings that graphically depict the recommendations for airport development. These drawings are presented at the end of this Appendix. The FAA approval letter is also contained in this Appendix.

Sheet #:

1. Cover Sheet
2. Airport Data Summary
3. Airport Layout Plan (ALP)
4. Terminal Area Plan
5. Airspace Plan
6. Runway 7/25 Approach Plan and Profile
7. Runway 11/29 Approach Plan and Profile
8. Runway 16/34 Approach Plan and Profile
9. Runway Protection Zones for Runways 7/25
10. Runway Protection Zones for Runways 11/29
11. Runway Protection Zones for Runways 16/34
12. Airport Land Use Plan
13. Exhibit "A" Airport Property Map

These drawings were developed in accordance with FAA Advisory Circular 150/5300-13, Appendix 7.

Cover Sheet (Sheet 1)

The Cover Sheet includes the name of the airport, the consultants working on the project, and a list of drawings included in the set.

Airport Data Summary (Sheet 2)

The Airport Data Summary sheet includes the wind rose, airport and runway data, FAA safety area dimensions, and location and vicinity maps.

Airport Layout Plan (Sheet 3)

The Airport Layout Plan (ALP) presents the existing and ultimate airport layout and depicts all improvements that will enable the Airport to meet forecasted aviation demand. Detailed airport and runway data, as well as a legend, are provided on the ALP to facilitate the interpretation of the development recommendations.

Terminal Area Plan (Sheet 4)

The Terminal Area Plan is a large scale, plan view of the areas where aprons, buildings, hangars and parking lots are located. This sheet represents a specific depiction of terminal area developments and provides plans for the construction of facilities to meet the forecast demands.

Airspace Plan (Sheet 5)

This drawing provides a plan view of FAR Part 77 surfaces at Pendleton. This information is based on Federal Aviation Regulations Part 77, Objects Affecting Navigable Airspace. In order to protect the airspace and the approaches to each runway from hazards that could affect the safe and efficient operations of the airport, Federal criteria have been established in FAR Part 77 for use by land use planners to control the height of objects in the vicinity of the airport.

The Airspace Plan is a graphic depiction of these Federal criteria. Design criteria for surface heights, angles and radii on this plan are determined by the airport category and runway approach instrumentation. An Airspace Plan also depicts obstructions in the vicinity of an airport. Obstructions to FAR Part 77 at Pendleton are indicted on Sheet 5.

Runway Approaches (Sheets 6, 7, 8)

Sheets 6, 7, and 8 depict Runway 7/25, Runway 11/29, and Runway 16/34 approaches, respectively. The approach surfaces are shown in both plan and profile view and indicate existing and ultimate slopes, where necessary. In addition, the profile view depicts objects in the path of the approach surfaces, their elevations, and the height by which the particular object clears the approach slope.

Runway Protection Zones - RPZs (Sheet 9, 10, 11)

The RPZs for Runway 7/25, Runway 11/29, and Runway 16/34 are depicted in Sheets 9, 10, and 11, respectively. These sheets show existing and ultimate RPZ dimensions and locations in both plan and profile views. The RPZ sheets also depict NAVAID locations.

Airport Land Use Plan (Sheet 12)

There are two primary considerations for airport land-use planning. These are first, to secure those areas that are essential to the safe and efficient operation of the airport; and, second, to determine compatible land uses for excess property both on the airside and landside that will be most advantageous to the airport and the community.

The airport is divided into several primary use groups. These include Aviation Activities (AA), Light Industry (M1), Heavy Industry (M2), and others shown on Sheet 12.

Property Plan (Sheet 13)

The last drawing of the ALP set is a depiction of the entire airport property. This drawing shows the tracts of land that were acquired for development of the airport and the current status of the property.

U.S. Department
of Transportation

**Federal Aviation
Administration**

Seattle Airports District Office
1601 Lind Avenue, S. W., Ste 250
Renton, Washington 98055-4056

March 7, 2003

Mr. Larry Dalrymple
Airport Manager
Eastern Oregon Regional Airport
2016 Airport Road
Pendleton, OR 97801

Dear Mr. Dalrymple:

The Eastern Oregon Regional Airport at Pendleton Airport Layout Plan (ALP), prepared by David Evans and Associates, in association with Mead & Hunt, and bearing your signature, is approved and the master plan will be accepted upon receipt of two copies of the final report. A signed copy of the approved ALP is enclosed.

An aeronautical study (no. 2002-ANM-4117-NRA) was conducted on the proposed development to determine its effect on the safe and efficient utilization of the navigable airspace by aircraft. If applicable, the aeronautical study also evaluated existing and proposed instrument flight procedures and navigational aids associated with the airport and the subject approved plans.

This ALP approval considers only the safety, utility, and efficiency of the airport, and it is conditioned on acknowledgement that any development on airport property requiring Federal environmental approval must receive such written approval from FAA prior to commencement of the subject development. This ALP approval is also conditioned on acceptance of the plan under local land use laws. We encourage appropriate agencies to adopt land use and height restrictive zoning based on the plan since action toward this end is a prerequisite of the Airport Improvement Program (AIP).

Approval of the plan does not indicate that the United States will participate in the cost of any development proposed. When airport construction, alteration, or deactivation is undertaken, such action requires notification and review in accordance with the provisions of Part 77 and Part 157 of the Federal Aviation Regulations.

Please attach this letter to the Airport Layout Plan and retain it in the airport files for future use under the Airport Improvement Program. We wish you great success in your plans for the development of the airport.

Sincerely,

J. Wade Bryant
Manager,
Seattle Airports District Office

Enclosure

cc:
Ann Crook, Oregon Dept. of Aviation
Rob Norton, David Evans and Associates
Tom Schnetzer, Mead & Hunt

EASTERN OREGON REGIONAL AIRPORT
AT PENDLETON
PENDLETON, OR

AIRPORT LAYOUT PLAN

JANUARY 2003

DAVID EVANS AND ASSOCIATES INC.

MEAD & HUNT ENGINEERS ARCHITECTS SCIENTISTS PLANNERS

The preparation of this document may have been supported, in part, through the Airport Improvement Program financial assistance from the Federal Aviation Administration (Project No. 3-41-0046-11) as provided under Title 49, United States Code, section 47104. The contents do not necessarily reflect the official view or policy of the FAA. Acceptance of this report by the FAA does not in any way constitute a commitment on the part of the United States to participate in any development depicted therein nor does it indicate that the proposed development is environmentally acceptable in accordance with appropriate public laws.

List of Drawings

AIRPORT DATA TABLE

ITEM		EXISTING	ULTIMATE
AIRPORT ELEVATION (NGVD 29)		1493.3	SAME
AIRPORT REFERENCE POINT (ARP) (DATUM: NAD 83)		45°41'43.20" N LAT. 118°50'28.80" W LONG.	45°41'44.27" N LAT. 118°50'40.31" W LONG.
NAVIGATION AIDS		ILS/VOR/NDB	SAME
NORMAL MAX. TEMP. HOTTEST MONTH		88°	SAME
AIRPORT REFERENCE CODE		C-III	SAME
TAXIWAYS	MARKINGS	BASIC	SAME
* NORTH OF A	LIGHTING	A,B*,C,F	SAME
	WIDTH	50'	SAME
	SURFACE	ASPHALT CONC.	SAME
	REFLECTORS	D,E	SAME
NPIAS ROLE		PRIMARY SERVICE	SAME
STAGE LENGTH		1000 MILES	2000 MILES

RUNWAY END COORDINATES

RUNWAY END	LATITUDE (DATUM: NAD 83)	LONGITUDE
7 (EXST)	45°41'43.21"N	118°51'12.14"W
7 (ULT)	45°41'43.16"N	118°51'40.32"W
25	45°41'43.37"N	118°49'43.38"W
11 (EXST)	45°41' 55.74"N	118°51'13.74"W
11 (ULT)	45°42'07.93"N	118°51'35.90"W
29 (ULT)	45°41'33.92"N	118°50'34.06"W
29 (END)	45°41'21.73"N	118°50'11.89"W
16	45°42'06.64"N	118°50'13.76"W
34	45°41'23.75"N	118°50'13.53"W

RUNWAY DATA TABLE

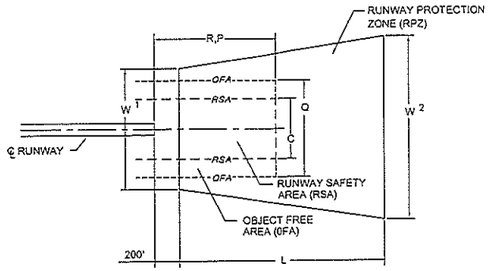
ITEM	RUNWAY 7 - 25		RUNWAY 11 - 29		RUNWAY 16 - 34	
	EXISTING	ULTIMATE	EXISTING	ULTIMATE	EXISTING	ULTIMATE
AVERAGE RUNWAY GRADIENT (%)	0.19%	SAME	0.14%	SAME	0.64%	SAME
WIND COVERAGE (%), 10.5 KNOTS	95.9%	SAME	97.6%	SAME	82.6%	SAME
AIRPORT REFERENCE CODE	C-III	SAME	B-II	C-III	B-I	SAME
PAVEMENT TYPE	ASPHALT	SAME	ASPHALT	SAME	ASPHALT	SAME
PAVEMENT DESIGN STRENGTH (LB), GROSS	210,000DT	SAME	122,000DT	SAME	20,000 S	SAME
APPROACH SLOPES	34:1/50:1	50:1/50:1 *	20:1	34:1	20:1	SAME
LIGHTING	HIRL	SAME	MIRL	SAME	NONE	SAME
RUNWAY MARKING	PRECISION	SAME	NONPRECISION	SAME	VISUAL	SAME
VISUAL APPROACH AIDS	R/W 7-VASI R/W 25-PAPI	SAME SAME	R/W 11-PAPI R/W 29-PAPI	SAME SAME	NONE NONE	SAME SAME
	ODALS	SAME	-		-	
	MALS	SAME	-		-	
LENGTH	6300'	8300' *	5581'	SAME	4341'	SAME
WIDTH	150'	SAME	100'	SAME	60'	60'
CRITICAL AIRCRAFT	737'	SAME	KING AIR	DASH-8 Q-400	PIPER NAVAJO	SAME
RUNWAY SAFETY AREA LENGTH	8300'	10300'	6181'	7581'	4821'	SAME
RUNWAY SAFETY AREA WIDTH	500'	SAME	150'	500'	120'	SAME
OBSTACLE FREE ZONE LENGTH	6700'	8700'	5981'	SAME	4741'	SAME
OBSTACLE FREE ZONE WIDTH	400'	SAME	400'	SAME	250'	SAME
OBJECT FREE AREA LENGTH	8300'	10300' *	6181'	7581'	4821'	SAME
OBJECT FREE AREA WIDTH	800'	SAME	500'	SAME	400'	SAME
ELECTRONIC AIDS	ILS/GPS/VOR	SAME	NDB/GPS	WAAS (GPS)	NONE	SAME
TOUCHDOWN ZONE ELEVATIONS	7-1482'	7-1482'	11-1483'	11-1483'	16-1487'	16-1487'
	25-1483'	25-1483'	29-1492'	29-1492'	34-1494'	34-1494'

* *Runway 7/25 - 2000' x 150' Runway Extension implementation to be determined.*

DECLARED DISTANCE TABLE

ITEM	RUNWAY 7 - 25		RUNWAY 11		RUNWAY 29		RUNWAY 16 - 34	
	EXISTING	ULTIMATE	EXISTING	ULTIMATE	EXISTING	ULTIMATE	EXISTING	ULTIMATE
TAKEOFF RUN AVAILABLE	6300'	8300' *	5581'	SAME	5581'	SAME	4341'	SAME
TAKEOFF DISTANCE AVAILABLE	6300'	8300' *	5581'	SAME	5581'	SAME	4341'	SAME
ACCELERATE-STOP DISTANCE AVAILABLE	6300'	8300' *	5126'	5581'	5581'	SAME	4341'	SAME
LANDING DISTANCE AVAILABLE	6300'	8300' *	5126'	5581'	5126'	SAME	4341'	SAME

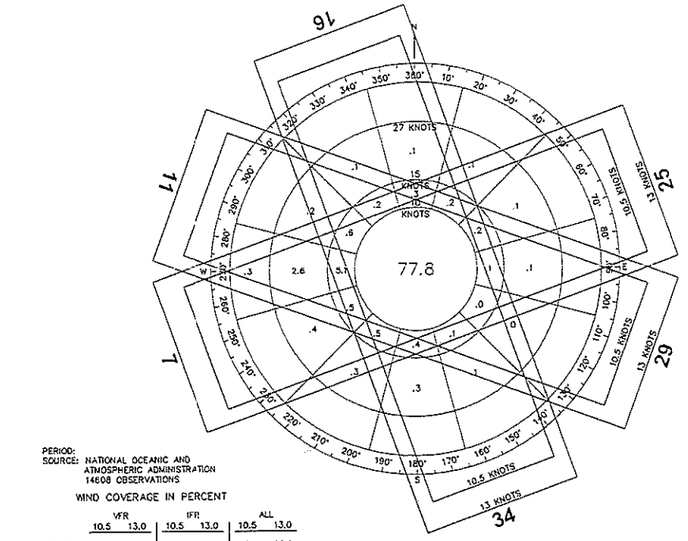
* *Runway 7/25 - 2000' x 150' Runway Extension implementation to be determined.*



