Vol. 3 - 0201



ROSEBURG REGIONAL AIRPORT

MASTER PLAN UPDATE 1995-2014

JANUARY 1996

ROSEBURG REGIONAL AIRPORT
MASTER PLAN UPDATE
1995 - 2014

Prepared For:

CITY OF ROSEBURG
ROSEBURG, OREGON

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January 1996

TABLE OF CONTENTS

		Page
Acknowledgements		
CHAPTER 1	INTRODUCTION	
	Introduction	1-1
	Findings and Conclusions	1-1
	Recommendations	1-5
CHAPTER 2	INVENTORY	
	Introduction	2-1
	Airport History	2-1
	Airport Data - Existing Facilities	2-3
	Airport Activity	2-4
	Airspace Data	2-5
	Airport Area Land Use	2-5
	Socio-Economic Data	2-10
CHAPTER 3	FORECASTS	
	Introduction	3-1
	Market Forces Affecting Aviation Activity	3-1
	Forecasting Methodology	3-6
	Airport Service Area	3-7
	Population Forecast for the Airport Service Area	3-7
	Forecast of Based Aircraft	3-8
	Based Aircraft Fleet Mix	3-10
	Forecast of Aircraft Operations	3-11
	Operation Peaking Characteristics	3-15
	Critical Aircraft	3-16
	Commercial Air Service	3-18
	Conclusion	3-24
CHAPTER 4	FACILITY REQUIREMENTS	
	Introduction	4-1
	Runway Demand/Capacity	4-1
	Airside Facility Requirements	4-2
	Landside Facility Requirements	4-8
	Terminal Area Plan	4-16

CHAPTER 5 AIRPORT PLANS

Introduction	5-1
Cover Sheet, Sheet 1	5-1
Existing Facilities 1994, Sheet 2	5-1
Airport Layout Plan, Sheet 3	5-1
FAR Part 77 Airspace, Sheets 4, 5, 6	5-3
Land Use Plan, Sheet 7	5-6
Terminal Area Plan, Sheet 8	5-6

CHAPTER 6 LAND USE AND ENVIRONMENTAL REVIEW

Overview	6-1

CHAPTER 7 FINANCIAL PLAN

Introduction	7-1
Schedule of Improvements and Costs	7-1
Sources of Funding	7-9
Projected Revenues and Expenses	7-10

APPENDICES

Appendix A	FAA Form 7460, Notice of Proposed Construction or Alteration On An Airport
Appendix B	FAA Airport Design, Computer Model Print-Outs
Appendix C	Integrated Noise Model Input Cases
Appendix D	Glossary of Aviation Terms

LIST OF TABLES

Table	Title	Page
1-1	Forecast of Based Aircraft	1-2
1-2	Forecast of Operations	1-2
1-3	CIP Financial Participation Summary	1-4
2-1	Historic Airport Activity	2-5
2-2	Historic Population Data	2-10
3-1	Demand Forecasts and Facility Impacts	3-6
3-2	Based Aircraft Forecast	3-8
3-3	Based Aircraft Fleet Mix Forecast	3-11
3-4	Aircraft Operations Forecast	3-12
3-5	Preferred Aircraft Operations Forecast	3-14
3-6	Peak Demand Figures	3-15
3-7	Forecast Operations	3-15
3-8	Aircraft Data Table	3-17
3-9	Critical Aircraft Operations Forecast	3-18
3-10	Top 23 Destinations - September, 1994	3-19
3-11	Mean Airfare Paid By Airport	3-21
3-12	Unconstrained Passenger Enplanement Forecasts	3-22
3-13	Adjustment For Proximity To Other Service	3-23
3-14	Adjustment For 30-Seat Turbo Prop Aircraft	3-24
3-15	Forecast Summary	3-25
4-1	Demand/Capacity Aircraft Mix	4-1
4-2	Airport Design Standards	4-2
4-3	Aircraft Parking Requirements	4-13
5-1	Runway Obstruction Table	5-6
7-1	Phased Development Plan-Project List	7-2
7-2	Phased Development Plan-Financial Participation	7-8
7-3	5 Year Combined Operating and Capital Budget	7-11

LIST OF FIGURES

Figure	Title	Page
2-1	Location Map	2-2
2-2	Standard Left Hand Traffic Pattern	2-6
2-3	Roseburg Municipal Airport Vicinity Map	2-7
2-4	Airspace Illustration	2-8
2-5	Approach Plate	2-9
3-1	Airport Service Area Population	3-7
3-2	Based Aircraft Forecast	3-9
3-3	Aircraft Operations Forecast	3-13
4-1	5,000' Runway Alternative	4-10
4-2	Proposed Development Existing Areas	4-17
4-3	West Side Land Uses Adjacent to the Airport	4-18
4-4	Possible Realignment of Bower Street	4-20
4-5	Possible Realignment of Bower Street	4-21
Sheet 1 of 8	ALP Title Sheet	5-7
Sheet 2 of 8	Existing Facilities Plan	5-8
Sheet 3 of 8	Airport Layout Plan	5-9
Sheet 4 of 8	FAR Part 77 Airspace	5-10
Sheet 5 of 8	Runway 16 Approach and RPZ	5-11
Sheet 6 of 8	Runway 34 Approach and RPZ	5-12
Sheet 7 of 8	Use Plan and Noise Contours	5-13
Sheet 8 of 8	Terminal Area Plan	5-14
6-1	1992 Land Use/Noise Contours	6-3
6-2	Runway Protection Zones	6-6
7-1	Phased Development Plan	7-3

LIST OF TABLES

Table	Title	Page
1-1	Forecast of Based Aircraft	1-2
1-2	Forecast of Operations	1-2
1-3	CIP Financial Participation Summary	1-4
2-1	Historic Airport Activity	2-5
2-2	Historic Population Data	2-10
3-1	Demand Forecasts and Facility Impacts	3-6
3-2	Based Aircraft Forecast	3-8
3-3	Based Aircraft Fleet Mix Forecast	3-11
3-4	Aircraft Operations Forecast	3-12
3-5	Preferred Aircraft Operations Forecast	3-14
3-6	Peak Demand Figures	3-15
3-7	Forecast Operations	3-15
3-8	Aircraft Data Table	3-17
3-9	Critical Aircraft Operations Forecast	3-18
3-10	Top 23 Destinations - September, 1994	3-19
3-11	Mean Airfare Paid By Airport	3-21
3-12	Unconstrained Passenger Enplanement Forecasts	3-22
3-13	Adjustment For Proximity To Other Service	3-23
3-14	Adjustment For 30-Seat Turbo Prop Aircraft	3-24
3-15	Forecast Summary	3-25
4-1	Demand/Capacity Aircraft Mix	4-1
4-2	Airport Design Standards	4-2
4-3	Aircraft Parking Requirements	4-13
5-1	Runway Obstruction Table	5-6
7-1	Phased Development Plan-Project List	7-2
7-2	Phased Development Plan-Financial Participation	7-8
7-3	5 Year Combined Operating and Capital Budget	7-11

LIST OF FIGURES

Figure	Title	Page
2-1	Location Map	2-2
2-2	Standard Left Hand Traffic Pattern	2-6
2-3	Roseburg Municipal Airport Vicinity Map	2-7
2-4	Airspace Illustration	2-8
2-5	Approach Plate	2-9
3-1	Airport Service Area Population	3-7
3-2	Based Aircraft Forecast	3-9
3-3	Aircraft Operations Forecast	3-13
4-1	5,000' Runway Alternative	4-10
4-2	Proposed Development Existing Areas	4-17
4-3	West Side Land Uses Adjacent to the Airport	4-18
4-4	Possible Realignment of Bower Street	4-20
4-5	Possible Realignment of Bower Street	4-21
Sheet 1 of 8	ALP Title Sheet	5-7
Sheet 2 of 8	Existing Facilities Plan	5-8
Sheet 3 of 8	Airport Layout Plan	5-9
Sheet 4 of 8	FAR Part 77 Airspace	5-10
Sheet 5 of 8	Runway 16 Approach and RPZ	5-11
Sheet 6 of 8	Runway 34 Approach and RPZ	5-12
Sheet 7 of 8	Use Plan and Noise Contours	5-13
Sheet 8 of 8	Terminal Area Plan	5-14
6-1	1992 Land Use/Noise Contours	6-3
6-2	Runway Protection Zones	6-6
7-1	Phased Development Plan	7-3

ACKNOWLEDGEMENTS

This plan was prepared and approved under the direction of:

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ODOT - Aeronautics Division:	**Gary Viehdorfer, Airport Planner**	
W&H Pacific Project Team:	**Chris Corich, Project Manager**	
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	Greg Haffner, Engineer	

The preparation of this document was financed in part through an Airport Improvement Program grant from the Federal Aviation Administration (Project Number 3-41-0054-05) as provided under Section 505 of the Airport and Airway Improvement Act of 1982, as amended. The contents do not necessarily reflect the official views 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.

SECTION 3.35.600 AIRPORT IMPACT OVERLAY

The purpose of the Airport Impact Overlay District is to protect the public health, safety and welfare by assuring the development within areas impacted by airport operations is appropriately planned to mitigate the impact of such operations.

Further, this overlay district is intended to prevent the establishment of air space obstructions in air approaches through height restrictions and other land use controls, as deemed essential to protect the public health, safety and welfare consistent with Federal Aviation Regulations (FAR) Part 77. The Airport Approach and Clear Zone plan is shown on page 12 of the Roseburg Municipal Airport Master Plan.

1. Definitions. For the purpose of this Section only, the following definitions are established:

   a. Airport Approach Surface. A surface longitudinally centered on the extended runway centerline, extending horizontally and vertically from the end of the Primary Surface at a 20:1 slope for a horizontal distance of 5,000 feet along the extended runway centerline. The beginning width of the Approach Surface coincides with the 500 foot width of the primary surface expanding to a width of the primary surface expanding to a width of 1,500 feet at a distance of 5,000 feet.

   b. Airport Approach Zone. The area underneath the Airport Approach Surface.

   c. Airport Clear Zone. The Airport Clear Zone coincides with the Airport Approach Zone for a horizontal distance of 1,000 feet from the end of the primary surface (or 1,200 feet from the end of the runway).

   d. Airport Transitional Surface. A surface extending outward at 90 degree angles to the runway centerline and the runway centerline extended at a 7:1 slope from the sides of the primary and Approach Surfaces to intersection with the Airport Horizontal Surface as specified herein and shown in Figure 17A of the Airport Master Plan.

   e. Airport Transitional Zone. The area underneath the Airport Transitional Surface.

   f. Airport Horizontal Surface. The Airport Horizontal Surface is established by constructing arcs of 5,000 feet radii from the center of each end of the Primary Surface and connecting the arcs with tangent lines drawn parallel to the runway centerline at an elevation of 675 feet above mean sea level. The Airport Horizontal Surface does not include the Approach and Transitional Surfaces.

g. Airport Horizontal Zone. The area underneath the Airport Horizontal Surface, not including the Airport Approach and Transitional Zones.

h. Airport Conical Surface. The Airport Conical Surface extends horizontally and vertically from the Airport Horizontal Surface and extends outward and upward at a slope of 20:1 for a horizontal distance of 4,000 feet, terminating at an elevation of 875 mean sea level.

i. Airport Conical Zone. The area underneath the Airport Conical Surface.

j. Airport Primary Surface. A surface longitudinally centered on the runway extending 200 feet beyond each end of the runway. The width of the Primary Surface is 500 feet. The elevation of any point on the Primary Surface is the same as the elevation of the nearest point on the runway centerline.

k. Place of Public Assembly. A structure which is designed to accommodate more than 25 persons at one time for such purposes as deliberation, education, worship, shopping, entertainment, or amusement.

l. Height. For the purpose of determining the height limits in all zones set forth in this Section and shown on the Approach and Clear Zone map, the datum shall be mean sea level elevation unless otherwise specified.

m. Nonconforming Use. Any pre-existing structure, object of natural growth, or use of land which is inconsistent with the provisions of this Section or an amendment thereto.

n. Structure. An object, including a mobile object, constructed or installed by persons, including but not limited to buildings, towers, cranes, smokestacks, poles, earth formations, and overhead transmission lines.

o. Obstruction. Any structure, growth, or other object, including a mobile object which penetrates any surface specified in this Section.

2. Permitted Use.

a. Uses and activities permitted by the underlying zoning district shall be allowed unless specifically prohibited by Subsection 3 of this Section.

b. Within the Airport Clear Zone, the following uses and activities are permitted:

(1) Farm use, excluding any permanent structures or objects.

(2) Roadways, parking areas and open storage areas which do not include any permanent structures or objects, and which are located in such a manner that vehicle lights will not make it difficult for pilots to distinguish between landing lights and vehicle lights or result in glare, or in any other way impair visibility in the vicinity of the land approach.

(3) Underground utilities.

(4) Exceptions for structures and uses other than above may be permitted subject to review and approval by the Federal Aviation Administration.

3. Use and Height Limits.

a. Within the Airport Impact Overlay District, no use shall be allowed if such use is likely to attract a quantity of birds hazardous to aircraft operations.

b. Within the Airport Clear Zone, and within the Airport Approach Zone for a distance of 2,500 feet extending from the end of the runway, sign lighting and exterior lighting shall not blink, flash, shimmer, oscillate, rotate, nor shall the beam of light project into the Approach Surface in such a manner as to result in confusion or distraction to pilots.

c. Within the Airport Approach Zone, no place of public assembly, as defined in this section, shall be permitted. Any existing place of public assembly shall be allowed to continue, including building modifications, but shall not increase its occupant load.

When the use of a building as a public assembly has been discontinued for a period in excess of one (1) year, the structure or property shall not thereafter be used as a public assembly.

Any place of public assembly which is damaged or destroyed may be restored to a public assembly, provided the restoration is commenced within a period of one (1) year, and is diligently prosecuted to completion. The restoration or reconstruction shall not increase the floor area or occupant load to a level greater than that which existed at the time of damage or destruction.

d. Within the Airport Approach Zone for a distance of 3,500 feet extending from the end of the runway, no Multi-Family dwelling shall be permitted.

e. Notwithstanding any other provisions of this Ordinance, no use may be made of land or water within any zone established by this Section in such

a manner as to create electrical interference with navigational signals of radio communication between the airport and aircraft, make it difficult for pilots to distinguish between airport lights and others, result in glare in the eyes of pilots using the airport, impair visibility in the vicinity of the airport, create bird strike hazards, or otherwise in any way endanger or interfere with the landing, takeoff, or maneuvering of aircraft intending to use the airport.

f. Except as otherwise provided in this Section, no structure shall be erected, altered, or maintained, and no natural or manmade object or structure shall be allowed to grow in any zone created by this Section so that it penetrates any Airport Surface, as defined in Section 3.35.600(1). No specific height limit applies because the ground level is irregular and therefore the distance between the ground and the Primary, Approach, Transitional, Horizontal and Conical Imaginary Surfaces varies.

4. Marking and Lighting. Notwithstanding the preceding provision of this Section, the owner of any existing obstruction or nonconforming structure or tree is hereby required to permit the installation, operation, and maintenance thereon of such markers and lights as shall be deemed necessary by the Airport Owner to indicate to the operators of aircraft in the vicinity of the airport and presence of such airport obstruction. Such markers and lights shall be installed, operated, and maintained at the expense of the Airport Owner.

5. Permits. Except as specifically provided in a, b and c hereunder, no material change shall be made in the use of land, no structure shall be erected or otherwise established, and no tree shall be planted in any zone hereby created until site development plans have been approved by the Director as specified in Article 3. Site development plan approval for a use inconsistent with the provisions of this Section shall not be granted unless a variance has been approved in accordance with Subsection 6.

a. In the area lying within the limits of the Horizontal Zone and Conical Zone, no site development plan review shall be required for any tree with a maximum potential height of less than seventy-five (75) feet of vertical height above the ground, which conforms to the restrictions of Subsection 3.

b. In areas lying within the limits of the Airport Approach Zones, but at a horizontal distance of 4,200 or more feet from each end of the runway, no site development review shall be required for any tree with a maximum potential height of seventy-five (75) feet of vertical height above the ground, which conforms to the restrictions of Subsection 3.

6. Variances. Any person desiring to erect or increase the height of any structure, or permit the growth of any tree, or use property, not in accordance with the regulations prescribed in this Section, may apply for a Variance from such regulations using the procedure of Section 2.060.

The application for variance shall be accompanied by a determination from the Federal Aviation Administration as to the effect on the proposal on the operation of air navigation facilities and the safe, efficient use of navigable airspace. In addition to the criteria for granting a variance as specified in Article 40, such variance must be found not to create a hazard to air navigation, and to be in accordance with the intent of this Section.

As further conditions for granting a variance the approving authority may require an overflight and aviation hold harmless agreement, and may further require an agreement from the applicant agreeing to remove the structure, tree, or use for which the variance is granted at the applicant's expense if the City so requires as some future time. The approving authority may require that such agreement(s) be recorded against the property.

ARTICLE 19

AIRPORT DISTRICT (AP)

SECTION 3.19.000 PURPOSE

The Airport District classification is intended to protect airport facilities and operations from incompatible uses; to provide for future airport expansion; and to preserve airport lands for future commercial and industrial uses which will be directly dependent on air transportation.

SECTION 3.19.050 PERMITTED USES

In the AP Zone, the following uses and their accessory buildings and uses are permitted subject to the general provisions and exceptions set forth by the Ordinance:

1. Aircraft sales, rental, repair, service, storage and schools relating to aircraft operations, and facilities essential for the operation of the airport, such as fuel storage, hangar use and air and ground traffic control facilities.
2. Air cargo terminals.
3. Air passenger terminals.
4. Public and semi-public buildings, structures and uses essential for the operation of the airport.
5. Restaurant for airport clientele.

SECTION 3.19.100 USES PERMITTED CONDITIONALLY

In the AP Zone, the following uses and activities and their accessory buildings and uses are permitted, subject to the provisions of Section 2.060(1)(g) and Article 39 of this Chapter:

1. Offices (Uses that do not conflict with the Airport Master Plan).
2. Uses not specifically listed under Section 3.19.050, where the ongoing operation and use is directly dependent upon and directly associated with airport activities.

SECTION 3.19.150 PROPERTY DEVELOPMENT STANDARDS

1. Setbacks.

   a. Front, side and rear yards will not be required, but if side or rear yards are created, they shall be a minimum of five (5) feet.

   b. Exception. When abutting other than a commercial or industrial zone, setbacks on the abutting side and rear yard shall be the same as those established for the abutting zone; provided, however, alleys contiguous to or within the property being used may be included in the required setback.

2. Height. Maximum height for all structures, including chimneys, towers, antennas, utility poles, trees, etc., shall be thirty-five (35) feet, except control towers and aircraft navigation devices.

3. Utilities. All utility wires shall be underground.

4. Lighting. Unless required for safe and convenient air travel, sign lighting and exterior lighting shall not blink, flash, shimmer, oscillate, rotate or project directly into the runway, taxiway or approach zone.

5. Glare and Electro-Magnetic Interference. Building materials shall not produce glare which may conflict with any present or planned operations of the airport, nor shall any use produce electro-magnetic interference which may conflict with any present or planned operation of the airport.

CHAPTER 1
INTRODUCTION

INTRODUCTION

In August, 1994, the City of Roseburg retained W&H Pacific, Inc. and Scudder and Associates to prepare the Master Plan for the Roseburg Regional Airport. This master plan is intended to forecast airport facility requirements, prepare a 20-year development program and identify methods to implement airport-related programs for the planning period 1995-2014.

As with any planning effort the ultimate objective is to recommend adoption and implementation of the plan. In an attempt to facilitate these steps it has been recognized that active participation from concerned interest groups is an integral part of the plan. In developing this plan, input was solicited from the Federal Aviation Administration (FAA), the Oregon Department of Transportation - Aeronautics Division, and the City of Roseburg Airport Commission. Also reflected in the Master Plan is input from local pilots, the Fixed Base Operator's (FBO), local businesses, and concerned citizens.

FINDINGS AND CONCLUSIONS

INVENTORY

The Roseburg Regional Airport is located adjacent to the Interstate 5 Freeway north of downtown Roseburg. The airport is owned and operated by the City of Roseburg.

The airport is currently considered a General Utility Stage I, Airport Reference Code (ARC) B-II airport serving aircraft with approach speeds of between 91 knots and 121 knots and , wingspans from 49 feet up to 79 feet and maximum certificated take-off weight of over 12,500 pounds (large aircraft).

Roseburg Regional Airport has a 4,600 foot long by 100 foot wide single paved runway with a full length parallel taxiway on the west side of the runway. The runway is equipped with a Medium Intensity Runway Lighting system (MIRL). The taxiways are also lighted.

Navigational aids for Runway 34 include a Visual Approach Slope Indicator (VASI) unit, rotating beacon, a lighted windsock, and a VOR-DME non-precision instrument approach.

As of June 1995, aircraft parking facilities consist of 72 tiedowns on the west side of the airport. There are currently 30 hangars, and one full service FBO and one limited service FBO. In 1994 there were 108 based aircraft and an estimated 30,794 operations.

Historically, the economic base of Roseburg has been based upon timber. Timber continues to be a significant factor. In the last five to ten years, however, the Roseburg economy has begun to diversify and it has become a regional center for retail and some medical services. There is also a strong federal employment base in the city.

FORECASTS

The current and future demands for based aircraft at Roseburg Regional Airport are based on a variety of factors. Some of these are national or regional in character, others are specific to the Roseburg Regional Airport. Each of these was taken into account in development of based aircraft forecasts for the airport. These factors are discussed in detail in Chapter 3.

There were 108 based aircraft at the Roseburg Regional Airport in 1994. This figure is expected to grow at a rate proportional to the population growth. Table 1-1 below presents the forecast of base aircraft.

Table 1-1

FORECAST OF BASED AIRCRAFT

1994	1999	2004	2014
108	118	129	150

The estimated number of aircraft operation in 1994 is 30,794. This number will grow as the number of based aircraft grows. The table below provides an estimate of the forecast growth.

Table 1-2

FORECAST OF OPERATIONS

1994	1999	2004	2014
30,794	37,069	39,936	45,884

Currently the airport serves aircraft in approach category B with approach speeds less than 121 knots and airplane design group II with wingspans from 49 feet to 79 feet. The Cessna Citation II has been designated the current (1994) critical aircraft. Should commercial air service be initiated, the critical aircraft will likely change to the Dornier 328 or a similar type airline commuter aircraft. Most of the airline commuter aircraft which are

likely to operate at Roseburg will fall within the ARC B-II category. As a result, the dimensional design standards for the airport are not expected to change.

FACILITY REQUIREMENTS

Table 7-1 in Chapter 7 gives the Phased Development Plan Summary and lists facility improvements required during the study period. This table lists the proposed schedule, estimated total cost in 1995 dollars, the level of eligibility for federal and state funds, as well as the local contribution. Of the projects that are scheduled throughout the three phase planning period, the most critical to the continued growth of the airport:

- Purchase land on the northwest side of the airport for continued expansion.
- Maintenance of airport pavements.

LAND USE PLANS

The land use plan addresses the use of property both on the airport as well as property surrounding the airport. The objective of the land use plan is to integrate airport development and surrounding uses to achieve long-term compatibility between the two.

The Roseburg Comprehensive Land Use Plan designates the airport as a public/semi-public use and the zoning for the airport is "Airport District - AP Zone". Together, these designations provide good land use controls for on airport land uses.

Noise impacts were analyzed as part of the Master Plan Update. For the 1994 and 2014 noise contours, there are no noise levels exceeding FAA standards for land designated as residential in the Roseburg Comprehensive Plan. There are, however, residential (manufactured homes) uses immediately adjacent on the west side of the airport. The underlying Comprehensive Plan designation is, however, industrial so no action has been planned to relocate these residential uses.

In 1996, the North Roseburg/Interstate 5 Interchange will open providing an opportunity for increased development of land to the North of the airport. Careful attention must be paid to prevent incompatible land uses or the construction of airspace obstructions in that area which might negatively impact the airport. A more complete discussion of this issue can be found in the Land Use Chapter of this Plan.

FINANCIAL PLAN

Four elements have been merged to create the financial plan for implementation of the Master Plan:

1) The facilities and improvements required to accommodate forecasted demand;
2) The estimated cost to construct the required improvements;
3) A development schedule identifying when improvements are expected to be needed; and
4) The financial resources available for airport development.

The proposed improvement projects fall within one of three phases. Phase I covers the first five years from 1995 to 1999 and is the most detailed. Phase II covers the next five years from 2000 to 2004. Phase III covers the next ten years from 2005 through the year 2014. During Phase I, projects are scheduled for specific years. In Phases II and III, projects are only identified by phase.

Capital improvements are scheduled to accommodate forecast demand subject to the availability of funds. To evaluate the economic feasibility of the phased development program, cash flow projections for the Roseburg Regional Airport were developed for all three phases. In addition, other methods of financing capital improvements were evaluated.

The total estimated cost for all three phases is $8,900,347 with $6,921,592 contributed through the FAA, and $1,898,379 through local governmental funding sources. Financial participation in the Phased Development Plan is summarized in Table 1-3.

Table 1-3

CIP FINANCIAL PARTICIPATION SUMMARY

	Dollars	Percent
Local Government Funding Sources	$1,898,379	21%
Federal Aviation Administration	$6,921,592	79%
TOTAL CIP	**$8,900,347**	**100%**

RECOMMENDATIONS

In order to provide for and foster aviation in the best interest of the residents of the City of Roseburg and the surrounding area, and the users of the airport, the Master Plan Update recommends that the City of Roseburg:

- Provide future development at the airport be in accordance with this plan.
- Submit copies of this plan to local planning agencies for incorporation into comprehensive plans and other necessary planning documents and land use regulations.
- Proceed with the Phase Development Plan as outlined in this report.
- Request and utilize funding assistance as provided by the Federal Aviation Administration.
- Review this master plan every two years and update at least every five years to reflect changed conditions.

CHAPTER 2
INVENTORY

INTRODUCTION

The objective of the inventory chapter is to provide data on airport facilities, airspace, on-airport land use, off-airport land use, and demographics. On-site inspections were conducted to determine current conditions, capacity, use and ability to expand. Aviation activity and land use data was collected and synthesized for use in subsequent chapters.

AIRPORT HISTORY

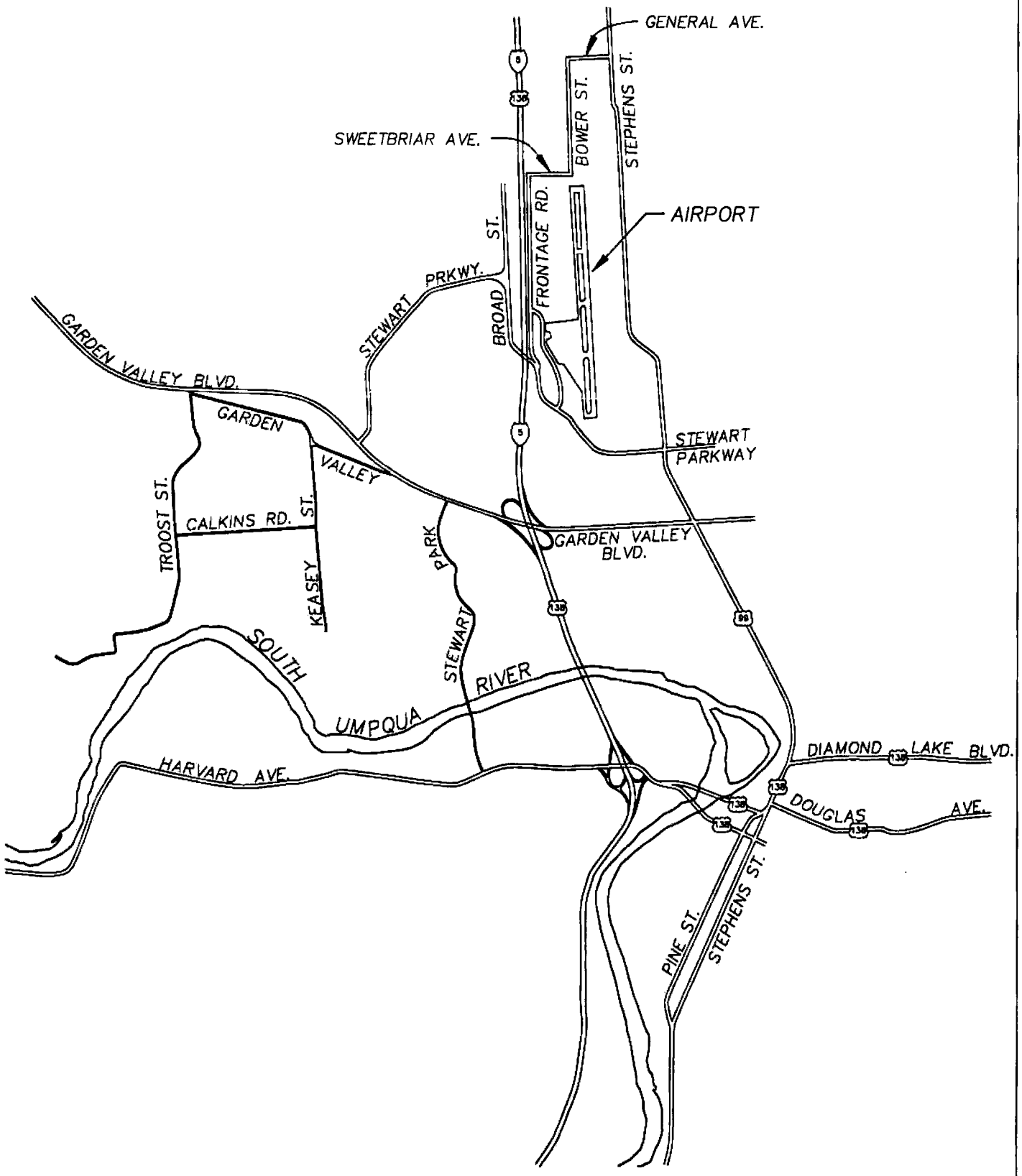
The site for the Roseburg Regional Airport was acquired in 1928 using funds from a municipal bond issue with the development of the runway and related facilities completed soon after. The airport has been in continuous operation since that time making it one of the older airports in the state. The location of the airport within the City is illustrated in Figure 2-1.

The original runway was 3,800' long and the airport contained 90 acres. It was operated by the City until 1935 when it was taken over by the U.S. Department of Commerce, Bureau of Air Commerce. The federal government operated the airport until 1947. The goal of the Commerce Department was to provide an intermediate airport for flights between Portland and Medford.

Early in its history, West Coast Airlines operated commercial passenger service in Roseburg as a stop on their Seattle to San Francisco flights. In 1946 this service was discontinued due to "high hills at either end of the runway".

As a result of the loss of air service, a study was conducted to determine if there was a better location for an airport in the area. The conclusion was that the existing airport location was the best choice and plans were made to improve facilities at the present airport site.

In 1950, another municipal bond issue was passed to acquire the property necessary for a runway extension. Upon completion of the runway extension, West Coast Airlines resumed service in 1951 and later operating as Hughes Airwest, continued service until 1973. Due to the physical layout of the airport, the surrounding terrain, and the operating characteristics of the aircraft used by the airlines, service to Roseburg was not dependable during the last few years of service. This lack of reliability resulted in a decline in number of passengers using the service. The availability of more reliable competing service at Eugene was also likely a factor.



PACIFIC

Roseburg Regional Airport
Location Map

Roseburg Regional Airport
Roseburg, Oregon

Figure
2-1

JOB NO. 4-0451-0201

ACAD FILE:FIG2-1.DWG

In 1967, a scheduled air taxi service was established between Roseburg and Eugene. Service was provided in smaller aircraft than were previously used on the Seattle to San Francisco flights. The service was more reliable and passenger volumes increased somewhat. As with the longer distance flights between Seattle and San Francisco, the air taxi service was discontinued in 1973.

Since 1973, there have been no successful scheduled commercial air service flights into Roseburg.

AIRPORT DATA - EXISTING FACILITIES

The following section lists the types of facilities that presently exist at the Roseburg Regional Airport. An existing facilities plan can be found in Chapter 5, Sheet 1 of 9.

The airport is located on the north side of Roseburg immediately adjacent to Interstate 5. The airport is built on 184 acres owned by the City. The airport elevation is 525 feet msl (NGVD29 - National Geodetic Vertical Datum of 1929 - per Obstruction Chart OC 888 prepared by the National Ocean Service, U.S. Department of Commerce) and has a mean maximum temperature of 83° F. The Airport Reference Point (ARP) is Latitude 43°14'19", Longitude 123°21'21" (NAD83 - North American Datum 1983 - per Obstruction Chart OC 888 prepared by the National Ocean Service, U.S. Department of Commerce).

The airport has a single runway, runway 16/34, which is 4,600 feet long by 100 feet wide. Runway 34 has a 371 foot displaced threshold while runway 16 has a 968 displaced threshold. The runway is constructed of asphalt and has an effective gradient of 0.61%. According to the FAA 5010 Record, the weight bearing capacity of the runway is 42,000 lbs for aircraft with single wheel landing gear, 54,000 lbs for aircraft with dual wheel landing gear, and 88,000 lbs for aircraft with dual tandem wheeled landing gear. The wind coverage is 96.6% for 12 mph winds (Source is the National Oceanic and Atmospheric Administration report for Roseburg based upon data taken from January 1960 to December 1964). The runway is lighted by medium intensity runway lights (MIRLs) and runway end identifier lights (REILs) located on both ends. Runway 34 has a visual approach slope indicator (VASI). The runway has a full length lighted parallel taxiway.

The airport has an ASOS - Automated Surface Observation System weather reporting system. As of September 1994, the system was being operated in a test mode.

The airport has a rotating beacon located on the west side of the airport behind the main maintenance FBO. Radio communications are available on a Unicom on a frequency of 122.8.

There are 72 aircraft tiedown positions for fixed wing aircraft, and 5 marked helicopter parking positions including one marked as an emergency medical helicopter landing pad located immediately adjacent to the airport access gate. There are 27 fully enclosed aircraft T-hangars, 6 open (no door) T-hangars, and 7 large "corporate" type hangars . The condition of the hangars ranges from new to fair.

One FBO provides 100 octane aviation fuel and Jet-A jet fuel which is stored in two underground fuel storage tanks owned by the City. The City owned tanks are currently in compliance with EPA Underground Storage Tank Regulations. Jet fuel is also stored in 2 other underground tanks owned by two of the corporate jet operators on the field.

There are 7 ground leases for corporate hangars, 1 ground lease for T-hangars, and a ground lease for the terminal building. The FBO's are in buildings leased from the city, and there are 23 T-hangars rented or leased by the city, and a total of 72 tie down spaces which are available.

As of August 1994, there are no landing fees.

A 5 cents per gallon fuel flowage fee is charged for all fuel dispensed on the airport by corporate operators. The FBO pays 13 cents per gallon and uses the City owned fuel system.

Access to the airport is provided by an entrance off of Aviation Drive which in turn connects with Stewart Parkway, a major arterial within the city. Frontage Road runs along the west side of the airport and connects with Aviation Drive. In the future, Frontage Road will extend (Via Sweetbrier and Bower St.) to connect with the new North Roseburg Freeway Interchange. Construction on the new interchange began in the summer of 1994 with completion anticipated some time in 1996.

AIRPORT ACTIVITY

As of August of 1994, there were 108 based aircraft at Roseburg and an estimated 30,794 annual operations. The estimate of operations was made using the 1989 Oregon Aviation System Plan Inventory 1990-2000 Forecasts document prepared by the Oregon Aeronautics Section. Based upon extensive sampling and data analysis at non-towered airports in Oregon (like Roseburg) the best prediction of operations was based upon a formula of 878 operations + 277 x # of based aircraft (108 in Roseburg). This formula was the one used to prepare the estimate of 30,794 operations.

The historical data in Table 2-1 was taken from a variety of sources, as noted.