RPZ/OFA/RSA DATA

R/W	Approach Category	Approach Slope	RPZ			OFA		RSA	
			L	W 1	W 2	Q	R	C	P
7	Nonprecision	34:1	1,700'	500'	1,010'	800'	1,000'	500'	1,000'
7 (FUTURE) *	Nonprecision	34:1	1,700'	1000'	1,510'	800'	1,000'	500'	1,000'
25	Precision	50:1	2,500'	1,000'	1,750'	800'	1,000'	500'	1,000'
11	Visual	20:1	1,000'	500'	700'	500'	300'	150'	300'
29	Visual	20:1	1,000'	500'	700'	500'	300'	150'	300'
11 (FUTURE)	Visual	20:1	1,700'	500'	1,010'	800'	1,000'	500'	1,000'
29 (FUTURE)	Nonprecision	34:1	1,700'	500'	1,010'	800'	1,000'	500'	1,000'
16	Visual	20:1	1,000'	500'	700'	400'	240'	120'	240'
34	Visual	20:1	1,000'	500'	700'	400'	240'	120'	240'

* *Runway 7/25 - 2000' x 150' Runway Extension implementation to be determined.*



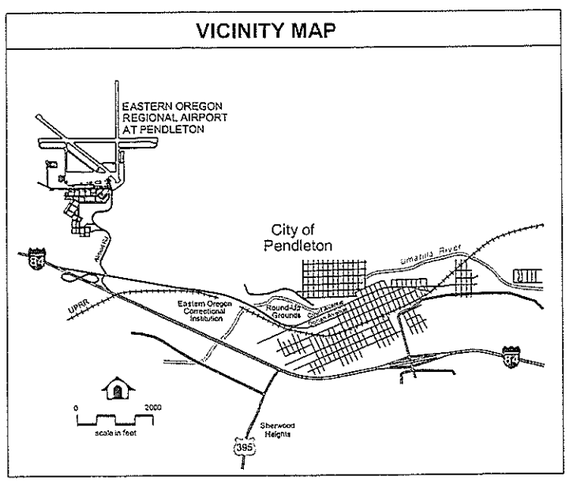
PERIOD:
SOURCE: NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION 14608 OBSERVATIONS

WIND COVERAGE IN PERCENT

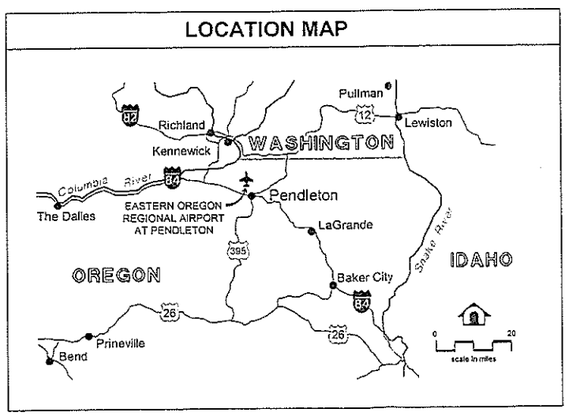
	VFR		IFR		ALL	
	10.5	13.0	10.5	13.0	10.5	13.0
RUNWAY 7–25	97.2	98.7	98.2	98.5	95.9	98.0
RUNWAY 11–29	85.9	92.8	97.3	98.0	87.8	93.1
RUNWAY 16–34	78.1	83.4	93.3	96.1	82.6	92.9

ALL WEATHER WIND ROSE

VICINITY MAP



LOCATION MAP



NOTES:

1. THE RUNWAY 11-29 PAVEMENT WIDTH OF 100 FEET EXCEEDS CATEGORY ADG-II STANDARDS, MEETING CRITERIA ESTABLISHED FOR CATEGORY ADG-III.

2. THE DISPLACED THRESHOLD OF RUNWAY 29, IN CONJUNCTION WITH GRADING OFF BOTH ENDS OF RUNWAY 11-29 PROVIDE FOR AN ACTUAL RSA WIDTH AND LENGTH BEYOND THE RUNWAY END MEETING CATEGORY ADG-III STANDARDS.

3. THE GREATER THAN MINIMUM STANDARDS DESCRIBED IN NOTES 1 AND 2, ABOVE, PROVIDE FOR ADDITIONAL SAFETY CONSIDERING THE OCCASIONAL USE OF CATEGORY ADG-III AIRCRAFT ON RUNWAY 11-29.

4. NO OF2 OBJECT PENETRATIONS.

No.	Revisions	Date	By	App'd

Drawn: GPG Checked: TMS Date: JANUARY 2003

AIRPORT DATA SUMMARY

EASTERN OREGON REGIONAL AIRPORT AT PENDLETON, OREGON

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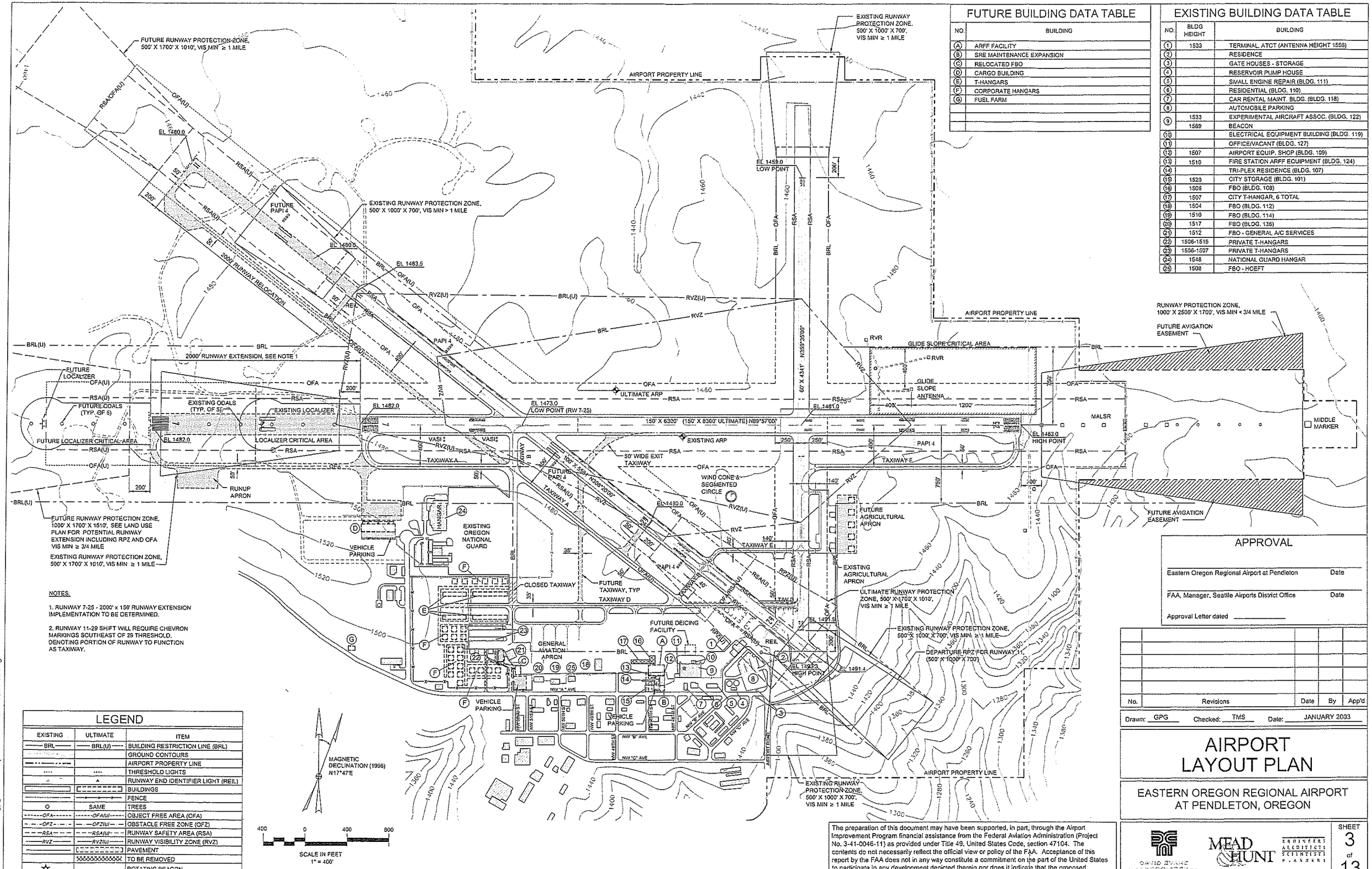
DAVID EVANS AND ASSOCIATES INC. | MEAD & HUNT | ENGINEERS ARCHITECTS SCIENTISTS PLANNERS



NOTES:

1. RUNWAY 7-25 - 2000' x 150' RUNWAY EXTENSION IMPLEMENTATION TO BE DETERMINED.

2. RUNWAY 11-29 SHIFT WILL REQUIRE CHEVRON MARKINGS SOUTHEAST OF 29 THRESHOLD, DENOTING PORTION OF RUNWAY TO FUNCTION AS TAXIWAY.

FUTURE BUILDING DATA TABLE

NO.	BUILDING
(A)	ARFF FACILITY
(B)	SRE MAINTENANCE EXPANSION
(C)	RELOCATED FBO
(D)	CARGO BUILDING
(E)	T-HANGARS
(F)	CORPORATE HANGARS
(G)	FUEL FARM

EXISTING BUILDING DATA TABLE

NO.	BLDG HEIGHT	BUILDING
(1)	1533	TERMINAL, ATCT (ANTENNA HEIGHT 1556)
(2)		RESIDENCE
(3)		GATE HOUSES - STORAGE
(4)		RESERVOIR PUMP HOUSE
(5)		SMALL ENGINE REPAIR (BLDG. 111)
(6)		RESIDENTIAL (BLDG. 110)
(7)		CAR RENTAL MAINT. BLDG. (BLDG. 118)
(8)		AUTOMOBILE PARKING
(9)	1533	EXPERIMENTAL AIRCRAFT ASSOC. (BLDG. 122)
	1569	BEACON
(10)		ELECTRICAL EQUIPMENT BUILDING (BLDG. 119)
(11)		OFFICE/VACANT (BLDG. 127)
(12)	1507	AIRPORT EQUIP. SHOP (BLDG. 109)
(13)	1510	FIRE STATION ARFF EQUIPMENT (BLDG. 124)
(14)		TRI-PLEX RESIDENCE (BLDG. 107)
(15)	1520	CITY STORAGE (BLDG. 101)
(16)	1506	FBO (BLDG. 108)
(17)	1507	CITY T-HANGAR, 6 TOTAL
(18)	1504	FBO (BLDG. 112)
(19)	1510	FBO (BLDG. 114)
(20)	1517	FBO (BLDG. 136)
(21)	1512	FBO - GENERAL A/C SERVICES
(22)	1506-1515	PRIVATE T-HANGARS
(23)	1506-1507	PRIVATE T-HANGARS
(24)	1548	NATIONAL GUARD HANGAR
(25)	1508	FBO - HOEFT

LEGEND

EXISTING	ULTIMATE	ITEM
BRL	BRL(U)	BUILDING RESTRICTION LINE (BRL)
		GROUND CONTOURS
		AIRPORT PROPERTY LINE
		THRESHOLD LIGHTS
		RUNWAY END IDENTIFIER LIGHT (REIL)
		BUILDINGS
		FENCE
SAME		TREES
OFA	OFA(U)	OBJECT FREE AREA (OFA)
OFZ	OFZ(U)	OBSTACLE FREE ZONE (OFZ)
RSA	RSA(U)	RUNWAY SAFETY AREA (RSA)
RVZ	RVZ(U)	RUNWAY VISIBILITY ZONE (RVZ)
		PAVEMENT
		TO BE REMOVED
		ROTATING BEACON

APPROVAL

Eastern Oregon Regional Airport at Pendleton — Date

FAA, Manager, Seattle Airports District Office — Date

Approval Letter dated _____

No.	Revisions	Date	By	App'd

Drawn: GPG Checked: TMS Date: JANUARY 2003

AIRPORT LAYOUT PLAN

EASTERN OREGON REGIONAL AIRPORT AT PENDLETON, OREGON

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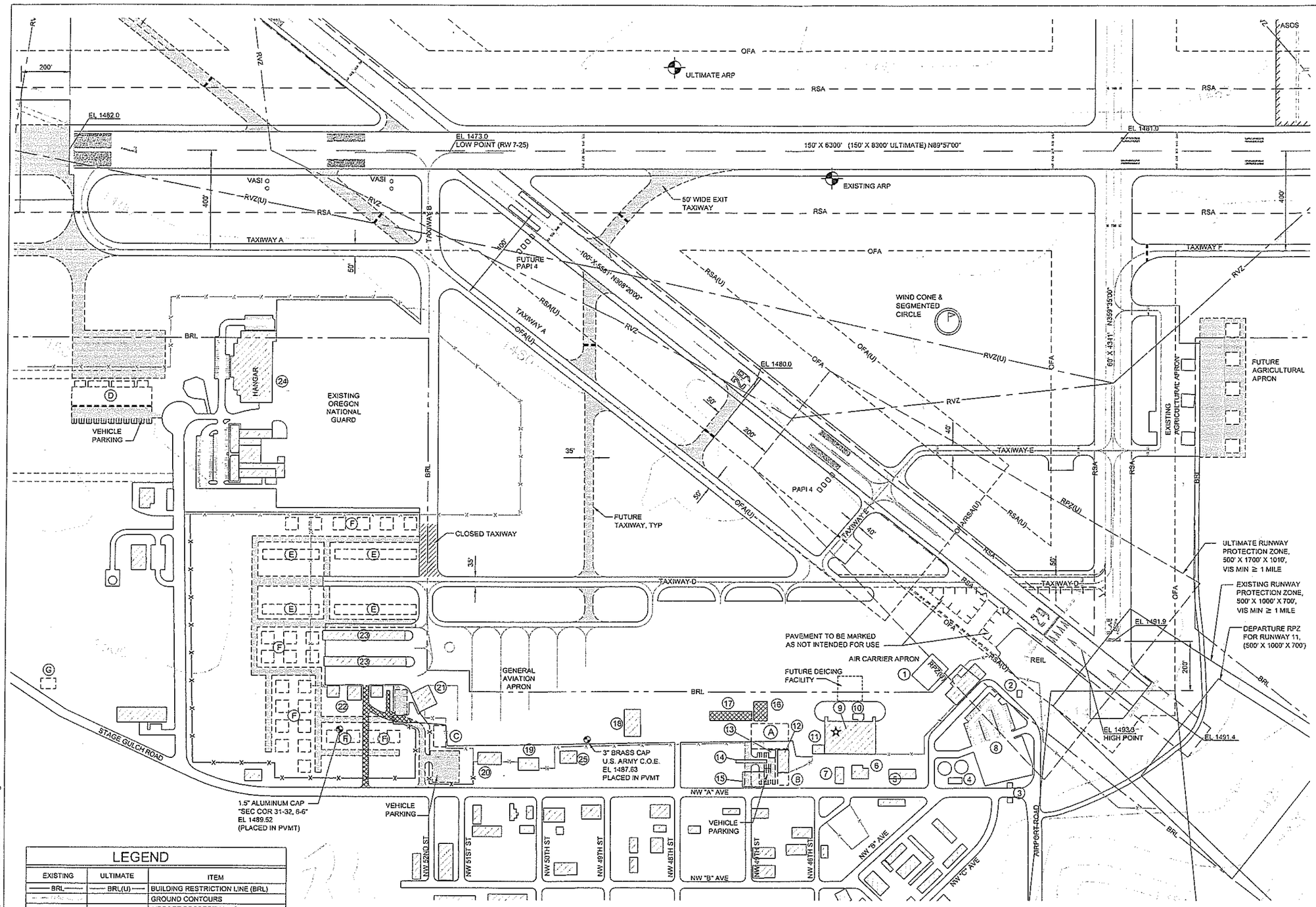

EXISTING BUILDING DATA TABLE

NO	BLDG HEIGHT	BUILDING
1	1533	TERMINAL, ATCT (ANTENNA HEIGHT 1556)
2		RESIDENCE
3		GATE HOUSES - STORAGE
4		RESERVOIR PUMP HOUSE
5		SMALL ENGINE REPAIR (BLDG. 111)
6		RESIDENTIAL (BLDG. 110)
7		CAR RENTAL MAINT. BLDG. (BLDG. 118)
8		AUTOMOBILE PARKING
9	1533	EXPERIMENTAL AIRCRAFT ASSOC. (BLDG. 122)
	1589	BEACON
10		ELECTRICAL EQUIPMENT BUILDING (BLDG. 119)
11		OFFICE/VACANT (BLDG. 127)
12	1507	AIRPORT EQUIP. SHOP (BLDG. 109)
13	1510	FIRE STATION ARFF EQUIPMENT (BLDG. 124)
14		TRI-PLEX RESIDENCE (BLDG. 107)
15	1520	CITY STORAGE (BLDG. 101)
16	1506	FBO (BLDG. 108)
17	1507	CITY T-HANGAR, 6 TOTAL
18	1504	FBO (BLDG. 112)
19	1510	FBO (BLDG. 114)
20	1517	FBO (BLDG. 136)
21	1512	FBO - GENERAL A/C SERVICES
22	1506-1515	PRIVATE T-HANGARS
23	1506-1507	PRIVATE T-HANGARS
24	1548	NATIONAL GUARD HANGAR
25	1508	FBO - HOEFT

FUTURE BUILDING DATA TABLE

NO.	BUILDING
A	ARFF FACILITY
B	SRE MAINTENANCE EXPANSION
C	RELOCATED FBO
D	CARGO BUILDING
E	T-HANGARS
F	CORPORATE HANGARS
G	FUEL FARM

LEGEND

EXISTING	ULTIMATE	ITEM
BRL	BRL(U)	BUILDING RESTRICTION LINE (BRL)
		GROUND CONTOURS
		AIRPORT PROPERTY LINE
		THRESHOLD LIGHTS
	▲	RUNWAY END IDENTIFIER LIGHT (REIL)
		BUILDINGS
		FENCE
	SAME	TREES
OFA	OFA(U)	OBJECT FREE AREA (OFA)
OFZ	OFZ(U)	OBSTACLE FREE ZONE (OFZ)
RSA	RSA(U)	RUNWAY SAFETY AREA (RSA)
RVZ	RVZ(U)	RUNWAY VISIBILITY ZONE (RVZ)
		PAVEMENT
		TO BE REMOVED
☆		ROTATING BEACON

No.	Revisions	Date	By	App'd

Drawn: GPG Checked: TMS Date: JANUARY 2003

TERMINAL AREA PLAN

EASTERN OREGON REGIONAL AIRPORT AT PENDLETON, OREGON

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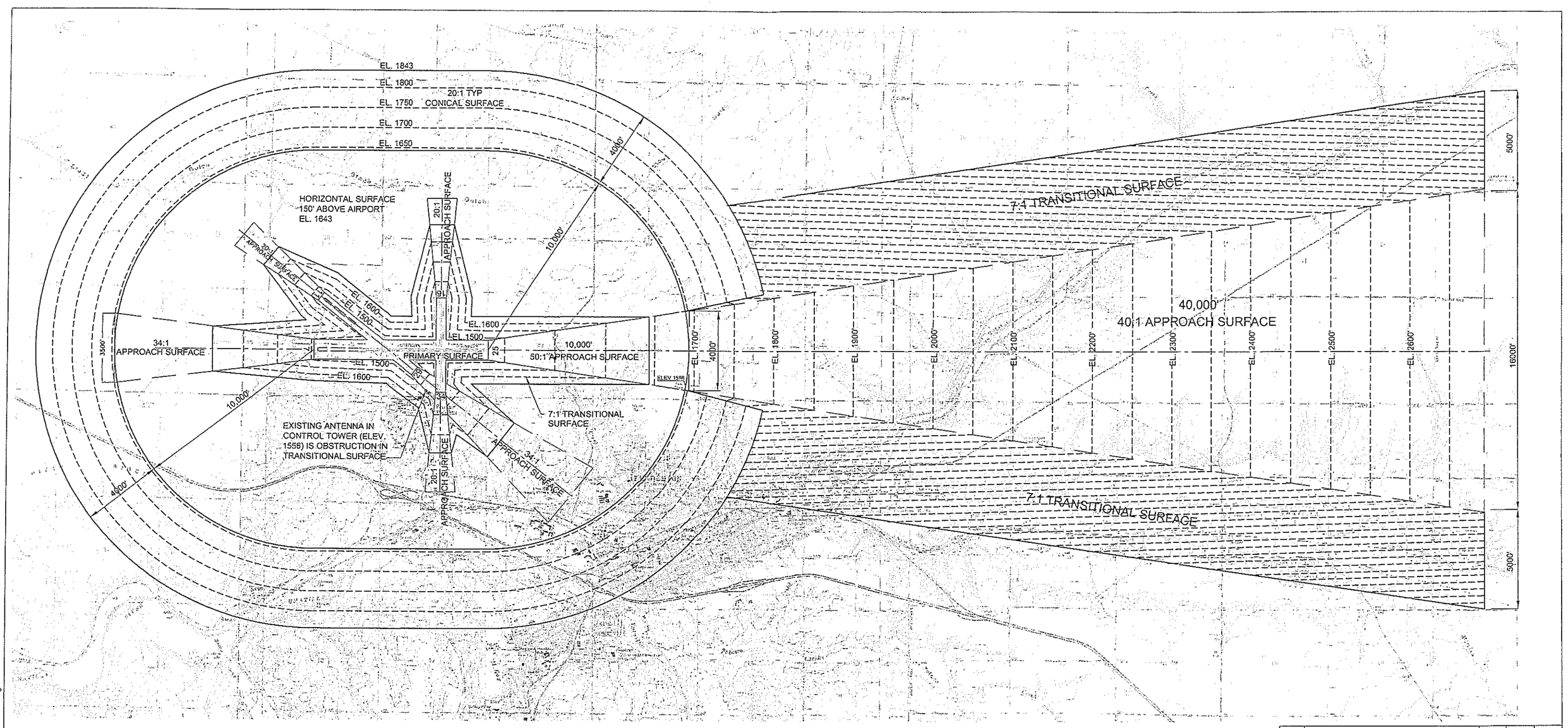

OBSTRUCTION TABLE
ANTENNA ON CONTROL TOWER (ELEV. 1556) PENETRATES TRANSITIONAL SURFACE BY 40 FEET

0 2400' 4800'
SCALE

No.	Revisions	Date	By	App'd

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AIRSPACE PLAN

EASTERN OREGON REGIONAL AIRPORT
AT PENDLETON, OREGON

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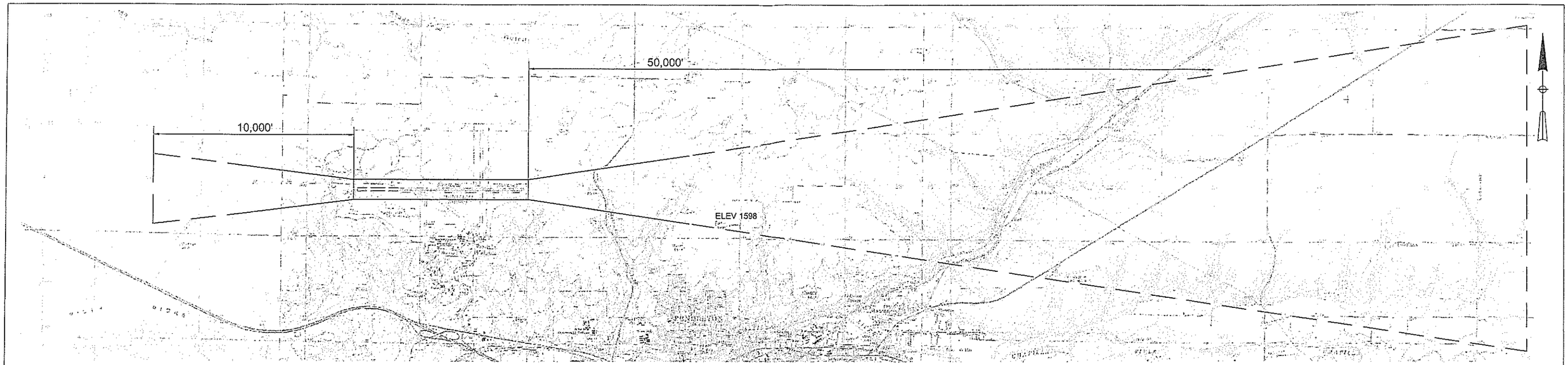
DAVIS EVANS ASSOCIATES
MEAD & HUNT
SHEET 5 of 13

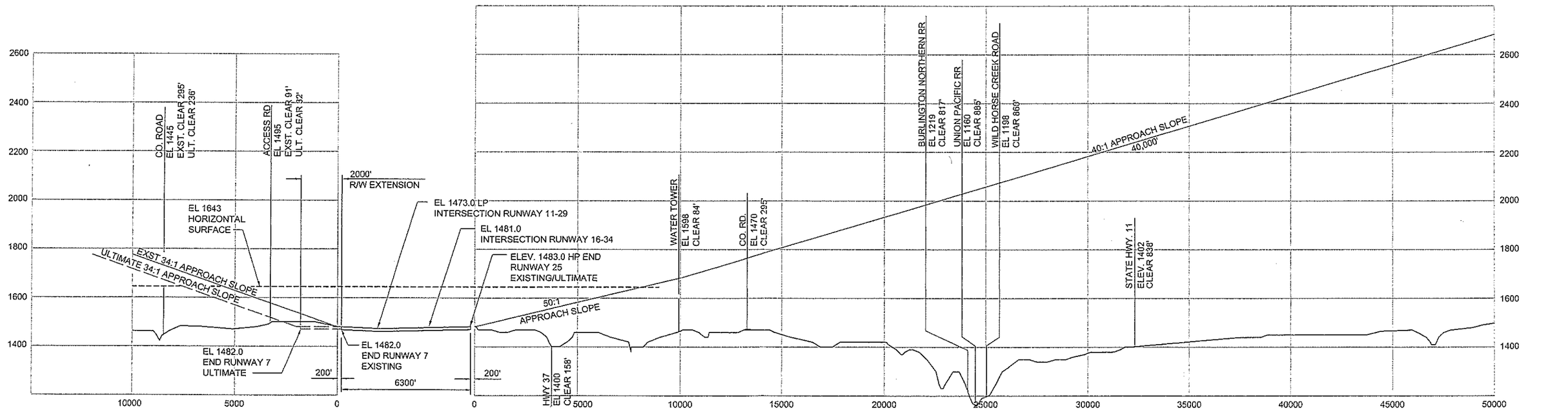


APPROACH TO RUNWAY END 7

SCALE: 1" = 2400'

APPROACH TO RUNWAY END 25

SCALE: 1" = 2400'



RUNWAY 7 APPROACH PROFILE

SCALE: 1" = 2400' HORIZ
1" = 200' VERT.