Table 2-1

HISTORIC AIRPORT ACTIVITY
ROSEBURG REGIONAL AIRPORT

YEAR	BASED AIRCRAFT	TOTAL OPERATIONS
1994	108 (C)	30,794 (C)
	108 (A)	10,220 (A)
1993	108 (A)	10,220 (A)
1985	135 (D)	30,900 (D)
1983	150 (B)	30,901 (B)
1976	94 (E)	31,500 (E)
1975	N.A.	34,000 (E)
1974	N.A.	30,000 (E)

N.A. = Data Not Available

Source Codes:

A = FAA 5010 Airport Record
B = OAD 1989 Inventory 1990-2000 Forecast
C = W&H Pacific Survey 8/94
D = 1986 Roseburg Airport Master Plan Update
E = 1977 Roseburg Airport Master Plan

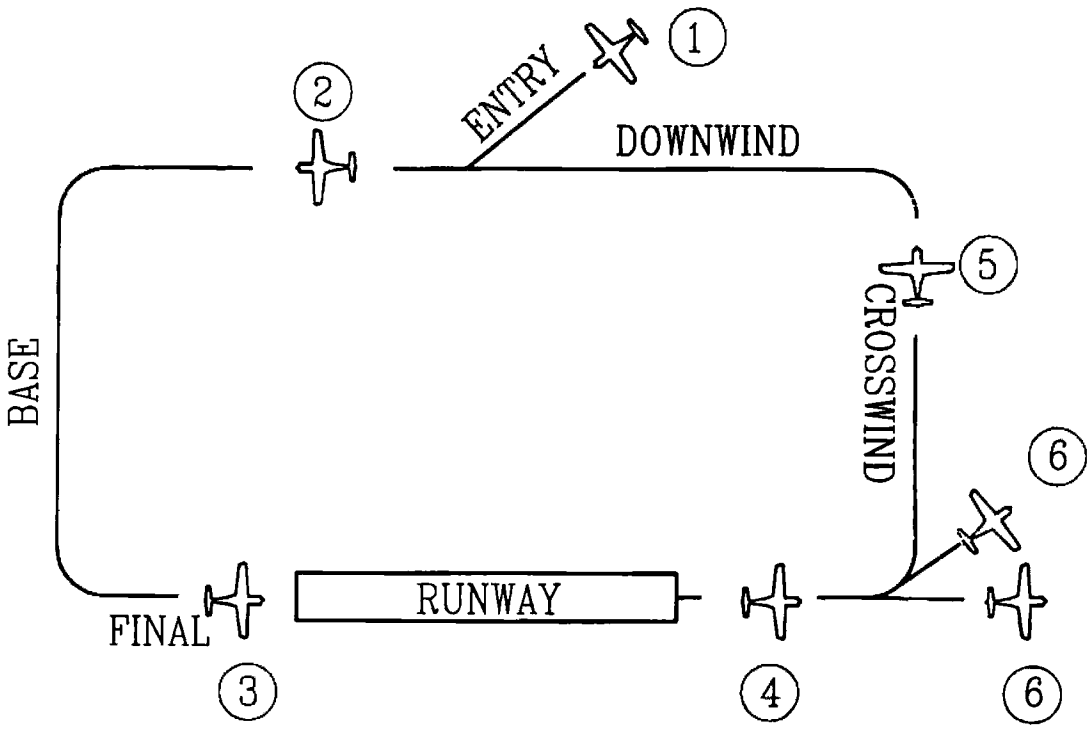
AIRSPACE DATA

The airport traffic pattern is a standard left hand pattern to both runways. This is illustrated in Figure 2-2. The pattern altitude is 775 feet above ground level (AGL), or 1,300 feet above mean sea level (MSL). The location of the airport and surrounding airports is depicted in Figure 2-3 which shows a portion of the Klamath Falls Sectional Chart (a type of map used by pilots flying with visual flight rules). The existing Federal Aviation Administration (FAA), Federal Aviation Regulation (FAR), Part 77 Airspace for the Roseburg Regional Airport is shown in Chapter 5, Sheet 4 of 9. Figure 2-4 illustrates the geometry of the FAA, FAR, Part 77 Airspace. The existing approach and runway protection zones (RPZ) are shown in Chapter 5 on Sheets 5 and 6 of 9.

The airport also has a VHF Omni-directional Range (VOR) type non-precision circling instrument approach. This approach is depicted in Figure 2-5 which shows the actual approach chart (called an "approach plate") used by pilots flying an instrument approach to Roseburg Regional Airport.

AIRPORT AREA LAND USE

As of August of 1994, the land use adjacent to the Roseburg Regional Airport is mixed, with industrial, residential (manufactured housing), and the Interstate 5 freeway (I-5) on the west; low density residential (including both conventional and manufactured housing) to the north; commercial, industrial, and transportation (rail) to the east, and light industrial and residential to the south.



1. Enter pattern in level flight at the midpoint of the runway, at the traffic pattern altitude 1,300' MSL.
2. Maintain pattern altitude until adjacent to the approach end of the landing runway, or downwind leg.
3. Complete turn to final at least 1/4 mile from the runway.
4. Continue straight ahead until beyond departure end of runway.
5. If remaining in the traffic pattern, commence turn to crosswind leg beyond the departure end of the runway, within 300 feet of pattern altitude.
6. If departing the traffic pattern, continue straight out, or exit with a 45 degree left turn beyond the departure end of the runway, after reaching pattern altitude.

PACIFIC

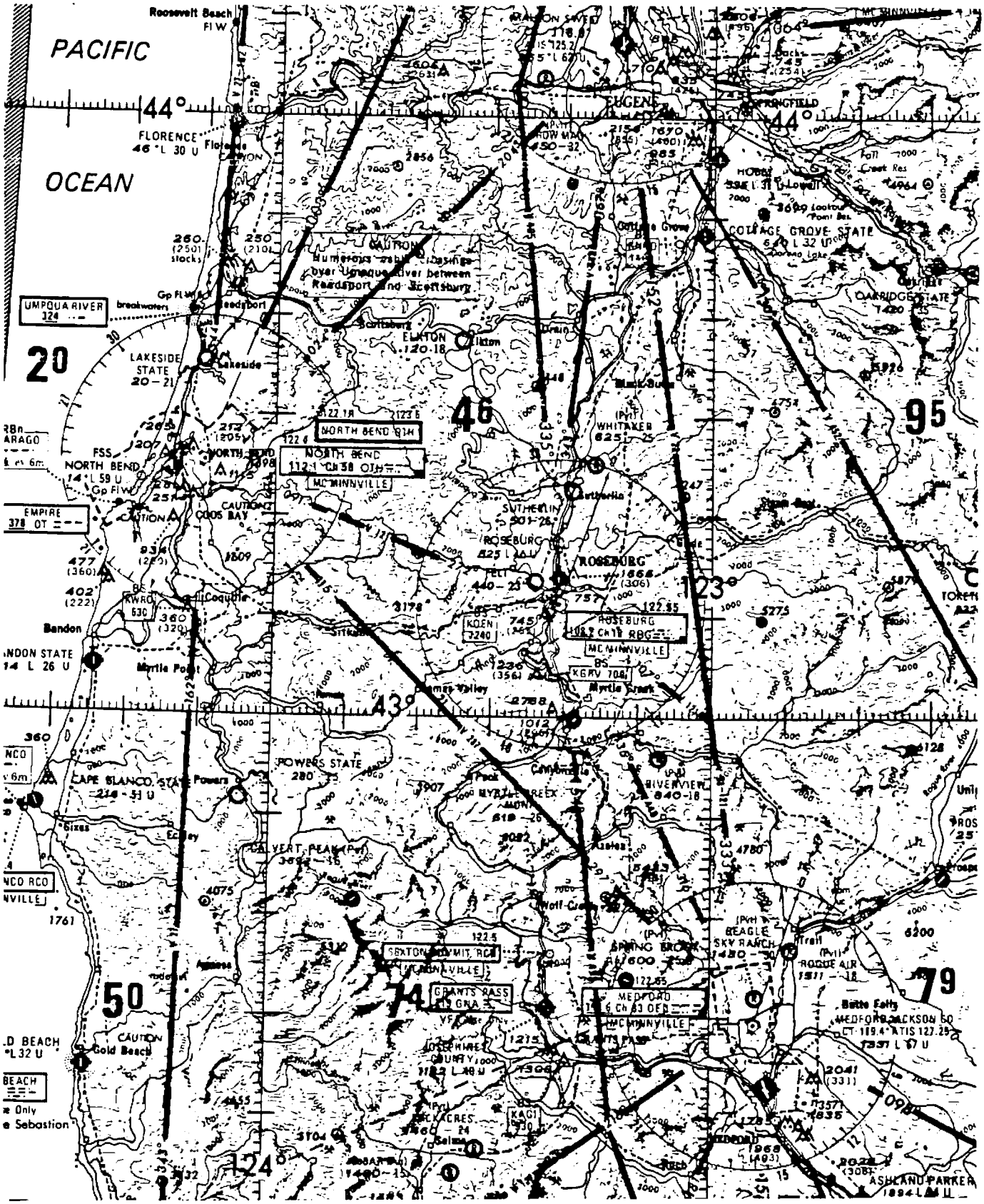
Standard Left Hand Traffic Pattern

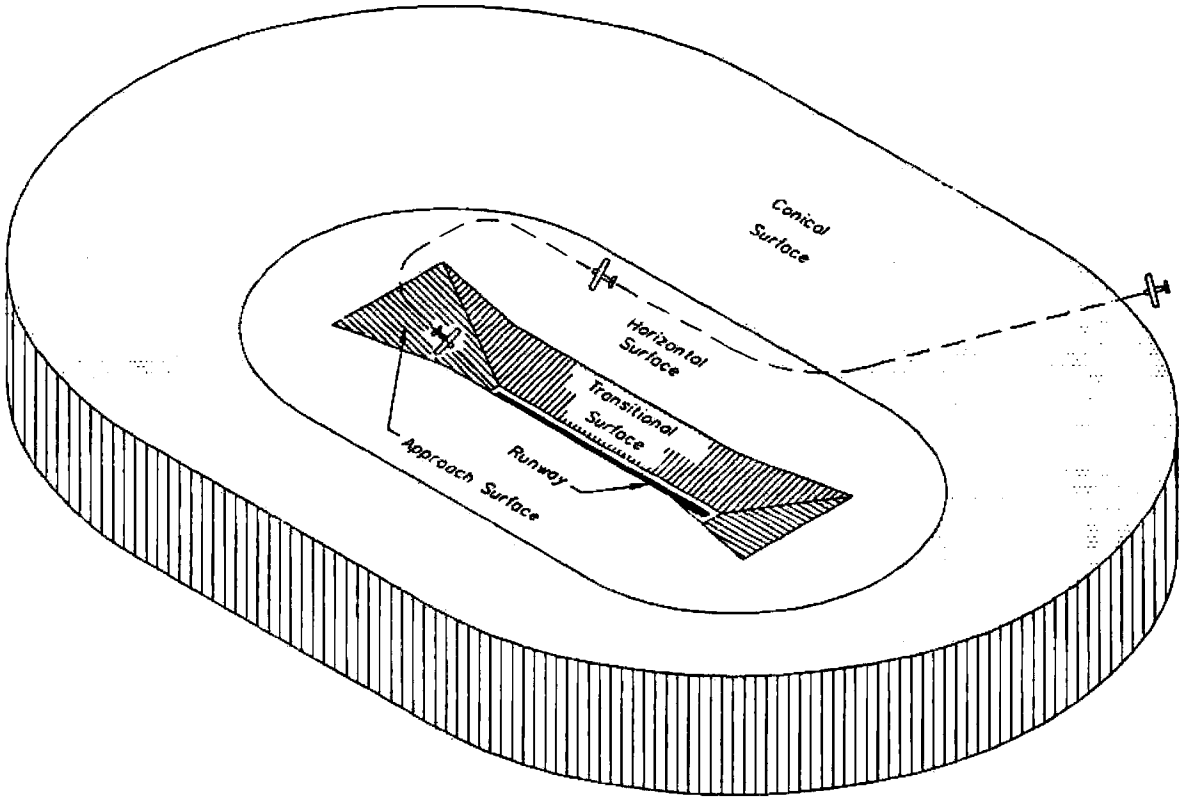
Roseburg Regional Airport
Roseburg, Oregon

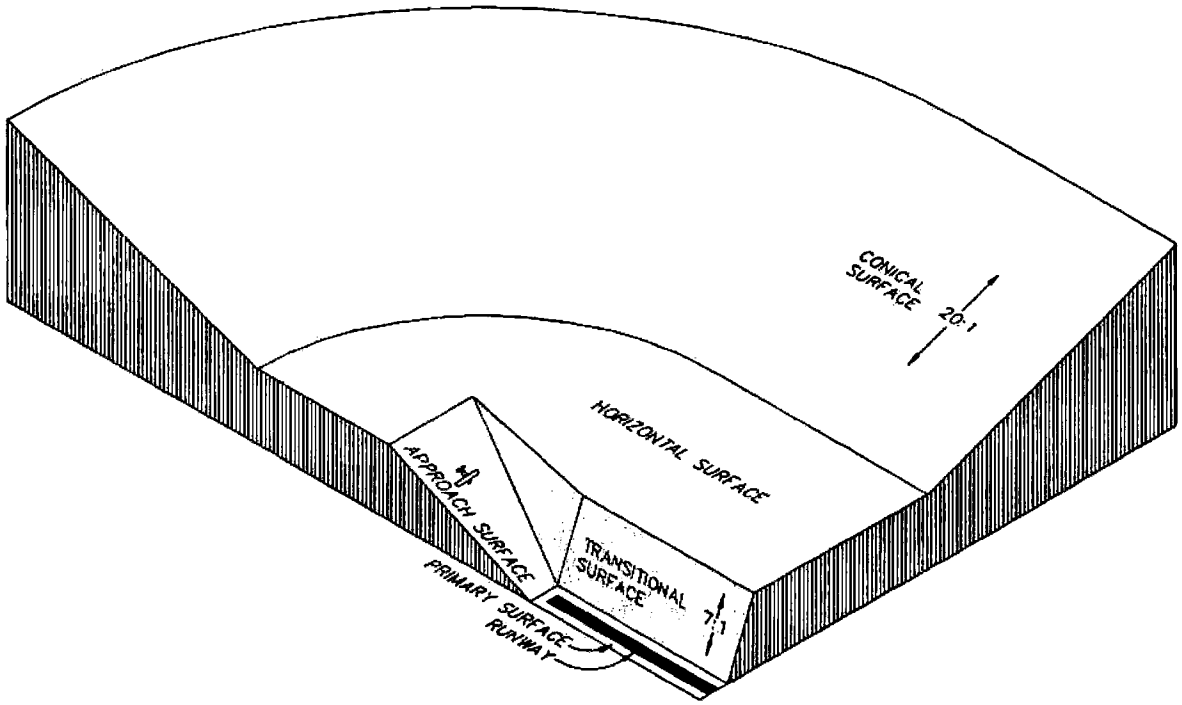
Figure 2-2

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PACIFIC
OCEAN
44°
43°
42°
FLORENCE
EUGENE
SPRINGFIELD
COTTAGE GROVE STATE
DARRIDGE STATE
UMPQUA RIVER
Reedsport
LAKESIDE STATE
NORTH BEND
NORTH BEND 113.1 CH38 OTH
MCMINNVILLE
EMPIRE
COOS BAY
ROSEBURG
ROSEBURG 122.55
Coquille
Bandon
Myrtle Point
Myrtle Creek
Riddle
Canyonville
POWERS STATE
CAPE BLANCO STATE
RIVERVIEW
Gold Beach
GRANTS PASS
MEDFORD
BEAGLE SKY RANCH
ROGUE AIR
Butte Falls
MEDFORD JACKSON CO
ASHLAND PARKER
Roosevelt Beach
Florence
Gardiner
Scottsburg
ELKTON
Sutherlin
Whitaker
Oakland
Drain
Yoncalla
Glendale
Azalea
Wolf Creek
Agness
Illahe
Galice
Selma
Kerby
Takilma
Cave Junction
Fort Klamath
Crescent Lake
Odell Lake
Lookout Point Res
Fall Creek Res
Dorena Lake
Camas Valley
Powers
Sixes
Ophir
Ellensburg
Port Orford
Langlois
Bandon State
Empire
Coquille
Myrtle Point
Gardiner
Reedsport
Scottsburg
Elkton
Lakeside
Sutherlin





PACIFIC

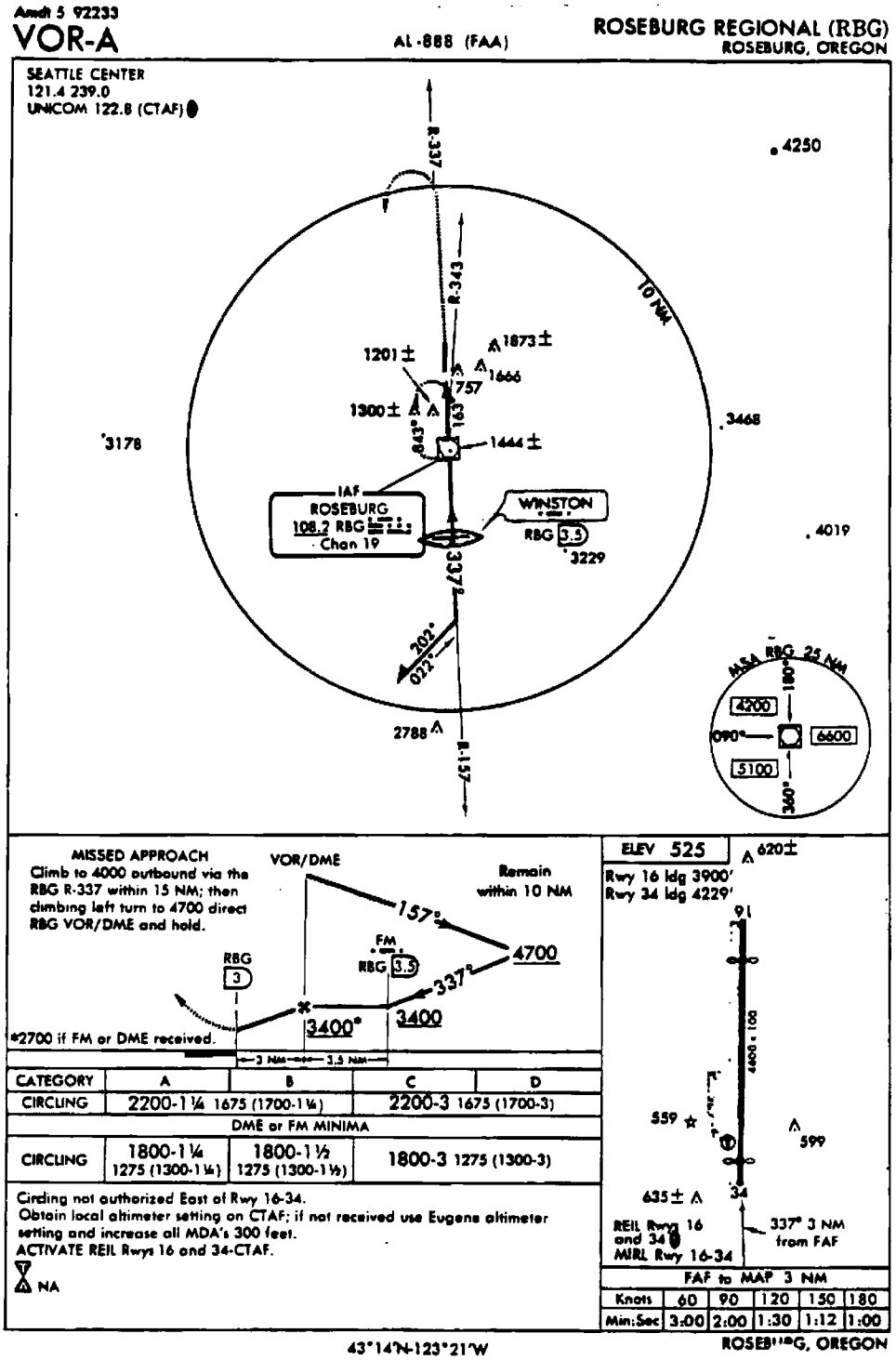
FAA Part 77 Airspace Illustration

Roseburg Regional Airport
Roseburg, Oregon

Figure 2-4

JOB NO. 4-0451-0201

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PACIFIC

Approach Plate

Roseburg Regional Airport
Roseburg, Oregon

Figure 2-5

JOB NO. 4-0451-0201

ACAD FILE:FIG2-4.DWG

The current land use designations surrounding the Airport are illustrated in Chapter 5, Sheet 7 of 9. These land use designations closely match the existing land use.

SOCIO-ECONOMIC DATA

Historic population data for the years 1970-1992 are shown in Table 2-2. This information was provided by the City of Roseburg and is contained in the Roseburg Municipal Water System Plan, prepared in 1993.

The economy in Roseburg proper has experienced a shift in recent years from being predominately a timber based economy to that of a regional service and retail center. A windshield survey of the city illustrates that it has a retail commercial and service business sector which is far larger than would be expected for a city the size of Roseburg. Those businesses are serving the outlying communities within a 30-40 mile radius.

The city has experienced steady population growth as a result and this growth is expected to continue. Further analysis and data will be provided in the Forecast chapter.

Table 2-2

HISTORIC POPULATION DATA
CITY OF ROSEBURG

YEAR	POPULATION	YEAR	POPULATION
1994	18,910*	1981	16,200
1993	18,610*	1980	16,200
1992	17,938	1979	17,300
1991	17,935	1978	16,900
1990	17,032	1977	17,230
1989	16,635	1976	16,950
1988	16,240	1975	16,735
1987	15,930	1974	15,530
1986	15,890	1973	15,360
1985	16,025	1972	15,095
1984	15,800	1971	14,530
1983	15,620	1970	14,461
1982	15,880		

Sources: City of Roseburg Municipal Water System Master Plan
*Portland State University

CHAPTER 3
FORECASTS

Chapter 3
FORECASTS

INTRODUCTION

The objective of forecasting is to estimate future levels of airport activity from which the demand for facilities can be derived. By comparing the demand for future facilities with existing facilities it is possible to identify airport facility constraints. From these efforts, cost effective facilities that meet existing and future demand can be planned.

The forecast spans 20 years, from 1995 to the year 2014, with intermediate forecasts for the years 1999 and 2004. It should be noted that as with any forecast, levels of uncertainty increase with the number of years.

The development of the forecast for Roseburg Regional Airport was a multi-step process involving the definition of the airport service area, analysis of the relationship between population within the service area and the number of based aircraft at the airport and, finally, the relationship between based aircraft and the levels of operations (take offs and landings) at the airport. Judgments are also made which take into account technological changes in aviation, shifts in business, demographic trends, the number of other airports in the service area, and consumer preferences. Given the number of factors involved, forecasting becomes a blend of science and "art".

In the final analysis, forecasts serve only as a guideline. Deviations from them will almost certainly occur. In most instances, deviations from forecasted numbers of based aircraft and aviation operations normally affect only the longer term development schedule, not the short-term facility requirements. However, a change in the airport role or services can impact rates of aviation growth and the kinds of aircraft that use the airport. An example of this would be upgrading an instrument approach or initiating scheduled commercial passenger service.

MARKET FORCES AFFECTING AVIATION ACTIVITY

It is important to begin any discussion of aviation forecasts with a brief overview of the market forces influencing aviation which may affect Roseburg Regional Airport. These factors include:

- Airline ticket costs and schedule frequencies;
- Costs of new and used general aviation aircraft and avionics compared to consumer price indices;
- Costs of owning and operating an aircraft;
- Numbers of active and student pilots;
- Health and evolution of our national and regional economies;
- Technological advances in aircraft, and enroute and terminal navigation systems;

In addition, three potential forces that may influence the short-term and intermediate future of general aviation at Roseburg Regional Airport are:

- Increasing demand for air carrier, regional airline and corporate pilots;
- Passage by Congress of a General Aviation liability bill; and,
- Widespread usage of the Global Positioning System (GPS) in conjunction with Loran C for enroute and terminal navigation.

A number of these forces deserve discussion. The following paragraphs identify six of the principal factors affecting aviation in the U.S.

DEREGULATION OF THE AIR CARRIERS

In 1977, the commercial airline industry was deregulated. Prior to 1977, routes and ticket prices were regulated by the Federal Government. After 1977, airlines were free to fly any route they wanted to and to charge any fare the market would bear.

As a result of deregulation, some communities have gained air service, and others have lost it as airlines which had been required to provide service in areas too small to support the service pulled out. Airline ticket prices have increased at a rate below that of inflation so that for many routes, the cost of flying is less today than in 1977.

A positive aspect of deregulation for a city like Roseburg is that getting airline service is simply a matter of getting an airline interested in providing service. There are no federal approvals beyond those required for safety and security of the passenger terminal. Many communities without commercial service have established task forces to promote and develop air service. Success for these groups has been mixed.

COST FACTORS

The costs of purchasing, maintaining and operating general aviation aircraft have increased steadily since 1978, with increases caused largely by increased purchase costs. Operating costs, in constant dollars, have actually declined over the same period, but not enough to offset the increased purchase costs.

Increases in product liability claims are cited as one of the key causes of the increased prices of new general aviation aircraft. Over the last 10 years, annual claims paid by manufacturers have increased from $24 million to over $210 million.

As the cost of new aircraft has been driven up by increased liability expenses, production has declined and in some cases ceased altogether. This has resulted in a tighter market for used aircraft and increases in the price of used aircraft as well as new.

Although the costs for operating and maintenance have, in relative terms, declined over the years, the increases in purchase price have had the effect of slowing the growth of some segments of general aviation, particularly the recreational general aviation segment made up of persons who fly for fun.

TORT REFORM AND NATIONAL LIABILITY LIMITS

As noted above, product liability costs have had a damaging effect upon the U.S. manufacturers of general aviation aircraft. A significant portion of the price increases in new aircraft (and to a degree, used aircraft) can be attributed to product liability awards assessed against manufacturers in product liability lawsuits. Increased awards, in turn, triggered increases in liability insurance premiums, driving up manufacturers' costs. One manufacturer estimates that product liability costs are twice as high as costs on a new aircraft.

In August of 1994, a product liability bill was passed by the Congress and signed into law by the President. The law imposes an 18 year statute of repose on all general aviation aircraft against product liability claims. No lawsuits can be brought against a manufacturer of a general aviation aircraft which is over 18 years old.

Aircraft manufactures have indicated that with the passage of this legislation, they intend to restart the production of light general aviation aircraft. Cessna Aircraft, which ceased producing any single engine piston aircraft in 1988, has indicated that it may resume production of its 172, 182, and 206 models and envisions annual production rates of 900-172's, 600-182's, and 400 to 500-206's. In contrast, the production of ALL factory-built piston general aviation aircraft in 1993 totaled 436 aircraft. Clearly, re-entry of Cessna into the light general aviation market would be a significant milestone which has the potential to stimulate that segment of the general aviation market. The passage of liability reform may also help the struggling Piper aircraft company increase its production.

GLOBAL POSITIONING SYSTEM/LORAN C

One of the most exciting developments in aviation, and one that has been embraced by all segments of general aviation, has been the technology of navigation using Loran C and Global Positioning Systems (GPS). Loran C relies upon a system of ground based transmitters to fix an aircraft's position, while GPS uses satellites and fixes not only position but altitude.

Both systems are gaining widespread use for "area" navigation, i.e., travel between two points. The technology for using Loran C and GPS for instrument approaches is also in the process of being developed. As of late 1994, there are a limited number of GPS instrument approaches in use in conjunction with "conventional" (NDB, VOR, etc) type approach systems. It is likely that "stand alone GPS approaches" will be common in the coming years.

The benefit to pilots lies in the fact that aircraft can now navigate more economically by flying direct point to point routes rather than using the present system of VOR's. Further, as the technology is proven, the use of Loran and GPS for the development of instrument approach procedures without the need for ground based equipment holds great promise in multiplying the number of airports with instrument approaches. GPS technology will also make it possible to design curved approach and missed approach flight paths. This will allow approaches to be custom designed for terrain which previously may have been impossible to design an approach for with non-GPS technology.

Taken together, these two factors will enhance the utility of general aviation and may act to stimulate its use.

AIRCRAFT SHIPMENTS

Prior to 1978, the growth in general aviation factory-built aircraft had been sustained and impressive. Since that time, however, a dramatic decline in aircraft production has occurred, primarily in the single engine category.

For the last 5 years, shipments of factory-built aircraft have remained steady, between 900 and 1,500. Increasingly, business and corporate type aircraft have become a greater percentage of the aircraft built as the single-engine low-end market has struggled with the product liability issue. As discussed previously, with the signing of product liability reform, it is possible that light general aviation shipments will return to a position of dominance in terms of numbers of aircraft manufactured, but it is unlikely that the industry will return to the production levels of the late 1970's.

The number of kit or home built aircraft has seen steady increases over recent years. The FAA estimates that for 1992 (the most recent data available) approximately 1,000 new amateur-built experimental aircraft received airworthiness certificates and over 2,000 kits were sold. This number exceeded the number of factory built aircraft for 1992 and represents a significant addition to the GA aircraft fleet.

Many of the kit aircraft companies are experimenting with new construction techniques and materials (such as composites or fiberglass) while others rely upon the old "tried and true" materials such as aluminum or steel tube and fabric. The manufacturers of such kits are constantly exploring ways to lessen construction time. This market segment of GA will continue to be a factor in the "production" of new light GA aircraft. Four of the top

kit manufacturers are located in the Pacific Northwest: Lancair in Redmond, Oregon; Avid Flyer and Kitfox in Nampa, Idaho; and RV4 in Roseburg, Oregon.

NATIONAL DEMAND FOR PROFESSIONAL PILOTS

Recent years have seen the total number of pilots stabilize at around 700,000. Within that number, the number of student pilots fluctuates and the number of private pilots is stable, but the number of commercial and airline transport pilots (ATP) has grown. Indications are that many pilots today are on a "career track" to become professional pilots.

The Future Airline Pilots of America (FAPA) organization reports that the airlines will retire a large number of their pilots over the next 10 years. FAPA's 10-year outlook calls for the hiring of up to 62,000 pilots. This corresponds with the trend toward more commercial and airline transport-type pilot certifications.

The impact at local airports may be seen in the area of training, from the recreational entry-level pilot through advanced airline transport pilots (ATP). This should result in increased student starts and increased flight training activity as the market responds to fill the growing need for professional pilots.

AIRPORT MASTER PLAN FORECASTING

Demand forecasts have been developed for Roseburg Regional Airport in three categories:

- Based Aircraft, i.e., how many airplanes are located on the airport.
- Operations, i.e., the number of take offs and landings.
- Critical Aircraft, i.e., the one that is the most demanding upon the airport from a size, weight, or speed standpoint.

These demand categories and corresponding facility impacts are listed in Table 3-1.

Table 3-1

DEMAND FORECASTS AND FACILITY IMPACTS

Roseburg Regional Airport

DEMAND FORECAST	FACILITY IMPACTS
Based Aircraft - Annual Based Aircraft - Fleet Mix	The number of based aircraft by type determines aircraft hangar and apron space demands, as well as some auto parking requirements.
Operations - Annual Operations - Peaking Characteristics - Type of Operations - Operations by AC Type	The number of operations by type of aircraft and time of day, month or year helps determine runway, taxiway, airspace and navigation aid requirements.
Critical Aircraft	The critical aircraft determines runway and taxiway design requirements, such as pavement strength, runway length, various clearance requirements, etc.

Source: W&H Pacific

FORECASTING METHODOLOGY

Preparing a forecast for the Roseburg Regional Airport was a multi-step process. The forecasting model relates the levels of based aircraft and operations to the population of the area served by the airport (airport service area). The challenge is to understand the relationship between past population and aviation activity trends so that a forecast can be prepared for the future. Any local factors which might alter the trend in the future also need to be considered. Factors such as a change in the economic base of the community, the availability of other area airports, or the return of commercial air service at the Roseburg Regional Airport could all affect the forecasts. The forecasts of aviation activity prepared by the State of Oregon Aeronautics Section (OAS) and forecast data from the FAA are also considered.

AIRPORT SERVICE AREA

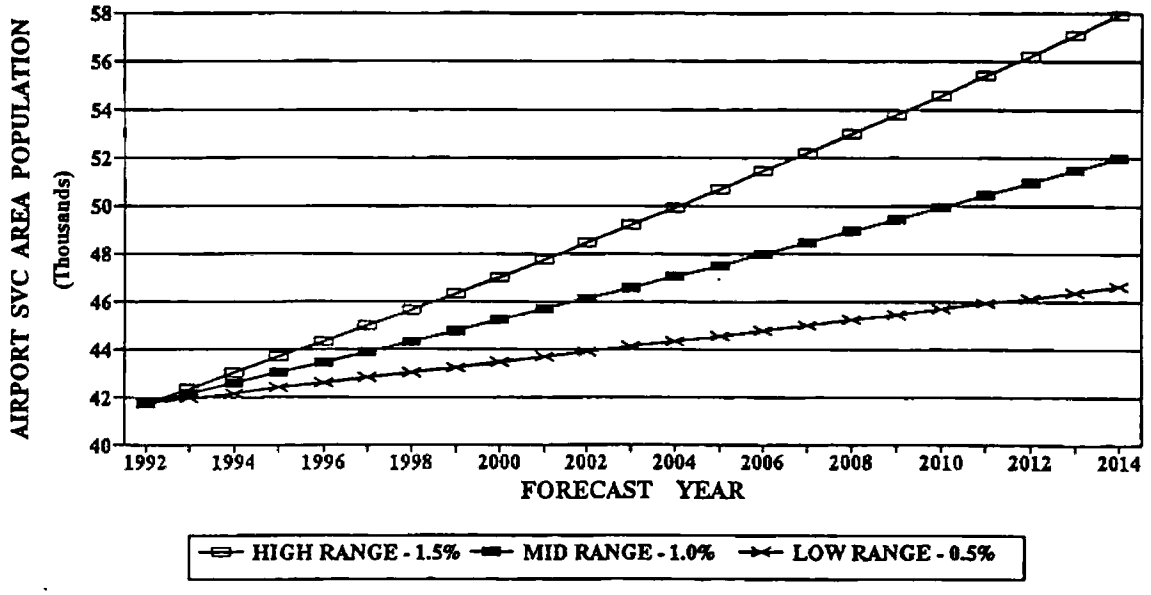
A review of aeronautical charts for southern Oregon and review of mailing addresses for airport hangar and tiedown lessees shows that, in addition to serving persons in the immediate Roseburg area, the Roseburg Regional Airport also serves aircraft owners in surrounding communities such as Winston, Myrtle Creek, Sutherlin, Winchester, Oakland, Canyonville, and other small communities. The Roseburg Regional Airport is the largest and most developed airport between Eugene and Medford. As a result, the airport service area extends into Douglas County about half the distance south to Medford and a similar distance north to Eugene.

POPULATION FORECAST FOR THE AIRPORT SERVICE AREA

Population forecasts for the Roseburg area were prepared as part of the 1992 City of Roseburg Water System Master Plan. The Water System Master Plan also provides a limited amount of historic data on the area populations. The Portland State University Center for Population Studies was contacted for population data for Winston, Myrtle Creek, Sutherlin, and Canyonville. Taken together, these communities form the population base from which aircraft owners and pilots are drawn. Figure 3-1 illustrates the growth forecasts by the City and the Center for Population Studies.

Figure 3-1

Airport Service Area Population



The expectation is that the population in the airport service area will grow at an average compound rate of around 1% per year over the next 20 years. In order to test the sensitivity of this growth rate, a projection was made assuming a higher 1.5% growth rate (the High Range) and a lower .5% growth rate (the Low Range). At the expected 1% growth rate, the population in the airport service area would reach 51,967 by the year 2014. At a higher 1.5% growth rate, the population would reach 57,931, while at a lower 0.5% growth rate, the population would only reach 46,492. In order to remain consistent with population planning assumptions already made by the City, the Mid Range 1% growth rate population forecast has been selected for use in forecasting population growth in the airport service area.

FORECAST OF BASED AIRCRAFT

A standard planning method for developing a forecast of based aircraft is to develop a ratio from historical based aircraft and airport service area population. Using historical population and based aircraft data since 1980, the ratio has ranged from a low of 2.53 aircraft per thousand population in the airport service area, to a high of 3.77 aircraft per thousand population. The average from 1980 to 1992 is 2.58 aircraft per thousand population. Table 3-2 and Figure 3-2 illustrate the range of based aircraft which would result from using the average, low, and high range ratios of based aircraft to population in the Roseburg Regional Airport Service Area.

Table 3-2

BASED AIRCRAFT FORECAST

Roseburg Regional Airport

	ACT. 1994		1999	2004	2014
Average Range - 2.58 Aircraft/1,000 Population	108	118	129	150	
High Range - 3.77 Aircraft/1,000 Population		108	128	150	196
Low Range - 2.53 Aircraft/1,000 Population		108	114	119	132

Source: W&H Pacific

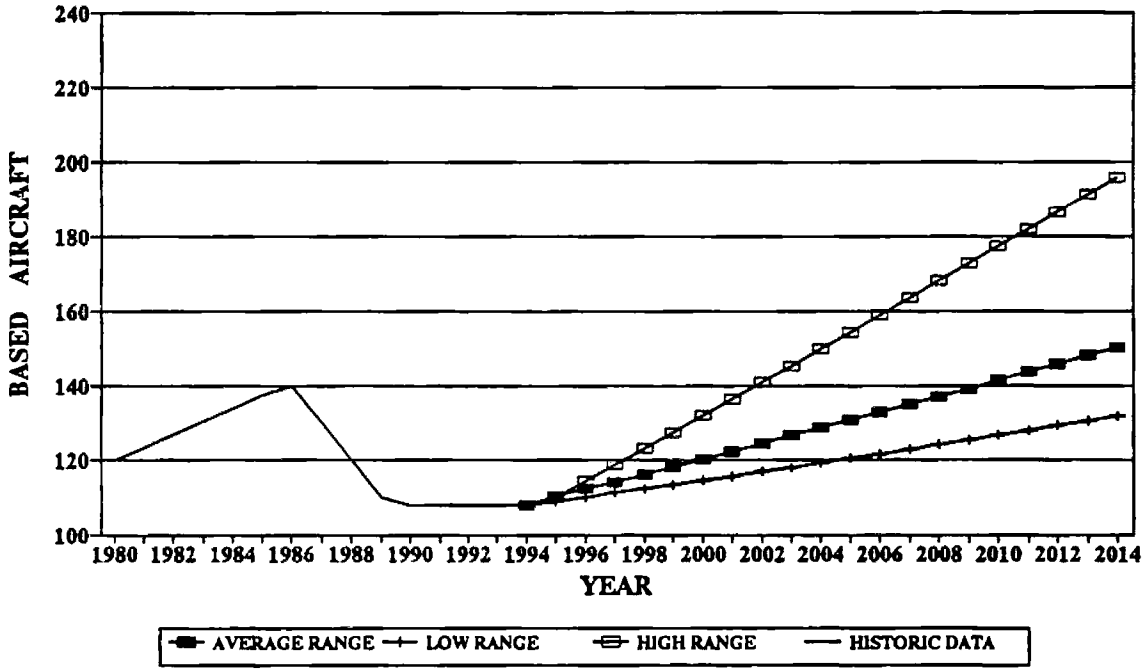
This plan recommends using the *average range* which represents an average for the period of 1980 through 1992. This results in the number of aircraft increasing from the current 108 to 150 during the forecast period. This represents a "middle of the road" which is neither overly aggressive nor overly conservative.