RUNWAY 25 APPROACH PROFILE

SCALE: 1" = 2400' HORIZ
1" = 200' VERT.

RUNWAY 7-25 APPROACH PLAN AND PROFILE

EASTERN OREGON REGIONAL AIRPORT
AT PENDLETON, OREGON

No.	Revisions	Date	By	App'd

Drawn: GPG Checked: TMS Date: JANUARY 2003

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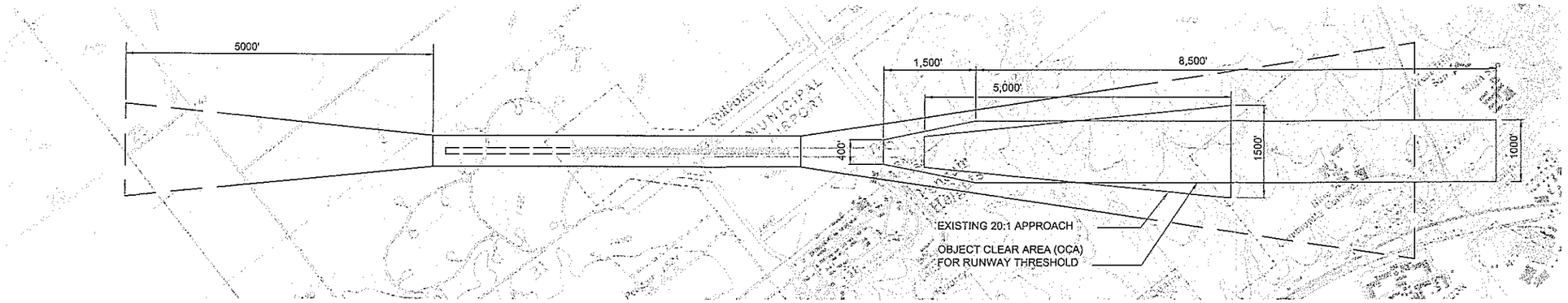
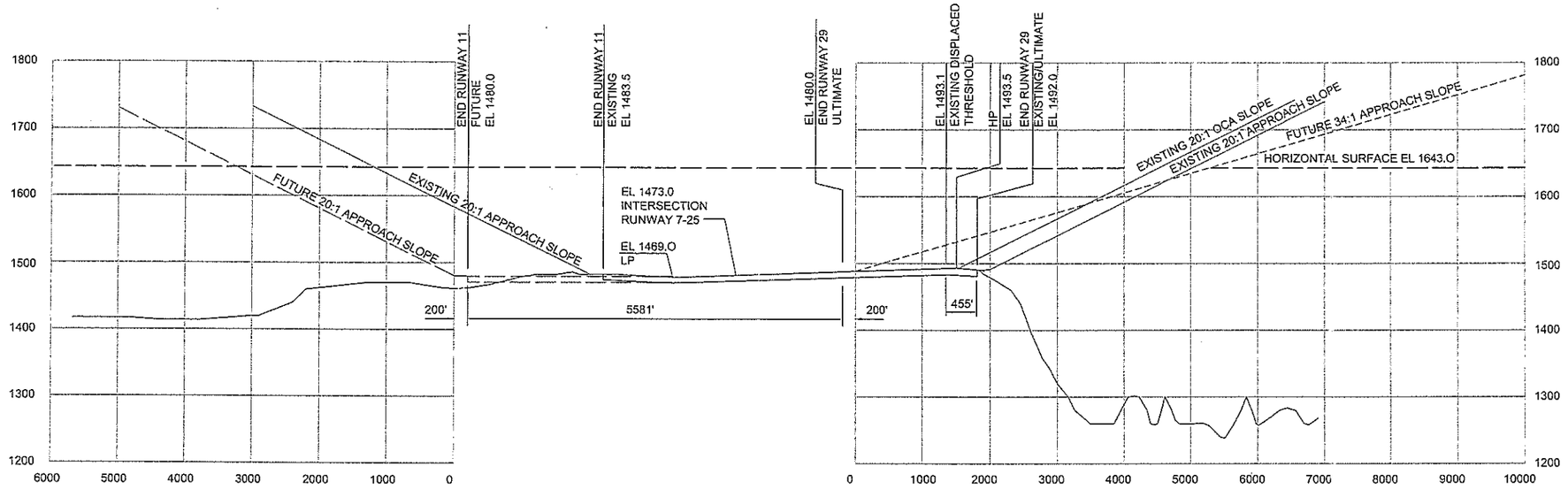
DAVIS EVANS & ASSOCIATES INC
MEAD & HUNT
ENGINEERS ARCHITECTS SCIENTISTS PLANNERS



APPROACH TO RUNWAY END 11
SCALE: 1" = 1000'

APPROACH TO RUNWAY END 29
SCALE: 1" = 1000'



RUNWAY 11 APPROACH PROFILE
SCALE: 1" = 1000' HORIZ.
1" = 100' VERT.

RUNWAY 29 APPROACH PROFILE
SCALE: 1" = 1000' HORIZ.
1" = 100' VERT.

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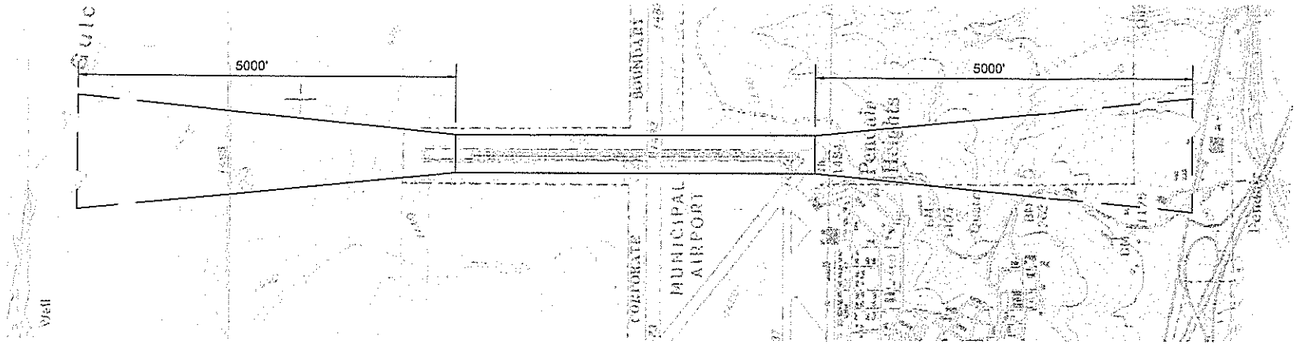
RUNWAY 11-29 APPROACH PLAN & PROFILE

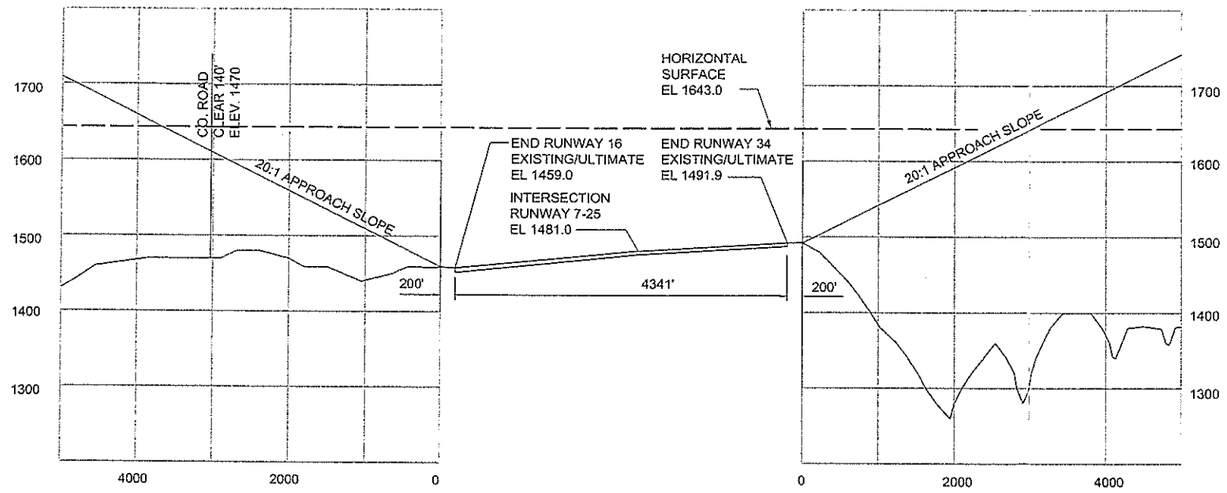
EASTERN OREGON REGIONAL AIRPORT
AT PENDLETON, OREGON

DAVID EVANS AND ASSOCIATES INC. MEAD & HUNT ENG SPENS ARCHITECTS SCIENTISTS PLANNERS



APPROACH TO RUNWAY END 16
SCALE: 1" = 1000'

APPROACH TO RUNWAY END 34
SCALE: 1" = 1000'



RUNWAY 16 APPROACH PROFILE
SCALE: 1" = 1000' HORIZ.
1" = 100' VERT.

RUNWAY 34 APPROACH PROFILE
SCALE: 1" = 1000' HORIZ.
1" = 100' VERT.

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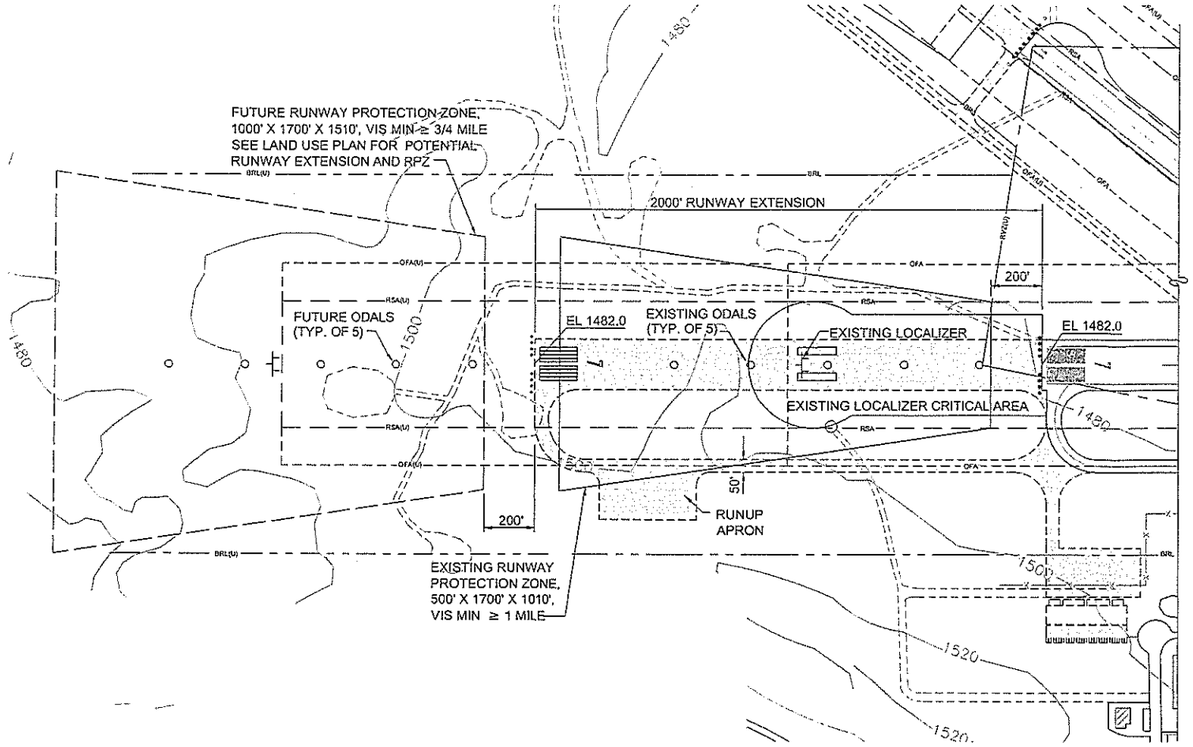
Drawn: GPG Checked: TMS Date: JANUARY 2003

RUNWAY 16-34
APPROACH PLAN & PROFILE

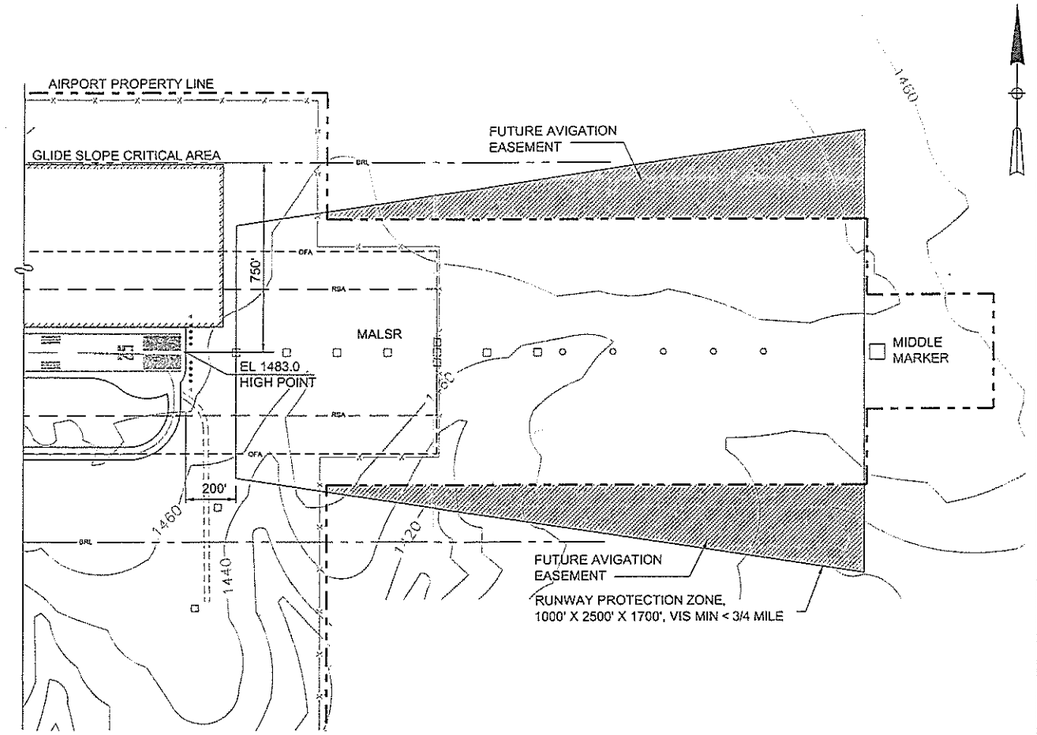
EASTERN OREGON REGIONAL AIRPORT
AT PENDLETON, OREGON

DAVIS EVANS & ASSOCIATES LLC
MEAD & HUNT
END YEARS ARCHITECTS SCIENTISTS PLANNERS



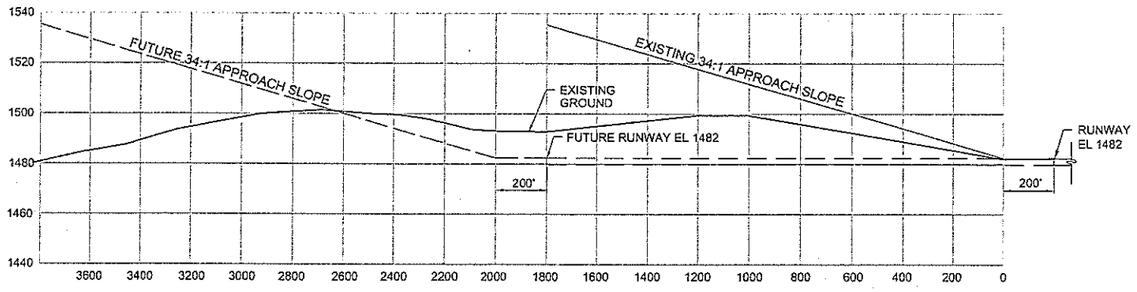
RUNWAY END 7 RPZ

SCALE: 1" = 300'



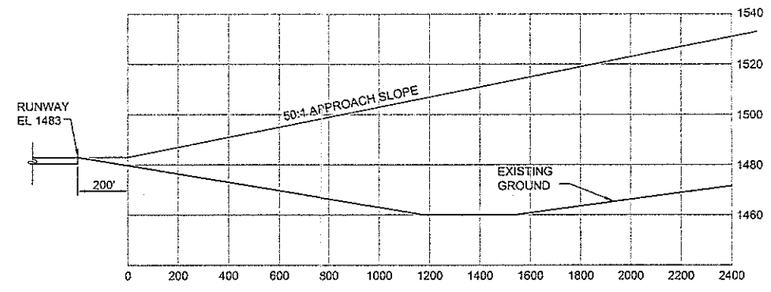
RUNWAY END 25 RPZ

SCALE: 1" = 300'



RUNWAY 7 RPZ PROFILE

SCALE: 1" = 300' HORIZ
1" = 30' VERT.



RUNWAY 25 RPZ PROFILE

SCALE: 1" = 300' HORIZ
1" = 30' VERT.

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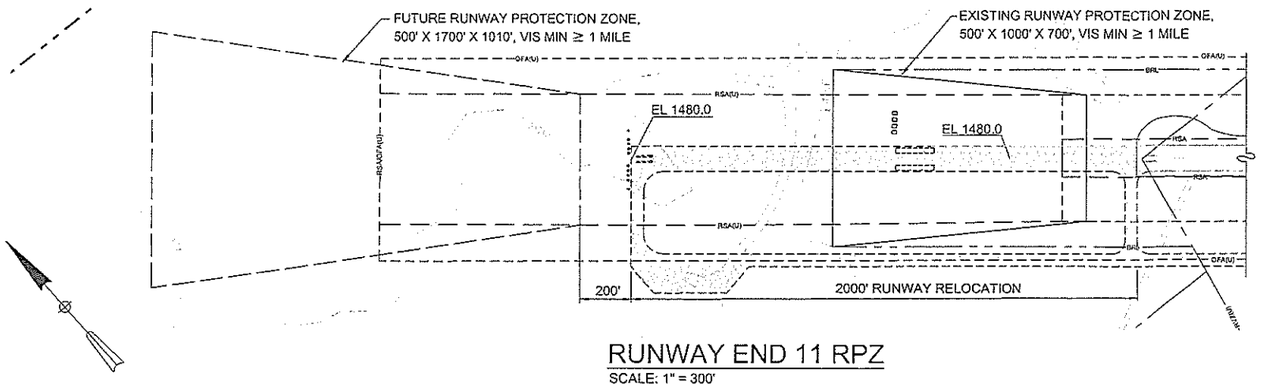
Drawn: GPG Checked: TMS Date: JANUARY 2003

RUNWAY PROTECTION ZONE FOR RUNWAY 7-25

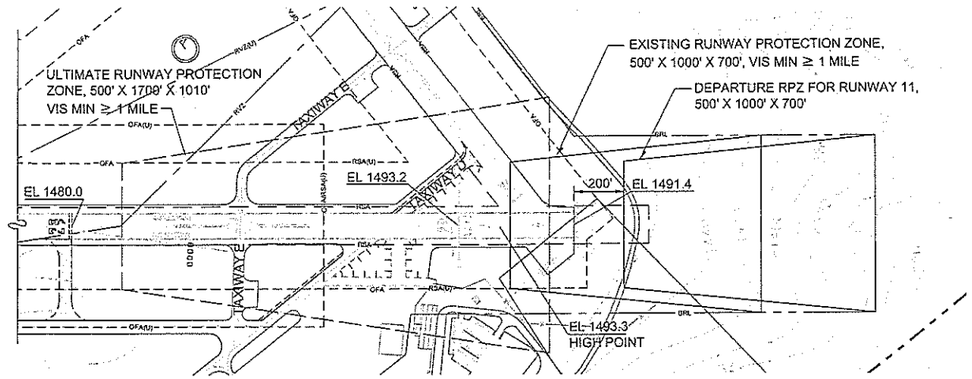
EASTERN OREGON REGIONAL AIRPORT
AT PENDLETON, OREGON

DAVID EVANS and ASSOCIATES, Inc. | MEAD & HUNT | ENGINEERS ARCHITECTS SCIENTISTS PLANNERS



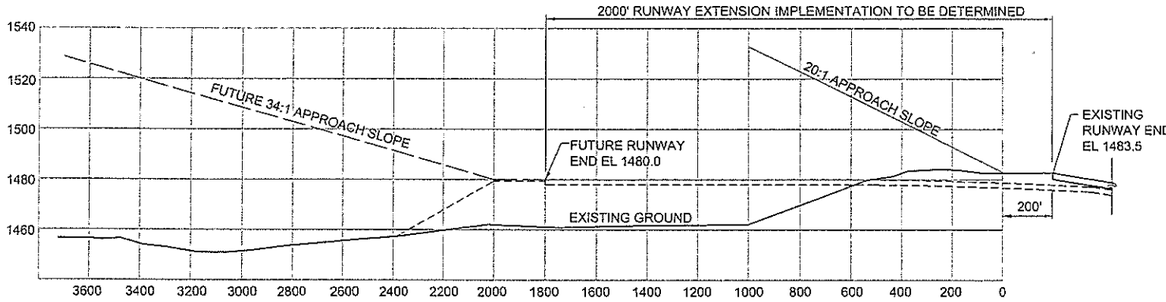
RUNWAY END 11 RPZ

SCALE: 1" = 300'



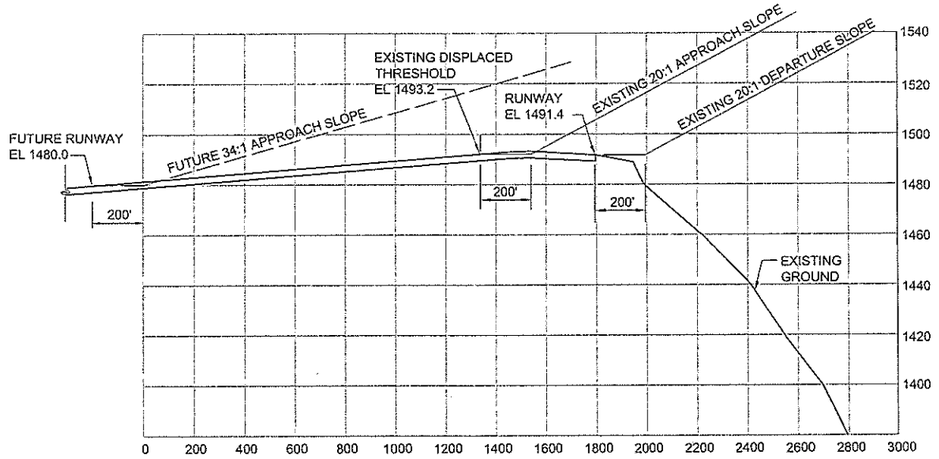
RUNWAY END 29 RPZ

SCALE: 1" = 300'



RUNWAY 11 RPZ PROFILE

SCALE: 1" = 300' HORIZ
1" = 30' VERT.



RUNWAY 29 RPZ PROFILE

SCALE: 1" = 300' HORIZ
1" = 30' VERT.

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RUNWAY PROTECTION ZONE FOR RUNWAY 11-29

EASTERN OREGON REGIONAL AIRPORT
AT PENDLETON, OREGON

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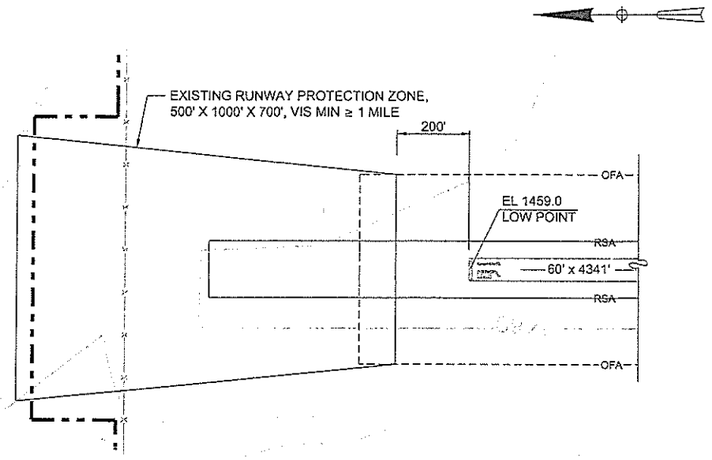
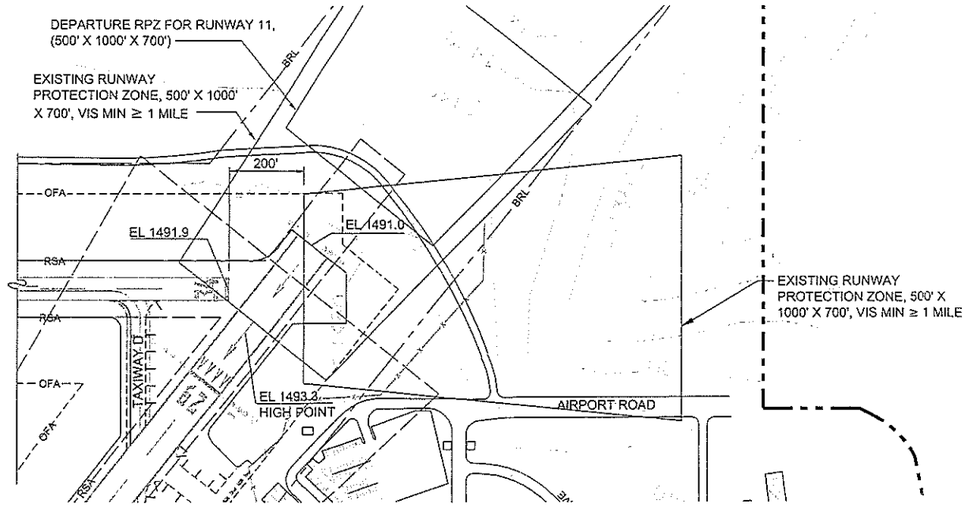
No.	Revisions	Date	By	App'd