In absolute numbers, the difference between the High Range forecast to the Low Range forecast is only 64 aircraft. In terms of airport development, numbers of based aircraft falling anywhere in between the High Range and the Low Range will not result in any dramatic shift in the demands for airport development. In order to cause a dramatic shift in airport development, a difference significantly greater than 64 aircraft would be needed.

Figure 3-2

BASED AIRCRAFT FORECAST

Roseburg Regional Airport



OREGON AERONAUTICS SECTION FORECAST

Aviation forecasts prepared by the Oregon Aeronautics Section (OAS) in 1989 were reviewed as part of this forecasting process. The aviation forecasts prepared by OAS show moderate growth through the planning period with a total of 84 based aircraft forecast for the year 2000. This is less than currently exist at the airport. By its nature, forecasts done on a state-wide level tend to be fairly general in nature and variations such as this are to be expected. Because of this variance, the OAD forecast was not used.

FAA FORECAST

Annually, the FAA prepares a 12-year forecast of aviation activity. The report published in March of 1994 forecasts a 0.3 percent decline in the aircraft fleet for the FAA forecast period (1994 to 2005). The FAA forecast assumed that the decline in overall numbers would be driven by retirements and/or shifts to nonactive status of many of the older aircraft in the GA fleet. The shifting of older aircraft out of the fleet was anticipated to be

offset *in later years* by newer aircraft brought into the fleet as a result of product liability reform. The forecast does not indicate the time frame for product liability reform.
Passage of the legislation in August of 1994 was far from certain when the final editing was completed for the report in early 1994. As a result, the .3 percent decline in the overall fleet may be overly pessimistic for the Roseburg Regional Airport for two reasons:

- First, product liability reform was in fact passed in August of 1994. It is anticipated that this will stimulate the production of GA aircraft.

- Second, the Roseburg airport service area has a growing population base. This will tend to offset a possible decline in the number of GA aircraft in the fleet nationwide as the Roseburg area captures a larger relative percentage of the national population.

As a result of the two factors noted above, the FAA Forecast, which indicates a decline in the number of aircraft, was not applied to the Roseburg forecast.

BASED AIRCRAFT FLEET MIX

Increased business use of general aviation is reflected in the changing character of the national fleet. The more expensive and sophisticated turbine and jet powered segment of the general aviation fleet is expected to grow slightly faster than the piston engine segment of general aviation. This national trend is expected to be reflected at Roseburg Regional Airport.

Roseburg has long been in a unique position of having a higher then expected number of business jet and turbine powered aircraft. There is no reason to believe that this long standing trend will not continue.

The forecasts for the fleet mix for based aircraft are shown in the following table.

Table 3-3

BASED AIRCRAFT FLEET MIX FORECAST
Roseburg Regional Airport

TYPE AIRCRAFT	1994	1999	2004	2014
Single-Engine Piston	90	94	98	110
Multi-Engine Piston	9	12	14	19
Turboprop	2	3	6	8
Turbojet	4	5	6	7
Rotorcraft	3	4	5	6
TOTAL	**108**	**118**	**129**	**150**

Source: W&H Pacific

FORECAST OF AIRCRAFT OPERATIONS

Three methods were used to prepare forecasts of aircraft operations. The three methods are described below.

BASED AIRCRAFT/OPERATIONS RATIO FROM FAA 5010 RECORD

The FAA Form 5010 is a frequently updated record of the condition of the airport, the number of based aircraft, and the number of aircraft operations. In reviewing the 1993 Form 5010, the number of based aircraft was listed as 108 and the number of aircraft operations listed as 10,220. This yields a ratio of aircraft to aircraft operations of 95. When applied to the 20 year forecast of based aircraft, this yields an estimated 14,269 aircraft operations in the year 2014.

OREGON AERONAUTICS SYSTEM PLAN

In 1989, the Oregon Aeronautics Section produced the Inventory 1990-2000 Forecast report. One of the elements of the report was to analyze extensive data collected in the Aeronautics Division acoustical aircraft counter program. The data was collected at non-towered airport like Roseburg. The analysis found that the following formula best fit the data and provided a 96% correlation with the acoustical counts taken:

Total Aircraft Operations = 878 + 277 x The Number of Based Aircraft

Applying this formula to Roseburg yields an estimated 30,794 operations in 1994 which increases to 42,484 operations in the year 2014.

FAA ADVISORY CIRCULAR 5300-13 - APPENDIX 5.
SMALL AIRPORT BUILDINGS, AIRPLANE PARKING, AND TIEDOWNS

Advisory Circular 5300-13 - Appendix 5 recommends that calculations for total annual operations be made *from the best available source*. Where specific data are not available, the following data, which reflect local plus itinerant operations, may be used:

Total Aircraft Operations For General Aviation Airports = 637 Operations Per Based Aircraft.

Applying this formula to Roseburg yields an estimated 68,796 annual operations in 1994 increasing to 95,680 annual operations in the year 2014.

Table 3-4 and Figure 3-3 reflect the various operations forecasts.

Table 3-4
AIRCRAFT OPERATIONS FORECAST
Roseburg Regional Airport

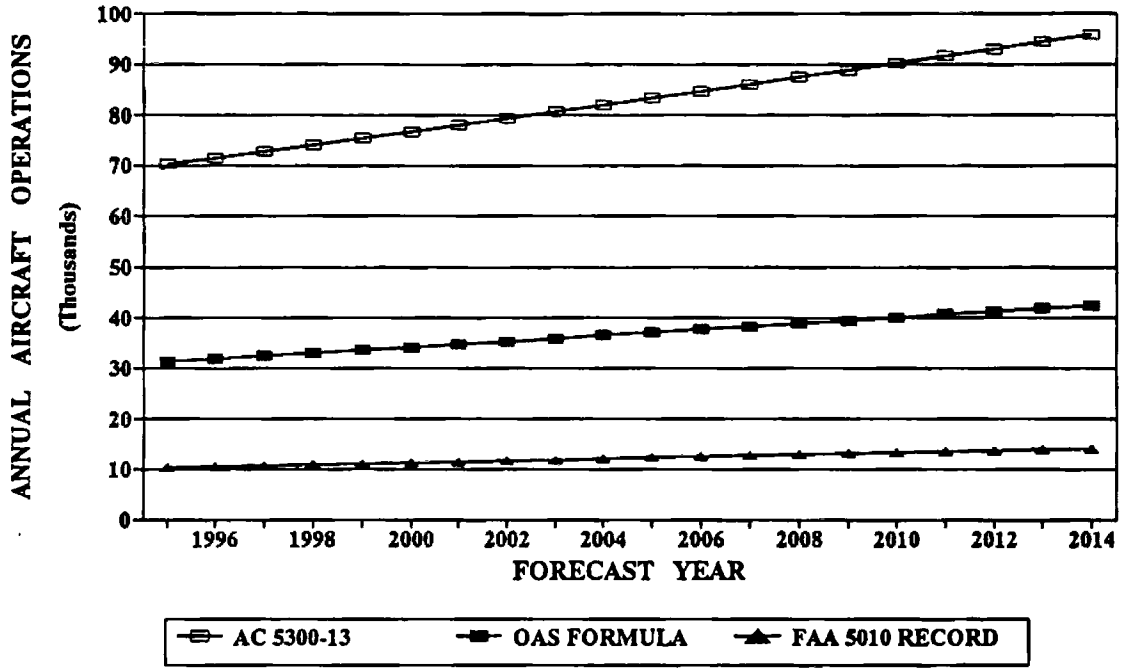
FORECAST METHOD	1994	1999	2004	2014
FAA 5010 Record (95 Operations/Aircraft)	10,220	11,246	12,229	14,269
OAS 1989 Systems Plan (878 + (277 x Number of Based Aircraft)	30,794	33,669	36,536	42,484
AC 5300-13 Appendix 5 (637 Operations/Aircraft	68,796	75,407	81,999	95,680

Source: W&H Pacific

FIGURE 3-3

AIRCRAFT OPERATIONS FORECAST

Roseburg Regional Airport



COMMERCIAL AIR SERVICE

It should be noted that none of the figures presented in Table 3-5 assume the resumption of commercial air service. Should a carrier such as Horizon Airlines establish scheduled air service at Roseburg, this will add a significant number of operations to the total. Horizon Airlines typically provides a minimum of 4 to 5 flights per day on weekdays, and 3 to 4 per day on Saturday and Sunday. This would result in an additional 2,700 to 3,400 operations per year which could be added. It is unlikely that the Roseburg market could support two commuter airlines flying 5 flights a day schedules. As a result, this number of operations would remain constant throughout

the 20 year time frame of this master plan. As passenger loads grow, it is likely that the airline would accommodate the passenger growth by changing to a larger aircraft to carry the additional passengers rather than adding more than the typical 5 flights.

Table 3-5

PREFERRED AIRCRAFT OPERATIONS FORECAST

Roseburg Regional Airport

		1999		2004		2014
OAS 1989 Systems Plan (878+(277x#Based A/C)		33,669		36,536		42,484
Commercial Air Service	3,400		3,400		3,400	
TOTAL ANNUAL OPERATIONS		37,069		39,936		45,884

Source: W&H Pacific

PREFERRED AIRCRAFT OPERATIONS FORECAST

The OAD 1989 Systems Plan formula with commercial air service added starting in the year 1997 (+3,400 operations) has been selected as the preferred aircraft operations forecast. Numerous visits were made to the Roseburg Regional Airport during the preparation of this Master Plan Update. Levels of activity observed and inventoried (by talking with local operators) during those visits indicate a higher number of annual operations than would be derived using the FAA Form 5010 ratios.

The ratios derived from the Airport Design Advisory Circular 150/5300-13 were rejected for two reasons:

- First, based upon field observation in late 1993 and 1994, the ratio derived from Airport Design appears to significantly overstate the number of operations.

- Second, the Airport Design ratio was rejected in favor of the more "Oregon Specific" data collected in the 1989 OAD Inventory 1990-2000 Forecasts report.

OPERATION PEAKING CHARACTERISTICS

Using the forecasts of operations, the peak demand figures can be derived by means of averages observed at numerous other airports. Peak demand forecasts for the airport are developed to evaluate peak hour operational capacity, much like the peak hour capacity of roadways. Table 3-6 depicts the forecast peak demand characteristics for Roseburg Regional Airport.

Table 3-6
PEAK DEMAND FIGURES
Roseburg Regional Airport

OPERATIONS	1999	2004	2014
Annual Operations	37,069	39,936	45,884
Peak Mo. (10% of Ann. Ops.)	3,707	3,994	4,588
Ave. Day (Peak Mo./31 days)	120	129	148
Peak Hour (11% of Avg. Day)	13	14	16

Source: W&H Pacific

TYPE OF OPERATIONS

Scheduled commuter airline flights will make up 3,400 flights annually and will remain constant throughout the forecast period. Air taxi (charter flights) will make up around 1% of all operations. General aviation itinerant flights (those which begin or end at an airport other than Roseburg) will make up the largest group of flights - around 52%-53% of the total. Local flights will comprise an estimated 36% to 37% throughout the forecast period. Military flights will comprise less than 1% of all operations during the forecast period. These ratios are similar to the ratios found at other airports similar in size to Roseburg. Table 3-7 provides a summary of this breakdown.

Table 3-7
FORECAST OPERATIONS
Roseburg Regional Airport

	1999	2004	2014
Commuter	3400 (9%)	3400 (8%)	3400 (7%)
Air Taxi	673 (1%)	731 (1%)	850 (1%)
General Aviation Itinerant*	19,360 (52%)	21,008 (52%)	24,429 (53%)
General Aviation Local*	13,467 (36%)	14,614 (36%)	16,994 (37%)
Military	168 (.4%)	183 (.4%)	212 (.4%)
TOTAL OPERATIONS	37,069	39,936	45,884

* Local operations are those which begin and end at Roseburg with no landing in between. Itinerant operations are flights which begin or end at a different airport

Source: W&H Pacific.

CRITICAL AIRCRAFT

In order to accurately project the facility requirements for an airport, identification of the critical aircraft must be made. The critical aircraft is a single aircraft or a family of aircraft which controls one or more design items based on wingspan, approach speed, and/or maximum certificated take-off weight. The same aircraft may not be critical to all design items. The critical aircraft should use the facility on a regular basis, which is considered to be at least 500 annual itinerant operations.

Analysis of existing operational patterns at the Roseburg Regional Airport indicate that the Cessna Citation II is the current critical aircraft. The Citation II falls within the Airport Reference Code (ARC) B-II, for aircraft with approach speeds less than 121 knots (approach speed category B), and wingspans less than 79 feet (airplane design group II). Other aircraft currently using the airport which fall into this category include the Cessna 441 Conquest turboprop, and the Beech King Air 200 turboprop.

Because the Cessna Citation II weights more than 12,500 lbs, the FAA classifies it as a "Large" aircraft. As a result, the airport is classified as serving "ARC B-II Large" aircraft.

The critical aircraft is not expected to change during the period covered by this Master Plan. Operating at an "ARC B-II Large" classification, the airport is currently serving the most common ARC class of aircraft for both business and commuter airline aviation. The Aircraft Data Table found on the following page provides a list of

business and commuter aircraft. As can be seen from the table, B-II class aircraft dominate the list. It is unlikely that the airport will revert to a smaller class of aircraft such as B-I.

The specific "critical" aircraft may continue to be the Cessna Citation II or, with the potential resumption of commercial air service at Roseburg, may become a commuter airliner such as the Dornier 328 or the Jetstream 31. Except for weight differences between the aircraft (ranging from 14,300 lbs for the Citation to 30,247 lbs for the Dornier) the design criteria for any of the aircraft would be essentially the same.

It is also *unlikely* that the airport will serve larger aircraft (such as the Gulfstream IV business jet) on other than an occasional basis. As a result, the airport is forecast to remain at a B-II airport reference code.

Table 3-8

AIRCRAFT DATA TABLE

Business/Corporate General Aviation Aircraft

Aircraft	ARC	Passengers	Weight	Runway Required
Business Jets/Turbo Props				
Lear 35 B-I	9-12	18,500 lbs		4,972 ft
Beechjet 400A	B-I	9-11	16,300 lbs	3,802 ft
Cessna Citation VI	B-I	9-15	22,200 lbs	5,030 ft
Beech King Air 200	B-II	15-16	12,500 lbs	3,411 ft
Cessna Citation II	B-II	8-13	14,300 lbs	3,430 ft
Falcon 50	B-II	11-12	38,800 lbs	4,700 ft
Gulfstream IV	C-II	16-21	75,000 lbs	5,540 ft
Regional/Commuter Airliners				
Metroliner	B-I	21	16,600 lbs	5,503 ft
Jetstream 31	B-II	21	16,314 lbs	5,147 ft
Beech 1900	B-II	21	17,060 lbs	3,737 ft
Embraer Brasilia 120	B-II	32	26,609 lbs	5,500 ft
Dornier 328	B-II	33	30,247 lbs	3,610 ft
de Havilland Dash 8	A-III	40	36,355 lbs	3,150 ft

Source:
Business and Commercial Aviation International, May 1994.
Data is for sea level operations, standard day temperature.

FAA Airport Reference Code Classification for Aircraft:

A = Approach Speeds Less Than 91 Knots.
B = Approach Speeds From 91 Knots to 121 Knots.
C = Approach Speeds From 121 Knots to 141 Knots.
D = Approach Speeds From 141 Knots to 166 Knots.

I = Up to 49' Wing Span
II = 49' Span up to 79'
III = 79' Span Up to 118'

Table 3-9 summarizes the anticipated number of operations by the critical aircraft.

Table 3-9

CRITICAL AIRCRAFT OPERATIONS FORECAST

Roseburg Regional Airport

	1999	2004	2014
Aircraft Type	Citation Or Commuter	Commuter	Commuter
Annual Operations	1,000 - 3,400	3,400 +	3,400+

Commuter assumes Horizon Air type schedule - 5 flights per week day, 3-4 on weekend days.

Source: W&H Pacific

COMMERCIAL AIR SERVICE

In 1991, the State of Oregon Aeronautics Section (OAS) prepared a Commercial Air Service and Facility Needs Study. The study analyzed commercial air service for communities with existing service as well as communities with no service. Roseburg was one of the markets analyzed. The study included a forecast of potential enplanement levels as well as facility needs to accommodate commercial air service (i.e.: runway, taxiway, ramp, terminal, etc).

As part of this Master Plan Update, the forecast for Roseburg prepared in 1991 has been updated and additional information collected relating to existing commercial air service travel patterns in the Roseburg area. The information on existing travel patterns was collected through a "ticket lift" survey. The survey involved visiting travel agencies (4 of them) located in the City of Roseburg and recording airline fare, airport, destination, and

airline information for all airline tickets written for September 1994. The 1994 data was supplemented by similar data collected by the City of Eugene for 1989 through 1993. The results are provided below.

TOP DESTINATIONS AND AIRPORT CHOICE.

Table 3-10 provides a list of the top 23 destinations traveled to in the month of September 1994. The list represents over 70% of all travel ticketed out of the 4 travel agencies and shows a strong orientation to points south. Eight of the top ten destinations representing 45% of all travel are to points in California, Nevada, and Arizona. Also provided in Table 3-10 is a breakdown of the airport used. Overall, the Eugene Airport captures 53% of all travel, Portland captures 31% and Medford, 1%.

Table 3-10

TOP 23 DESTINATIONS - SEPTEMBER, 1994

Roseburg Regional Airport

	Primary Destination	Passenger Count	EUG	PDX	MER
1.	Las Vegas	75	35 (47%)	40 (53%)	-
2.	Los Angeles	60	44 (73%)	16 (27%)	-
3.	San Francisco	43	38 (88%)	04 (09%)	01 (02%)
4.	Seattle	37	35 (95%)	02 (05%)	-
5.	Phoenix	35	13 (37%)	22 (63%)	-
6.	Ontario	30	26 (87%)	04 (13%)	-
7.	San Diego	30	21 (70%)	08 (27%)	01 (03%)
8.	Orange County	28	19 (50%)	19 (50%)	-
9.	Reno	26	13 (50%)	13 (50%)	-
10.	Burbank	24	22 (92%)	02 (08%)	-
11.	Denver	23	23 (100%)	-	-
12.	Anchorage	21	08 (38%)	05 (24%)	SEA (08)
13.	Dallas/Ft. Worth	19*	12 (63%)	01 (05%)	02 (10%)
14.	Kansas City	18	14 (78%)	04 (22%)	-
15.	Atlanta	17	11 (65%)	06 (35%)	-
16.	Chicago	14	11 (79%)	03 (21%)	-
17.	Minneapolis	12	08 (67%)	04 (33%)	-
18.	Palm Springs	12	02 (17%)	10 (83%)	-
19.	Albuquerque	11	-	11 (100%)	-
20.	Sacramento	11	09 (82%)	01 (09%)	01 (09%)
21.	New York	10	08 (80%)	02 (20%)	-
22.	Salt Lake City	10	03 (30%)	07 (70%)	-
23.	Oakland	10	03 (30%)	07 (70%)	-

*Includes four (4) passengers driving to Seattle to enplane.

MEAN AIRFARE PAID

Table 3-11 below reflects the mean airfares paid for travel from Eugene, Portland, Medford, and North Bend for 1994, and six survey periods prior to 1994. The information reflects the volatility of air fares and, in the case of North Bend and Medford, may be skewed by a small number of tickets sold to generate the average. In the 1994 survey, over 79% of all travel was made on discounted airline tickets, 20% on unrestricted full fare coach, and 1% first class.

Table 3-11

MEAN AIRFARE PAID BY AIRPORT

Roseburg Regional Airport

Airport	September 1994	October 1993	April 1991	May 1990	October 1990	April 1989	October 1989
Eugene	$299	$258	$339	$372	$427	$322	$274
Portland	$223	$271	$386	$319	$426	$305	$283
Medford	$437	N.B.	$285	$ 31	$471	$349	$256
North Bend	N.B.	N.B.	N.B.	N.B.	$243	$ 60	$144

N.B. = No Roseburg originating boardings recorded for that month and year.

Source: Scudder and Associates, Eugene, Oregon.

AIRLINE CHOICE

Airline choice varied by airport and the airlines serving the airport. Service in Eugene is dominated by United Airlines. United has good service to hubs in San Francisco and Los Angeles which meets the strong travel demand in that direction for travelers from Roseburg. Since travel from Eugene makes up 68% of all travel demand, this is reflected in United's high 61% market share. As noted above, however, on the average, travelers are paying more to fly out of Eugene than Portland. This may present an opportunity for an airline such as Horizon. With strong supporting network of flights to the south, commuter air service feeding the Portland hub for Alaska Airlines might compete well in terms of price and levels of service.

ENPLANEMENT FORECAST

The 1991 Commercial Air Service and Facility Needs Study used a multi step process to forecast passenger enplanements. This plan will update the data used in each of the steps to prepare a forecast for this Master Plan.

Service Area Population. In the 1991 study, the airport service area population was estimated at 45,311. For this Master Plan, the airport service area population is estimated to be 43,880 in 1995 growing to be 51,967 in the year 2014.

Enplanements per Capita (EPC). The 1991 enplanements per capita ratio was 1.55 enplanements per person for the United States. Using actual data for 1993, the national average has risen to 2.04 enplanements per person. For Oregon, the 1993 enplanement ration was 1.61 passengers per person. The lower average reflects a lower density population than average for the US with lower levels of air service for much of the population in the State. The 1.61 enplanement per capita ratio will be used in this Master Plan. Table 3-12 reflects the updated population forecast and the enplanement rate of 1.61 enplanement per capita.

Table 3-12

UNCONSTRAINED PASSENGER ENPLANEMENT FORECASTS

	Airport Service Area Population	Unconstrained Enplanement Forecast
1991 COMMERCIAL AIR SERVICE STUDY		
1991 Population	45,311	80,853
1995 MASTER PLAN UPDATE - 1.61 ENPLANEMENTS PER CAPITA		
1995 Forecast Year	43,015	69,254
2014 Forecast Year	51,967	83,667

Source: W&H Pacific, 1991 Commercial Air Service and Facility Needs Study

Proximity to Other Service. The 1991 study noted that the proximity to other air service, principally the Eugene Airport located 79 miles to the north, would reduce the enplanement levels. This has not changed. The reduction in the number of enplanements will also vary with the number of flights per day provided in Roseburg. The 1991 study estimated that three flights per day would capture approximately 23% of the potential enplanements with the balance using other airports such as Eugene or Portland. With increased frequency of flights in Roseburg,

an increasing number of passengers would be captured in Roseburg rather than using the other airports. Four and five flights per day would capture an estimated 28% and 33% of Roseburg passenger traffic, respectively. Table 3-13 includes an adjustment of the unconstrained forecast for proximity to competing service and for possible service levels at the Roseburg Regional Airport.

Table 3-13

ADJUSTMENT FOR PROXIMITY TO OTHER SERVICE

Roseburg Regional Airport

	Unconstrained Enplanements	Capture Rates 3 Flights 23%	4 Flights 28%	5 Flights 33%
1991 COMMERCIAL AIR SERVICE STUDY				
	80,853	18,596	22,639	26,681
1995 MASTER PLAN UPDATE				
1995 Forecast Year	69,254	15,928	19,391	22,853
2014 Forecast Year	83,667	19,243	23,427	27,610

Source: W&H Pacific, 1991 Commercial Air Service and Facility Needs Study

Type of Aircraft. The final factor identified in developing a forecast of passenger enplanements is the type of aircraft used. The larger the aircraft, the greater the number of persons willing to fly on it. In discussions with Horizon Airlines, they foresee a time in the next 5 - 10 years when the smallest aircraft they operate will be the Dornier 328 or the de Havilland Dash 8. Both offer stand up cabins with amenities such as overhead storage bins and in-flight service by a flight attendant. The interior feel of such a cabin varies greatly from the feel of smaller aircraft such as the Metroliner or Jetstream 31 which do not offer a stand up cabin, overhead storage, or in flight service by a flight attendant. The 1991 Air Service Study estimated that service by the larger turboprop 30+ passenger aircraft would only suffer a 5% reduction in passengers willing to use it over service provided in larger commercial jets such as a Boeing 737 or McDonnell Douglas MD-80. A 5% reduction was used in developing the updated Roseburg enplanement forecast provided in Table 3-14 below.

Table 3-14

ADJUSTMENT FOR 30-SEAT TURBO PROP AIRCRAFT

	3 Flights	4 Flights	5 Flights
1991 COMMERCIAL AIR SERVICE STUDY			
	17,666	21,507	25,347
1995 MASTER PLAN UPDATE			
1995 Forecast Year	15,132	18,422	21,711
2014 Forecast Year	18,281	22,255	26,230

Source: W&H Pacific, 1991 Commercial Air Service and Facility Needs Study

Based upon the assumptions outlined above, there may be a potential for commercial airline service with a range of 15,000 to 21,000 enplanements in 1995 rising to 18,000 to 26,000 in 2014.

OTHER COMMERCIAL AIR SERVICE FACTORS

Another factor which an airline would consider when developing service into a community is the availability of a suitable instrument approach for the local weather conditions. The question the airline will ask is: "can reliable service be provided or will there be numerous diversions or cancellations due to bad weather?"

Airlines typically prefer a precision instrument approach with low approach minimums (minimums are a measure of how "bad" the weather can be and have an aircraft safely fly an instrument approach - low minimums mean the weather can include clouds down close to the runway). Although highly desirable, it is not necessarily a requirement. Commuter air service is currently being provided into Wenatchee, Washington and Pullman-Moscow, Washington with only non-precision instrument approach capabilities at both airports.

A factor to consider is the terrain around the airport and the type of instrument weather normally encountered. In Roseburg, the terrain around the airport is high with the airport located in a valley. Flat terrain would be much more desirable. Based upon discussions with local pilots, local instrument weather tends to be a high overcast (with some exceptions typically associated with short periods of ground fog). This weather pattern may offset

the difficulties associated with high terrain and may make it possible to establish reliable commercial service despite the lack of an instrument approach.

After evaluating a potential airline market and the operating conditions likely to be encountered, an airline may agree to establish service if the local community is willing to provide some type of guaranteed number of passengers. This is a method of sharing the risk of establishing new service in an untested market or a market which has been without service for an extended period of time, such as Roseburg.

SHUTTLE BUS SERVICE OPTION

An alternative to commercial air service via an aircraft is commercial air service, which begins the trip in Roseburg via a bus with a connection to an airliner at the Eugene Airport. Such a service is presently in effect between Salem and Portland International Airport with the Hut Shuttle operating essentially as an airplane without wings. Passengers arrive at the Salem airline passenger terminal, check their bags, and go through passenger security screening as if boarding an aircraft. They are then allowed to board a bus and are driven directly to the Horizon Airline gates at Portland International Airport. Passengers are ticketed for the Salem - Portland leg with conventional airline tickets and the service offers the benefit of not having to go through security in Portland or deal with higher priced parking there. Such a shuttle type service from Roseburg to Eugene may be an opportunity to develop commercial air service by starting out as a premium shuttle bus service to the Eugene Airport.

CONCLUSION

Based upon the information presented within this chapter, the based aircraft and operations forecast are summarized in Table 3-15.

Table 3-15
FORECAST SUMMARY
Roseburg Regional Airport

	1999	2004	2014
Based Aircraft	118	129	150
Annual Operations	37,069	39,936	45,884
Operations By The Critical Aircraft	1,000 - 3,400	3,400+	3,400+
Critical Aircraft Type	Citation/Commuter	Commuter	Commuter
Forecast of Airline Passengers *	22,593	23,745	26,230

* Forecast of enplaned airline passengers is based upon 5 flights per day with 30 passenger turboprop.

Source: W&H Pacific

CHAPTER 4
FACILITY REQUIREMENTS

INTRODUCTION

The objective of the facility requirements chapter is to analyze the ability of the airside and landside facilities to accommodate future activity levels. Existing facilities are compared with demand projections in order to determine what type and when additional facilities will be required.

RUNWAY DEMAND/CAPACITY

The term used to describe the throughput capacity of the runway and taxiway system is hourly airport capacity. This is a measure of the maximum number of aircraft operations which can be accommodated on the airport in an hour. The annual service volume (ASV) is a reasonable estimate of an airport's annual capacity. The ASV accounts for differences in runway use, aircraft mix, weather conditions, etc., that would be encountered over a year's time.

According to the FAA AC 150/5060-5, *Airport Capacity and Delay* as calculated using the FAA Computer Model *Airport Design, Version 4.1*, the capacity of the Roseburg Regional Airport is 98 VFR operations per hour and 59 IFR operations per hour. This equates to an annual service volume of 230,000 operations. Standard planning practices indicate that improvements should be considered when sixty percent of the ASV is reached. For Roseburg Regional Airport, this threshold is 138,000 annual operations. The number of operations for the year 2014 are forecast to be 45,884. This is significantly less than the ASV or the sixty percent threshold for considering capacity related improvements. As a result, this plan recommends that no action be taken with regard to runway capacity enhancement.

Table 4-1
DEMAND/CAPACITY AIRCRAFT MIX

Classification	Year 2014 Operations	Year 2014 Aircraft Mix
A - Single Engine, 12,500 or less	36,384	79%
B - Multi Engine, 12,500 or less	6,100	13%
C - Multi Engine, 12,500lb to 300,000lb	3,400	8%
D - Multi Engine, over 300,000lb	- 0 -	0%
Totals	**45,884**	**100%**

AIRSIDE FACILITY REQUIREMENTS

AIRPORT DESIGN STANDARDS

As stated earlier, the airport is a General Utility Stage I airport built to ARC B-II standards and designed for large airplanes (airplanes weighing over 12,500 lbs). A partial listing of some aircraft found in the B-II group include the Beech King Air 200, the Cessna Citation II, and the Dornier 328 Commuter Airliner. As noted in the previous chapter, the Cessna Citation II and later the Dornier 328 Commuter Airliner have been designated as representative of the existing and future critical aircraft for the Roseburg Regional Airport. Both aircraft are classified as B-II. A listing of the airport design standards for an ARC B-II airport are provided in Table 4-2 below along with a listing of the existing dimensions. A complete listing of the design standards can be found in the Appendix of this Plan. A discussion of the airport's ability to meet ARC B-II design standards, runway length requirements, and landing threshold siting requirements is provided below.

Table 4-2

AIRPORT DESIGN STANDARDS

	Existing	ARC B-II
Runway Width	100'	75'
Runway Centerline to Hold Line	135'	125'
Runway/Taxiway Separation	200'	240'
Runway to Aircraft Parking	250'	250'
Runway Safety Area Width	150'	150'
Runway Safety Area Beyond R/W End	300' (1)	300'
Runway Obstacle Free Zone Width	250'	250'
Runway Obstacle Free Zone Width Beyond R/W End	200'	200'
Runway Object Free Area Width	500'	500'
Runway Object Free Area Width Beyond R/W End	210'-600' (2)	600'
Taxiway Width	40'-48'	35'
Taxiway Safety Area Width	79'	79'
Taxiway Object Free Area Width	131'	131'

Note: Copies of the FAA Airport Design Computer Model for this airport are provided in the appendix of this Plan.

(1) As of 10/94, a fence on the north end of the runway limits the Runway Safety Area to 203'. The City is in the process of moving the fence to comply with ARC B-II RSA Standards.

(2) On the south end of the airport, Stewart Parkway limits the Runway Object Free Area length beyond the runway end to 210'.

RUNWAY DESIGN ISSUES

Runway Length. Runway length requirements have been calculated for both the existing and future critical aircraft (Cessna Citation II and Dornier 328). The runway length requirement for the Cessna Citation II is 3,430'

for sea level standard temperature day operations. Although Roseburg is above sea level (525') and the planning temperature of 83 degrees F is above the "standard day" temperature, these differences are not significant enough to increase the runway length requirements beyond the existing 4,600' long runway. The adequacy of the runway length was also confirmed with the operators of Cessna Citation II's based at the field.

The Dornier Aircraft Company was contacted to obtain Roseburg specific runway performance data. Based upon the Roseburg field elevation, a full passenger load, and an 83 degree temperature, the runway length requirement calculated by the Dornier Company was 3,683'. This is less than the existing runway length.

Based upon the existing and forecast future critical aircraft, it will not be necessary to lengthen the runway.

It should be noted, however, that at the airport's present location, it would be possible to construct a runway slightly over 6,000' long. Stewart Parkway and the north I5 Freeway interchange access road would be the boundaries on the south and north respectively. As it currently exists, a runway extended to that length would not be fully usable in both directions. It would be necessary to maintain displaced landing thresholds on both ends. The usable runway lengths would be calculated and published as "declared distances". Pilots using the airport would be able to look up the available runway length based upon the particular operation they are making, i.e., take off or landing, and could then determine the adequacy of runway length for that specific operation.

Runway Landing Threshold Siting. Runway landing threshold siting requirements are found in Advisory Circular 150/5300-13, Airport Design, Appendix 2. Given the present and anticipated critical aircraft and the type of approaches available at the airport, the standards call for a Type C Obstacle Clearance Approach (OCA). At the present time, the landing threshold for runway 34 meets the OCA standards and no changes are needed.

The landing threshold for runway 16 is displaced 698', a location based upon a Type B OCA. It does not meet the standards for a Type C OCA which is wider and twice as long as a Type B (10,000' vs 5,000'). Several options have been reviewed for addressing the issue:

1. Relocate the Threshold to Meet Type C OCA Standards. Siting the landing threshold to meet the Type C OCA standards would require displacement of the landing threshold an additional 1,920' feet down the runway for a total displacement of 2,618 feet or ***more than half the length of the runway***. This is not viewed as a desirable option since it would greatly reduce the utility of that runway.

2. FAA Modification to Standards. Seek an FAA Modification to Standards to allow the present 700' displaced landing threshold to remain. Because of prevailing winds at the Roseburg Airport, the majority of operations occur on runway 34 which meets the more stringent Type C standards. Given the low level of landing operations on runway 16, it might be reasonable to allow the 700' displacement to remain through a Modification to FAA Standards.

3. Lower the Objects Penetrating the OCA. The penetrations of the OCA are found on Mast Hill which is located approximately 4,000 feet to the north of the airport. There are 3 trees and an obstruction light on a 50' (estimated height) pole. The pole causes the greatest penetration of the OCA, penetrating 96'. Allowing for the height of the pole, the terrain below the pole penetrates an estimated 46'. Walking around the top of the hill, it appeared that the hill is made up of soil and a soil/rock mix. It might be possible to excavate the top of the hill to remove the obstruction caused by the terrain. A preliminary planning level estimate for the quantity of earth work is 219,000 cubic yards of material. If the material is in fact soil (opposed to rock) the cost would be $5.00 per cubic yard to remove it or an estimated $1,095,000 to remove the top 50' of material. If it is rock beneath the top layer of soil, the cost could run as high as $10.00 per cubic yard to remove it or $2,190,000 to remove the top 50' of material.

Another alternative would be to lower the obstruction light on the hill to a point 10' above the ground instead of leaving it at the present 50'. This would reduce the penetration by 40' but would maintain the operational integrity of the obstruction light. The 40' reduction in penetration would equate to reducing the amount of displacement needed by 800'.

Recommended Course of Action: After discussing this issue with the Airport Commission and representatives of the FAA, it was decided that the Mast Hill would, for the time being, remain as it is today (1995) and the landing threshold will remain at a displacement of 698'. A project will be identified in the 2005 - 2010 time frame to lower the hill and the issue will be reviewed at that time and as part of any subsequent airport master plan update for the airport. Should the opportunity arise to lower the hill as part of an effort to provide fill material, this should be pursued.

Runway Width. The existing runway width of 100' exceeds the standards for an ARC B-II airport. At such time as the runway needs a full overlay or reconstruction, or when the runway lights need an upgrade, consideration should be given to narrowing the runway to and ARC B-II standard of 75'. If the runway is narrowed, consideration should be given to using the eastern 75' of width. This will improve the runway/taxiway separation which is presently less than the ARC B-II Standard of 240'.

Runway/Taxiway Separation. At the present time, the airport does not meet the ARC B-II standard for runway to taxiway separation. The ARC B-II standard is 240' and the existing parallel taxiway is 200'. Should it be necessary to completely reconstruct or overlay the runway or taxiway, consideration should be utilizing the western 35' of the taxiway and the eastern 75' of the runway to increase runway/taxiway separation without having to totally relocate either facility. Until this is accomplished, the runway/taxiway separation can remain at the present 200' and would be the subject of an indefinite Modification to FAA Design Standards.

Runway Centerline to Taxiway Hold Lines. The distance from the runway centerline to taxiway hold lines is currently at 135'. This exceeds the ARC B-II standard. It is not critical that these lines be moved. Leaving them at their present location is acceptable and should not cause a problem.

Runway to Aircraft Parking. The airport presently meets the ARC B-II runway to aircraft parking standards.

Runway Safety Area (RSA) Width. The airport presently meets the ARC B-II runway safety area (RSA) width standards.

Runway Safety Area (RSA) Beyond the Runway End. As of October 1994, the airport does not meet the ARC B-II standard for a 300' RSA off the ends of the runway. On the north end, the RSA is limited to 203' by a fence. The City is in the process of relocating the fence to a point just beyond the 300' RSA limit. At that point, the north end will meet the RSA standard. The south end currently meets the standard.

Runway Object Fee Area (ROFA) Width. The airport presently meets the ARC B-II standards for runway object free area width.

Runway Object Free Area (ROFA) Beyond the Runway End. On the north end of the airport, the fence which obstructs the RSA also obstructs the ROFA beyond the end of the runway and will limit it to 300' off the end vs the 600' ARC B-II standard. Similarly, the fence along Stewart Parkway limits the ROFA to 210' off the end of the runway. Since it is not practical to relocate Stewart Parkway or the fence adjacent to the Parkway, the ROFA on the south end of the airport will be the subject of an indefinite FAA Modification to Standards to allow the fence and road to remain. On the north end of the airport, a project is planned to relocate the fence to a point beyond the limit of the ROFA. When this is accomplished, it will meet the ROFA standard. Until that is done, it will require a Modification to FAA Standards for the north end ROFA. On both the north and south ends of the runway, the runway safety areas will be free and will meet the ARC B-II standards. Of the two areas (RSA and ROFA), the RSA is the more critical.

Taxiway Width. The present taxiway is 40' to 48' wide and exceeds the 35' ARC B-II standard. At such time as the taxiways require reconstruction or the taxiway lighting systems are modified, the taxiway width should be reduced to 35'. As noted above, reconstruction or repaving on the western most 35' would improve runway/taxiway separation to meet the ARC B-II standard.

Taxiway Safety Area Width. The present taxiway safety area meets the ARC B-II standard.

Taxiway Object Free Area Width. The present taxiway object free area width meets the ARC B-II standard.

Runway 16 VASI/PAPI. Runway 16 lacks any type of visual approach aid such as a Visual Approach Slope Indicator (VASI) or Precision Approach Path Indicator (PAPI). Although runway 34 is used the majority of the time, anyone unfamiliar with the airport and approaching for a landing on runway 16 at night will be confronted with Mast Hill located approximately one mile north of the airport. Although the hill has an obstruction light, some type of visual approach aid would be desirable to provide approach slope guidance.

INSTRUMENT APPROACH EVALUATION

The potential of establishing a straight in non-precision instrument approach to replace the present VOR-A approach was raised during the master planning process. Establishment and/or alteration of instrument approach procedures is a complex three dimensional "puzzle". Two factors influence the design of an approach:

- *Aircraft Approach Criteria, i.e., A, B, C, or D.* The aircraft approach criteria establishes aircraft approach speed, with aircraft with the slowest speeds falling into category A, the fastest falling into category D. The Roseburg Regional Airport is designed to serve aircraft in the "B" category - speeds from 91 knots to less than 121 knots. In general terms, an aircraft in approach category A requires the least amount of airspace, category B requires more airspace, C and D require still more. The faster an aircraft is flying on an instrument approach, the greater the amount of airspace needed to accommodate the approach.

- *Terrain Around the Airport.* Roseburg is located in a valley with high terrain on virtually all sides of the airport. The design of an instrument approach requires that a wide flight path be free of obstacles, such as terrain, both approaching the airport and departing. The hills around the airport limit how low a pilot can descend in an attempt to see the airport to make a landing.

The current instrument approach has "minimums" of 1,800' ceiling and 1.25 mile visibility. This means that a pilot can fly as low as 1,800' (1,275' above the airport) on the approach path and that he or she must be able to see "out the window" for a distance of 1.25 miles before visibility is obscured by clouds. At the 1,800' low point on the approach, the pilot must either have the airport in sight and can then complete the landing, or must execute a "missed approach" climbing to 4,000' to either attempt the instrument approach again or fly to an alternate airport. A copy of the instrument approach plate which pilots use when they fly an instrument approach into Roseburg can be found in Chapter 2, Figure 2-7.

In conversations with the FAA (Mr. Vic Zembruski - Northwest Mountain Region, Flight Standards Division) it was concluded that it would be difficult to alter the current approach or to establish a new approach with "minimums" of less than the current 1,800' and 1.25 miles visibility. ***The limiting factor is the terrain.*** After

a review of the terrain around the airport, it was his general opinion the terrain favored a straight in approach to runway 16. He was not certain, however, that it would allow any minimums lower than presently exist.

The possibility that changing technology (i.e., GPS) might provide opportunity for changing the type of approach and the approach minimums was also discussed. The conclusion was that it *would not* provide any significant improvement over existing technology. Regardless of how the pilot is receiving guidance for the instrument approach (VOR, NDB, ILS, GPS), it will continue to be necessary to provide unobstructed airspace in which to navigate the aircraft - and that clear airspace will have to be big enough to allow a pilot to make some mistakes without hitting terrain or other objects.

Determination of the type of instrument approach has an impact on planning for developments on the ground. The type of approach (visual, non-precision, precision) determines the size of the runway protection zone (RPZ) and the Federal Aviation Regulations Part 77 Airspace Approach Surface. The RPZ is a trapezoidal area off the end of a runway within which the FAA Policy is to keep clear of most types of development and to prevent the congregation of people. The FAR Part 77 Airspace defines the area of airspace which the FAA desires to be free and clear of obstructions (terrain, trees, poles, etc.) which might penetrate the approach surface.

The size of the RPZ can range from 8 acres for small aircraft flying visual approaches up to 78 acres for large aircraft (aircraft over 12,500 lbs) flying precision instrument approaches. Similarly, the approach surface for a visual approach is 250' by 1,250' by 5,000 at a slope of 20:1 increasing to 1,000' by 4,000' by 10,000' at a slope of 50:1 for a precision instrument approach for large aircraft.

Since the airport currently serves large aircraft with visual approaches (the FAA considers the current circling VOR approach to be a visual approach) the RPZ and Part 77 Approach Surface dimensions that are in effect in 1994 are:

- RPZ = 500' by 700' by 1,000' (13.77 acres)
- Part 77 Approach = 500' by 1,500' by 5,000' at a slope of 20:1.

The consensus was that plans should be made to protect the opportunity to establish a straight in approach to runway 16. By planning for a straight in approach, both the RPZ and the FAR Part 77 Approach Surfaces become larger and impact a larger area. The dimensions of the RPZ become 500' by 1,010' by 1,700' covering 29.46 acres. The FAR Part 77 Approach becomes 500' by 3,500' by 10,000' at a slope of 34:1.

These dimensions have been used in the preparation of the Airport Layout Plan, the FAR Part 77 Airspace Plan, and the Approach and RPZ Plan for runway 16.

LANDSIDE FACILITY REQUIREMENTS

The landside facilities generally include the FBO operations, aircraft tiedowns, T-hangars, corporate flight departments, and airline terminals. Each of those activities has different needs which affect where they can be located upon an airport. The text below outlines the various needs of each type of airfield user.

FBO

An FBO needs good public access and visibility from public roads, good airfield access, and should be easily located by itinerant traffic landing at the airport.

TIEDOWNS

Aircraft tiedowns locations do not require great public access because the users will be aircraft owners or renters who are familiar with aircraft operations and can, on a limited basis, drive their cars on aircraft ramps to access aircraft parked on the tiedowns. Where possible, it is desirable to separate aircraft operations and auto access and parking, although sometimes this is not practical.

T-HANGAR AIRCRAFT STORAGE

As with aircraft tiedowns, hangars do not need great public access since most users will be the pilot/aircraft owners who are familiar with airport operations and can drive on airport aprons with aircraft if needed. Typically, the pilot will park his or her car inside the hangar if they are to be gone for any length of time, so auto parking requirements for this type of use are not great.

CORPORATE FLIGHT DEPARTMENTS

A corporate flight departments needs only minimal public access for company aircraft users. Most users will regularly use the company aircraft and will know their way to and around the airport. If possible, access should not require driving on aircraft ramps, but this is not always possible. Access to the airfield can be less direct than for an FBO since the pilots operating the aircraft will be professionals familiar with the airport.

COMMERCIAL AIRLINE TERMINAL

A commercial airline terminal has needs for both excellent street access and airside access. On the street side, the facility needs to be easy to get to, provide good on-site circulation, and good short and long term parking. On the airside (runway side), the terminal needs to have a large aircraft ramp with taxi/in -taxi/out access for

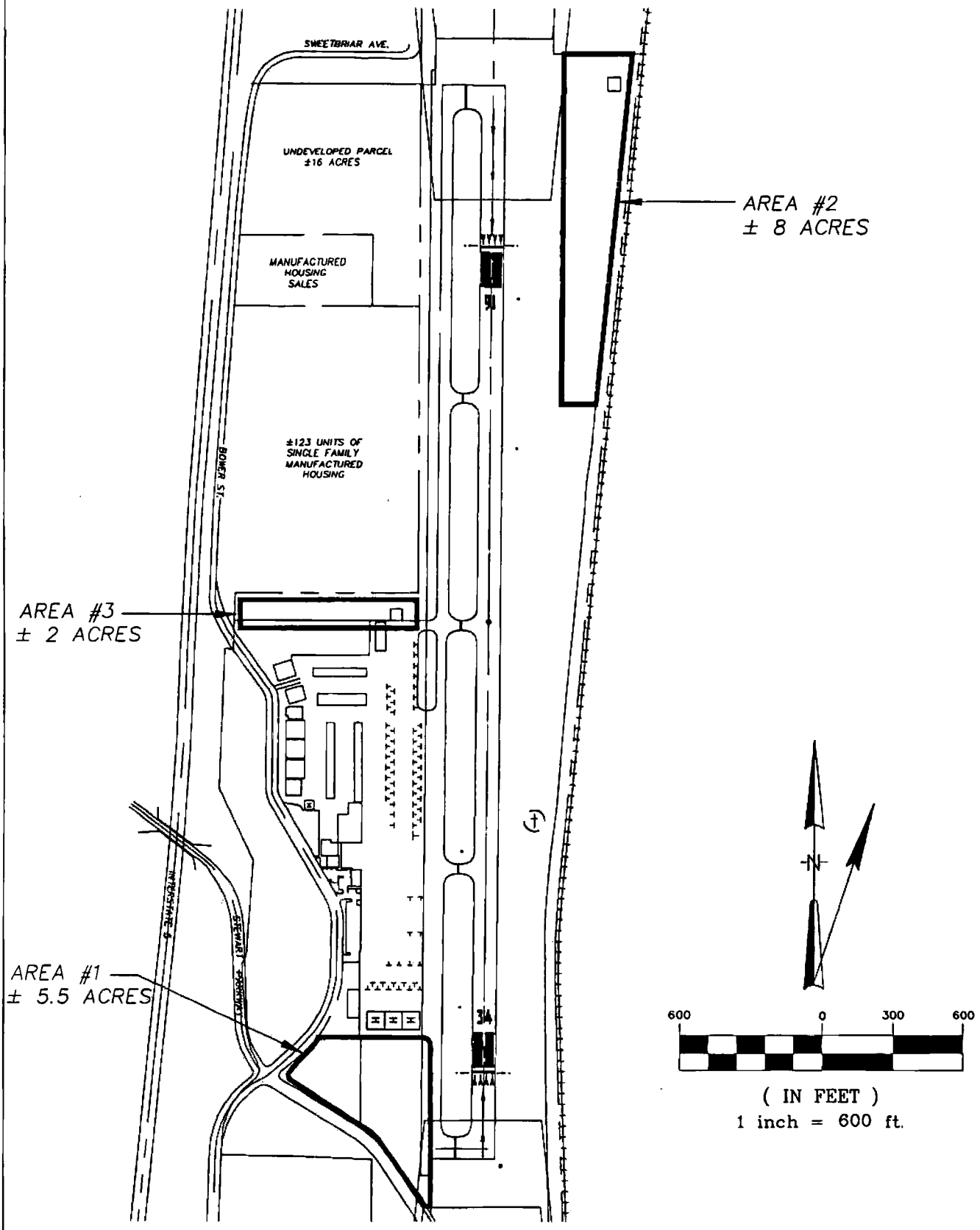
commuter airlines. This will make aircraft operations quick and easy and will keep staffing and equipment needs to a minimum. The ability to grow on both the street side and the airside is also important. The ability to expand the terminal building itself is also an important criteria.

EXISTING AIRPORT LAND INVENTORY

The Roseburg Airport is somewhat constrained by existing development. On the south, growth is limited by rising terrain and Stewart Parkway. On the east, the rail road limits growth. On the north, terrain and the future I-5 interchange access roads will limit growth, although not to the degree that the railroad track limits expansion growth on the east side of the airport. On the west side of the airport, development is limited by existing residential uses, wetlands, and ultimately, Interstate 5.

A review was made of the limited amount of available on-airport land (in 1994) and what types of uses the lands are suitable for. Figure 4-1 shows the location of the only three vacant areas. The text below will discuss each site and what it is suitable for given the criteria outlined above.

Area #1, 5.5 acres. Located south and west of the existing ramp and office building, this site has excellent airfield and street access. As such, it could be used for aircraft parking ramps, aircraft storage hangars, or FBO development. The small size of the site limits it potential for development as an airline terminal. Although possibly adequate in the short term, the expansion potential on this site makes it undesirable for permanent commercial airline terminal use.



PACIFIC

VACANT LAND INVENTORY-1994

Roseburg Regional Airport
Roseburg, Oregon

Figure
4-1

JOB NO. 4-0451-0201

ACAD FILE:FIG4-1.DWG

Area #2. 8 acres. Located on the north east side of the airport, this area is shallow and long. It presently lacks street access, and is located away from all other services and development on the airport. Airside access will be hampered by the lack of an east side taxiway to the site. This will require some runway crossings to access the site. Because of it's narrow depth and location, a user not generating a large number of operations, and one with minimal public access needs would be the best candidate. A corporate flight department fits those criteria - low number of flights per day, few runway crossings, and the ability to provide maps and guidance to company employees needing to access the service.

Another opportunity is for some type of helicopter operation. Helicopters do not need a taxiway system and could easily operate on that side of the airport. A benefit of the segregation of helicopter and fixed wing aircraft would be the reduced likelihood of a helicopter blowing over a fixed wing aircraft. The concept of a locating helicopter users in the north east corner is shown on the 1986 ALP.

Due to the lack of roads in the area, the site will be costly to develop. Development in this area may also require significant grading. At it's high point, the site is 15 feet above the runway elevation.

Aircraft ramps and taxiways are normally limited to a maximum grade of 2%.

Area #3. 2.1 acres. Located immediately north of the existing t-hangar area, this is an area of dense vegetation. The area also bisected by Newton Creek. The city has designated this as a conservation area and it is not available for development.

FBO OPERATIONS

Currently there are two FBOs at the Roseburg Regional Airport. One is a full service FBO and the other is a limited service FBO providing only aircraft maintenance. Typically, one full service FBO is adequate for up to 100 based aircraft. Using this standard, Roseburg is adequately served with the current mix of full and limited service FBOs. It is possible that additional FBO operators may want to establish operations at Roseburg despite the current levels of service provided by the existing companies. This plan recommends providing space for one additional full service FBO and one limited FBO by the end of the planning period. FBO area requirements range from 1/2 to 4 acres depending upon the extent of the services they provide. In order to provide sufficient land for new FBOs, 2-4 acres will be needed.

AIRCRAFT PARKING FACILITIES

As stated in the inventory chapter, there are currently a total of 72 tiedowns and 30 aircraft hangars accommodating 108 aircraft. Half of the based aircraft are stored inside a hangar. Roseburg has seven large corporate type hangars which accommodate multiple aircraft. As a result, the hangar occupancy ratio is 1.8

aircraft per hangar. The City has been actively encouraging the construction of hangars, so the trend over the life of the master plan will be for the ratio to shift in favor of a higher number of aircraft stored in hangars. For planning purposes, a ratio of 60% hangared to 40% tied down was used. Another factor which will impact demand for hangars will be the hangar occupancy ratio. Proportionally, the growth in hangars will favor single-occupancy t-hangars. As a result, the hangar occupancy ratio will likely drop over the term of the master plan. For planning purposes, a ratio of 1.5 aircraft per hangar has been used.

Given the forecast growth of 42 more based aircraft, a shift to more aircraft in T-hangars (up to 60% vs. the present 50%), and a lower density of aircraft per hangar (1.5 per hangar vs. today's 1.8), there will be demand for an additional 16 hangars during the planning horizon of this plan. For planning purposes, the assumption has been made that at least two of the anticipated sixteen hangars will be the larger corporate type, the balance will be standard T-hangar units. Table 4-3 summarizes the demand for aircraft tiedowns and hangars throughout the planning period.

Roseburg currently has a 7 unit T-hangar building ("E" hangars). Using that building as a guide, two more 7 unit hangar buildings approximately the same size would require an additional 1.6 - 2 acres of land.

The existing corporate hangars at Roseburg are typical of what would be expected in the future. The hangars are typically 80'x 80' with an equal amount of space dedicated to ramp in front of the unit. Including space for building setbacks, two corporate hangars would require .6 acres.

Based upon the dimensional requirements outlined above, there is a demand for an additional 2.1 - 2.6 acres of land for hangars.

In the area of aircraft tiedowns, the existing supply of 72 only slightly exceeds the 60 tie down demand for future based aircraft (40% of aircraft on tie downs - 150 based aircraft = 60 tie downs). With a demand of 60 spaces for based aircraft, there will be only 12 space for itinerant traffic. This will likely prove inadequate. This plan recommends adding 10 additional tie downs to provide an ultimate itinerant capacity of 22 tie downs. The additional capacity can be added at such time as the number of based aircraft on tie downs increases beyond 60. Based upon a layout for single engine aircraft and light twins, an additional 10 tie downs will require approximately 100,000 square feet or 2.3 acres.

Table 4-3

AIRCRAFT PARKING REQUIREMENTS

	1994	1999	2004	2014
Total Based Aircraft	108	118	129	150
Aircraft in Hangars (1)	54	70	77	90
Aircraft on Tiedowns	54	48	52	60

Note 1: Hangar spaces indicate aircraft in hangars, not number of hangars. The number of hangars is reduced by the hangar occupancy ratio, i.e., more than one aircraft per hangar.

Source: W&H Pacific

AUTOMOBILE PARKING

Typically, auto parking spaces are required at a ratio of one space for every two based aircraft. This allows sufficient parking for visitors, employees and pilots. At the Roseburg Airport, many pilots park their vehicle in their hangar while flying. Currently there are approximately 80 paved parking spaces in the parking lots along Aviation Drive. When combined with automobile parking in aircraft hangars, no additional auto parking is anticipated during this planning period (this parking demand is exclusive of parking required for the commercial air service terminal). Any new facility such as new FBO or corporate flight department will be required to accommodate parking demand as part of their site development.

COMMERCIAL AIR SERVICE PASSENGER TERMINAL

At such time as commercial air service is re-established in Roseburg, a passenger terminal will be needed. The terminal would actually be a series of facilities linked together:

- The passenger terminal building itself
- The aircraft ramp and loading area
- The access road and parking lots

What follows is an analysis of the requirements of each of those functional areas.

Terminal Building. The 1991 Commercial Air Service Needs Study prepared by the Oregon Aeronautics Section (OAS) identified a terminal size between 4,125 square feet and 5,625 square feet. A building that size could contain the following services and facilities:

- Airline ticket counter and offices
- Baggage claim and makeup areas
- Passenger waiting area
- Concessions/rental car agencies
- Restrooms
- Pilot lounge
- Public circulation
- Storage

The planning standard used in the OAS study assumed a ratio of 75 square feet of terminal space per person and assumed serving two commuter aircraft in the same operational hour.

The FAA Advisory Circular 150/5360-13 Planning and Design Guidelines for Airport Terminal Facilities cites two guidelines for airline terminals. A ***"Rule-of-Thumb"*** guideline recommends 150 square feet of gross terminal building area per design peak-hour passenger as one method for estimating gross terminal area. Assuming service with a Dornier 328 (30 passenger aircraft), a terminal building size of 4,500 square feet would be needed. Figures 5-1 and 5-2 also indicated that for a "Basic Non-Hub Terminal" serving less than 200,000 annual enplanements and a single aircraft gate, a terminal size of 4,000 to 8,000 square feet is adequate.

All three sources indicate a terminal size of between 4,000 to 8,000 square feet would be adequate for Roseburg with a single airline providing 4 or 5 flights per day. For planning purposes, this Plan will assume a terminal of 6,000 square feet.

Commercial Aircraft Parking Apron. Aircraft parking plans call for two "power-in/power-out" parking positions for Dornier 328 class aircraft. By allowing the aircraft to "power-in" and "power-out", the need for aircraft tug equipment and tug operators is eliminated. Although it is unlikely that two aircraft will be present at one time, providing space for two will make it possible to accommodate an occasional off-schedule arrival or the possibility of having a second flight added for a special purpose. The OAS Commercial Air Service and Facility Needs Study recommended a 105,300 square feet (2.4 acres) ramp to accommodate aircraft parking, service access roads, and ground equipment.

The Dornier Aircraft company was contacted and they confirmed that a 2.4 acre ramp would provide ample room for parking two DO 328 aircraft in a power-in/power-out configuration.

Passenger Terminal Automobile Parking/Circulation. The FAA Advisory Circular 150/5360-13 Planning and Design Guidelines for Airport Terminal Facilities suggests a standard of 1.5 times the number of peak hour passengers is an appropriate number of spaces for airline passengers. Assuming a 30 passenger peak hour factor, the number of spaces would be 45. In addition to passenger spaces, employees spaces would be needed for

employees of the airlines, rental car agencies, and airport management. Employee spaces would add an additional 10 spaces. Given the levels of airline traffic forecast, an additional 10 spaces for rental cars would be appropriate. The total demand for parking would be 65 spaces. The AC 150/5360 suggests that for planning purposes, an estimate of 350 to 400 square feet per parking space for parking and circulation within the parking lot be used. This yields a parking lot of between .5 and .6 acres.

The OAS Commercial Air Service and Facility Needs Study also provided guidelines for auto parking at commercial airline terminals. 50 spaces were recommended for public parking, 10 spaces for employees, and an additional 10 spaces for rental cars. This results in a need for a total of 70 auto parking spaces.

With a difference of only 5 parking spaces between the two, the two methods are essentially the same. This plan recommends utilizing the standards of the FAA Advisory Circular allowing for 65 auto parking spaces on .5 to .6 acres of land.

Total Commercial Air Service Terminal Land Area Demand. The total land area demand for an a passenger terminal is:

- Terminal 6,000 square feet.
- Aircraft Ramp 104,544 square feet.
- Auto Parking 22,136 square feet.

Total Area = 136,680 square feet or 3 acres

AIRSIDE LAND DEMAND SUMMARY

Summarizing the demand indicated above, there is a need for between 9.4 - 11.9 acres in the following uses:

FBO	= 2 - 4 acres
Hangars (both T-hangars and corporate)	= 2.1 - 2.6 acres
Tiedowns	= 2.3 acres
Terminal (building, ramp, auto parking)	= 3 acres
Total Airport Land Area Requirements	= 9.4 - 11.9 acres

TERMINAL AREA PLAN

The goal of the Terminal Area Plan (TAP), is to match demand for airside facilities with existing land resources. The result is a plan which outlines the most logical method to accommodate the future growth of the airport. With a demand for between 9.4 and 11.9 acres and a supply of 13.5 acres, it would appear that the airport has a surplus of land. This is not the case.

Area #2 (identified on Figure 4-1), the 8 acre area in the north east corner of the airport, as previously noted, has a limited development potential. In addition to its remote location away from existing services and lack of taxiways, development of that area will require the extension of roads and extensive grading. The terrain in that area is higher than the adjacent runway. This Plan recommends that Area #2 be held for long term future development. It is likely that roads will be built in the area to the north east of the airport as the new North Roseburg I-5 interchange is built. This will greatly lessen the cost of extending roads to serve that parcel.

Given it's size and location, Area #1 (identified on Figure 4-1) on the south west corner of the airport should be planned for additional aircraft parking ramp and FBO development. Extending the existing ramp to the south into that area can provide the needed future tie downs and is a logical direction of growth. The site also provides adequate space for a new FBO and meets the criteria for siting an FBO: good airfield access and visibility, and good street side access and visibility. The site is also large enough that it is unlikely that an FBO development there will outgrow it.

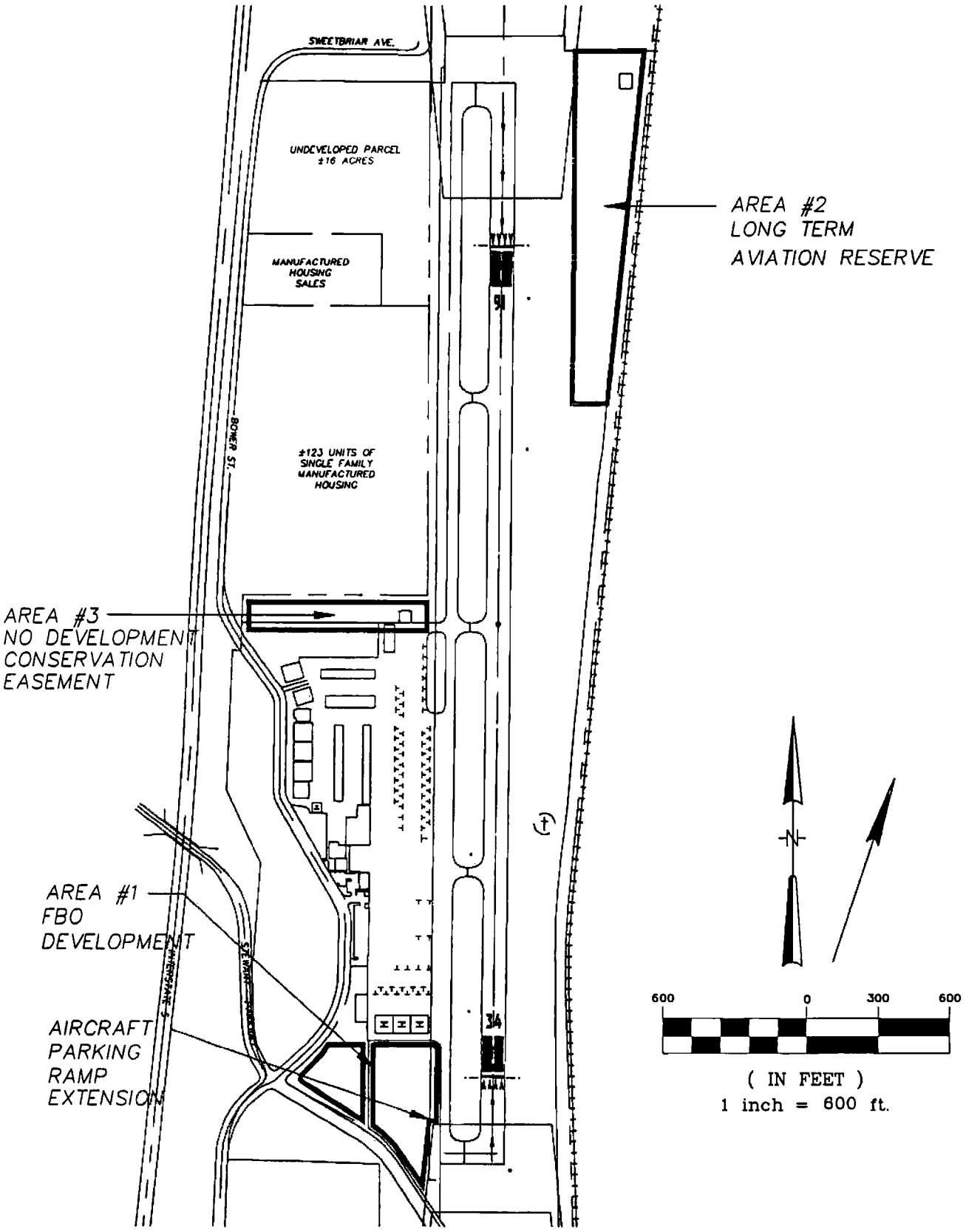
These uses recommended for the existing available land are shown on Figure 4-2.

POTENTIAL FOR AIRPORT EXPANSION

Remaining to be sited are additional aircraft storage hangars and a location for a possible future commercial airline terminal. Figure 4-3 illustrates non-aviation uses found on the west side of the airport which might be locations into which the airport might expand.

Area A. Located on the far north end of the airport, Area A contains single family conventional construction residences. This area is long and narrow, and by itself, provides little opportunity for expansion.

Area B. Area B is an approximately 18 acre parcel which is presently available for sale and development (according to the sign on the property). The southern corner of the area is presently being used by a manufactured home sales lot. The sales buildings and inventory of homes for sale are all mobile. The site itself is 2-4 feet lower than the airport runway so filling would be required before the site could be usable as part of the airport. The site also has a drainage ditch along the northern and north eastern boundary which would also be a consideration.



PACIFIC

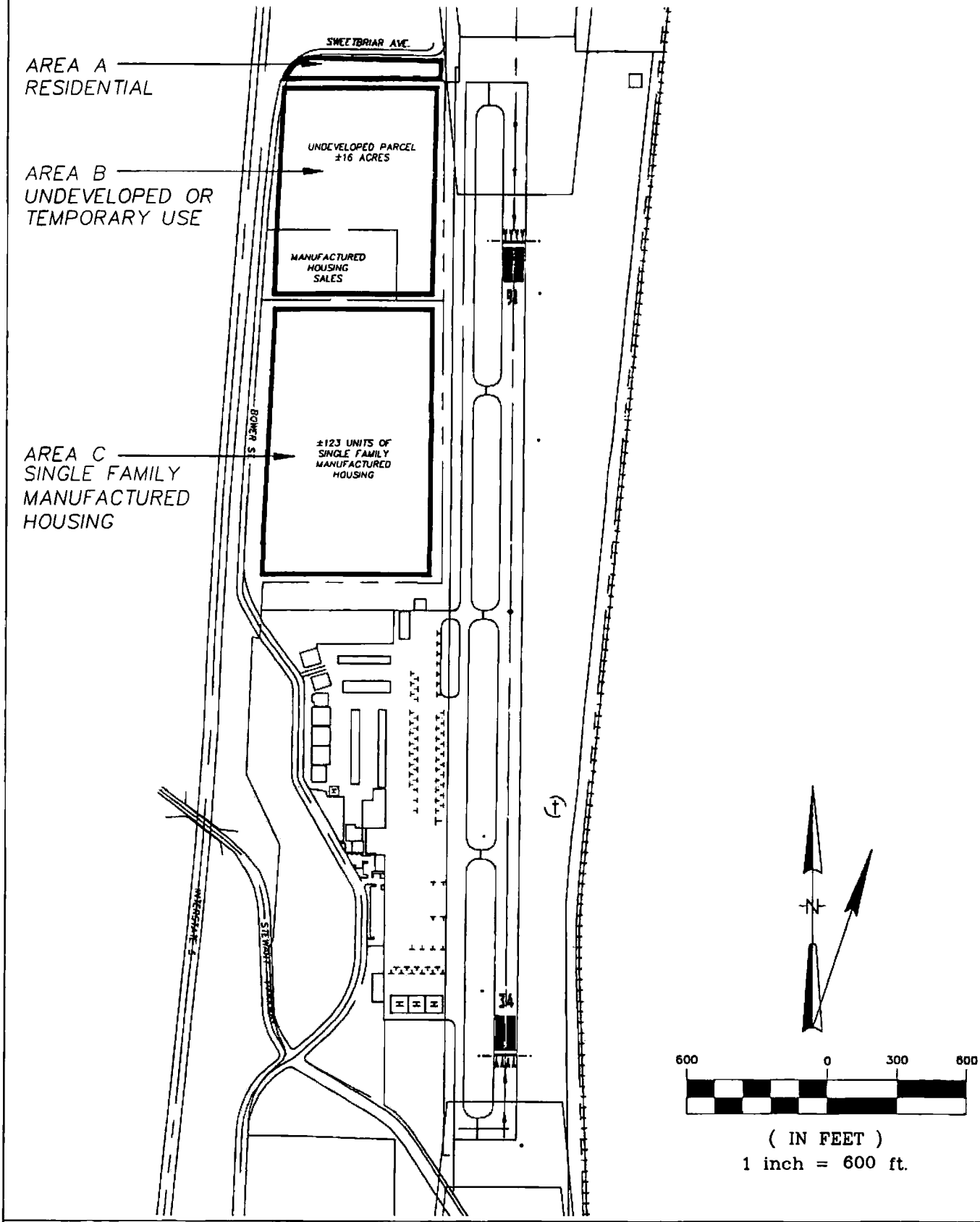
PROPOSED DEVELOPMENT
EXISTING AREAS

Roseburg Regional Airport
Roseburg, Oregon

Figure
4-2

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PACIFIC

WEST SIDE LAND USES
ADJACENT TO THE AIRPORT

Roseburg Regional Airport
Roseburg, Oregon

Figure
4-3

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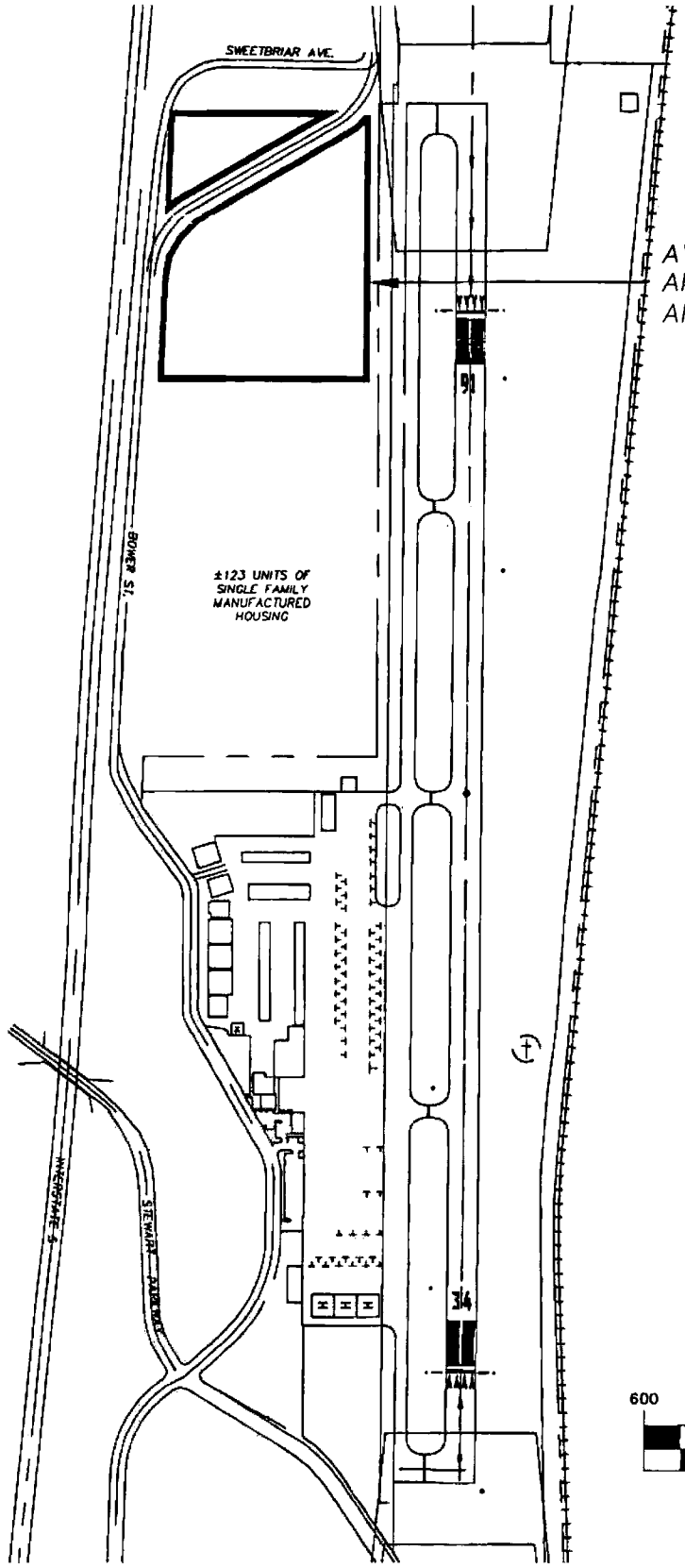
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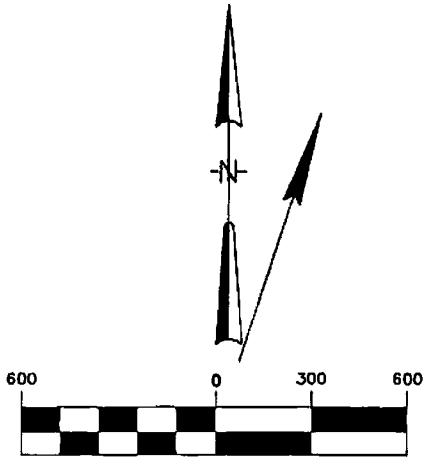
Area C. Area C is an existing fully developed manufactured housing park. The spaces in the lot are under a single ownership and are leased to the occupants. The approximately 15 acre area includes over 123 housing units which represents a significant amount of housing stock for the City of Roseburg. Acquisition for airport use and relocation of the housing would be a significant undertaking.