DAVID EVANS and ASSOCIATES INC
MEAD & HUNT ENGINEERS ARCHITECTS SCIENTISTS PLANNERS

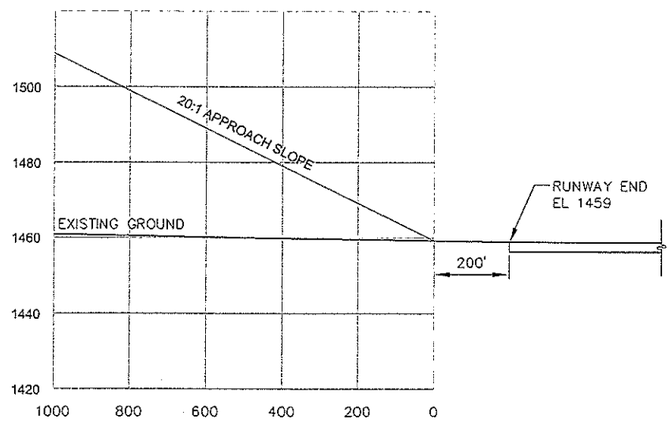
SHEET 10 of 13



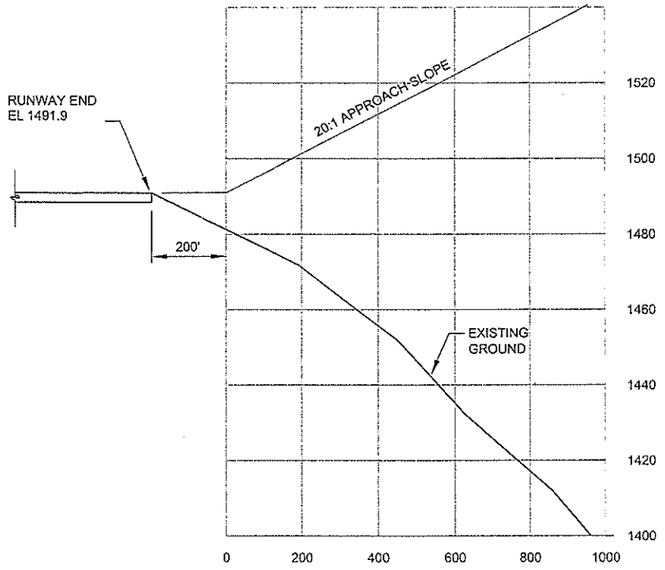
RUNWAY END 16 RPZ
SCALE: 1" = 200'



RUNWAY END 34 RPZ
SCALE: 1" = 200'



RUNWAY 16 RPZ PROFILE
SCALE: 1" = 200' HORIZ
1" = 20' VERT.



RUNWAY 34 RPZ PROFILE
SCALE: 1" = 200' HORIZ
1" = 20' VERT.

Drawn: GPG Checked: TMS Date: JANUARY 2003

RUNWAY PROTECTION ZONE FOR RUNWAY 16-34

EASTERN OREGON REGIONAL AIRPORT
AT PENDLETON, OREGON

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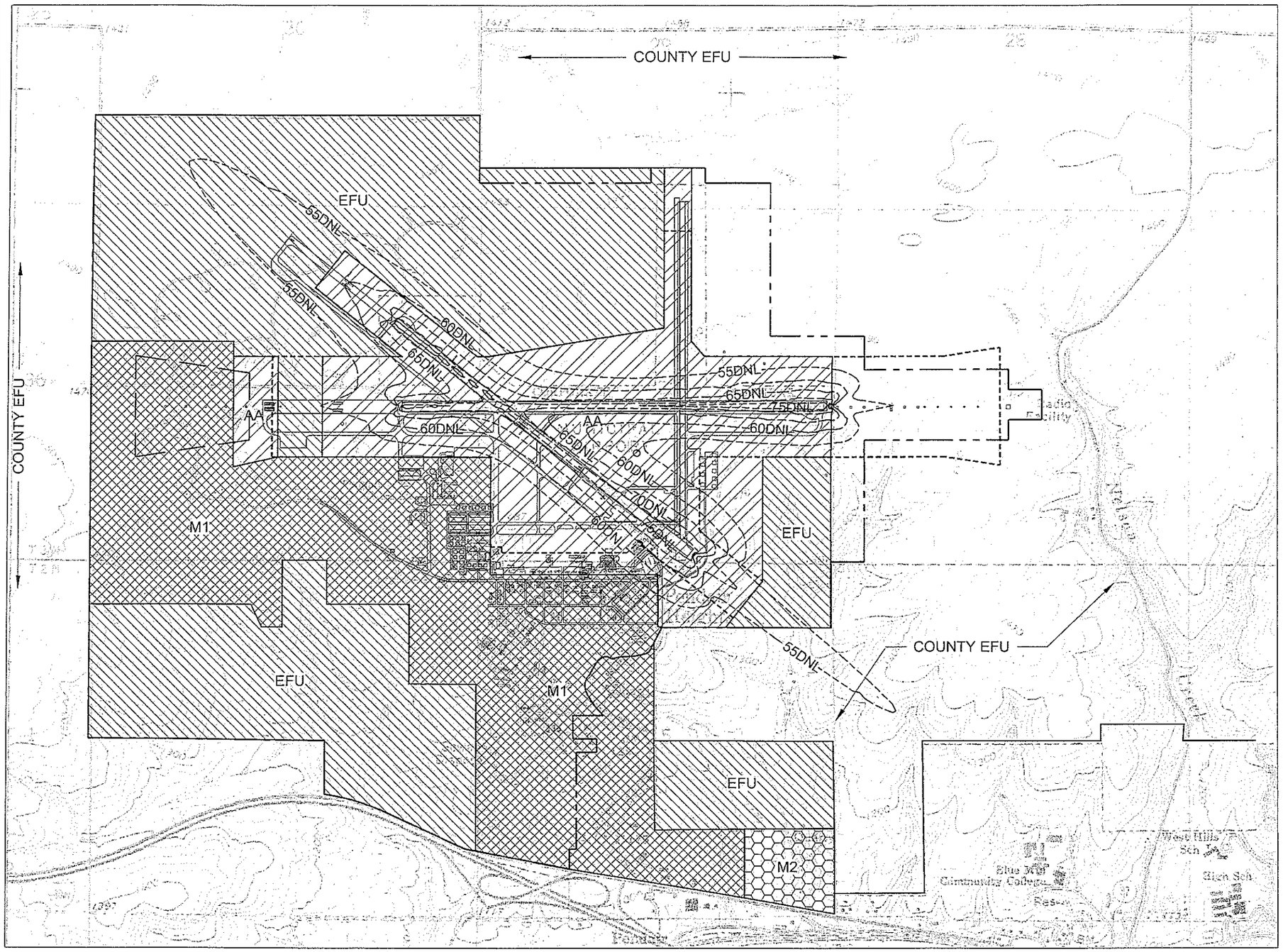
DAVID EVANS and ASSOCIATES INC. MEAD & HUNT ENGINEERS ARCHITECTS SCIENTISTS PLANNERS

SHEET 11 of 13



0 800' 1600'
SCALE

- AREA RESERVED FOR POTENTIAL RUNWAY EXTENSION
- AA AVIATION ACTIVITIES
- EFU (CITY) FARM USE OUTSIDE URBAN GROWTH BOUNDARY, INSIDE CITY
- M1 LIGHT INDUSTRY
- M2 HEAVY INDUSTRY
- AIRPORT PROPERTY LINE
- BUILDING RESTRICTION LINE
- --55DNL-- YEAR 2005 DAY/NIGHT NOISE EXPOSURE CONTOURS

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AIRPORT LAND USE PLAN

EASTERN OREGON REGIONAL AIRPORT
AT PENDLETON, OREGON

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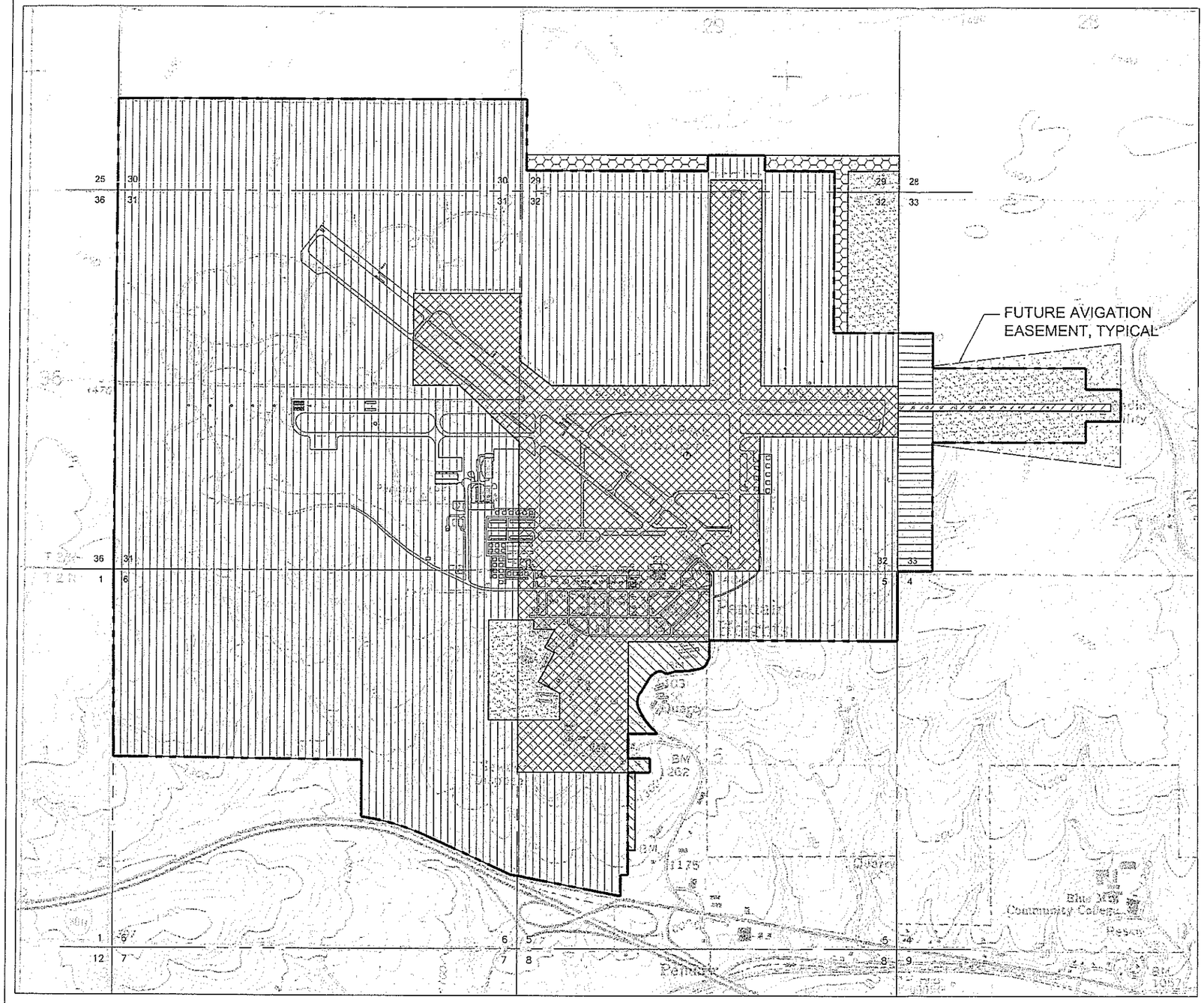
DAVID EVANS and ASSOCIATES, INC. MEAD & HUNT

SHEET 12 of 13



NOTES:

1. COUNTY ROAD No. 923 NOT DIRECTLY CONTROLLED BY THE CITY.
2. PACIFIC POWER AND LIGHT COMPANY HAS A PERMIT TO OPERATE AND MAINTAIN AN ELECTRICAL DISTRIBUTION SYSTEM SOUTH OF COUNTY ROAD No. 923.

0 800' 1600'
SCALE

LEGEND

AIRPORT BOUNDARY LINE

SECTION LINE

AREA I

AIRPORT LAND ACQUIRED FROM U.S. GOVERNMENT
FEE SIMPLE SUBJECT TO WAR ASSETS ADMINISTRATION LICENSE WAA-32-RPD-417
QUIT CLAIM DEED EASEMENT 1 1802.72 ACRES

AIRPORT LAND ACQUIRED FROM PRIVATE PARTIES
FEE SIMPLE SUBJECT TO WAR LICENSE WAA-32-RPD-417
WARRANTY DEED EASEMENT 1 453.68 ACRES

RPZ & APPROACH LIGHTING ACQUIRED BY TRADE FROM DAVID NELSON
FEE SIMPLE 8.65 ACRES FAAP-06

AREA II — RPZ - AVIGATION EASEMENT
58.09 ACRES FAAP-06

AREA III — CITY LAND ACQUIRED FROM STATE OF OREGON
WITH AVIGATION EASEMENT EXISTING OVER PROPERTY

AREA IV — 33.45 ACRES ACQUIRED FROM DAVID NELSON
ADAP - 03

AREA V — 32.59 ACRES TRADED TO DAVID NELSON FOR LAND SHOWN AS AREA IV
ADAP - 03

Drawn: GPG Checked: TMS Date: JANUARY 2003

EXHIBIT 'A'
AIRPORT PROPERTY MAP

EASTERN OREGON REGIONAL AIRPORT
AT PENDLETON, OREGON

The preparation of this document may have been supported, in part, through the Airport Improvement Program financial assistance from the Federal Aviation Administration (Project No. 3-41-0046-11) as provided under Title 49, United States Code, section 47104. The contents do not necessarily reflect the official view or policy of the FAA. Acceptance of this report by the FAA does not in any way constitute a commitment on the part of the United States to participate in any development depicted therein nor does it indicate that the proposed development is environmentally acceptable in accordance with appropriate public laws.

No.	Revisions	Date	By	App'd

DAVID EVANS and ASSOCIATES INC
MEAD & HUNT
ENGINEERS ARCHITECTS SCIENTISTS PLANNERS

SHEET 13 of 13

GLOSSARY OF TERMS

ADVISORY CIRCULAR (AC) - Series of external Federal Aviation Administration (FAA) publications consisting of all non-regulatory material of a policy, guidance, and informational nature.

AIRCRAFT APPROACH CATEGORY - A grouping of aircraft based on 1.3 times their stall speed in their landing configuration at their maximum certificated landing weight. The categories are as follows:

Category A: Speed less than 91 knots
Category B: Speed 91 knots or more but less than 121 knots
Category C: Speed 121 knots or more but less than 141 knots
Category D: Speed 141 knots or more but less than 166 knots
Category E: Speed 166 knots or more

AIRCRAFT DELAY - The additional travel time at an airport or in the air, caused by aircraft traffic congestion, taken by an aircraft to move from its origination to its destination.

AIRCRAFT OPERATION - An aircraft arrival (landing) or departure (takeoff) represents one aircraft operation at an airport. Aircraft operations are typically recorded by the FAA in four categories: air carrier, air taxi, general aviation, and military. General aviation includes operations performed by all civil aircraft not classified as air carrier or air taxi aircraft.

AIRCRAFT RESCUE AND FIREFIGHTING (ARFF) - The airport fire station.

AIRFIELD CAPACITY (HOURLY) - The maximum number of aircraft operations (landings or takeoffs) that can take place on an airfield in one hour under specific conditions.

AIRPLANE DESIGN GROUP (ADG) - A grouping of airplanes based on wingspan. The groups are as follows:

Group I: Up to but not including 49 feet (15 m)
Group II: 49 feet (15 m) up to but not including 79 feet (24 m)
Group III: 79 feet (24 m) up to but not including 118 feet (36 m)
Group IV: 118 feet (36 m) up to but not including 171 feet (52 m)
Group V: 171 feet (52 m) up to but not including 214 feet (65 m)
Group VI: 214 feet (65 m) up to but not including 262 feet (80 m)

AIRPORT ELEVATION - The highest point on an airport's usable runway expressed in feet above mean sea level (MSL).

AIRPORT ENVIRONS - The area surrounding an airport that is considered to be directly affected by the presence and operation of the airport.

AIRPORT IMPROVEMENT PROGRAM (AIP) - A program administered by the U.S. Department of Transportation, FAA, to provide financial grants-in-aid for airport development projects such as runways, taxiways, aircraft parking aprons, public areas in terminal buildings, and land acquisition associated with airport development, clear zones and approach protection.

AIRPORT LAYOUT PLAN - A plan (drawings) developed for an airport showing boundaries and proposed additions to all areas owned or controlled by the sponsor for airport purposes, the location and nature of existing and proposed airport facilities and structures, and the location on the airport of existing and proposed non-aviation areas and improvements thereon.

AIRPORT MASTER PLAN - An assembly of appropriate documents and drawings covering the development of a specific airport from a physical, environmental, economical, social, and political jurisdictional perspective. The Airport Layout Plan is a part of this plan.

AIRPORT ROTATING BEACON - Navigational aid that indicates the location of an airport by projecting beams of light spaced 180 degrees apart. Alternating white/green flashes identify a lighted civil airport, while white/white flashes identify an unlighted civil airport.

AIRPORT SPONSOR - A public agency or tax-supported organization, such as an airport authority, that is authorized to own and operate an airport, to obtain property interests, to obtain funds, and to be legally, financially, and otherwise able to meet all applicable requirements of the current laws and regulations.

AIRPORT SURFACE DETECTION EQUIPMENT (ASDE) - Radar equipment specifically designed to detect all principle features on the surface of an airport, including aircraft and vehicular traffic.

AIRPORT SURVEILLANCE RADAR (ASR) - Designed to provide relatively short-range coverage in the general vicinity of an airport and to serve as an expeditious means of handling terminal area traffic through observation of precision aircraft locations on a radarscope.

AIRPORT TRAFFIC CONTROL (ATC) - A service provided by the FAA to promote the safe, orderly, and expeditious flow of airport traffic.

AIR ROUTE TRAFFIC CONTROL CENTER (ARTCC) - A facility established to provide airport traffic control service to aircraft operating on an instrument flight rule (IFR) flight plan within controlled airspace and principally during the enroute phase of flight.

ANNUAL SERVICE VOLUME (ASV) - A quantifiable measure used to determine airfield capacity. ASV accounts for differences in variables such as runway use, aircraft mix, and weather conditions, that would be encountered over a year's time, and thus is a reasonable estimate of an airport's annual capacity.

APPROACH LIGHTING SYSTEM (ALS) - Navigational aid which is a configuration of lights positioned symmetrically along the extended runway centerline, beginning at the runway threshold and extending towards the approach.

AUTOMATIC WEATHER OBSERVATION STATIONS (AWOS) - Automatic recording instruments that measure meteorological conditions such as cloud height, visibility, wind speed and direction, temperature, and dewpoint.

AVIGATION EASEMENT - A type of land acquisition that involves less-than-fee purchase (see also LESS-THAN-FEE ACQUISITION). One form of avigation easement grants an airport the right to perform aircraft operations over the designated property, including operations that might cause noise, vibration, and other effects. A stronger form of easement is a deed restriction that may include (1) the right to perform aircraft operations over the property, and (2) public acquisition of a landowner's rights restricting future development of the property for any use more intensive than that existing at the time of the transaction. This easement may also include specific prohibitions on the uses for which the property may be developed. Maximum heights of structures and other objects may also be specified.

BUILDING RESTRICTION LINE - A line which identifies suitable building area locations on airports.

DAY-NIGHT AVERAGE SOUND LEVEL (DNL) - A method for predicting, by a single number rating, cumulative aircraft noise affecting communities in airport environs. The DNL value represents decibels of noise as measured by an A-weighted sound-level meter. In the DNL procedure, the noise exposure from each aircraft takeoff or landing at ground level around an airport is calculated, and these noise exposures are accumulated for a typical 24-hour period.. Daytime and nighttime noise exposures are considered separately. A weighting factor equivalent to a penalty of 10 decibels is applied to operations between 10 p.m. and 7 a.m. to account for the increased perceived sensitivity of people to noise during the sleeping hours. The DNL values can be expressed graphically on maps using contours of equal noise exposure. DNL may also be used for measuring other noise sources, such as automobile traffic, to determine combined noise effects. This metric was previously referred to as Ldn; however the international convention is DNL.

DECISION HEIGHT - Height at which a decision must be made, during an ILS approach, to continue the approach or execute a missed approach.

DISPLACED THRESHOLD - A runway landing threshold that is located at a point other than the designated beginning of the runway (where departures would begin).

DISTANCE MEASURING EQUIPMENT (DME) - Navigational aid that furnishes distance information between aircraft and ground station with a very high degree of accuracy.

ENGINE RUNUP AREA - An area on an airport where aircraft engines are serviced or tested. The noise from such servicing or testing can affect neighborhoods adjacent to an airport.

ENPLANED/DEPLANED PASSENGERS - The volume of passengers outbound from an airport (enplaned) or inbound to an airport (deplaned). The annual passenger volume of an airport is the total of enplaned and deplaned passengers.

ENVIRONMENTAL ASSESSMENT (EA) - An assessment of the environmental effects of a proposed action for which federal financial assistance is being requested or for which federal authorization is required. The EA serves as the basis for the FAA's Environmental Impact Statement (EIS) or Finding of No Significant Impact (FONSI), as specified in FAA Orders 1050.1D and 5050.4A.

ENVIRONMENTAL IMPACT STATEMENT (EIS) - A document prepared under the requirements of NEPA, Section 102(2) (c). The EIS represents a federal agency's evaluation of the effect of a proposed action on the environment. Regulations relating to the preparation of an EIS are published in FAA Order 1050.1D and 5050.4A.

FAR PART 77 - Federal Aviation Regulations Part 77 - Establishes standards for identifying obstructions to aircraft in navigable airspace.

FEDERAL AVIATION ADMINISTRATION (FAA) - The FAA is the agency of the U.S. Department of Transportation that is charged with (1) regulating air commerce to promote its safety and development; (2) achieving the efficient use of navigable airspace of the United States; (3) promoting, encouraging, and developing civil aviation; (4) developing and operating a common system of airport traffic control and air navigation for both civilian and military aircraft; and (5) promoting the development of a national system of airports.

FEE SIMPLE LAND ACQUISITION - The full purchase of land and improvements by an airport sponsor. The land is usually maintained or leased for uses that are compatible with airport operations.

FIXED BASE OPERATOR (FBO) - Private enterprises offering flight training instruction, aircraft maintenance and repair, aircraft fueling services, aircraft storage and parking, and other ground support services to the general aviation community.

FLIGHT SERVICE STATION (FSS) - Air traffic facility that provides a variety of services, such as pilot briefings, en route communications, relaying of ATC clearances, aviation weather broadcasts, IFR flight plan receiving and processing, and NAVAID monitoring.

FRANGIBLE NAVAID - A navigational aid (NAVAID) which retains its structural integrity and stiffness up to a designated maximum load, but on impact from a greater load, breaks, distorts, or yields in such a manner as to present the minimum hazard to aircraft.

GENERAL AVIATION (GA) - All civil aviation except that classified as air carrier or air taxi. The types of aircraft typically used in general aviation activities vary from multi-engine jet aircraft to single-engine piston aircraft.

GLIDE SLOPE (GS) - The GS antenna signal is used to establish and maintain the aircraft's descent rate until visual contact confirms the runway alignment and location. A glide slope differentiates precision from non-precision approaches.

GLOBAL POSITIONING SYSTEM (GPS) - A United States satellite-based radio navigational, positioning, and time transfer system operated by the Department of Defense. The system provides highly accurate position and velocity information and precise time on a continuous global basis to an unlimited number of properly-equipped users. The system is unaffected by weather and provides a worldwide common grid reference system based on the earth-fixed coordinate system.

HAZARD TO AIR NAVIGATION - An object which, as a result of an aeronautical study, the FAA determines will have a substantial adverse effect upon the safe and efficient use of navigable airspace by aircraft, operation of air navigation facilities, or existing or potential airport capacity.

HELIPAD - A small area designated for takeoff, landing, or parking of helicopters.

HOLD APRON - Airfield area designated for departing aircraft waiting for clearance for departure, or arriving aircraft waiting for available gate space at the terminal.

IFR CONDITIONS - Weather conditions that require aircraft to be operated in accordance with instrument flight rules.

IFR MINIMUMS AND DEPARTURE PROCEDURES (FAR PART 91) - Prescribed takeoff rules. For some airports, obstructions or other factors require the establishment of nonstandard

takeoff minimums or departure procedures, or both. Both may be required to assist pilots in avoiding obstacles during climb to the minimum enroute altitude.

INCOMPATIBLE LAND USE - Residential, public, recreational and certain other noise sensitive land uses which are designated as unacceptable within specific ranges of cumulative (DNL) noise exposure as set forth in FAR Part 150, Appendix A, Table 2. Incompatible land uses also are unacceptable in the runway protection zone.

INSTRUMENT FLIGHT RULES (IFR) - Rules specified by the FAA for flight under weather conditions in which visual reference cannot be made to the ground and the pilot must rely on instruments to fly and navigate.

INSTRUMENT LANDING SYSTEM (ILS) - An electronic system which provides the aircraft with lateral, longitudinal, and vertical guidance necessary for an instrument landing.

ITINERANT OPERATIONS - All aircraft arrivals and departures other than local operations.

LAND USE CONTROLS - Controls established by local or state governments to carry out land use planning. The controls include zoning, subdivision regulations, land acquisition (in fee simple, lease-back, or easements), building codes, building permits, and capital improvement programs (or provide sewer, water, utilities, or other service facilities).

LAND USE PLANNING - Comprehensive planning carried out by units of local government, for all areas under their jurisdiction, to identify the optimum uses of land and to serve as a basis for the adoption of zoning or other land use controls.

LEAD-IN LIGHTING SYSTEMS (LDIN) - Navigational aid consisting of at least three flashing lights installed at or near ground level to define the desired course to an ALS or to a runway threshold.