Recommendation for Expansion. In reviewing the opportunity provided by Areas A, B, and C, Area B stands out as the logical direction for airport expansion. Area A does not provide enough land for a viable expansion, and would require the relocation of a number or single family residences. Area C would require the relocation of a large number of single family residences. Given the availability of Area B and the fact that it is largely undeveloped, Area C should be developed only as a last resort. With the successful acquisition of Area B, Area C should not be needed within the 20 year time frame of this master plan. If through some unforseen circumstance Area C becomes available for conversion to a use other than it's present use as a manufactured home park, the City should consider acquiring the property for the long term development of the airport rather than allowing it to convert to a non-aviation use.
Another advantage of the development of Area B is that it takes advantage of the existing west side parallel taxiway. As a result, access to the area will not require runway crossings.

With T-hangars and a passenger terminal area requiring an estimated 5.1 to 5.6 acres, Area B exceeds the amount of land anticipated within the planning horizon of this Plan. In discussing possible acquisition of Area B with the City, there were indications that Bower Street to the west of the airport may be realigned to improve the future connection to the North Roseburg freeway interchange. The realignment would remove the jog on Sweetbrier Ave. If this is done, it will reduce the size of Area B and will create a parcel on the west side of the realigned Bower St. as shown in Figure 4-4. This concept will not impact the airport expansion as the remaining segment of Area B will continue to be adequate for the expansion needs of the airport.

Within the remaining approximately 14 acres in Area B there will be adequate land for the development of a commercial airline terminal and aircraft storage hangars. Figure 4-5 provides an expanded view of that area and how it might be designed to accommodate both airline terminal and aircraft storage hangar uses.





(IN FEET)
1 inch = 600 ft.

PACIFIC

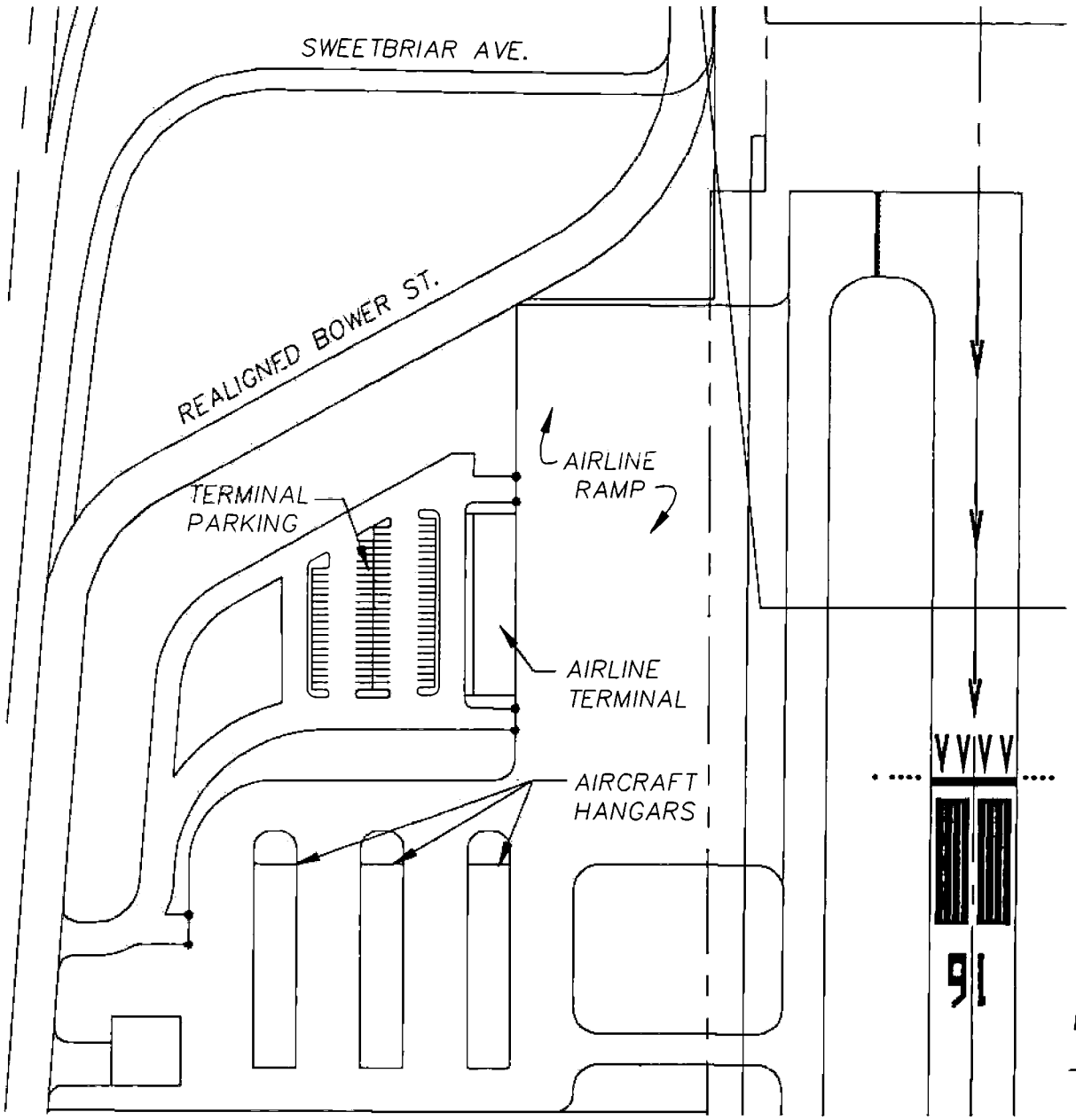
POSSIBLE RE-ALIGNMENT OF BOWER ST.

Roseburg Regional Airport
Roseburg, Oregon

Figure 4-4

JOB NO. 4-0451-0201

ACAD FILE:FIG4-4.DWG



GRAPHIC SCALE

200 0 100 200

(IN FEET)
1 inch = 200 ft.

PACIFIC

POSSIBLE RE-ALIGNMENT OF BOWER ST.

Roseburg Regional Airport
Roseburg, Oregon

Figure 4-5

JOB NO. 4-0451-0201

ACAD FILE:FIG4-5.DWG

SURFACE ACCESS

Access to the west side of the airport is provided via Stewart Parkway and Aviation Drive. The intersection of Stewart Parkway and Aviation Drive was signalized in 1994, and the access is presently considered adequate for the west side of the airport. All west side development will be able to access Aviation Drive or Bower Street (Aviation Drive transitions into Bower Street and to the driver, appears to be a continuous street. The City is looking into renaming portions of Bower Street/Aviation Drive to simplify the situation.

Future access to the north east side of the airport will likely be provided at such time as plans are made to develop the land adjacent to the new North Roseburg I-5 Freeway Interchange access road.

UTILITIES

The airport is fully served by utilities, including power, municipal water, telephone, and city sewer. No utility extensions will be needed to support the development plans called for in this Plan.

CHAPTER 5
AIRPORT PLANS

INTRODUCTION

The airport plans presented in this chapter graphically describe the existing features and the future development of the airport throughout the 20-year planning period. The basis for the proposed development are the inventory, forecasts, demand/capacity analysis and the facility requirement chapters. The plans consist of the following figures which will be presented at the end of this chapter:

Sheet 1 Cover Sheet
Sheet 2 Existing Facilities 1994
Sheet 3 Airport Layout Plan
Sheet 4 FAR Part 77 Airspace
Sheet 5 Runway 16 Approach & RPZ Plan and Profile
Sheet 6 Runway 34 Approach & RPZ Plan and Profile
Sheet 7 Land Use Plan - 1994 and 2014 Noise Contours
Sheet 8 Terminal Area Plan

COVER SHEET, SHEET 1

The cover sheet shows the location of Roseburg Regional Airport in relation to the surrounding community. The index to the other drawings in the plan set is also contained on this sheet.

EXISTING FACILITIES 1994, SHEET 2

The existing facilities plan depicts those facilities which are existing as of 1994 and are further described in Chapter 2 of this Master Plan.

AIRPORT LAYOUT PLAN, SHEET 3

The airport layout plan (ALP) depicts the existing and proposed airport facilities. The preliminary alternatives were presented to the airport commission and were further refined. The result is the airport layout plan (ALP) shown in Sheet 3.

The following is a brief description of some of the more significant development proposals shown on the plan.

NORTH T-HANGAR - AIRLINE TERMINAL DEVELOPMENT

A result of this master plan is the recommendation that a vacant parcel of land adjacent to the airport on the northwest side should be acquired for future development. The development proposed is t-hangars for aircraft storage, and possible future airline passenger terminal. Both developments are shown on the ALP but should be considered schematic in nature rather than final designs.

SOUTH RAMP DEVELOPMENT

The master plan calls for the extension of the existing aircraft parking ramp to the south as far as Stewart Parkway. This should be part of an FBO development on the corner of Stewart Parkway and Aviation Drive. Any construction in this area will require the relocation of the ASOS weather reporting system.

SURFACE ACCESS CONCEPT PLAN

During the planning horizon for this master plan, the airport is not anticipated to generate any significant amount of automobile traffic. What small amount is generated will not exhibit any substantial peaking and trips will generally be distributed throughout the day. Upgrading roads around the airport will not be required as a result of airport related traffic. Should airline passenger service be initiated, it is unlikely that the service would substantially alter trip generation patterns. Parking should be provided in conjunction with terminal building development.

As new businesses locate at the airport, parking should be required as part of any site development plan and should be provided in close proximity to the business.

MODIFICATION TO FAA DESIGN STANDARDS

Unique local conditions may require modification to airport design standards on a case-by-case basis. FAA approval is required for modification to an airport design standard on an airport which receives Federal aid. For the airport, two modification to standards are needed:

On the south end of the airport, an indefinite modification to standards for the ROFA extension off the end of the runway will be needed as a result of the fence located adjacent to Stewart Parkway. The fence is needed for airport security and it is not feasible to relocate Stewart Parkway.

The airport does not meet ARC B-II runway/taxiway separation standards of 240'. The current runway/taxiway separation is 200'. An indefinite modification to standards is recommended as the 40' variance from the standard is not great enough to warrant relocation of either the runway or taxiway to meet the standard.

FAR PART 77 AIRSPACE, SHEETS 4, 5, 6

Sheet 4 shows the Federal Aviation Regulation (FAR) Part 77 Airspace Plan. Ideally, airports should be located so that all surrounding airspace is clear of obstructions that could be hazardous to aircraft. Existing obstructions should be identified and their ultimate disposition determined.

The airspace in the vicinity of airports is established by the definition of a set of imaginary surfaces. Objects which penetrate those imaginary surfaces represent obstacles to air navigation. The geometry of these surfaces is governed by the regulations that are set forth in the Federal Aviation Regulations (FAR) Part 77, "Objects Affecting The Navigable Airspace." Three drawings have been prepared to analyze these areas. The first is the Airspace Plan which is composed of FAR Part 77 Imaginary Surfaces and depicts the airspace associated with the Roseburg Regional Airport. Figures 5-5 and 5-6 provide a more detailed analysis of the approaches to runways 16 and 34.

The airspace around the Roseburg Regional Airport is made up of five imaginary surfaces which are described below.

Primary Surface: The primary surface is longitudinally centered on the runway extending 200 feet beyond the paved threshold in each direction and measuring 500 feet across on a non-precision instrument runway such as 16-34.

Approach Surfaces: The approach surfaces are inclined planes extending upward and outward from the ends of the primary surfaces. The existing (1994) approach surfaces for Roseburg Regional Airport are established based upon visual approaches by large aircraft (aircraft weighing more than 12,500 lbs). Although the airport has a non-precision instrument approach, it is a circling type approach rather than a straight-in approach. For FAR Part 77 purposes, the FAA considers the circling approach a visual approach. The FAR Part 77 approach for both runways is a 5,000 feet long trapezoid that is 500 feet wide at the point where it meets the primary surface near the runway threshold and 1,500 feet wide at the end, 5,000 feet away from the airport. The approach extends upward at a slope of 20:1.

In the future, should a straight-in non-precision instrument approach be established on runway 16, the approach surface will increase in size and flatten out in approach slope. The future non-precision approach would be a trapezoid 10,000' long, 500' wide where it meets the primary surface, and 3,500' wide at the other end. The slope would be at a 34:1 ratio.

Horizontal Surface: The horizontal surface is a plane 150 feet above the established airport elevation. The plan dimensions of the horizontal surface are set by arcs extending from the end of the primary surface, connected by tangent lines. These arcs for the existing (1994) airspace plan are 5,000' long. In the future, should a non-precision instrument approach be established, the arcs will increase to 10,000' long.

Transitional Surface: The transitional surface is an inclined plane with a slope of 7:1 extending upward and outward from the primary and approach surfaces, terminating at the point where they intersect with the horizontal surface or any other surface with more critical restrictions.

Conical Surface: The conical surface is an inclined plane at a slope of 20:1 extending upward and outward from the periphery of the horizontal surface for a distance of 4,000 feet.

OBSTRUCTIONS OF HORIZONTAL AND CONICAL SURFACES

The most significant penetrations of the horizontal and conical FAR Part 77 Surfaces are caused by the high terrain which surrounds the airport. It is not possible to eliminate the terrain, and those obstructions will remain indefinitely. Sheet 4 illustrates the obstructions caused by the high terrain around the airport.

OBSTRUCTIONS OF RUNWAY APPROACH SURFACES

A more detailed look is prepared for the approaches to each of the runways. Sheets 5 and 6 provide, in both plan and profile view, an analysis of the obstructions within the approaches to both runways. Listed below are the obstructions for each approach and the recommended action.

Runway 34 Approach

1. Stewart Parkway. 15' obstruction. No action recommended - not practical to remove or relocate the roadway.

2. Airport Fence. 5' obstruction. No action recommended - airport fence is needed for security and forms a boundary with Stewart Parkway. It is not practical to relocate the parkway.

3. Tree	31' obstruction. Top or remove. May be necessary to purchase tree from owner.
4. Light on Pole	35' obstruction. No action recommended. This is an obstruction light for the rising terrain to the south of the airport.
5. Tree	3' obstruction. Top or remove. May be necessary to purchase tree from owner.

Runway 16 Approach

1. Mast Hill	90' obstruction for 20:1 approach, 185' obstruction for 34:1 approach. Should there be an opportunity to mine or otherwise remove or lower the top Mast Hill, it should be pursued. The presence of the hill causes deviations to flight tracks and is a significant obstacle to air navigation around the airport.
2. Obstruction Light On Mast Hill	137' obstruction for 20:1 approach, 232' obstruction for 34:1 approach. No action recommended - obstruction light needed for safety to identify the hill.
3. Tree - Near Hill	53' obstruction for 20:1 approach. This obstruction will be removed as part of the North Roseburg I-5 Freeway Interchange Project which will also remove a large part of Near Hill.
4. Future Broad St.	20' obstruction of a 34:1 approach. No action recommended. The elevation of Broad Street is dictated by the need to cross a railroad track and cannot be lowered to provide clearance for a possible future 34:1 approach surface. The street will clear the 20:1 approach surface.
5. Near Hill Terrain	39' obstruction. This ground obstruction of Near Hill will be removed as part of the North Roseburg I-5 Freeway Interchange Project.
6. Tree - Near Hill	61' obstruction for 20:1 approach. This obstruction will be removed as part of the North Roseburg I-5 Freeway Interchange Project.
7. Tree	50' obstruction for 20:1 approach. This obstruction will be removed as part of the North Roseburg I-5 Freeway Interchange Project.

8. Tree - Near Hill — 40' obstruction for 20:1 approach. This obstruction will be removed as part of the North Roseburg I-5 Freeway Interchange Project.

LAND USE PLAN, SHEET 7

Sheet 7 illustrates the Roseburg Comprehensive Plan land use designations for the airport environs. The figure also illustrates both the 1994 and 2014 noise contours for the airport based upon forecast levels of aircraft traffic. As is noted in the Land Use Chapter, the noise impact of the airport as measured by the 65 Ldn noise contour is contained almost entirely on airport-owned property or on compatible land uses such as industrial, commercial, or open space. For a more detailed discussion of Land Use, refer to Chapter 6.

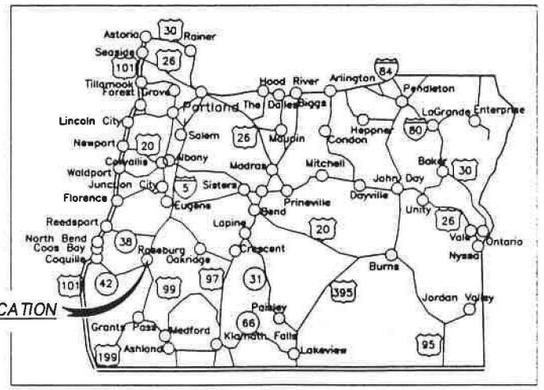
TERMINAL AREA PLAN, SHEET 8

Sheet 8 shows in greater detail the development proposed within the existing terminal area and the future t-hangar and airline terminal area. The types of businesses and their locations are conceptual. Demand for land by the various types of businesses will be a function of the market place and it is difficult to predict the sequence of development. It is important to remain flexible in the final layout and design in order to meet the needs of the market place, and to use the Terminal Area Plan as a guide.

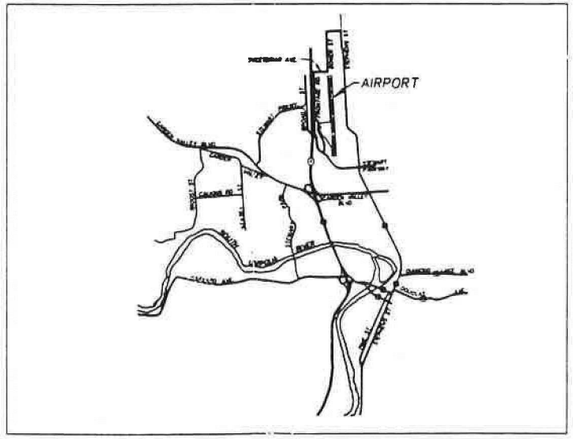
ROSEBURG REGIONAL AIRPORT
ROSEBURG, OREGON

MASTER PLAN UPDATE

JANUARY, 1996



LOCATION MAP



VICINITY MAP

SHEET	DESCRIPTION
1	COVER SHEET
2	EXISTING FACILITIES 1995
3	AIRPORT LAYOUT PLAN
4	FAR PART 77 AIRSPACE
5	RUNWAY 16 APPROACH & RPZ PLAN & PROFILE
6	RUNWAY 34 APPROACH & RPZ PLAN & PROFILE
7	LAND USE PLAN & 2014 NOISE CONTOURS
8	TERMINAL AREA PLAN

SHEET INDEX

SECTION, TOWNSHIP, RANGE: SECTIONX.RGEX.WM

W&H PACIFIC
8405 S.W. Nimbus Avenue
BEAVERTON, OR 97008
Phone: (503) 626-0455 Fax: (503) 526-0775
Planning * Engineering * Surveying
Landscape Architecture * Environmental Services

Plot Date: 06/05/95
Drawn: MCL/PEL
Checked: C. Cornish

Drawing Number
AROSCS01.DWG

Sheet Number
1 of 8

Vol. 3 - 0290

MAGNETIC DECLINATION 16°30'E
ANNUAL RATE OF CHANGE 4.6'W

NORTH

GRAPHIC SCALE

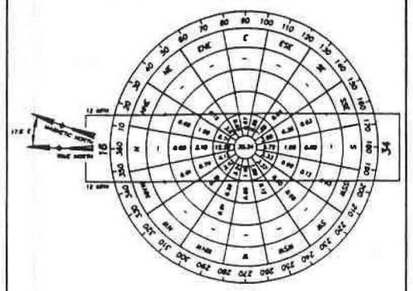
300 0 150 300

1"=300'

NOTES

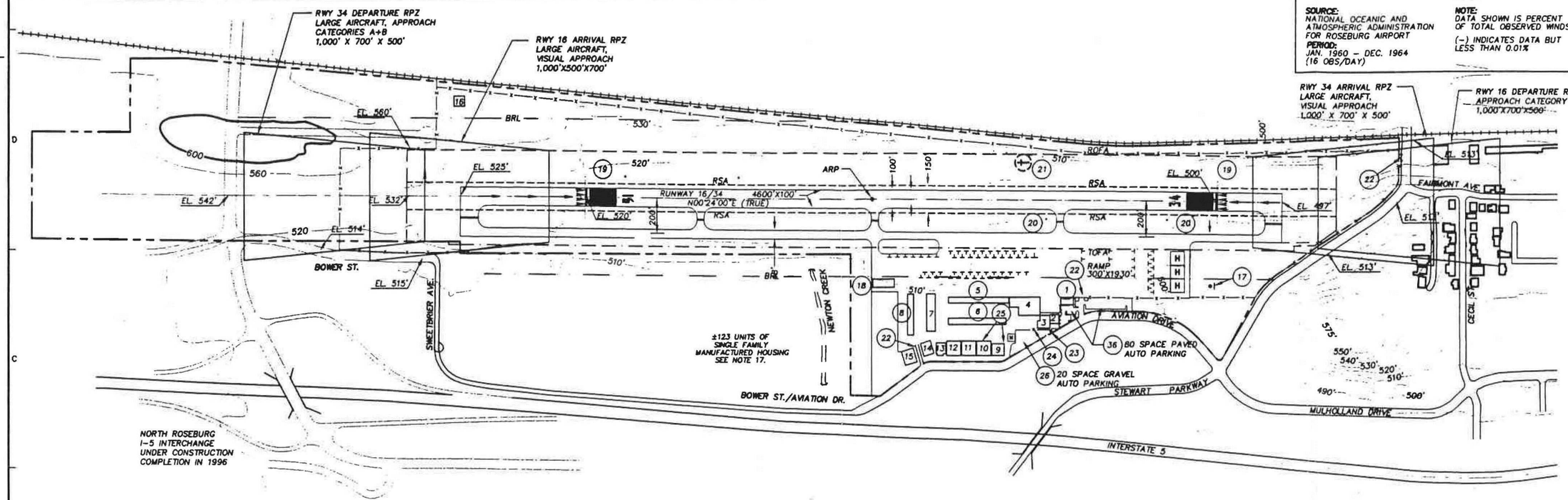
1. LANDING THRESHOLDS WERE SITED USING AC 150/5300-13 AIRPORT DESIGN, APPENDIX 2, THRESHOLD SITING REQUIREMENTS.
2. THE SOURCE FOR ALL COORDINATES AND RUNWAY ELEVATIONS IS THE AIRPORT OBSTRUCTION CHART OC 888 FOR ROSEBURG REGIONAL AIRPORT, 7TH EDITION, FIELD SUMMARY MAY 1992, PUBLISHED MAY 1993. HORIZONTAL DATUM IS BASED UPON THE NORTH AMERICAN DATUM OF 1983 (NAD 83). VERTICAL DATUM IS BASED UPON THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29).
3. THE ROFA IS LIMITED TO 190' (VS. 300' ARC B-II STD.) BY STEWART PARKWAY.
4. THE 425' BUILDING RESTRICTION LINE (BRL) IS BASED UPON ALLOWING A 25' HIGH BUILDING AT THE BRL & ASSUMES THE GROUND IS LEVEL WITH THE RUNWAY. HANGAR (18) IS LOCATED ON THE 425' BRL.
5. ALL CONSTRUCTION ON THE AIRPORT REQUIRES NOTIFICATION OF THE FAA. A FORM 7460-1 SHOULD BE FILED WITH THE FAA A MINIMUM OF 60 DAYS PRIOR TO THE INITIATION OF CONSTRUCTION.
6. THE EXISTING CRITICAL AIRCRAFT IS THE CESSNA CITATION.
7. THE ENTIRE AIRPORT PERIMETER IS FENCED. IN MOST CASES, THE FENCE FOLLOWS THE AIRPORT PROPERTY LINE.

ALL WEATHER WIND ROSE
12 MPH CROSSWIND COVERAGE = 96.6%



SOURCE: NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION FOR ROSEBURG AIRPORT
PERIOD: JAN. 1960 – DEC. 1964 (16 OBS/DAY)

NOTE: DATA SHOWN IS PERCENT OF TOTAL OBSERVED WINDS
(–) INDICATES DATA BUT LESS THAN 0.01%



RUNWAY END AND THRESHOLD COORDINATES/ELEVATIONS SEE NOTE 2	
RWY 16 END	**RWY 34 END**
LAT. 43°14'42.337"	LAT. 43°13'56.901"
LONG. 123°21'21.136"	LONG. 123°21'21.070"
ELEVATION 525'	ELEVATION 497'
RWY 16 698' DISPLACED THRESHOLD	**RWY 34 371' DISPLACED THRESHOLD**
LAT. 43°14'35.438"	LAT. 43°14'00.566"
LONG. 123°21'21.126"	LONG. 123°21'21.076"
ELEVATION 520'	ELEVATION 500'

RUNWAY DATA TABLE		
DESCRIPTION	EXISTING 16-34	
% EFFECTIVE GRADIENT	0.61	
% WIND COVERAGE (12 MPH)	96.9	
PAVEMENT TYPE	ASPHALT	
PAVEMENT STRENGTH (THOUSANDS)	42SW, 540W, 880TW	
RUNWAY LIGHTING	MEDIUM INTENSITY	
RUNWAY LENGTH/WIDTH	4,600' X 100'	
RUNWAY SAFETY AREA	5,200' X 150'	
RUNWAY OFA	5,410' X 500'	
RUNWAY	16	34
RUNWAY TYPE (SEE NOTE)	VISUAL	VISUAL
RUNWAY MARKINGS	NPI	NPI
PART 77 REQUIRED APPROACH	20:1	20:1
ACTUAL CLEAR APPROACH		
APPROACH AIDS/VISUAL AIDS	NONE	VASI
CRITICAL AIRCRAFT (ARC)	B-II	B-II
WINGSPAN	52'	52'
WEIGHT	14,300 lbs.	14,300 lbs.
APP. SPEED	99 KNOTS	99 KNOTS

DECLARED DISTANCES		
EXISTING		
	RW16	RW34
TORA	4600	4600
TODA	4600	4600
ASDA	4600	4600
LDA	3902	4229

LEGEND	
DESCRIPTION	EXISTING
AIRPORT PROPERTY LINE	
PAVEMENT (ASPHALT)	
ON-AIRPORT BUILDING	10
RUNWAY SAFETY AREA	-RSA-
RUNWAY OBJECT FREE AREA	--ROFA--
TAXIWAY OBJECT FREE AREA	--TOFA--
BUILDING RESTRICTION LINE	--BRL--
PRINCIPAL DRAINAGE FEATURES	
CONTOURS	00

EXISTING BUILDING/FACILITY LEGEND		
ID CODE	DESCRIPTION	OWNER
(1)	OFFICE BLDG.	PRIVATE
(2)	MAINT. HANGAR	CITY
(3)	MAINT. HANGAR	CITY
(4)	MAINT. HANGAR	CITY
(5)	T-HANGAR	CITY
(6)	T-HANGAR	CITY
(7)	T-HANGAR	CITY
(8)	T-HANGAR	CITY
(9)	CORP. HANGAR	PRIVATE
(10)	CORP. HANGAR	PRIVATE
(11)	CORP. HANGAR	PRIVATE
(12)	CORP. HANGAR	PRIVATE
(13)	CORP. HANGAR	PRIVATE
(14)	CORP. HANGAR	PRIVATE
(15)	CORP. HANGAR	PRIVATE
(16)	SHOP	CITY
(17)	ASOS	CITY
(18)	T-HANGAR	CITY
(19)	REILS	CITY
(20)	VASI	CITY
(21)	SEGMENTED CIRCLE	CITY
(22)	VEHICLE GATE	CITY
(23)	BEACON	CITY
(24)	FUEL TANKS	CITY
(25)	FUEL TANKS	PRIVATE
(26)	AUTO PARKING	CITY

AIRPORT DATA TABLE	
DESCRIPTION	EXISTING
AIRPORT REFERENCE CODE	ARC B-II, LARGE
AIRPORT TYPE	GEN. UTIL.-STAGE I
AIRPORT ELEVATION	525'
ARP COORDINATES	43°14'19.619"
	123°21'21.103"
MEAN MAX. TEMPERATURE	83°F
TERMINAL NAVAIDS	VOR/DME
TAXIWAY LIGHTING	MEDIUM INTENSITY
MAGNETIC DECLINATION	17.8°E
RATE OF DECLINATION CHANGE	52'
AIRPORT & TERMINAL CODE	RBG
NPIAS ROLE	GENERAL AVIATION

CAPACITY	
DESCRIPTION	EXISTING
ANNUAL SERVICE VOLUME	230,000
TIEDOWNS	72
HANGAR SPACES	30
ROTORCRAFT SPACES	5

SECTION, TOWNSHIP, RANGE:

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Planning • Engineering • Surveying
Landscape Architecture • Environmental Services

© WJH PACIFIC, 1994

ROSEBURG REGIONAL AIRPORT
MASTER PLAN UPDATE
EXISTING FACILITIES 1995

ROSEBURG/DOUGLAS COUNTY OREGON
SCALE: 1"=300'

PROJECT NO. 4-0451-0201
DRAWING FILE NAME: AROSFA03.DWG

DESIGNED BY: CBC CHECKED BY: C. Pearl
DRAWN BY: MCL/PEL PLOT DATE: 07/18/95

DATE	BY	REVISION	CK'D	APPR

SHEET 2/8
2

Vol. 3 - 0291

MAGNETIC DECLINATION 17.8° E

NORTH

GRAPHIC SCALE

300 0 150 300

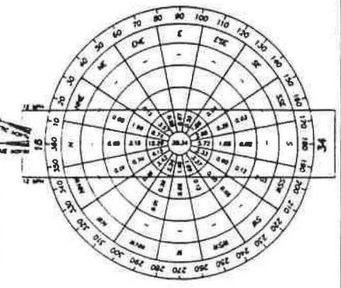
1"=300'

NOTES

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3. THE ROFA IS LIMITED TO 190' (VS. 300' ARC B-II STD.) BY STEWART PARKWAY. SEE ROFA MODIFICATION TO STANDARDS.
4. THE ARC B-II RSA IS SHOWN CENTERED ON THE EXISTING 100' WIDE RUNWAY. AT SUCH TIME AS THE RUNWAY IS NARROWED TO 75', THE RSA WILL REMAIN 150' WIDE BUT WILL BE SHIFTED AS NEEDED TO REMAIN CENTERED OVER THE RUNWAY. SEE MODIFICATION TO STANDARD #2.
5. EXTENSION OF THE RAMP TO THE SOUTH WILL REQUIRE RELOCATION OF THE ASOS UNIT AND PLACING EXISTING SURFACE DRAINAGE UNDERGROUND. SITING CRITERIA FOR RELOCATION OF THE ASOS ARE FOUND IN FAA ORDER 6560.20A. THE FAA SHOULD BE CONSULTED FOR APPROVAL PRIOR TO ESTABLISHMENT OF A FINAL SITE. LAYOUT OF THE RAMP WILL BE EVALUATED AT THE TIME OF CONSTRUCTION & WILL BE A FUNCTION OF WHETHER OR NOT THERE IS AN FBO ON THE CORNER OF STEWART PARKWAY AND AVIATION DRIVE AND THE NEED FOR HELICOPTER PARKING SPACES.
6. THE LAYOUT OF THE AIRLINE TERMINAL AND THE NORTH AIRCRAFT STORAGE HANGAR AREA IS CONCEPTUAL. THE ACTUAL DESIGN WILL BE DETERMINED AT SUCH TIME AS THE DEMAND EXISTS FOR THE DEVELOPMENT. CITY STREET PLANS CALL FOR BOWER ST./AVIATION DR. TO BE RE-ALIGNED AS SHOWN AND FOR SWEETBRIAR AVE. TO BE CUL-DE-SAC'D. THIS WILL ELIMINATE TWO 90° TURNS AND WILL IMPROVE TRAFFIC FLOW.
7. THE 425' BUILDING RESTRICTION LINE (BRL) IS BASED UPON ALLOWING A 25' HIGH BUILDING AT THE BRL & ASSUMES THE GROUND IS LEVEL WITH THE RUNWAY. HANGAR (18) IS LOCATED ON THE 425' BRL.
8. ALL CONSTRUCTION ON THE AIRPORT REQUIRES NOTIFICATION OF THE FAA. A FORM 7460-1 SHOULD BE FILED WITH THE FAA A MINIMUM OF 60 DAYS PRIOR TO THE INITIATION OF CONSTRUCTION.
9. THE EXISTING CRITICAL AIRCRAFT IS THE CESSNA CITATION. THE FUTURE CRITICAL AIRCRAFT IS BASED UPON UPON THE DORNIER 328 COMMUTER AIRLINER.
10. THE AIRPORT IS NOT SUBJECT TO FLOODING.
11. THE ENTIRE AIRPORT PERIMETER IS FENCED. IN MOST AREAS, THE FENCE FOLLOWS THE AIRPORT PROPERTY LINE.
12. PROPERTY TO BE ACQUIRED INCLUDES AN 8 ACRE PARCEL LOCATED ON THE NORTHWEST SIDE OF THE AIRPORT. THE PARCEL IS IDENTIFIED AS THE FUTURE LOCATION OF ADDITIONAL T-HANGARS AND A POSSIBLE AIRLINE TERMINAL.
13. THE CITY CURRENTLY OWNS ALL LAND WITHIN THE RPZ'S ON THE NORTH END OF THE AIRPORT. ON THE SOUTH END OF THE AIRPORT, THE CITY DOES NOT PRESENTLY OWN ALL PARCELS. THE FAA RECOMMENDS THAT ALL LAND WITHIN THE RPZ'S BE IN EITHER CITY OWNERSHIP OR SUBJECT TO AVIGATION EASEMENTS. A PROGRAM TO ACCOMPLISH ACQUISITION IN FEE SIMPLE OR OF AVIGATION EASEMENTS WILL BE UNDERTAKEN BY THE CITY.
14. BECAUSE OF RISING TERRAIN IN THE NORTHEAST CORNER OF THE AIRPORT, PLACEMENT OF BUILDINGS IN THAT AREA SHOULD BE CAREFULLY REVIEWED TO PREVENT OBSTRUCTIONS TO THE FAR PART 77 7:1 TRANSITIONAL SURFACE. ALSO SEE NOTE 8.
15. TWO SITES HAVE BEEN IDENTIFIED AS POTENTIAL ARFF FACILITY LOCATIONS. THE ASSUMPTION IS THAT THE ARFF FACILITY WOULD BE CO-LOCATED WITH A MUNICIPAL FIRE STATION. FINAL SITE SELECTION WILL BE DEPENDANT UPON FURTHER ANALYSIS OF MUNICIPAL STATION LOCATION NEEDS AND AIRPORT DEVELOPMENT PATTERNS. EITHER SITE HAS ADEQUATE SPACE AND WOULD ALLOW ON AIRFIELD RESPONSE TIMES TO MEET FAR PART 139 STANDARDS. STEPS MUST BE TAKEN TO ENSURE THAT EMERGENCY ACCESS ONTO THE AIRFIELD BY FIRE TRUCKS WILL BE UNIMPEDED BY PARKED VEHICLES OR AIRCRAFT.
16. TWO SITES-BOTH SHOWN AS NUMBER (36) HAVE BEEN IDENTIFIED AS SUITABLE LOCATIONS FOR FUTURE CITY OWNED UNDERGROUND FUEL STORAGE TANKS. SELECTION WILL BE BASED UPON AIRPORT DEVELOPMENT PATTERNS AT THE TIME TANK REPLACEMENT IS NECESSARY TO MEET EPA FUEL STORAGE TANK STANDARDS.
17. SHOULD THE OPPORTUNITY ARISE TO PURCHASE THE MANUFACTURED HOME PARK ADJACENT TO THE AIRPORT, THE CITY SHOULD EXPLORE THAT OPPORTUNITY. THE PROPERTY IS COMPREHENSIVE PLANNED AS INDUSTRIAL WHICH WOULD BE A MORE COMPATIBLE USE WITH THE AIRPORT.

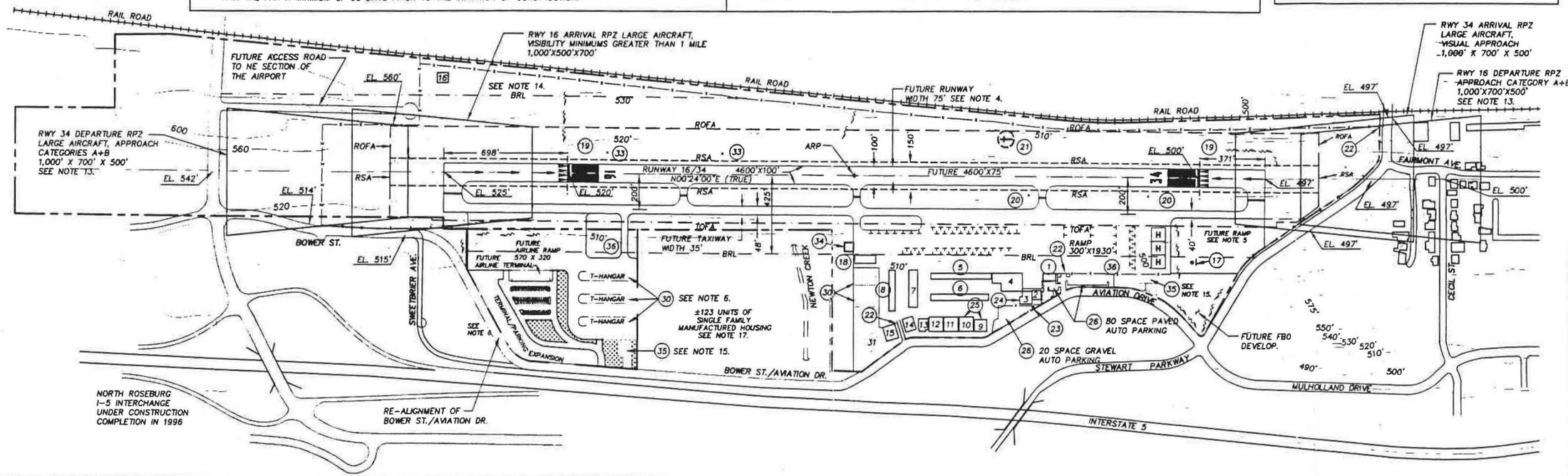
ALL WEATHER WIND ROSE

12 MPH CROSSWIND COVERAGE = 96.6%



SOURCE: NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION FOR ROSEBURG AIRPORT
PERIOD: JAN. 1960 - DEC. 1964 (16 OBS/DAY)

NOTE: DATA SHOWN IS PERCENT OF TOTAL OBSERVED WINDS
(-) INDICATES DATA BUT LESS THAN 0.01%



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LAT. 43°14'42.337"	LAT. 43°13'56.901"
LONG. 123°21'21.136"	LONG. 123°21'21.070"
ELEVATION 525'	ELEVATION 497'
RWY 16 698' DISPLACED THRESHOLD	RWY 34 371' DISPLACED THRESHOLD
LAT. 43°14'35.438"	LAT. 43°14'00.566"
LONG. 123°21'21.126"	LONG. 123°21'21.076"
ELEVATION 520'	ELEVATION 500'

RUNWAY DATA TABLE				
DESCRIPTION	EXISTING 16-34		FUTURE 16-34	
% EFFECTIVE GRADIENT	0.61		SAME	
% WIND COVERAGE (12 MPH)	96.6		SAME	
PAVEMENT TYPE	ASPHALT		SAME	
PAVEMENT STRENGTH (THOUSANDS)	42SW, 540W, 880TW		SAME	
RUNWAY LIGHTING	MEDIUM INTENSITY		SAME	
RUNWAY LENGTH/WIDTH	4,600' X 100'		4,600' X 75'	
RUNWAY SAFETY AREA	5,103' X 150'		5,200' X 150'	
RUNWAY OFA	5,090' X 500'		5,090' X 500'	
RUNWAY	16	34	16	34
RUNWAY TYPE (SEE NOTE)	VISUAL	VISUAL	NPI	VISUAL
RUNWAY MARKINGS	NPI	NPI	SAME	SAME
PART 77 REQUIRED APPROACH	20:1	20:1	34:1	20:1
ACTUAL CLEAR APPROACH	10:1	4:1	20:1	4:1
APPROACH AIDS/VISUAL AIDS	NONE	VASI	PAPI	PAPI
CRITICAL AIRCRAFT (ARC)	B-II	B-II	B-II	B-II
WINGSPAN	52'	52'	68'	68'
WEIGHT	14,300 lbs.	14,300 lbs.	30,200 lbs.	30,200 lbs.
APP. SPEED	99 KNOTS	99 KNOTS	110 KNOTS	110 KNOTS
TYPE	CESSNA CITATION II		DORNIER 328	

DECLARED DISTANCES				
	EXISTING		FUTURE	
	RW16	RW34	RW16	RW34
TORA	4600	4600	4600	4600
TODA	4600	4600	4600	4600
ASDA	4600	4600	4600	4600
LDA	3902	4229	3902	4229

AIRPORT DATA TABLE		
DESCRIPTION	EXISTING	FUTURE
AIRPORT REFERENCE CODE	ARC B-II, LARGE	ARC B-II, LARGE
AIRPORT TYPE	GEN. UTIL.-STAGE I	GEN. UTIL.-STAGE I
AIRPORT ELEVATION	525.0'	525.0'
ARP COORDINATES LAT.	43°14'19.619"	SAME
LONG.	123°21'21.103"	SAME
MEAN MAX. TEMPERATURE	83F	SAME
TERMINAL NAVAIDS	VOR/DME	VOR/DME+GPS
TAXIWAY LIGHTING	MEDIUM INTENSITY	SAME
MAGNETIC DECLINATION	17.8E	SAME
RATE OF DECLINATION CHANGE	52'	68'
AIRPORT & TERMINAL CODE	RBG	SAME
NPIAS ROLE	GENERAL AVIATION	SAME

CAPACITY		
DESCRIPTION	EXISTING	FUTURE
ANNUAL SERVICE VOLUME	230,000	SAME
TIEDOWNS	72	82
HANGAR SPACES	30	46
ROTORCRAFT SPACES	5	3

EXISTING BUILDING/FACILITY LEGEND		
ID CODE	DESCRIPTION	OWNER
(1)	OFFICE BLDG.	PRIVATE
(2)	MAINT. HANGAR	CITY
(3)	MAINT. HANGAR	CITY
(4)	MAINT. HANGAR	CITY
(5)	T-HANGAR	CITY
(6)	T-HANGAR	CITY
(7)	T-HANGAR	CITY
(8)	T-HANGAR	CITY
(9)	CORP. HANGAR	PRIVATE
(10)	CORP. HANGAR	PRIVATE
(11)	CORP. HANGAR	PRIVATE
(12)	CORP. HANGAR	PRIVATE
(13)	CORP. HANGAR	PRIVATE
(14)	CORP. HANGAR	PRIVATE
(15)	CORP. HANGAR	PRIVATE
(16)	SHOP	CITY
(17)	ASOS	CITY
(18)	T-HANGAR	CITY
(19)	REILS	CITY
(20)	VASI	CITY
(21)	SEGMENTED CIRCLE	CITY
(22)	VEHICLE GATE	CITY
(23)	BEACON	CITY
(24)	FUEL TANKS	CITY
(25)	FUEL TANKS	PRIVATE
(26)	AUTO PARKING	CITY

FUTURE BUILDING/FACILITY LEGEND		
ID CODE	DESCRIPTION	OWNER
(30)	T-HANGAR	CITY
(31)	CORP. HANGAR	PRIVATE
(32)	AIRLINE TERMINAL	CITY
(33)	PAPI OR VASI	CITY
(34)	WASH RACK	CITY
(35)	ARFF STATION	CITY
(36)	UNDERGROUND FUEL STORAGE	CITY
(37)	VEHICLE GATE	CITY

MODIFICATIONS TO STANDARDS

1. THE RUNWAY 16 RUNWAY OBJECT FREE AREA (ROFA) OFF THE SOUTH END OF THE RUNWAY IS 190' vs. THE ARC B-II STANDARD OF 300'. THE ROFA IS LIMITED BY STEWART PARKWAY, IT IS NOT PRACTICAL TO MOVE STEWART PARKWAY SO AN INDEFINITE MODIFICATION TO FAA STANDARDS IS RECOMMENDED.
2. THE RUNWAY/TAXIWAY SEPARATION DOES NOT MEET ARC B-II STANDARD OF 240'. THE RUNWAY AND TAXIWAY ARE 200' APART. AT SUCH TIME AS THE RUNWAY IS NARROWED AND/OR THE TAXIWAY ARE NARROWED (BOTH PRESENTLY EXCEED ARC B-II STANDARDS FOR WIDTH), EFFORTS SHOULD BE MADE TO SHIFT THE RUNWAY AND TAXIWAY CENTERLINES TO THE EAST AND WEST RESPECTIVELY. EVEN WITH THESE CHANGES THE SEPARATION WILL NOT MEET THE ARC B-II STANDARD OF 240' GIVEN THE LEVEL OF ACTIVITY AND THE FACT THAT THE VARIANCE IS ONLY 40', AN INDEFINITE MODIFICATION TO STANDARDS IS RECOMMENDED. WIDTH OF ANY RECONSTRUCTION OR OVERLAY OF THE RUNWAY OR TAXIWAY WILL BE DETERMINED AT THE TIME THE PROJECT IS UNDERTAKEN AND WILL BE DETERMINED ONLY AFTER CONSULTATION WITH THE FAA. SHIFTING THE RUNWAY OR TAXIWAY CENTERLINES MAY NOT BE POSSIBLE DUE TO EXISTING CROWNING OF THOSE PAVEMENTS OR ISSUES RELATING TO THE LOCATION OF EXISTING LIGHTING SYSTEMS.

LEGEND		
DESCRIPTION	EXISTING	FUTURE
AIRPORT PROPERTY LINE		
PAVEMENT (ASPHALT)		
LANDSCAPING		
ON-AIRPORT BUILDING	99	99
RUNWAY SAFETY AREA	RSA	RSA
RUNWAY OBJECT FREE AREA	ROFA	ROFA
TAXIWAY OBJECT FREE AREA	TOFA	TOFA
BUILDING RESTRICTION LINE	BRL	BRL
PRINCIPAL DRAINAGE FEATURES		
CONTOURS	00	

APPROVAL BLOCK

SIGNATURES

FEDERAL AVIATION ADMINISTRATION

SIGNATURE _____ TITLE _____ DATE _____

CITY OF ROSEBURG

SIGNATURE _____ TITLE: PUBLIC WORKS DIRECTOR _____ DATE _____

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ROSEBURG REGIONAL AIRPORT
MASTER PLAN UPDATE

AIRPORT LAYOUT PLAN

ROSEBURG/DOUGLAS OREGON

SCALE: 1"=300'

PROJECT NO. 4-0451-0201

DRAWING FILE NAME: AROSAL02.DWG

DESIGNED BY: CBC	CHECKED BY: C. Cowie
DRAWN BY: MCL/PEL	PLOT DATE: 07/18/95

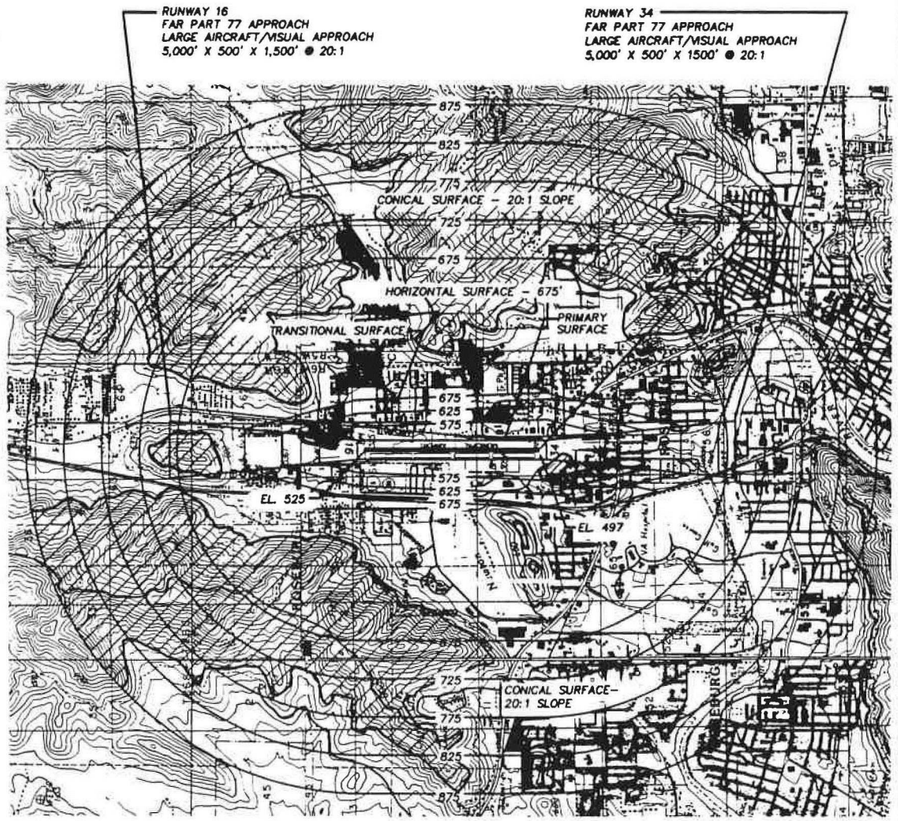
DATE	BY	REVISION	CK'D	APPR

SHEET 3/8
3

SECTION, TOWNSHIP, RANGE:

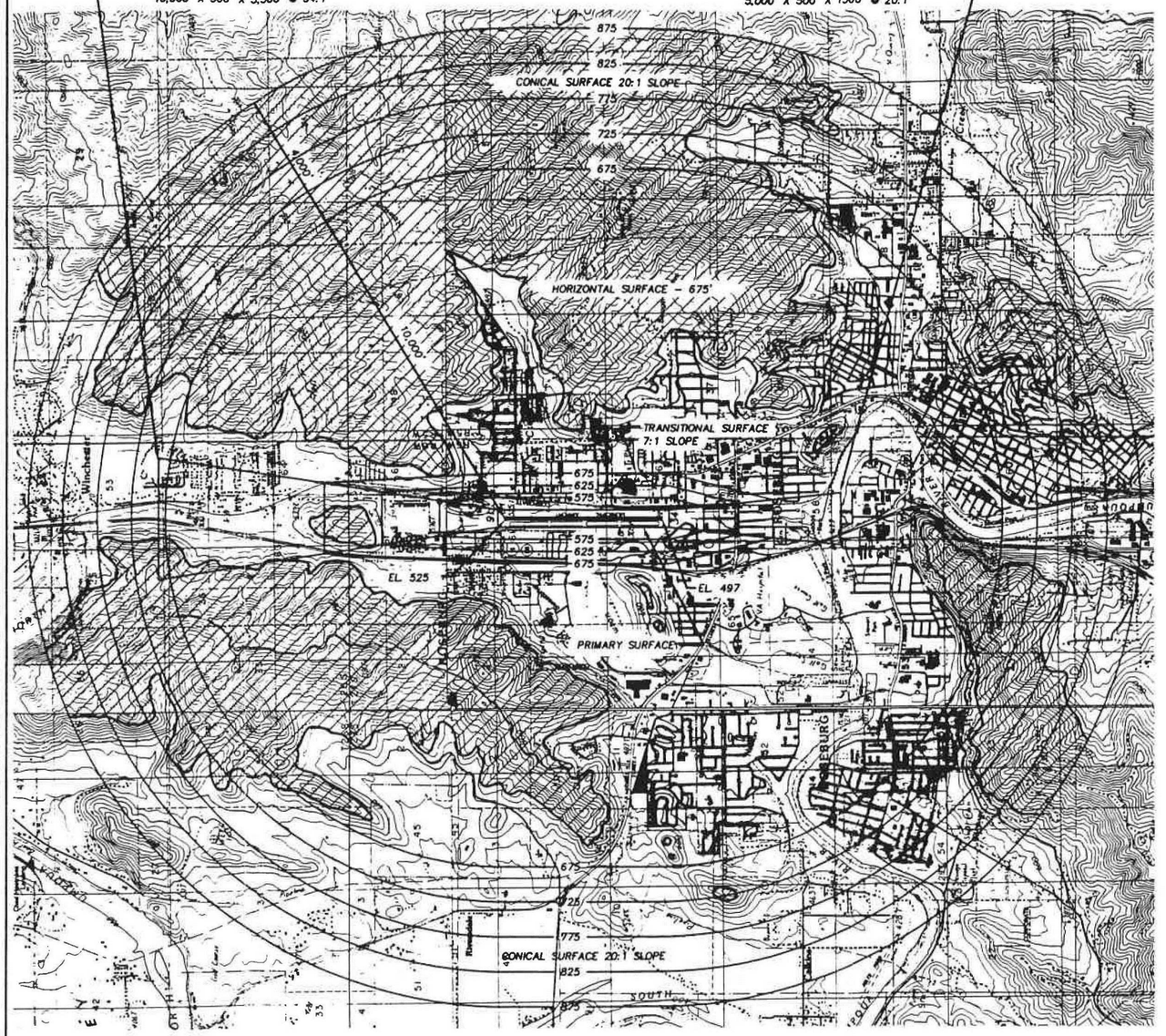
Vol. 3 - 0292

FAR PART 77 AIRSPACE*



*NOTE: AS OF 1995, THE ROSEBURG AIRPORT HAS A VOR–A CIRCLING TYPE NON–PRECISION INSTRUMENT APPROACH. THIS IS CONSIDERED A VISUAL APPROACH FOR THE PURPOSES OF DEFINING FAR PART 77 AIRSPACE SURFACES.

FUTURE FAR PART 77 AIRSPACE**



**NOTE: THE FUTURE FAR PART 77 AIRSPACE ASSUMES THE ESTABLISHMENT OF A STRAIGHT–IN NON–PRECISION INSTRUMENT APPROACH TO RUNWAY 16. AS OF 1995, NO IN–DEPTH DETAILED ANALYSIS OF THE FEASIBILITY OF SUCH AN APPROACH HAS BEEN CONDUCTED BY THE FAA.

SCALE: 1" = 2000'
2000 0 1000 2000 4000

NORTH

LEGEND:
PENETRATION OF FAR PART 77 AIRSPACE

NOTES:
1. FOR DESCRIPTION OF CLOSE IN OBSTRUCTIONS SEE RPZ PLANS AND PROFILE DRAWINGS
2. GROUND CONTOUR INFORMATION TAKEN FROM USGS 7.5 MINUTE QUADRANGLE MAPS–ROSEBURG EAST, ROSEBURG WEST, GARDEN VALLEY, AND WINCHESTER OREGON. VERTICAL DATUM=NATIONAL GEODETIC VERTICAL DATUM OF 1929, HORIZONTAL DATUM=1927 NORTH AMERICAN DATUM.
3. HEIGHT RESTRICTION ZONING IN EFFECT. CITY OF ROSEBURG ZONE CODE – SECTION 3.35.600 AIRPORT IMPACT OVERLAY ZONE DOUGLAS COUNTY ORDINANCE SECTION 3.1.080 OVERLAY DISTRICTS, SUB–SECTION 15.

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ROSEBURG REGIONAL AIRPORT
MASTER PLAN UPDATE
FAR PART 77 AIRSPACE
ROSEBURG, DOUGLAS OREGON
SCALE: 1"=2000'

PROJECT NO. 4–0451–0201
DRAWING FILE NAME: AROSPT04.DWG

DESIGNED BY: CBC CHECKED BY: C. Louis
DRAWN BY: MCL/PEL PLOT DATE: 07/18/95

DATE	BY	REVISION	CK'D	APPR

SHEET 4/8
4

SECTION, TOWNSHIP, RANGE:

RUNWAY 16 APPROACH OBSTRUCTION TABLE

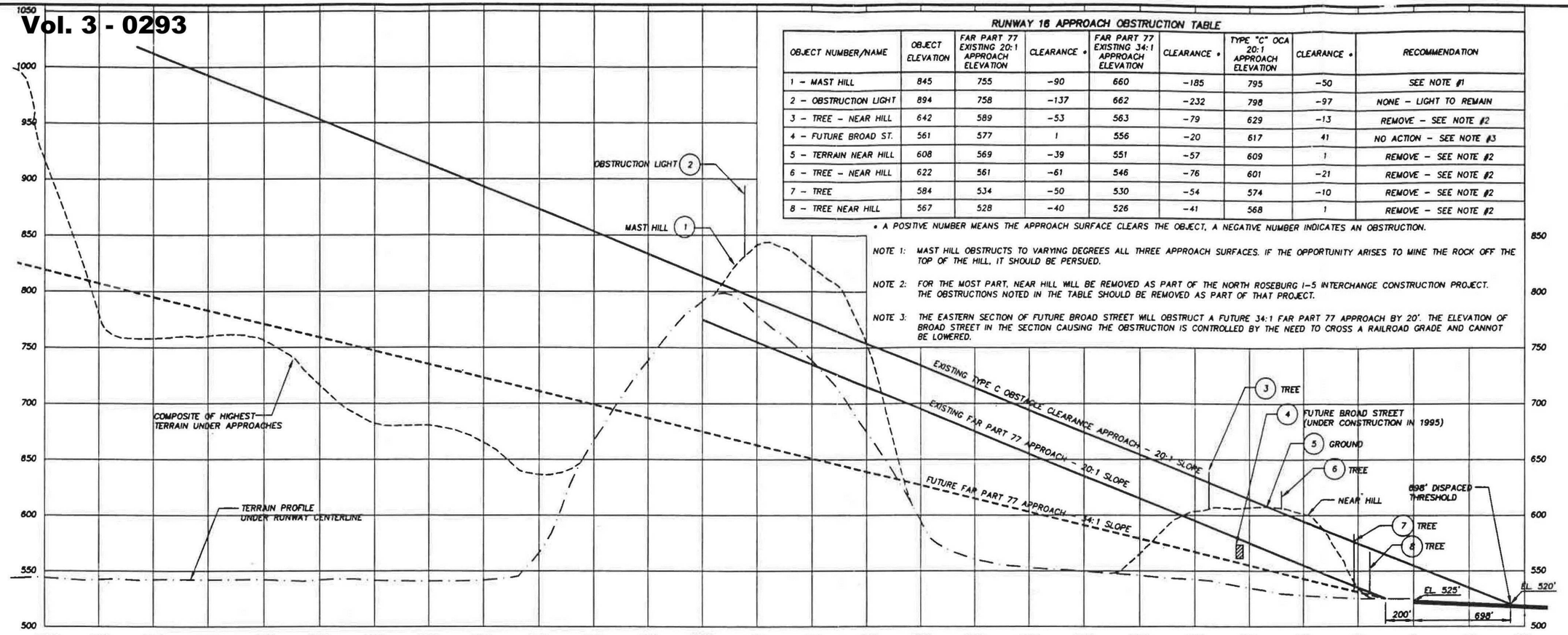
OBJECT NUMBER/NAME	OBJECT ELEVATION	FAR PART 77 EXISTING 20:1 APPROACH ELEVATION	CLEARANCE •	FAR PART 77 EXISTING 34:1 APPROACH ELEVATION	CLEARANCE •	TYPE "C" OCA 20:1 APPROACH ELEVATION	CLEARANCE •	RECOMMENDATION
1 – MAST HILL	845	755	-90	660	-185	795	-50	SEE NOTE #1
2 – OBSTRUCTION LIGHT	894	758	-137	662	-232	798	-97	NONE – LIGHT TO REMAIN
3 – TREE – NEAR HILL	642	589	-53	563	-79	629	-13	REMOVE – SEE NOTE #2
4 – FUTURE BROAD ST.	561	577	1	556	-20	617	41	NO ACTION – SEE NOTE #3
5 – TERRAIN NEAR HILL	608	569	-39	551	-57	609	1	REMOVE – SEE NOTE #2
6 – TREE – NEAR HILL	622	561	-61	546	-76	601	-21	REMOVE – SEE NOTE #2
7 – TREE	584	534	-50	530	-54	574	-10	REMOVE – SEE NOTE #2
8 – TREE NEAR HILL	567	528	-40	526	-41	568	1	REMOVE – SEE NOTE #2

• A POSITIVE NUMBER MEANS THE APPROACH SURFACE CLEARS THE OBJECT, A NEGATIVE NUMBER INDICATES AN OBSTRUCTION.

NOTE 1: MAST HILL OBSTRUCTS TO VARYING DEGREES ALL THREE APPROACH SURFACES. IF THE OPPORTUNITY ARISES TO MINE THE ROCK OFF THE TOP OF THE HILL, IT SHOULD BE PERSUED.

NOTE 2: FOR THE MOST PART, NEAR HILL WILL BE REMOVED AS PART OF THE NORTH ROSEBURG I-5 INTERCHANGE CONSTRUCTION PROJECT. THE OBSTRUCTIONS NOTED IN THE TABLE SHOULD BE REMOVED AS PART OF THAT PROJECT.

NOTE 3: THE EASTERN SECTION OF FUTURE BROAD STREET WILL OBSTRUCT A FUTURE 34:1 FAR PART 77 APPROACH BY 20'. THE ELEVATION OF BROAD STREET IN THE SECTION CAUSING THE OBSTRUCTION IS CONTROLLED BY THE NEED TO CROSS A RAILROAD GRADE AND CANNOT BE LOWERED.



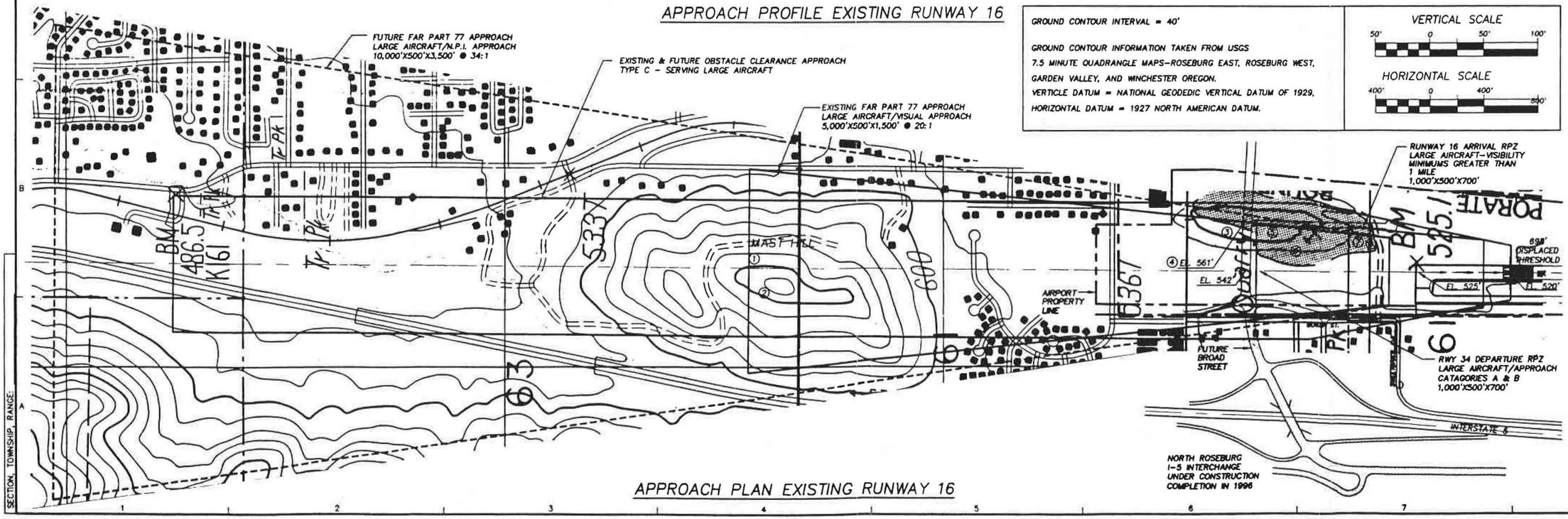
APPROACH PROFILE EXISTING RUNWAY 16

GROUND CONTOUR INTERVAL = 40'

GROUND CONTOUR INFORMATION TAKEN FROM USGS 7.5 MINUTE QUADRANGLE MAPS–ROSEBURG EAST, ROSEBURG WEST, GARDEN VALLEY, AND WINCHESTER OREGON.
VERTICLE DATUM = NATIONAL GEODEDIC VERTICAL DATUM OF 1929.
HORIZONTAL DATUM = 1927 NORTH AMERICAN DATUM.

VERTICAL SCALE
50' 0 50' 100'

HORIZONTAL SCALE
400' 0 400' 800'



APPROACH PLAN EXISTING RUNWAY 16

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ROSEBURG REGIONAL AIRPORT
PLAN & PROFILE
RUNWAY 16 APPROACH & RPZ
ROSEBURG, DOUGLAS OREGON
SCALE: AS SHOWN

PROJECT NO. 4-0451-0201
DRAWING FILE NAME: RBRNWY16.DWG

DESIGNED BY: CBC CHECKED BY: C Davis
DRAWN BY: JLM PLOT DATE: 3/3/95

DATE	BY	REVISION	CK'D	APPR

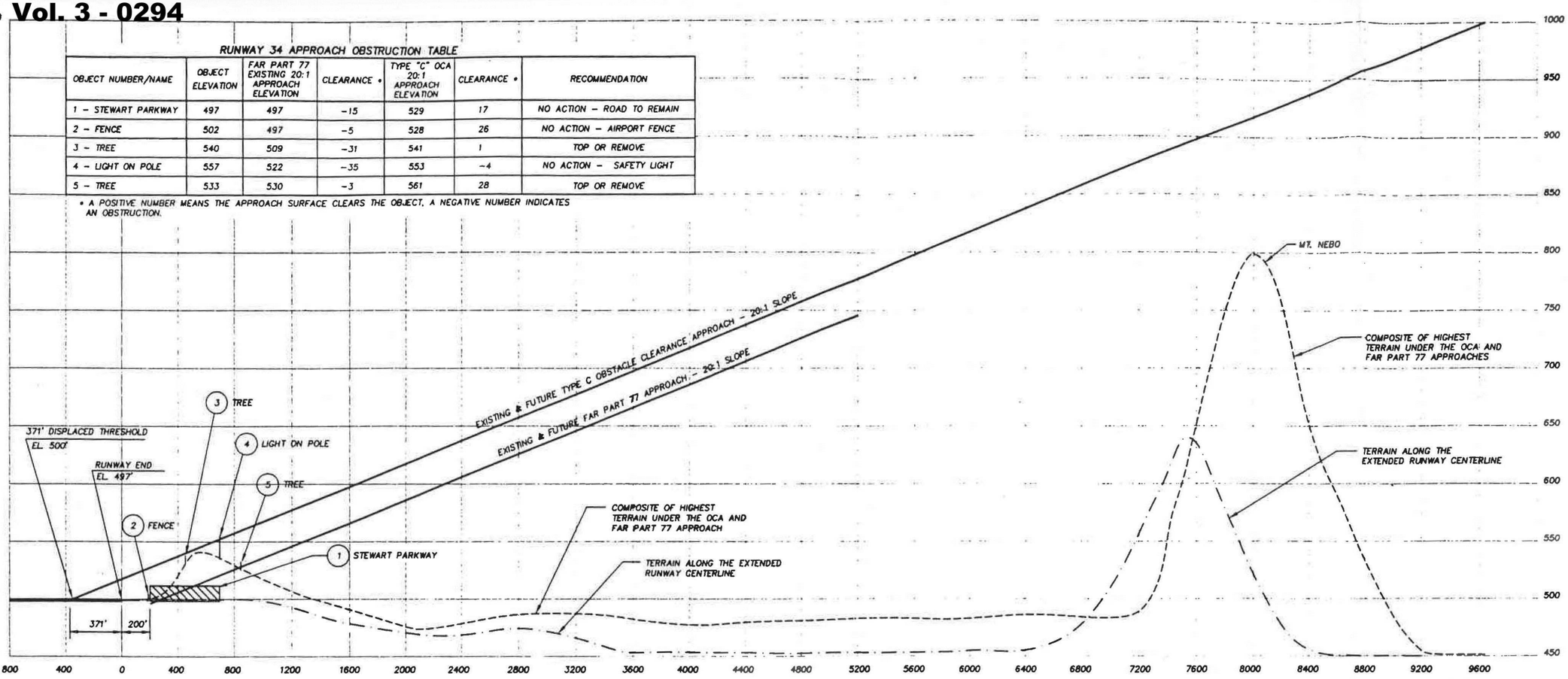
SHEET 5/8
5

Vol. 3 - 0294

RUNWAY 34 APPROACH OBSTRUCTION TABLE

OBJECT NUMBER/NAME	OBJECT ELEVATION	FAR PART 77 EXISTING 20:1 APPROACH ELEVATION	CLEARANCE *	TYPE "C" OCA 20:1 APPROACH ELEVATION	CLEARANCE *	RECOMMENDATION
1 – STEWART PARKWAY	497	497	–15	529	17	NO ACTION – ROAD TO REMAIN
2 – FENCE	502	497	–5	528	26	NO ACTION – AIRPORT FENCE
3 – TREE	540	509	–31	541	1	TOP OR REMOVE
4 – LIGHT ON POLE	557	522	–35	553	–4	NO ACTION – SAFETY LIGHT
5 – TREE	533	530	–3	561	28	TOP OR REMOVE

* A POSITIVE NUMBER MEANS THE APPROACH SURFACE CLEARS THE OBJECT, A NEGATIVE NUMBER INDICATES AN OBSTRUCTION.



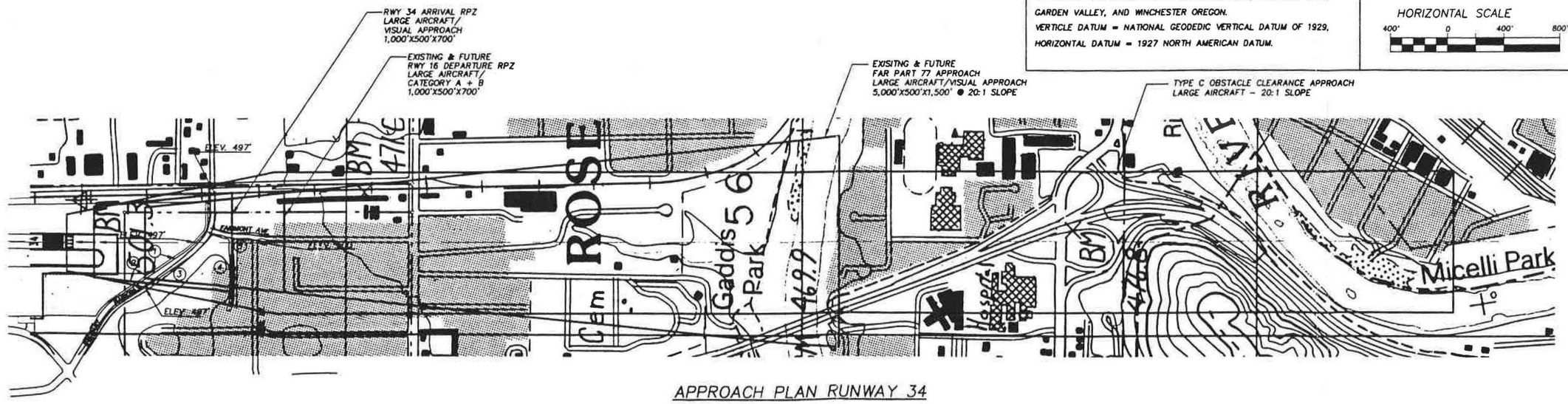
APPROACH PROFILE RUNWAY 34

GROUND CONTOUR INTERVAL = 40'

GROUND CONTOUR INFORMATION TAKEN FROM USGS 7.5 MINUTE QUADRANGLE MAPS–ROSEBURG EAST, ROSEBURG WEST, GARDEN VALLEY, AND WINCHESTER OREGON.
VERTICLE DATUM = NATIONAL GEODEDIC VERTICAL DATUM OF 1929.
HORIZONTAL DATUM = 1927 NORTH AMERICAN DATUM.

VERTICAL SCALE
50' 0 50' 100'

HORIZONTAL SCALE
400' 0 400' 800'



APPROACH PLAN RUNWAY 34

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ROSEBURG REGIONAL AIRPORT
PLAN & PROFILE
RUNWAY 34 APPROACH AND RPZ
ROSEBURG, DOUGLAS OREGON
SCALE: AS SHOWN
PROJECT NO. 4-0451-0201
DRAWING FILE NAME: RBRNWY34.DWG

DESIGNED BY: CBC	CHECKED BY: C. Couch
DRAWN BY: JLM	PLOT DATE: 3/6/95

DATE	BY	REVISION	CK'D	APPR.

SHEET 6/8
6

REFS:

SECTION, TOWNSHIP, RANGE:

MAGNETIC DECLINATION 17.8° E

NORTH

GRAPHIC SCALE

600 0 300 600

1"=600'

NOISE CONTOURS

55

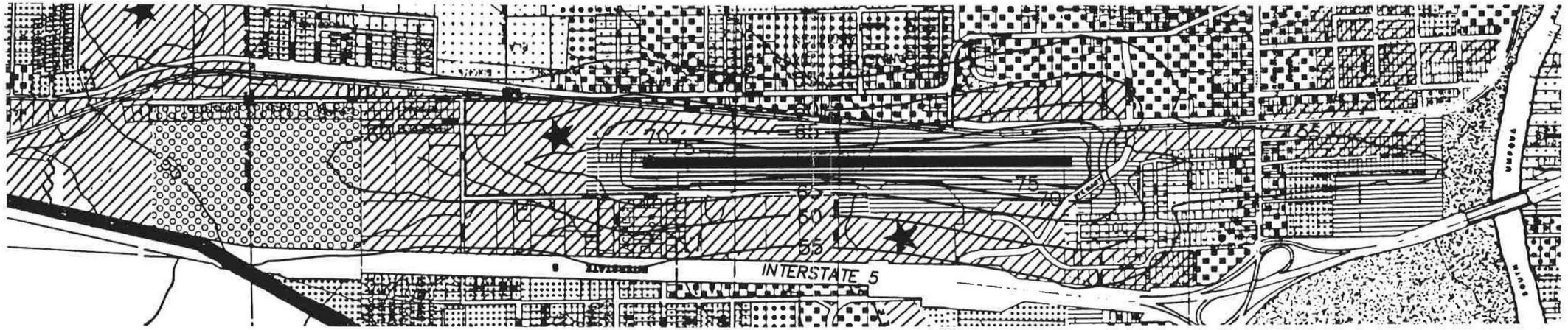
60

NOTE: THE NOISE CONTOURS ILLUSTRATED BELOW WERE GENERATED USING THE FAA'S INTEGRATED NOISE MODEL - VERSION 4.11.