LOCALIZER (LOC) - A component of an ILS. The localizer signal is used to establish and maintain the aircraft's horizontal position until visual contact confirms the runway alignment and location.

LOCALIZER TYPE DIRECTIONAL AID (LDA) - A navigational aid used for nonprecision instrument approaches with utility and accuracy comparable to a localizer; however, it is not part of a complete ILS and is not aligned with the runway.

LOCAL OPERATION - An aircraft operation which remains no more than 25 nautical miles from the departure point, or which terminates at the point of departure, or which does not include a stop of a greater duration than 15 minutes. Touch-and-go operations are local operations.

MEDIUM INTENSITY APPROACH LIGHTING SYSTEM (MALS) - Navigational aid that enhances nonprecision instrument and night visual approaches.

MEDIUM INTENSITY APPROACH LIGHTING SYSTEM WITH RUNWAY ALIGNMENT INDICATOR LIGHTS (MALSR) - Navigational aid used by pilots during instrument landing approach to align aircraft with runway centerline. It is an economy ALS system approved for CAT I precision approaches.

MEDIUM INTENSITY APPROACH LIGHTING SYSTEM WITH SEQUENCED FLASHERS (MALSF) - Navigational aid that is identical to the MALS except that sequenced flashing lights are added to the outer three light bars. The sequenced flashing lights improve pilot recognition of the ALS when here are distracting lights in the airport vicinity.

MISSED APPROACH POINT (MAP) - A point during an instrument approach procedure at which, if the visual reference to continue the approach does not exist, a missed approach procedure must be executed.

MITIGATION MEASURE - An action that can be planned or taken to reduce the severity of (mitigate) an adverse environmental impact. As set forth in Council on Environmental Quality (CEQ) 1500 (Section 1508.20), "mitigation" includes:

(a) Avoiding the impact altogether by not taking a certain action or parts of an action.

(b) Minimizing the impact by limiting the degree or magnitude of the action and its implementation.

(c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.

(d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.

(e) Compensating for the impact by replacing or providing substitute resources or environments.

A proposed airport development project, or alternatives to that project, may constitute a mitigation measure as defined by the CEQ.

MOVEMENT AREA - Runways, taxiways, and other areas of an airport used for taxiing, takeoff, and landing of aircraft which are under strict control of the ATCT personnel.

NAVIGATIONAL AID (NAVAID) - Any visual or electronic device (airborne or on the ground) that provides point-to-point guidance information or position data to pilots of aircraft in flight.

NEPA - National Environmental Policy Act of 1969 (PL 91-190).

NOISE ABATEMENT PROCEDURES - Changes in operational procedures affecting runway use, in flight approach and departure routes and procedures, and in other airport traffic procedures that are made to shift adverse aviation effects away from noise-sensitive areas (such as residential neighborhoods).

NOISE EXPOSURE CONTOURS - Lines drawn on a map that connect points of equal cumulative noise exposure (DNL) values. They are usually drawn in 5 dB intervals, such as DNL 75 dB values, DNL 70 dB values, DNL 65 dB values, and so forth.

NONDIRECTIONAL RADIO BEACON (NDB) - A low/medium frequency radio beacon transmitting nondirectional signals whereby the pilot of an aircraft equipped with direction- finding equipment can determine his bearing to or from the radio beacon and track to or from the station.

NON-MOVEMENT AREA - Taxiway and ramp areas **not** under the control of the ATCT. Aircraft maneuvering in this area is at the discretion of the individual pilot.

NORTH AMERICAN DATUM (NAD) 83 - The geodetic datum to which local geographical latitude and longitude coordinates are generally referenced.

OBJECT FREE AREA (OFA) - An area on the ground centered on a runway, taxiway, or taxilane centerline provided to enhance the safety of aircraft operations by having the area free of objects, except for objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes.

OBSTACLE FREE ZONE (OFZ) - A clearing standard that precludes taxiing and parked airplanes and object penetrations, except for frangible visual NAVAIDs that need to be located in the OFZ because of their function.

OBSTRUCTION - An object that exceeds a limiting height or penetrates an imaginary surface described by current Federal Aviation Regulations (Part 77).

OMNIDIRECTIONAL APPROACH LIGHTING SYSTEM (ODALS) - Navigational aid that may be installed on a runway with a nonprecision approach or on a runway that is difficult to identify due to an excessive number of lights in the area.

PRECISION APPROACH CATEGORY I (CAT I) RUNWAY - A runway with an instrument approach procedure which provides for approaches to a decision height (DH) of not less than 200 feet (60 m) and visibility of not less than ½ mile (800 m) or Runway Visual Range (RVR) 2400 (RVR 1800 with operative touchdown zone and runway centerline lights).

PRECISION APPROACH CATEGORY II (CAT II) RUNWAY - A runway with an instrument approach procedure which provides for approaches to a minima less than CAT I to as low as a decision height (DH) of not less than 100 feet (30 m) and RVR of not less than RVR 1200.

PRECISION APPROACH CATEGORY III (CAT III) RUNWAY - A runway with an instrument approach procedure which provides for approaches to minima less than CAT II.

PRECISION APPROACH PATH INDICATOR (PAPI) - A system of lights so arranged as to provide visual descent guidance information during the approach to a runway. Uses light units similar to the VASI but are installed in a single row of either two or four light units.

PRECISION INSTRUMENT APPROACH PROCEDURE - A standard instrument procedure for an aircraft to approach an airport in which an electronic glide slope is provided, e.g., an instrument landing system (ILS) and precision approach radar.

RADAR - Method of determining the location of objects whereby radio waves are transmitted into the air and are then received when they have been reflected by an object in the path of the beam.

RUNWAY - A defined rectangular surface on an airport prepared or suitable for the landing or takeoff of airplanes.

RUNWAY END IDENTIFIER LIGHTS (REIL) - Navigational aid that identifies the approach end of a particular runway.

RUNWAY OBJECT FREE AREA (ROFA) - The ROFA is a two-dimensional ground area surrounding the runway, and is centered on the runway centerline. FAA standards prohibit parked aircraft and objects, except NAVAIDs and objects fixed by function, from locating within the OFA.

RUNWAY OBSTACLE FREE ZONE (ROFZ) - The defined volume of airspace centered above the runway centerline. The ROFZ clearing standards prohibit taxiing, parked airplanes, and object penetrations, except frangible NAVAIDs with fixed locations.

RUNWAY PROTECTION ZONE (RPZ) - A trapezoidal area at ground level whose perimeter conforms to the projection on the ground of the innermost portion of the Approach Surface as defined in FAR Part 77. The RPZ is centered on the extended runway centerline and begins at the end of the FAR Part 77 Primary Surface, terminating below the points or line where the Approach Surface reaches a height of 50 feet above the elevation of the runway end. FAA regulations require that RPZ's be kept free of obstructions and any uses which cause an assemblage of persons.

RUNWAY SAFETY AREA (RSA) - A defined two-dimensional surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway.

RUNWAY THRESHOLD - The beginning of that portion of a runway usable for landing or takeoff.

RUNWAY VISUAL RANGE (RVR) - An instrumentally derived visibility value that represents the horizontal distance a pilot will see down the runway from the approach end, resulting from existing meteorological conditions.

TACTICAL AIR NAVIGATION (TACAN) - A navigational system which lends itself to military and naval requirements.

TAXILANE - The portion of the aircraft parking area used for access between taxiways and aircraft parking positions.

TAXIWAY - A defined path established for the taxiing of aircraft from one part of an airport to another.

TAXIWAY AND TAXILANE OBJECT FREE AREA (TOFA) - TOFA is a two-dimensional ground area surrounding the taxiway or taxilane, and centered on the centerline. FAA standards prohibit parked aircraft and objects, except NAVAIDs and objects fixed by function, from locating within the TOFA.

TAXIWAY SAFETY AREA (TSA) - A two-dimensional area centered on the taxiway centerline. Design standards for the TSA dictate that the TSA must be cleared and graded without surface variations; drained; capable of supporting snow removal, ARFF, and aircraft under dry conditions; and free of objects, except for objects that are fixed by function.

TERMINAL RADAR APPROACH CONTROL (TRACON) - Radar approach facility for an airport.

THRESHOLD - The beginning of that portion of the runway available for landing. In some instances the landing threshold may be displaced.

TOWER/AIRPORT TRAFFIC CONTROL TOWER (ATCT) - A central operations facility in the terminal airport traffic control system, consisting of a tower cab structure, including an associated IFR room if radar equipped, using air/ground communications and/or radar, visual signaling, and other devices, to provide safe and expeditious movement of terminal airport traffic.

TRAFFIC PATTERN - The traffic flow that is prescribed for aircraft landing at, taxiing on, or taking off from an airport.

UNITED STATES STANDARD FOR TERMINAL INSTRUMENT PROCEDURES (TERPS) - Criteria used to formulate, review, approve, and publish procedures for instrument approach and departure aircraft to and from civil and military airports.

VERY HIGH FREQUENCY OMNIDIRECTIONAL RANGE STATION (VOR) - A navigational aid transmitting very high frequency navigation signals 360 degrees in azimuth.

VFR CONDITIONS - Weather conditions that permit aircraft to be operated in accordance with visual flight rules.

VHF OMNI-DIRECTIONAL RANGE/TACTICAL AIR NAVIGATION (VORTAC) - A navigational facility consisting of the following components at one site: VOR azimuth, TACAN azimuth, and TACAN distance measuring equipment (DME).

VISUAL APPROACH - An approach to an airport wherein an aircraft on an IFR flight plan, operating in VFR conditions under the control of a radar facility and having an airport traffic control authorization, may deviate from the prescribed instrument approach procedure and proceed to the airport of destination, served by an operational control tower, by visual reference to the surface.

VISUAL APPROACH SLOPE INDICATORS (VASI) - A system of lights so arranged as to provide visual descent guidance information during the approach to a runway. Most VASI installations consist of two bars, near and far, and may consist of 2-, 4-, or 12-light units.

VISUAL FLIGHT RULES (VFR) - Rules that govern the procedures for conducting flight under visual conditions (Federal Aviation Regulations, Part 91).

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To: Terry Kessler		541/754.76749
From: Tom Schnetzer	Mead & Hunt	952/941.5622
Date: 5.14.02	Project Number	
Subject: PDT Deicing Pad		
___ Faxed at your request ___ Please review and call me	___ Edit/revise and fax back ___ Other:	Page 1 of 2

Terry,

Please review the attached memo. I wrote it for two reasons: 1) I thought it was important to get the issues down on paper, especially the FAA's position; and 2) I felt it needed to be incorporated into the master plan writeup.

Let me know what your thoughts are. I will leave it up to you and Rob on how/if you want to distribute.

Regards,
Tom

Mead & Hunt 6600 City West Parkway Suite 225 Minneapolis Minnesota 55344
phone: 952/941.5619 email: tom.schnetzer@meadhunt.com

Technical Memorandum

MEAD & HUNT ENGINEERS ARCHITECTS SCIENTISTS PLANNERS

To: Terry Kessler, David Evans and Associates

From: Tom Schnetzer

Date: May 14, 2002

Subject: Eastern Oregon Regional Airport at Pendleton (PDT)
Long-Range Planning for Aircraft Deicing Pad

cc: Rob Norton (DEA), Larry Dalrymple (PDT), Don Larson (FAA)

The purpose of this memo is to document discussions among various parties regarding the future location of an aircraft deicing pad and glycol collection/containment facility at PDT.

The issue of an aircraft deicing pad at PDT arose during the FAA's recent review of plans for the reconstruction of the air carrier apron at the Airport. One of the review comments from the FAA was regarding the Region's policy that airports consider the development of infrastructure for glycol containment and handling as part of any major apron reconstruction projects. Subsequent discussions focused on both the magnitude of the issue and possible solutions.

Our understanding is that the airline uses a minimal amount of propylene glycol during the winter and that the Airport is currently in compliance with water quality laws. Nevertheless, since environmental laws (and the enforcement of such laws) can change in the future, this issue was addressed. Several options were initially discussed, with each having advantages and disadvantages. Options for collecting glycol that were discussed among the FAA, airport management, and the Airport's planning and engineering consultants, include the following:

- Deicing at terminal gate; with drainage collection system under apron
- Deicing at terminal gate; with vacuum truck collection system
- Deicing near agricultural spraying operations pad
- Deicing west of terminal building

Criteria used in evaluating the various options include operational issues associated with the deicing operation itself, aircraft movement and parking, and associated costs (both capital and O&M). The magnitude of the problem, the issue of recycling the waste, and the interests of the users (airline) were also considered. The FAA indicated that they prefer an infrastructure solution vs. one that may be heavy on O&M (such as the vacuum truck), although FAA staff did indicate that the vacuum truck would work.

It was determined that, from a long-range planning perspective, any of the options in the above list would provide a workable solution. The option with a subsurface drainage collection system (in the vicinity of the terminal gate) would likely be the most expensive option. The option with a below-grade system installed either west of the terminal building (taking into account future planned improvements) or in the vicinity of the Ag pads, may be advantageous from an operational perspective, and would provided more flexibility in terms of terminal building expansion. Since there are no immediate needs to improve the Airport's glycol-handling capabilities, and since there are several other options for dealing with glycol if and when it becomes a problem, it was decided that the current air carrier apron rehabilitation project would not need to incorporate a collection system. This issue will also be documented in the Master Plan Update.

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