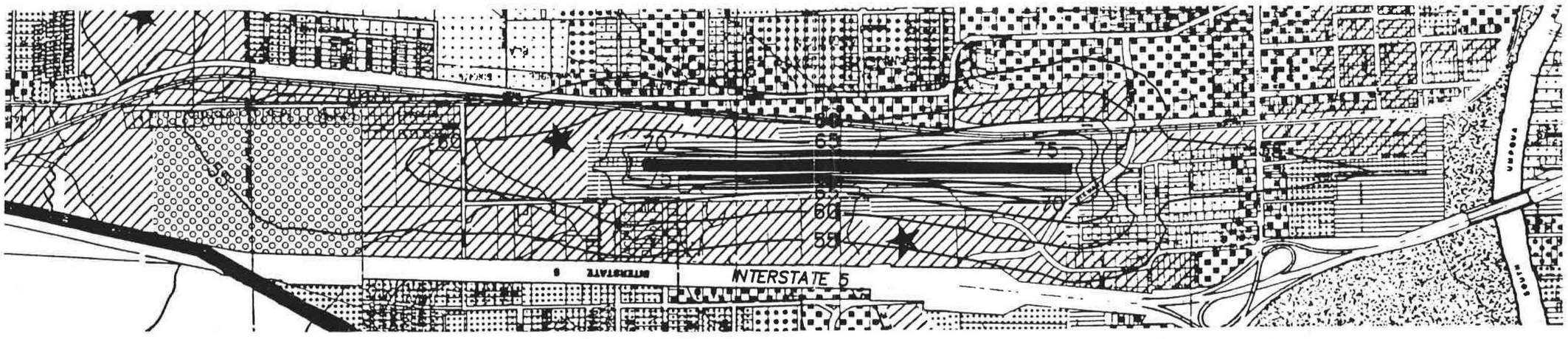
LAND USE DESIGNATIONS
ROSEBURG URBAN AREA COMPREHENSIVE PLAN

- LOW DENSITY RESIDENTIAL 1-6 DWELLINGS PER GROSS ACRE
- MED DENSITY RESIDENTIAL 7-14 DWELLINGS PER GROSS ACRE
- HIGH DENSITY RESIDENTIAL 15-40 DWELLINGS PER GROSS ACRE
- COMMERCIAL
- PROFESSIONAL OFFICE
- PUBLIC/SEMI-PUBLIC SCHOOLS, HOSPITALS, CHURCHES, ETC.
- INDUSTRIAL
- PARKS/OPEN SPACE AND HAZARD AREAS
- RESIDENTIAL/OPEN SPACE P.U.D./1 DWELLING PER 3 ACRES

2014 NOISE CONTOURS



1994 NOISE CONTOURS



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ROSEBURG REGIONAL AIRPORT
MASTER PLAN UPDATE
LAND USE PLAN AND NOISE CONTOURS
ROSEBURG, DOUGLAS OREGON
SCALE:

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PROJECT NO. 4-0451-0201
DRAWING FILE NAME: AROSNS07.DWG

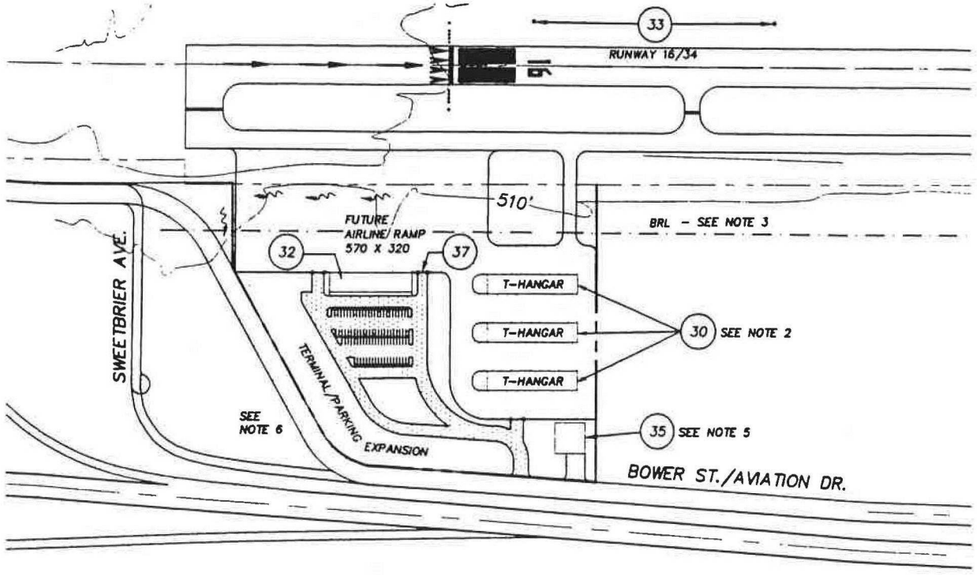
DESIGNED BY: CBC CHECKED BY: C. Cowles
DRAWN BY: MCL/PEL PLOT DATE: 3/6/95

DATE	BY	REVISION	CK'D	APPR

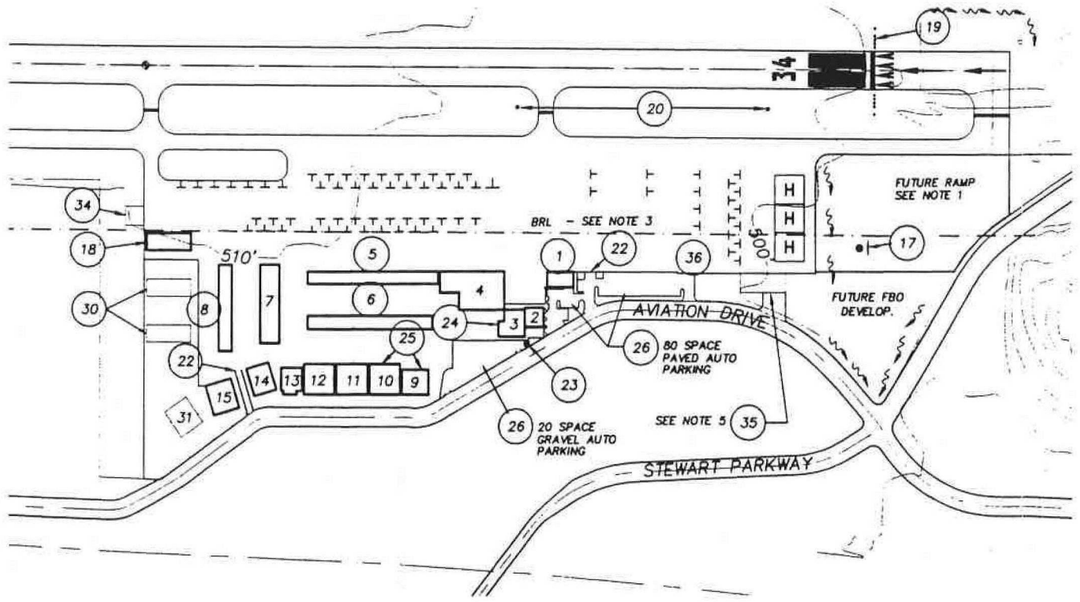
SHEET 7/8
7

SECTION, TOWNSHIP, RANGE:

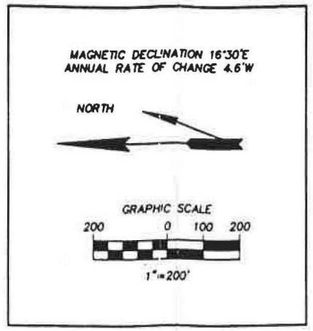
Vol. 3 - 0296



FUTURE NORTH TERMINAL AREA



EXISTING SOUTH TERMINAL AREA



LEGEND		
DESCRIPTION	EXISTING	FUTURE
PAVEMENT (ASPHALT)		
ON-AIRPORT BUILDING	99	99
BUILDING RESTRICTION LINE	BRL	BRL
PRINCIPAL DRAINAGE FEATURES		

EXISTING BUILDING/FACILITY LEGEND

ID CODE	DESCRIPTION	OWNER
1	OFFICE BLDG.	PRIVATE
2	MAINT. HANGAR	CITY
3	MAINT. HANGAR	CITY
4	MAINT. HANGAR	CITY
5	T-HANGAR	CITY
6	T-HANGAR	CITY
7	T-HANGAR	CITY
8	T-HANGAR	CITY
9	CORP. HANGAR	PRIVATE
10	CORP. HANGAR	PRIVATE
11	CORP. HANGAR	PRIVATE
12	CORP. HANGAR	PRIVATE
13	CORP. HANGAR	PRIVATE
14	CORP. HANGAR	PRIVATE
15	CORP. HANGAR	PRIVATE
17	ASOS	CITY
18	T-HANGAR	CITY
19	REILS	CITY
20	VASI	CITY
22	VEHICLE GATE	CITY
23	BEACON	CITY
24	FUEL TANKS	CITY
25	FUEL TANKS	PRIVATE
26	AUTO PARKING	CITY

FUTURE BUILDING LEGEND

ID CODE	DESCRIPTION	OWNER
30	T-HANGAR	CITY
31	CORP. HANGAR	PRIVATE
32	AIRLINE TERMINAL	CITY
33	PAPI OR VASI	CITY
34	WASH RACK	CITY
35	ARFF STATION	CITY
36	UNDERGROUND FUEL STORAGE	CITY
37	VEHICLE GATE	CITY

NOTES

1. EXTENSION OF THE RAMP TO THE SOUTH WILL REQUIRE RELOCATION OF THE ASOS UNIT AND PLACING EXISTING SURFACE DRAINAGE UNDERGROUND. SITING CRITERIA FOR RELOCATION OF THE ASOS ARE FOUND IN FAA ORDER 6560.20A. THE FAA SHOULD BE CONSULTED FOR APPROVAL PRIOR TO ESTABLISHMENT OF A FINAL SITE. LAYOUT OF THE RAMP WILL BE EVALUATED AT THE TIME OF CONSTRUCTION & WILL BE A FUNCTION OF WHETHER OR NOT THERE IS AN FBO ON THE CORNER OF STEWART PARKWAY AND AVIATION DRIVE AND THE NEED FOR HELICOPTER PARKING SPACES.
2. THE LAYOUT OF THE AIRLINE TERMINAL AND THE NORTH AIRCRAFT STORAGE HANGER AREA IS CONCEPTUAL. THE ACTUAL DESIGN WILL BE DETERMIND AT SUCH TIME AS THE DEMAND EXISTS FOR THE DEVELOPMENT. CITY STREET PLANS CALL FOR BOWER ST./AVIATION DR. TO BE RE-ALIGNED AS SHOWN FOR SWEETBRIAR AVE. TO BE CUL-DE-SAC'D. THIS WILL ELIMINATE 90° TURNS AND WILL IMPROVE TRAFFIC FLOW.
3. THE 425' BUILDING RESTRICTION LINE (BRL) IS BASED UPON ALLOWING A 25' HIGH BUILDING AT THE BRL & ASSUMES THE GROUND IS LEVEL WITH THE RUNWAY. HANGER (18) IS LOCATED ON THE 425' BRL.
4. ALL CONSTRUCTION ON THE AIRPORT REQUIRES NOTIFICATION OF THE FAA. A FORM 7460-1 SHOULD BE FILED WITH THE FAA A MINIMUM OF 60 DAYS PRIOR TO THE INITIATION OF CONSTRUCTION.
5. TWO SITES HAVE BEEN IDENTIFIED AS POTENTIAL ARFF FACILITY LOCATIONS. THE ASSUMPTION IS THAT THE ARFF FACILITY WOULD BE CO-LOCATED WITH A MUNICIPAL FIRE STATION. FINAL SITE SELECTION WILL BE DEPENDANT UPON FURTHER ANALYSIS OF MUNICIPAL STATION LOCATION NEEDS AND AIRPORT DEVELOPMENT PATTERNS. EITHER SITE HAS ADEQUATE SPACE AND WOULD ALLOW ON AIRFIELD RESPONSE TIMES TO MEET FAR PART 139 STANDARDS. STEPS MUST BE TAKEN TO ENSURE THAT EMERGENCY ACCESS ONTO THE AIRFIELD BY FIRE TRUCKS WILL BE UNIMPEDED BY PARKED VEHICLES OR AIRCRAFT.

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ROSEBURG REGIONAL AIRPORT
MASTER PLAN UPDATE
TERMINAL AREA PLAN

ROSEBURG, DOUGLAS COUNTY, OREGON
SCALE: 1"=200'

PROJECT NO. 4-0451-0201
DRAWING FILE NAME: AROSTA08.DWG

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DESIGNED BY: CBC CHECKED BY: C. Cook
DRAWN BY: MCL/PEL PLOT DATE: 07/18/95

DATE	BY	REVISION	CK'D	APPR

SHEET 8/8
8

SECTION, TOWNSHIP, RANGE:

CHAPTER 6
LAND USE

Chapter 6
LAND USE

OVERVIEW

This chapter analyzes land use issues associated with the Roseburg Regional Airport and the land use impacts of anticipated airport development. The land use discussion focuses on five areas:

- Airport zoning
- Noise impacts of the airport as measured by airport noise contours and land use compatibility
- North Roseburg Freeway Interchange Development Issues
- Airport overlay zoning to protect from creation of obstructions to air navigation
- Property acquisition needs
- Ownership/Control of Runway Protection Zones

In addition to the analysis provided within this Plan, additional guidance and reference information is available from the Oregon Department of Transportation Department - Aeronautics Division. In 1994, as part of the Oregon Aviation System Plan Update, a report titled the Oregon Airport Land Use Compatibility Guidelines was developed. The report provides excellent guidance on developing compatible land use in the vicinity of airports.

ON AIRPORT ZONING AND LAND USE

The airport is designed in the Roseburg Comprehensive Land Use Plan as a "public/semi-public" use, and is zoned "Airport District - AP". Within the AP zoning designation, the following uses are allowed outright subject to the general provisions and exceptions of the zone code:

- Aircraft sales, rental, repair, service, storage and flight schools
- Air cargo terminals
- Air passenger terminals
- Public and semi-public buildings, structures and uses essential for the operation of the airport
- Restaurant for airport clientele

The following conditional uses are allowed subject to the provisions of Section 2.060(1)(g):

- Offices (uses that do not conflict with the Airport Master Plan)
- Uses not specifically listed as permitted uses where the ongoing operation and use is directly dependent upon and directly associated with airport activities.

The code goes on to specify setbacks, height restrictions, underground utility wire placement, lighting standards, and a prohibition of building materials which might produce glare or electro-magnetic interference with airport operations. The zoning and land use controls afforded by the existing Comprehensive Plan and Zoning Ordinance are appropriate and provide the degree of control and regulation necessary to foster continued airport development.

NOISE IMPACTS

The generation of noise by aircraft at the Roseburg Regional Airport cannot be avoided. This section of the land use chapter will analyze the impact of noise on the surrounding community.

As part of the preparation of this Master Plan, noise contours were prepared using the FAA's Integrated Noise Model 4.11 (copies of the input case are included in the appendix of this Plan). The noise contours are an indication of the intensity of noise generated by the airport on the surrounding community and are measured in a noise descriptor called the Ldn which stands for "Level - day and night". It provides an average noise level for an entire year for a particular location. The higher the Ldn level, the louder the average noise. The model inputs include not only the number of take offs and landings, but the type of aircraft and where they fly (the actual flight patterns). The model also adds a penalty for night time flying (from 10pm to 7am) since noise during this time period is more intrusive than during the day.

Aircraft noise contours have been prepared for existing 1994 conditions and for the 20-year forecast period of this plan 2014. Those contours are presented in Figure 6-1 and are shown superimposed upon the Roseburg Urban Area Comprehensive Plan map for the same area. This makes identification of areas of noise impact possible.

Noise Compatibility Guidelines. The FAA guidelines for noise impact state that where noise levels are below the 65 Ldn level, all uses, including residential areas, are compatible. Between 65-75 Ldn, residential uses are generally unacceptable and, if allowed, would require special sound insulation techniques to mitigate the impacts. The Ldn is based on an energy summation of the aggregate noise environment as measured in A-weighted decibel units. In simple terms, any point on the 65 Ldn noise contour should be exposed to the same level of noise as any other point on that contour. For the FAA, the 65 Ldn contour is the dividing line between areas which are suitable for residential land use and those areas which are not.

Vol. 3 - 0300

MAGNETIC DECLINATION 17.8° E

NORTH

GRAPHIC SCALE

600 0 300 600

1"=600'

NOISE CONTOURS

55

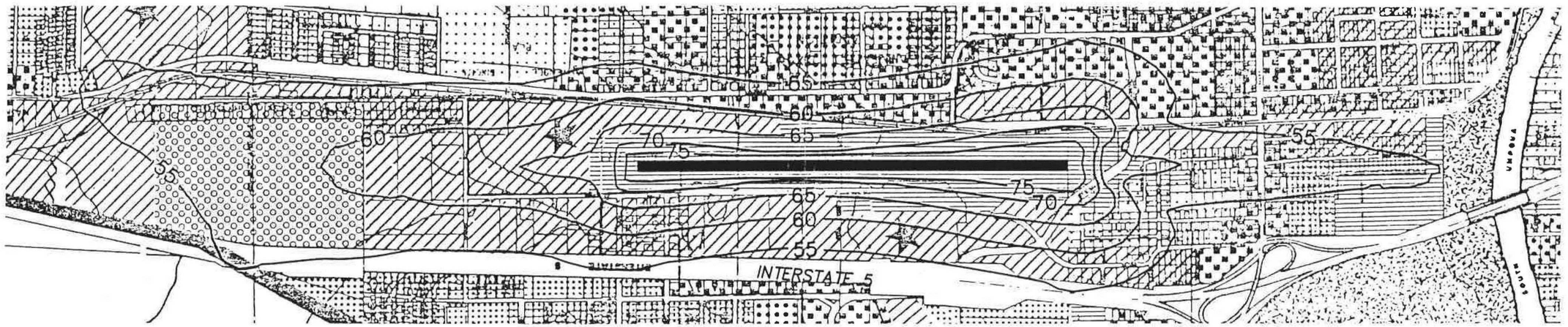
60

NOTE: THE NOISE CONTOURS ILLUSTRATED BELOW WERE GENERATED USING THE FAA'S INTEGRATED NOISE MODEL – VERSION 4.11.

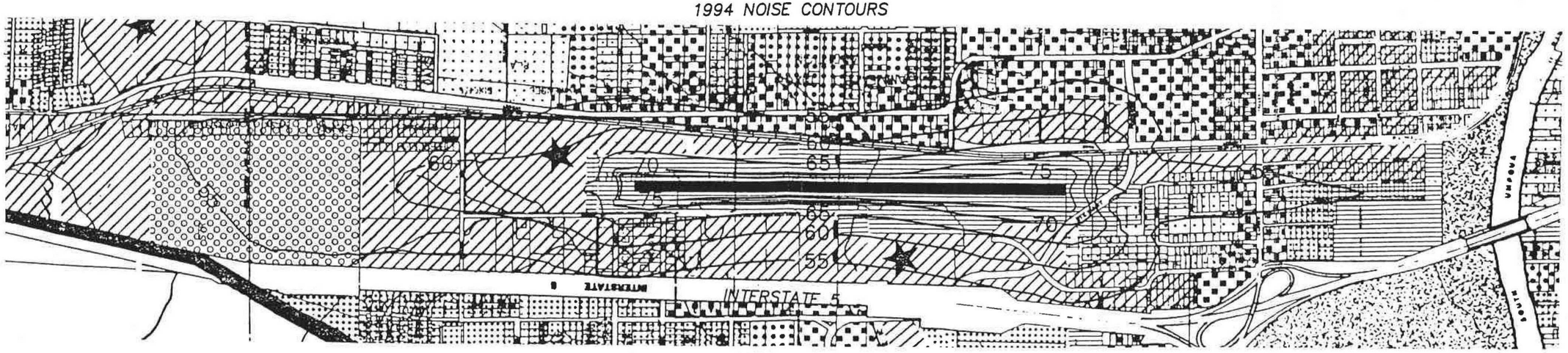
LAND USE DESIGNATIONS ROSEBURG URBAN AREA COMPREHENSIVE PLAN

- LOW DENSITY RESIDENTIAL 1–6 DWELLINGS PER GROSS ACRE
- MED DENSITY RESIDENTIAL 7–14 DWELLINGS PER GROSS ACRE
- HIGH DENSITY RESIDENTIAL 15–40 DWELLINGS PER GROSS ACRE
- COMMERCIAL
- PROFESSIONAL OFFICE
- PUBLIC/SEMI–PUBLIC SCHOOLS, HOSPITALS, CHURCHES, ETC.
- INDUSTRIAL
- PARKS/OPEN SPACE AND HAZARD AREAS
- RESIDENTIAL/OPEN SPACE P.U.D./1 DWELLING PER 3 ACRES

2014 NOISE CONTOURS



1994 NOISE CONTOURS



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Landscape Architecture • Environmental Services

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ROSEBURG REGIONAL AIRPORT
MASTER PLAN UPDATE
LAND USE PLAN AND
NOISE CONTOURS

ROSEBURG/JACKSON COUNTY, OREGON

SCALE:

PROJECT NO. 4-0451-0201

DRAWING FILE NAME: AROSNS07.DWG

DESIGNED BY: CBC CHECKED BY:
DRAWN BY: MCL/PEL PLOT DATE: 3/6/95

DATE	BY	REVISION	CK'D	APPR

Figure 6-1

SECTION, TOWNSHIP, RANGE:

The State of Oregon, through its Oregon Administrative Rules (OAR's), Chapter 340 - Division 35, has established State standards which are similar to the national FAA standards. The State standard indicates that in rural areas, noise impacts as low as 55 Ldn may have an impact on residential land uses because of the quieter background levels often found in rural areas. For the Roseburg Airport land use analysis, 55 and 60 Ldn noise contours were also prepared in an effort to define areas of potential impact.

1994 Noise Contours and Land Use Compatibility. As noted previously, Figure 6-1 illustrates the Roseburg Comprehensive Plan designation for the areas around the airport which will be impacted by noise. In 1994, the 65 Ldn contour falls largely on airport property. The southwest corner of the 65 Ldn contour touches a small area which is designated low density residential on the comprehensive plan map. A review of the location of the homes within that area indicates that the homes fall outside the 65 Ldn boundary and would therefore not be considered impacted according to the FAA standard. Another factor to consider when evaluating the noise impacts in this and other areas around the airport is the proximity to other significant noise sources. Interstate 5 is located immediately to the west of the airport, the eastern boundary of the airport is a main line railroad, and the southern boundary of the airport is a city major arterial. All of these uses contribute to the ambient noise level in the area and would, in effect, "compete" with the airport. In talking with the airport operators, there is no evidence of a significant noise problem at the Roseburg Airport, so no action is recommended at this time for noise mitigation purposes.

For the most part, the 60 and 55 Ldn contours extend out into areas zoned commercial and industrial. The most notable exception is a large area of land encompassing Mast Hill to the north of the airport. This area is designated residential/open space. Because of the topography, it is unlikely that the hill will develop into anything other than a very low density residential, if it is developed at all. Given the competing noise sources previously noted, it is unlikely that low density residential development would present a noise conflict problem for the airport.

2014 Noise Contours and Land Use Compatibility. The noise contours for 2014 reflect growth over the 1994 contours as a result of the anticipated increase in the number of aircraft operations. As with the 1994 contours, for the most part they fall on land which is zoned compatibly with the levels of noise generated, given the ambient noise levels to be found in the community. In addition, some of the areas to the south of the airport which fall within the 55 Ldn noise contour are actually shielded from the airport by topography. Accurate prediction of noise levels in that area would require complex and costly analysis which is not warranted at this time.

Non-Conforming Uses. Although the Comprehensive Plan land use designations in the vicinity of the airport are compatible with the airport (ie: mostly industrial and commercial land uses) there are significant pockets of non-conforming uses. The most obvious example is the manufactured home park located on the airport's western boundary, and another large manufactured home development located to the northwest of the airport. At the

present time, these areas have not presented problems for the airport. In the future, this may not be the case. Future land development should be allowed only in compliance with the Comprehensive Plan Designations in the area to prevent further development of non-conforming and potentially conflicting uses with the airport.

Oregon Airport Land Use Compatibility. An additional resource for information concerning airport land use compatibility can be found in the report Oregon Land Use Compatibility. The report was prepared in 1994 as part of the Oregon Aviation System Plan Update and is available through the Oregon Department of Transportation - Aeronautics Division.

NORTH ROSEBURG/I5 FREEWAY INTERCHANGE DEVELOPMENT

As of 1994, construction was started on a new freeway interchange on the north end of the airport providing access to I5 and extension of Broad Street. Completion of the new interchange and the associated access roads is anticipated sometime in 1996. Construction of the interchange presents a significant development opportunity for land in the vicinity of the interchange and the access roads. Much of the vacant and developable land is owned by the City of Roseburg. The development in the vicinity of the interchange will be influenced by the following airport related issues:

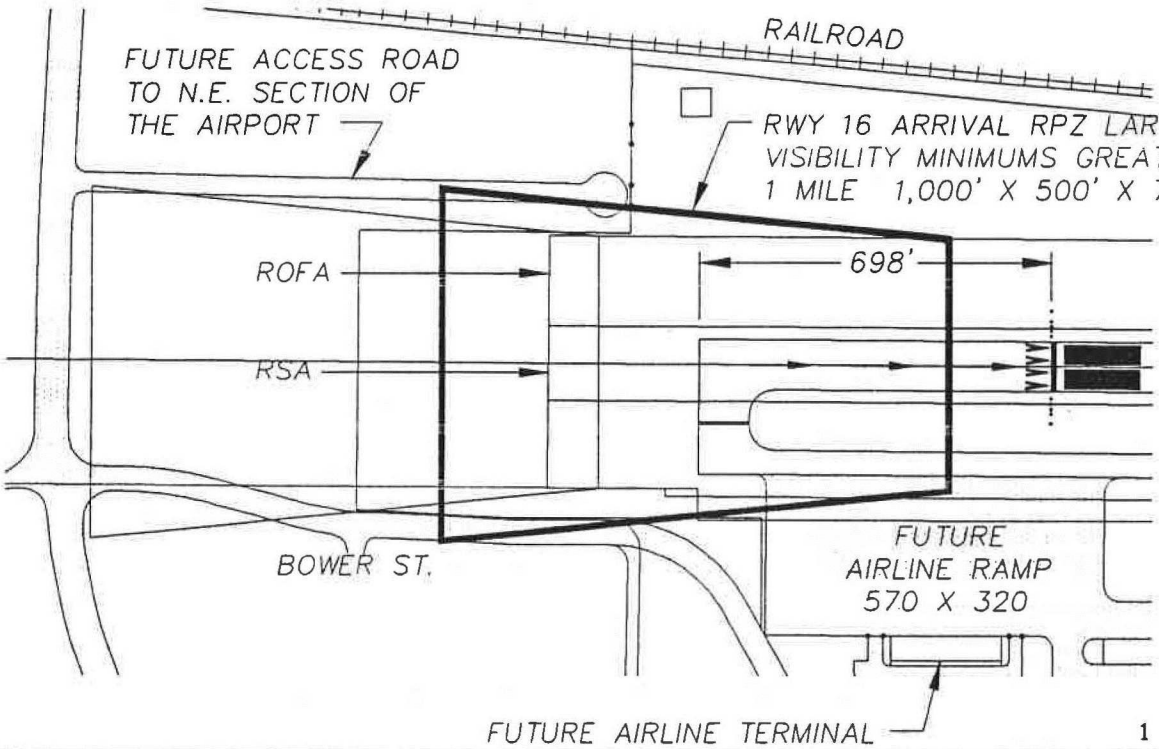
Noise. No residential development should be allowed within the 55 or 60 Ldn contour unless the housing units are specifically designed with sound insulation certifications which attest to a high degree of sound attenuation. This would include hotel or motel units.

No residential development should be allowed within the 65 Ldn noise contour.

Runway Protection Zones. Figure 6-2 depicts a section of the Airport Layout Plan which illustrates the existing and future runway protection zones for runway 16. Advisory Circular AC 150/5300-13, paragraph 212 provides the following guidance on uses allowed with RPZs:

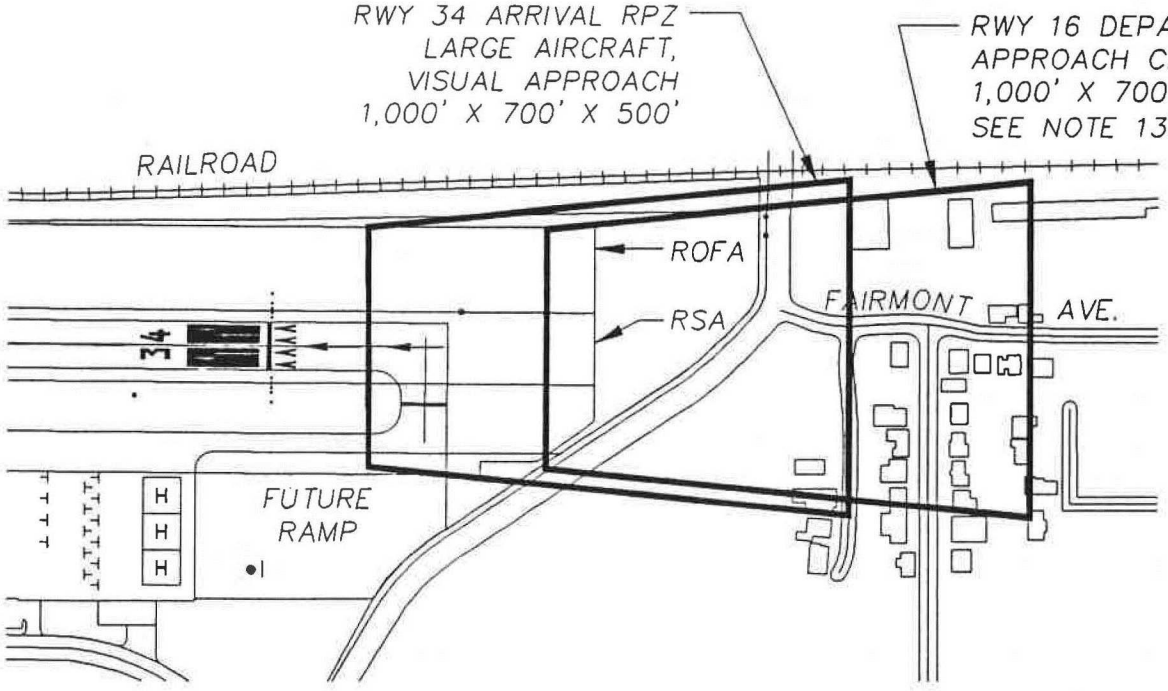
> Permitted uses include: golf courses (but not club houses), agricultural operations (other than forestry or livestock farms). Auto parking is permitted (although discouraged), provided the parking facilities and any associated appurtenances are located outside the object free area extension. Although not expressly addressed, a road would be a permitted use. Care would have to be exercised that utility poles not obstruct the airspace for the runway.

RUNWAY 16 RUNWAY PROTECTION ZONES (RPZ's)



SCALE:
1 INCH = 400 FT.

RUNWAY 34 RUNWAY PROTECTION ZONES (RPZ's)



SCALE:
1 INCH = 400 FT.

W&H PACIFIC

Runway Protection Zones

Roseburg Regional Airport
Roseburg, Oregon

Figure 6-2

JOB NO. 6-0816-0101

ACAD FILE:FIG6-2.DWG

Prohibited uses include: residences (including hotels or motels) or places of public assembly (churches, schools, hospitals, office buildings, shopping centers, and other uses with similar concentrations of persons typify places of public assembly).

If possible, the RPZ should be left undeveloped and should remain in the control of the City.

Height Restrictions. Any development off the north end of the airport should be carefully reviewed in light of the existing 20:1 approach and a possible future 34:1 approach surface to runway 16. The FAR Part 77 approach surfaces (illustrated on Sheet 5, Chapter 5) begin at a point 200' from the end of the existing runway at an elevation of 525' (the same elevation as the end of the runway) and rise at a ratio of 20:1 for the existing visual approach and 34:1 for the possible future non-precision instrument approach. Buildings and terrain which encroach into these approach surfaces may result in the approach minimums being raised to a point where the approach would provide little benefit over the existing circling approach. It is possible, however, that the surrounding terrain may be the limiting factor. A detailed analysis by the FAA will be necessary to determine whether the existing terrain or possible new development in the area of the interchange would be the controlling factor. Such an analysis is beyond the scope of this master plan update.

AIRPORT OVERLAY ZONES

Section 3.35.600 of The City of Roseburg Zoning Code establishes an airport overlay zone. The overlay zone protects the airport by restricting the height of structures or trees within the FAA Part 77 Imaginary Surfaces. The zone also prevents any use of the land which would create electrical interference with radio communications at the airport or any lights or lighting which would cause glare or impair the visibility in the vicinity of the airport or otherwise endanger aircraft. This is fairly standard language for such an ordinance and has proven effective in protecting airports.

The zone should be updated to include the new FAR Part 77 Surfaces established by the possible future non-precision instrument approach. While this will greatly expand the size of the overlay zone, it will not significantly change the enforcement of the ordinance.

Specific changes should include:

- Change any references to "Clear Zones" to the new term - "Runway Protection Zones"
- Define the approach surfaces for each runway specifically with VFR dimensions for runway 34 (5,000' x 500' x 1,500' at 20:1 slope) and non-precision instrument dimensions for runway 16 (10,000' x 500' x 3,500' at 34:1 slope)
- The horizontal surface will extend 10,000 feet (vs. existing 5,000')

Multi-Family Housing Restriction. Section 3.d. Use and Height Limits states that within the airport approach zone, no multifamily should be permitted within 3,500' extending from the end of the runway. In order to provide a greater margin of safety, the City should consider extending this distance to 5,000. This would correspond to a full VFR approach dimension and would reduce the likelihood of any type of multifamily housing being built within 5,000' of the end of the runway.

Avigation Easements. Another recommended action to protect the airport would be the requirement of avigation easements for any development which occurs under the FAR Part 77 Approach Surfaces. This requirement could be added to the existing Airport Overlay Zone section of the zoning ordinance. The easements would be dedicated to the City and would attach to the land providing notice to anyone wanting to purchase a parcel that certain development restrictions exist. A sample easement is included in the appendix of this plan. The typical conditions of an easement include:

- Specific height restrictions for the parcel
- The "right to flight" over the parcel
- A restriction against the creation of light, smoke, or electrical interference which would impair or endanger aircraft flying over the parcel

The features of the easement are similar to those of the airport overlay zone.

OWNERSHIP/CONTROL OF RUNWAY PROTECTION ZONES

The FAA desires that the airport operator own or exercise some control through easements all land within runway protection zones (RPZ's). On the north end of the airport, the City owns all land within both the arrival and departure RPZ's. On the south end of the airport, there are approximately 21 single family homes which fall within the runway 16 departure RPZ. There are also two businesses, one providing storage and the other engaged in electric motor repair. The City should consider a program of either purchasing (as they come on the market) the homes and businesses in fee simple or acquiring avigation easements to achieve control over all land within the runway 16 RPZ (the motor repair has already dedicated an avigation easement to the City as a condition of developing on that site). This would bring the City into compliance with the intent to control development and land uses within the RPZ's.

CHAPTER 7
FINANCIAL PLAN

Chapter 7
FINANCIAL PLAN

INTRODUCTION

The purpose of this chapter is to assess the financial feasibility of the improvements recommended by this plan and to integrate the development priorities and timing with the budget and financial resources.

Development projects fall within one of three phases. Phase I covers the first five years from 1995 to 1999 and is the most detailed. Phase II covers the next five years from 2000 to 2004. Phase III covers the next ten years from 2005 through the year 2014. During Phase I, projects are scheduled for specific years. In Phases II and III, projects are only identified by phase.

To evaluate the economic feasibility of the phased development program, a five year cash flow projection for the Roseburg Regional Airport was developed. In addition, other methods of financing capital improvements were evaluated.

The recommended alternatives and cash flow projections are based on the projected airport activity levels developed in the Forecast Chapter and discussions with the City Finance Director. These activity levels could vary from the forecast. If the activity levels at the airport vary significantly from projections, the development schedule may need to be modified.

SCHEDULE OF IMPROVEMENTS AND COSTS

The phased development plan outlines expenditures for the Roseburg Regional Airport. The development projects planned as part of the Master Plan Update are described below on the following pages and also shown on Table 7-1.

Table 7-1 lists the projects, scheduling, and estimated total cost in 1995 dollars. The level of eligibility for federal and state funds, as well as the local contribution is also provided within the Table.

The projects are graphically shown in Figure 7-1.

Roseburg Regional Airport - PHASED DEVELOPMENT PLAN PROJECT LIST

Table 7-1

	Project	Total Cost*	Funding Source FAA**	Local	Phase I 1995	1996	1997	1998	1999	Phase II 2000-2004	Phase III 2005-2014
	Phase I										
1	North End Fence Relocation	$9,625	$8,663	$866	$9,625						
2	Property Acquisition - W. Side - 8 Acres	$1,400,000	$1,260,000	$126,000	$1,400,000						
3	Electric Auto Gate - Corp. Hangar Area	$3,000		$3,000	$3,000						
4	PAPI on Runway 16	$8,000	$7,200	$800		$8,000					
5	Construct 10 T-Hangars	$150,000		$150,000		$150,000					
6	Pave Gravel Parking Lot by Rotating Beacon	$23,250	$20,925	$1,046			$23,250				
7	Overlay/Restrip Office/Term. Bld Ramp	$127,658	$114,892	$5,745			$127,658				
8	Overlay/Restripe South T-Hangar/FBO Ramp	$238,293	$214,464	$10,723			$238,293				
9	Construct 6 Replacement T-Hangars	$100,000		$100,000				$100,000			
	Replace City Owned Fuel Storage Tanks	$50,000		$50,000					$50,000		
	Phase II										
11	North T-Hangar Development Taxiway	$288,120	$259,308	$28,812						$288,120	
12	Runway Slurry Seal/Restriping	$61,086	$54,977	$5,498						$61,086	
13	Construct 6 Replacement T-Hangars	$100,000		$100,000						$100,000	
14	Taxiway Slurry Seal/Restriping	$20,373	$18,336	$1,834						$20,373	
15	Develop South Ramp	$359,063	$323,157	$32,316						$359,063	
	Replace Obstruction Light - Mast Hill	$1,000	$900	$90						$1,000	
	Replace Obstruction Light - Mt. Nebo	$1,000	$900	$90						$1,000	
	Phase III										
18	Runway Overlay	$283,768	$255,391	$25,539							$283,768
19	Taxiway Overlay	$181,221	$163,099	$16,310							$181,221
20	Replace Rotating Beacon	$8,000	$7,200	$720							$8,000
21	Replace Rwy 34 VASI with PAPI	$8,000	$7,200	$720							$8,000
22	Office/Term. Bld Ramp Slurry Seal/Restripe	$23,537	$21,183	$2,118							$23,537
23	So. T-Hangar/FBO Ramp Slurry Seal/Restrip	$40,303	$36,273	$3,627							$40,303
24	Lower Mast Hill	$500,000	$450,000	$45,000							$500,000
25	Airline Terminal Development	$1,415,050	$707,525	$707,525							$1,415,050
26	Fire Station Development	$400,000	$200,000	$200,000							$400,000
	Purchase Fire Truck	$100,000	$90,000	$10,000							$100,000
28	Mobile Home Park Acquisition	$3,000,000	$2,700,000	$270,000							$3,000,000
	Totals =	$8,900,347	$6,921,592	$1,898,379	$1,412,625	$158,000	$389,201	$100,000	$50,000	$830,642	$5,959,879

* All COSTS ESTIMATED IN 1995 DOLLARS.

Filed:RBCIP.WQ1 02-Aug-95

** ELIGIBILITY FOR FAA FUNDING DOES NOT INSURE THAT FUNDS WILL BE AVAILABLE OR GRANTED FOR THE PROJECT.

MAGNETIC DECLINATION 17.8° E

NORTH

GRAPHIC SCALE

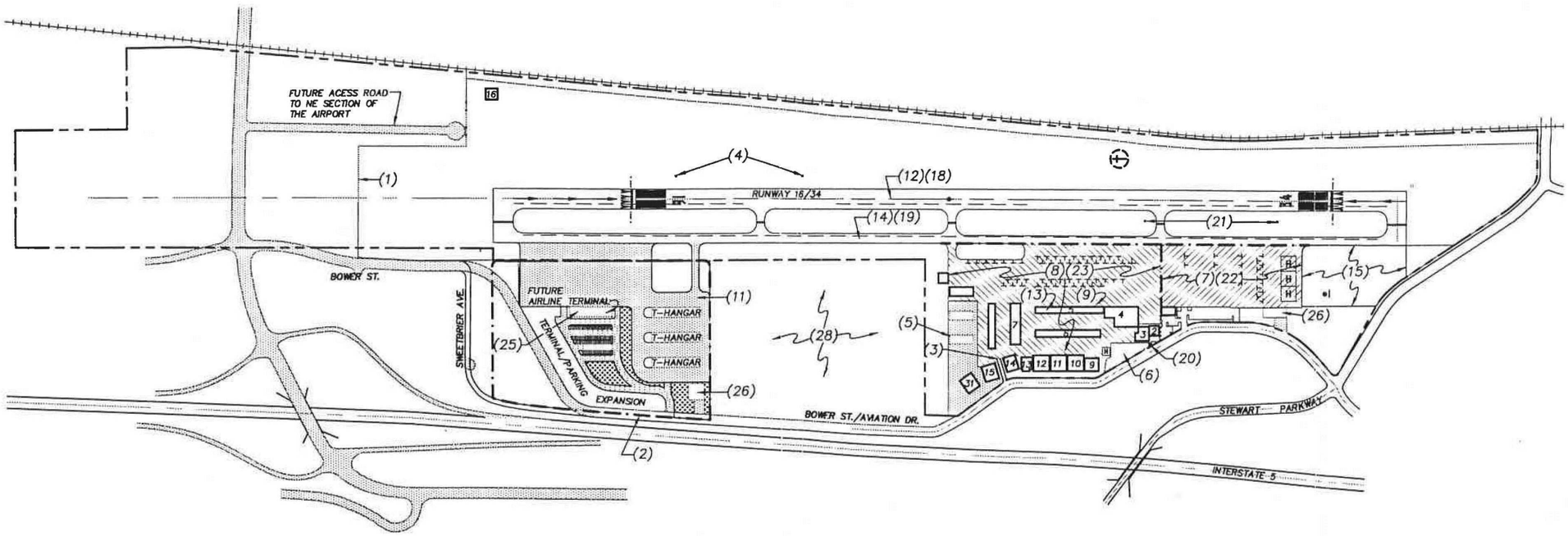
300 0 150 300

1"=300'

PHASE I PROJECTS – 1995 TO 1999		
KEY	DESCRIPTION	COST
(1)	NORTH END FENCE RELOCATION	$9,625
(2)	PROPERTY ACQUISITION – W. SIDE – 8 ACRES	$1,400,000
(3)	ELECTRIC AUTO GATE – CORP. HANGAR AREA	$3,000
(4)	PAPI ON RUNWAY 16	$8,000
(5)	CONSTRUCT 10 T-HANGARS	$150,000
(6)	PAVE GRAVEL PARKING LOT BY ROTATING BEACON	$23,250
(7)	OVERLAY/RESTRIPE OFFICE/TERM. BUILDING RAMP	$127,658
(8)	OVERLAY/RESTRIPE SOUTH T-HANGAR/FBO RAMP	$238,293
(9)	CONSTRUCT 6 REPLACEMENT T-HANGARS	$100,000
(NA)	REPLACE CITY OWNED FUEL TANKS	$50,000

NA = NOT KEYED TO DRAWINGS — COST = 1995 DOLLARS

XREFS:
OSBM01
XLOGO
34A



PHASE II PROJECTS – 2000 TO 2004		
KEY	DESCRIPTION	COST
(11)	NORTH T-HANGAR DEVELOPMENT TAXIWAY	$288,120
(12)	RUNWAY SLURRY SEAL/RESTRIPING	$61,086
(13)	CONSTRUCT 6 REPLACEMENT T-HANGARS	$100,000
(14)	TAXIWAY SLURRY SEAL/RESTRIPING	$20,373
(15)	DEVELOP SOUTH RAMP	$359,063
(NA)	REPLACE OBSTRUCTION LIGHT – MAST HILL	$1,000
(NA)	REPLACE OBSTRUCTION LIGHT – MT. NEBO	$1,000

NA = NOT KEYED TO DRAWINGS — COST = 1995 DOLLARS

PHASE III PROJECTS – 2005 TO 2014		
KEY	DESCRIPTION	COST
(18)	RUNWAY OVERLAY	$283,768
(19)	TAXIWAY OVERLAY	$181.221
(20)	REPLACE ROTATING BEACON	$8,000
(21)	REPLACE RWY 34 VASI WITH PAPI	$8,000
(22)	OFFICE/TERM. BUILDING RAMP SLURRY SEAL/RESTRIPE	$23,537
(23)	SO. T-HANGAR/FBO RAMP SLURRY SEAL/RESTRIPE	$40,303
(NA)	LOWER MAST HILL	$500,000
(25)	AIRLINE TERMINAL DEVELOPMENT	$1,415,050
(26)	FIRE STATION DEVELOPMENT	$400,000
(NA)	PURCHASE FIRE TRUCK	$75,000
(28)	MOBILE HOME PARK ACQUISITION	$3,000,000

NA = NOT KEYED TO DRAWINGS — COST = 1995 DOLLARS

SECTION, TOWNSHIP, RANGE:

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ROSEBURG REGIONAL AIRPORT
MASTER PLAN UPDATE

PHASED DEVELOPMENT PLAN

ROSEBURG/DOUGLAS OREGON
SCALE: 1"=300'
PROJECT NO. 4-0451-0201
DRAWING FILE NAME: AROSPD01.DWG

DESIGNED BY: CBC CHECKED BY:
DRAWN BY: JLM PLOT DATE: 07/15/95

DATE	BY	REVISION	CK'D	APPR.

SHEET
FIGURE 7-1

PHASE I PROJECTS FOR 1995-1999

1. Fence Relocation.

   Description: Relocate the fence on the north end of the runway to a point outside the runway object free area. This will eliminate the need for a modification to standards for the fence being within the runway safety area and runway object free area. This project is eligible for FAA funding.

2. Property Acquisition.

   Description: Acquire the 16 acre undeveloped parcel located on the west side of the airport just north of the manufactured home park. This parcel is critical to the future expansion of the airport. Acquisition should be accomplished as soon as possible. The airside portion of this property (the portion which will have access to the airfield) is eligible for FAA funding.

3. Electric Gate - Corporate Hangar Area.

   Description. Install an electric auto gate with key pad within the corporate hangar area for the new (in 1994) driveway.

4. Install PAPI on Runway 16.

   Description. Install a PAPI (or VASI) on runway 16 to provide visual guidance for night approaches from the north to runway 16. The PAPI should be adjusted to provide safe clearance over Mast Hill located approximately one mile north of the airport. This project is eligible for FAA funding.

5. T-Hangar Construction - 10 Units

   Description. Construct 10 new aircraft t-hangars.

6. Pave Gravel Parking Lot Adjacent to Rotating Beacon.

   Description. Pave the gravel parking lot located adjacent to the rotating beacon. This project is not eligible for FAA funding.

7. Overlay & Restripe Office/Terminal Building Ramp.

   Description. Overlay and restripe the ramp in front of and to the south of the office/terminal building. This project is eligible for FAA funding.

8. Overlay & Restripe South T-Hangar/FBO Ramp.

   Description. Overlay and restripe the ramp in front of the FBO's (the area north of the terminal/office building) and between the t-hangars and corporate hangars. This project is eligible for FAA funding.

9. Construct 6 Replacement T-Hangars.

   Description: Construct 6 t-hangars to replace existing wooden units in poor condition.

10. Replace City Owned Underground Fuel Storage Tanks.

    Description: Replace three existing underground fuel storage tanks owned by the City to meet EPA fuel storage tank codes. Consider replacing with above ground tanks.

PHASE II PROJECTS FOR 2000-2004

11. North T-Hangar Development Taxiway.

    Description. Begin development of the north t-hangar area on the property acquired under project #2 above. This project does not include construction of the t-hangars. Project elements include the following:

    a. Perimeter fence - 1700', 6' chain link.
    b. Auto gate with key pad controls.
    c. Taxiway access from the parallel taxiway and t-hangar apron taxiways between the t-hangars.

12. Runway Slurry Seal and Restriping.

    Description. Slurry seal and restripe the runway. This project will make it possible to achieve the longest usable life from the existing pavement. This project is eligible for FAA funding.

13. Construct 6 Replacement T-Hangars.

    Description: Construct 6 t-hangars to replace existing wooden units in poor condition.

14. Taxiway Slurry Seal and Restriping.

    Description. Slurry seal and restripe the taxiway. This project will make it possible to achieve the longest usable life from the existing pavement. This project is eligible for FAA funding.

15. Develop South Ramp.

    Description. Extend the existing ramp area to the south to the fence line at Stewart Parkway. This ramp can be used for expanded aircraft parking or for use by a possible new FBO located on the corner of Stewart Parkway and Airway Drive. It will be necessary to relocate the AWOS as a part of this project. This project is eligible for FAA funding.

16. Replace Obstruction Light on Mast Hill (North of the airport).

    Description. Replace the obstruction light located on the top of Mast Hill. This project is eligible for FAA funding.

17. Replace Obstruction Light on Mount Nebo (South of the airport).

    Description. Replace the obstruction light located on the top of Mount Nebo. This project is eligible for FAA funding.

PHASE III PROJECTS FOR 2005-2014

18. Runway Overlay.

    Description. Overlay and narrow the runway to an ARC B-II standard width of 75'. Replace the runway lights at the same time to meet FAA standards for runway light spacing distance from the runway. This project is eligible for FAA funding.

19. Taxiway Overlay.

    Description. Overlay and narrow the taxiway to an ARC B-II standard width of 35'. Replace the taxiway lights at the same time to meet FAA standards for taxiway light spacing distance from the taxiway. This project is eligible for FAA funding.

20. Replace Rotating Beacon.

    Description. Replace the rotating beacon. This project is eligible for FAA funding.

21. Replace VASI on Runway 34 with a PAPI.

    Description. Replace the VASI on runway 34 with a PAPI. This project is eligible for FAA funding.

22. Office/Terminal Building Ramp Slurry Seal and Restriping.

    Description. Slurry seal and restripe the ramp in front and south of the office/terminal building. This project will make it possible to achieve the longest usable life from the existing pavement. This project is eligible for FAA funding.

23. South T-Hangar/FBO Ramp Slurry Seal and Restriping.

    Description. Slurry seal and restripe the ramp in front of the FBO's and within the existing (as of 1994) t-hangars and corporate hangars. This project will make it possible to achieve the longest usable life from the existing pavement. This project is eligible for FAA funding.

24. Lower the Elevation of Mast Hill.

    Description. Mast Hill has been identified as an obstruction to the airport. This project has been included as a place holder to acknowledge the need to lower the hill. If an opportunity is identified to lower the hill, it should be fully explored. This project is eligible for FAA funding but may not be a high enough priority to be funding given the competing project.

25. Airline Terminal Development.

    Description. Develop an airline terminal facility for the Roseburg Regional Airport including the following facilities:

    a. Airline ramp for the exclusive use of commuter airliners.
    b. Airline passenger terminal.
    c. Electric auto security gates to allow service and emergency vehicle access to the airline ramp on the north and south ends of the airline passenger terminal building.
    d. Security fence around terminal to meet FAA security standards.
    e. Auto parking and access driveways for the passenger terminal building.
    f. Terminal building signage.

    The initial construction of a terminal may be eligible for FAA funding. It may be possible that parts of the terminal facility will be eligible for FAA Discretionary Funds, and other parts will require local funding. The assumption has been made that approximately 50% of the project would be FAA funded. At such time as the airline traffic exceeds 10,000 passengers per year, the airport will be eligible for airline "entitlement" funds which are currently $500,000 per year. This program (as are all FAA programs) subject to change.

26. Fire Station Development

Description. Develop a joint use airport/municipal fire station with clear access onto the airfield.

27. Purchase Fire Truck.

Description. Purchase an aircraft fire fighting truck which meets FAA standards in effect at the time of initiation of commercial air service.

28. Mobile Home Park Acquisition.

Description. The mobile home park located immediately adjacent to the airport is not in the ideal location for a residential use. Should the park be closed by its present owners, efforts should be made to acquire the vacant park to prevent it from being developed in a use which might be incompatible with the airport.

Total Estimated Cost

The total estimated cost for all three phases is $8,900,347 with $6,921,592 contributed through the FAA, and $1,898,379 through local governmental funding sources. Financial participation in the Phased Development Plan is summarized in Table 7-2.

Table 7-2

PHASED DEVELOPMENT PLAN - FINANCIAL PARTICIPATION

	Dollars	Percent
Local Share	$1,898,379	21%
Federal Share	$6,921,592	79%
TOTAL CIP	**$8,900,347**	**100%**

SOURCES OF FUNDING

As can be seen in Tables 7-1 and 7-2, the predominate source of funding for the proposed projects is through the Federal Aviation Administration (FAA). The FAA funds improvement projects through the Airport Improvement Program (AIP). Projects eligible for AIP funding can receive up to 90 percent federal participation with a 10 percent local match.

In addition to direct financial contributions, under certain circumstances, the local share of federally funded projects may be matched through alternative means. Some of these alternatives include in-kind labor services, volunteer services, donated property, and donated land and buildings.

Projects not eligible for FAA participation must be funded at the local level /through public or private investment. This may be accomplished through a variety of sources.

GENERAL OBLIGATION BONDS

General Obligation Bonds, or G.O. Bonds, are issued by the municipal authority sponsoring a development project and repaid through taxes. Because repayment is through taxes, the public must vote to accept the bond issuance. These bonds are attractive, in some circumstances, because they are generally issued at lower interest rates relative to other forms of financing.

REVENUE BONDS

Revenue Bonds are also issued by the sponsoring municipal authority of a development project. Unlike G.O. Bonds, the debt is retired through the project or sponsoring agency's revenues. Because the debt is retired through operating income, public voting approval is generally not required. These bonds carry a higher rate of interest then General Obligation Bonds due to the method of repayment. General Obligation Bond repayment is guaranteed by the municipal authority, where as Revenue Bonds may not have these guarantees. Because of the potential increased risk, there is a corresponding increase in interest rate.

INSTITUTIONAL FINANCING

Institutional financing of projects works much the same as other bank loans. The sponsoring agency must prove the ability to repay the loan and show sufficient collateral. As with other loans, the agency's credit history and market history will determine the interest rate for the particular project.

PROJECTED REVENUES AND EXPENSES

Table 7-3 on the following page presents a five year forecast of operational revenues and expenses for the planning period 1996 through 2000. Revenues are anticipated to increase due to new revenue producing facilities, i.e., new aircraft T-hangars and anticipated increases in activity at the airport. Some of the increases in revenues will be offset by increased expenses associated with the development of new hangars and the removal of existing wooden hangars. Neither revenues or expenses have been adjusted for inflation or anticipated rate increases. This was done to keep the expense and revenue base on the same 1995 dollar base as the capital plan.

As can be seen by looking at the bottom of Table 7-3, the airport enjoys a positive balance of funds at the end of four out of five years in the five year projection. This indicates that the fiscal health of the airport is excellent with good revenue streams and equally good cost control.

Roseburg Regional Airport — *Table 7-3*

5 YEAR COMBINED CAPITAL/OPERATING BUDGET

	Proposed 95-96	Projected 96-97	Projected 97-98	Projected 98-99	Projected 99-00
BEGINNING FUNDS	$111,500	$49,938	$0	$42,466	$24,803
OPERATING INCOME					
Rental - Land Leases	$13,000	$13,000	$13,000	$13,000	$13,000
Rental - Hangars	$85,000	$90,000	$90,000	$95,000	$95,000
Rental - Tie Downs	$8,000	$8,200	$8,405	$8,615	$8,831
Fuel Flowage	$19,500	$19,500	$19,500	$19,500	$19,500
Interest	$5,000	$5,000	$5,000	$5,000	$5,000
General Fund Trans.	$24,000	$24,000	$24,000	$24,000	$24,000
FAA GRANTS	$1,268,663	$7,200	$350,281	$0	$0
TOTAL OPERATING INCOME	$1,534,663	$216,838	$510,186	$207,581	$190,134
OPERATING EXPENSES					
Seasonal Maintenance	$5,500	$6,000	$6,500	$7,000	$7,500
City Services	$1,100	$1,155	$1,213	$1,273	$1,337
Materials & Supplies	$2,000	$2,100	$2,205	$2,315	$2,431
Telephone & Utilities	$22,000	$25,000	$25,000	$27,500	$27,500
Maintenance	$20,500	$21,013	$21,538	$22,076	$22,628
Insurance	$7,000	$7,175	$7,354	$7,538	$7,727
Other	$14,000	$14,350	$14,709	$15,076	$15,453
TOTAL OP. EXPENSES	$72,100	$76,793	$78,519	$82,778	$84,576
CAPITAL	$1,412,625	$158,000	$389,201	$100,000	$50,000
TOTAL EXPENDITURES	$1,484,725	$234,793	$467,720	$182,778	$134,576
BALANCE	**$49,938**	**($17,955)**	**$42,466**	**$24,803**	**$55,558**

02-Aug-95 Filed: RBOPBUD.WQ1

APPENDICES

Appendix A
FAA Form 7460
Notice of Proposed Construction Or Alteration on an Airport

Vol. 3 - 0320

US Department of Transportation
Federal Aviation Administration

Notice of Proposed Construction or Alteration

Aeronautical Study Number

1. Nature of Proposal

A. Type	B. Class	C. Work Schedule Dates
☐ New Construction ☐ Alteration *	☐ Permanent ☐ Temporary (Duration _____ months)	Beginning _____ End _____

* If Alteration, provide previous FAA Aeronautical Study Number, if available :

3A. Name, address, and telephone number of individual, company corporation, etc. proposing the construction or alteration. (Number, Street, City, State, and Zip Code)

( ) _____
Area Code Telephone Number

3B. Name, address and telephone number of proponent's representative, if different than 3A. above.

( ) _____
Area Code Telephone Number

2. Complete Description of Structure

Please describe, on a separate sheet of paper if necessary, the proposed construction or alteration.

A. For proposals involving transmitting stations, include effective radiated power (ERP) and assigned frequency of all proposed or modified transmitters on the structure. (If not known, give frequency band and maximum ERP).

B. For proposals involving overhead wire, transmission lines, etc., include the size and the configuration of the wires and their supporting structures.

C. For all proposals, include site orientation, dimensions, and construction materials of the proposed or altered structure.

D. **Optional**— Describe the type of obstruction marking and lighting system desired for your structure. The FAA will recommend appropriate marking and lighting for the structure in accordance with the standards of Advisory Circular AC 70/7460-1. An FAA marking and lighting recommendation will reflect the minimum acceptable level of conspicuity necessary to warn pilots of the presence of an object. However, the FAA, under certain circumstances, will not object to the use of a system (such as a medium intensity flashing white light system or a dual lighting system) other than the recommended standard.

4. Location Of Structure

4A. Coordinates (to hundredths of seconds, if known)

Latitude 0 ' "

Longitude 0 ' "

4D. Source of coordinate information for item 4A. above.
☐ USGS 7.5' Quad Chart ☐ Survey ☐ Other Specify _____

Indicate the reference datum of the coordinates, if known.
☐ NAD 27 ☐ NAD 83 ☐ Other Specify _____

B. Nearest City or Town and State	C. Nearest public or military airport, heliport, flightpark, or seaplane base
(1). Distance to 4B	(1). Distance from structure to nearest point of nearest runway
(2). Direction to 4B	(2). Direction from structure to airport

4E. Describe, on a separate sheet of paper, the location of the site with respect to highways, streets, airports, prominent terrain features, existing structures, etc. Attach a copy of a U.S. Geological Survey quadrangle map 7.5 minute series (or equivalent) showing the construction site. If available, attach a copy of a documented site survey with the surveyor's certification.

5. Height and Elevation (to nearest foot)

A. Elevation of site above mean sea level.	
B. Height of structure including all appurtenances and lighting above ground or water.	
C. Overall height above mean sea level (A + B)	

FAILURE TO PROVIDE ALL REQUESTED INFORMATION MAY DELAY PROCESSING OF YOUR NOTICE

Notice is required by Part 77 of the Federal Aviation Regulations (14 C.F.R. Part 77) pursuant to Section 1101 of the Federal Aviation Act of 1958, as amended (49 U.S.C. app. § 1501). Persons who knowingly and willfully violate the Notice requirements of Part 77 are subject to a civil penalty of $1,000 per day until the notice is received, pursuant to Section 901(a) of the Federal Aviation Act of 1958, as amended (49 U.S.C. app § 1471(a)) as well as the fine (criminal penalty) of not more than $500 for the first offense and not more than $2,000 for subsequent offenses, pursuant to Section 902(a) of the Federal Aviation Act of 1958, as amended (49 U.S.C. app § 1472(a)).

I HEREBY CERTIFY that all of the above statements made by me are true, complete, and correct to the best of my knowledge. In addition, I agree to obstruction mark and/or light the structure in accordance with established marking & lighting standards as necessary.

Date	Typed or Printed Name and Title of Person Filing Notice	Signature

FOR FAA USE ONLY *FAA will either return this form or issue a separate acknowledgement.*

The Proposal:

☐ Does not require a notice to FAA.

☐ is not identified as an obstruction under any standard of FAR, Part 77, Subpart C, and would not be a hazard to navigation.

☐ is identified as an obstruction under the standards of FAR, Part 77, Subpart C, but would not be a hazard to navigation.

☐ Should be obstruction ☐ marked ☐ lighted per FAA Advisory Circular 70/7460-1, Chapters _____

☐ Obstruction marking and lighting are not necessary.

Supplemental Notice of Construction, FAA Form 7460-2, is required any time the project is abandoned, or

☐ At least 48 hours before the start of construction.

☐ Within five days after the construction reaches its greatest height.

This determination expires on _____ unless:

(a) extended, revised or terminated by the issuing office;

(b) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit is made to the FCC on or before the above expiration date. In such cases the determination expires on the date prescribed by the FCC for completion of construction, or on the date the FCC denies the application.

NOTE: Request for extension of the effective period of this determination must be postmarked or delivered to the issuing office at least 15 days prior to the expiration date.

If the structure is subject to the licensing authority of the FCC, a copy of this determination will be sent to that agency.

Remarks

NAD 83 Coordinates (Use these coordinates for any future correspondence with the FAA) Latitude ° ' " Longitude ° ' "

Issued in	Signature	Date

FAA Form 7460-1 (1-93)

Do Not Remove Carbons

Appendix B
FAA Airport Design
Computer Model Print-Outs

AIRPORT AND RUNWAY DATA
RUNWAY LENGTH REQUIREMENTS

Airport elevation ..... 525 feet
Mean daily maximum temperature of the hottest month ..... 83.00 F
Maximum difference in runway centerline elevation ..... 28 feet
Length of haul for airplanes of more than 60,000 pounds ..... 500 miles
Dry runways

RUNWAY LENGTHS RECOMMENDED FOR AIRPORT DESIGN

Small airplanes with approach speeds of less than 30 knots ..... 320 feet
Small airplanes with approach speeds of less than 50 knots ..... 840 feet
Small airplanes with less than 10 passenger seats
- 75 percent of these small airplanes ..... 2600 feet
- 95 percent of these small airplanes ..... 3130 feet
- 100 percent of these small airplanes ..... 3750 feet

Small airplanes with 10 or more passenger seats ..... 4240 feet

Large airplanes of 60,000 pounds or less
- 75 percent of these large airplanes at 60 percent useful load ..... 4960 feet
- 75 percent of these large airplanes at 90 percent useful load ..... 6550 feet
- 100 percent of these large airplanes at 60 percent useful load ..... 5570 feet
- 100 percent of these large airplanes at 90 percent useful load ..... 8190 feet

Airplanes of more than 60,000 pounds ..... Approximately 5200 feet

REFERENCE: AC 150/5325-4A, RUNWAY LENGTH REQUIREMENTS FOR AIRPORT DESIGN.

AIRPORT CAPACITY AND DELAY DATA

C = Percent of airplanes over 12,500 lbs but not over 300,000 lbs 10
D = Percent of airplanes over 300,000 lbs 0
Mix Index (C+3D) 10
Annual demand 46,000
General aviation operations dominate

AIRPORT CAPACITY AND DELAY FOR LONG RANGE PLANNING

Runway-use Capacity Configuration				Ratio of Annual Demand To ASV	Average Delay per Aircraft		Minutes of Annual Delay	
(Sketch) No.	(Ops/Hour) VFR	IFR	ASV	Ratio	(Minutes) Low	High	(000) Low	High
8	394	119	715,000	0.06	0.0	0.0	0	0
7	295	119	625,000	0.07	0.0	0.0	0	0
5	295	62	385,000	0.12	0.0	0.1	0	5
6	295	62	385,000	0.12	0.0	0.1	0	5
18	301	59	385,000	0.12	0.0	0.1	0	5
16	295	59	385,000	0.12	0.0	0.1	0	5
19	264	59	375,000	0.12	0.0	0.1	0	5
4	197	119	370,000	0.12	0.0	0.1	0	5
12	197	119	370,000	0.12	0.0	0.1	0	5
3	197	62	355,000	0.13	0.0	0.1	0	5
11	197	62	355,000	0.13	0.0	0.1	0	5
2	197	59	355,000	0.13	0.0	0.1	0	5
10	197	59	355,000	0.13	0.0	0.1	0	5
13	197	59	355,000	0.13	0.0	0.1	0	5
17	197	59	355,000	0.13	0.0	0.1	0	5
14	150	59	270,000	0.17	0.0	0.1	0	5
15	132	59	260,000	0.18	0.1	0.1	5	5
1	98	59	230,000	0.20	0.1	0.1	5	5
9	98	59	230,000	0.20	0.1	0.1	5	5

REFERENCE: AC 150/5060-5, AIRPORT CAPACITY AND DELAY, CHAPTER 2.

DECLARED DISTANCES
ARC B-II - EXISTING CONFIGURATION
VISUAL APPROACHES

Aircraft Approach Category B
Airplane Design Group II (Large Airplanes)
Runway 16 is visual
Runway 34 is visual

Runway 16/34 length ..... 4600 feet
Stopway length at the far end of Runway 16..... 0 feet
Stopway length at the far end of Runway 34..... 0 feet
Clearway length at the far end of Runway 16 ..... 0 feet
Clearway length at the far end of Runway 34 ..... 0 feet
Runway safety area length beyond the far end of Runway 16 ..... 300 feet
Runway safety area length beyond the far end of Runway 34 ..... 300 feet
Object free area length beyond the far end of Runway 16 ..... 600 feet
Object free area length beyond the far end of Runway 34 ..... 600 feet
Distance from approach end of Runway 16 to the threshold..... 698 feet
Distance from approach end of Runway 34 to the threshold..... 371 feet
Distance from start end of Runway 16 to the start of takeoff ..... 0 feet
Distance from start end of Runway 34 to the start of takeoff..... 0 feet
Distance from far end of Runway 16 to the start of clearway ..... 0 feet
Distance from far end of Runway 34 to the start of clearway ..... 0 feet
Distance from far end of Runway 16 to the start of departure RPZ ..... 200 feet
Distance from far end of Runway 34 to the start of departure RPZ ..... 200 feet

DECLARED DISTANCES

	Runway 16 (feet)	Runway 34 (feet)
Takeoff run available (TORA)	4600	4600
Takeoff distance available (TODA)	4600	4600
Accelerate-stop distance available (ASDA)	4600	4600
Landing distance available (LDA)	3902	4229

REFERENCE: AC 150/5300-13, AIRPORT DESIGN, APPENDIX 14.

DECLARED DISTANCES
ARC B-II - NON-PRECISION INSTRUMENT APPROACH

Aircraft Approach Category B
Airplane Design Group II (Large Airplanes)
Runway 16 is nonprecision instrument > 3/4-statute mile
Runway 34 is visual
Runway 16/34 length .....4600 feet
Stopway length at the far end of Runway 16 .....0 feet
Stopway length at the far end of Runway 34.....0 feet
Clearway length at the far end of Runway 16 .....0 feet
Clearway length at the far end of Runway 34 .....0 feet
Runway safety area length beyond the far end of Runway 16.....300 feet
Runway safety area length beyond the far end of Runway 34 .....300 feet
Object free area length beyond the far end of Runway 16 .....600 feet
Object free area length beyond the far end of Runway 34 .....600 feet
Distance from approach end of Runway 16 to the threshold .....698 feet
Distance from approach end of Runway 34 to the threshold ..... 371 feet
Distance from start end of Runway 16 to the start of takeoff ..... 0 feet
Distance from start end of Runway 34 to the start of takeoff ..... 0 feet
Distance from far end of Runway 16 to the start of clearway ..... 0 feet
Distance from far end of Runway 34 to the start of clearway ..... 0 feet
Distance from far end of Runway 16 to the start of departure RPZ.....200 feet
Distance from far end of Runway 34 to the start of departure RPZ .....200 feet

DECLARED DISTANCES

	Runway 16 (feet)	Runway 34 (feet)
Takeoff run available (TORA)	4600	4600
Takeoff distance available (TODA)	4600	4600
Accelerate-stop distance available (ASDA)	4600	4600
Landing distance available (LDA)	3902	4229

REFERENCE: AC 150/5300-13, AIRPORT DESIGN, APPENDIX 14.

AIRPORT DESIGN STANDARDS
ARC B-II - SMALL AIRCRAFT - VISUAL APPROACHES

Aircraft Approach Category B
Airplane Design Group II (Small Airplanes)
Airplane wingspan ..... 78.99 feet
Primary runway end is visual
Other runway end is visual
Airplane undercarriage width (1.15 x main gear track) ..... 9.00 feet

RUNWAY AND TAXIWAY WIDTH AND CLEARANCE STANDARD DIMENSIONS

Runway centerline to parallel runway centerline simultaneous operations when wake turbulence is not treated as a factor:

Airplane Group/ARC

VFR operations ..... 700 feet
VFR operations with intervening taxiway ..... 700 feet
VFR operations with two intervening taxiways .....700 feet
IFR approach and departure with approach to near threshold .....2500 feet
less 100 ft for each 500 ft of threshold stagger to a minimum of 1000 ft.

Runway centerline to parallel runway centerline simultaneous operations when wake turbulence is a factor:

VFR operations ..... 2500 feet
IFR departures ..... 2500 feet
IFR approach and departure with approach to near threshold .....2500 feet
IFR approach and departure with approach to far threshold .....2500 feet
plus 100 feet for each 500 feet of threshold stagger
IFR approaches .....3400 feet

Runway centerline to parallel taxiway/taxilane centerline	164.4	240 feet
Runway centerline to edge of aircraft parking	250.0	250 feet
Taxiway centerline to parallel taxiway/taxilane centerline	104.8	105 feet
Taxiway centerline to fixed or movable object	65.3	65.5 feet
Taxilane centerline to parallel taxilane centerline	96.9	97 feet
Taxilane centerline to fixed or movable object	57.4	57.5 feet

Runway protection zone at the primary runway end:

Length		1000 feet
Width 200 feet from runway end		250 feet
Width 1200 feet from runway end		450 feet

Runway protection zone at other runway end:

Length		1000 feet
Width 200 feet from runway end		250 feet
Width 1200 feet from runway end		450 feet

Departure runway protection zone:

Length		1000 feet
Width 200 feet from the far end of TORA		250 feet
Width 1200 feet from the far end of TORA		450 feet

Runway obstacle free zone (OFZ) width	250.0	250 feet
Runway obstacle free zone length beyond each runway end		200 feet
Approach obstacle free zone width	250.0	250 feet
Approach obstacle free zone length beyond approach light system		200 feet
Approach obstacle free zone slope from 200 feet beyond threshold		50:1
Inner-transitional surface obstacle free zone slope		0:1

Runway width		75 feet
Runway shoulder width		10 feet
Runway blast pad width		95 feet
Runway blast pad length		150 feet
Runway safety area width		150 feet
Runway safety area length beyond each runway end or stopway end, whichever is greater		300 feet
Runway object free area width		500 feet
Runway object free area length beyond each runway end or stopway end, whichever is greater		600 feet
Clearway width		500 feet
Stopway width		75 feet

Taxiway width	24.0	35 feet
Taxiway edge safety margin		7.5 feet
Taxiway shoulder width		10 feet
Taxiway safety area width	79.0	79 feet
Taxiway object free area width	130.6	131 feet
Taxilane object free area width	114.8	115 feet
Taxiway wingtip clearance	25.8	26 feet

Taxilane wingtip clearance.....17.9 18 feet

Threshold surface at primary runway end:

Distance out from threshold to start of surface ..... 0 feet
Width of surface at start of trapezoidal section ..... 250 feet
Width of surface at end of trapezoidal section ..... 700 feet
Length of trapezoidal section ..... 2250 feet
Length of rectangular section ..... 2750 feet
Slope of surface.....20:1

Threshold surface at other runway end:

Distance out from threshold to start of surface ..... 0 feet
Width of surface at start of trapezoidal section ..... 250 feet
Width of surface at end of trapezoidal section ..... 700 feet
Length of trapezoidal section ..... 2250 feet
Length of rectangular section ..... 2750 feet
Slope of surface 20:1

REFERENCE: AC 150/5300-13, AIRPORT DESIGN.

AIRPORT DESIGN STANDARDS
ARC B-II - LARGE AIRCRAFT - VISUAL APPROACHES

Aircraft Approach Category B
Airplane Design Group II (Large Airplanes)
Airplane wingspan ..... 78.99 feet
Primary runway end is visual
Other runway end is visual
Airplane undercarriage width (1.15 x main gear track) ..... 9.00 feet
Airport elevation ..... 525 feet

RUNWAY AND TAXIWAY WIDTH AND CLEARANCE STANDARD DIMENSIONS

Runway centerline to parallel runway centerline simultaneous operations when wake turbulence is not treated as a factor:

VFR operations .....700 feet
VFR operations with intervening taxiway ..... 700 feet
VFR operations with two intervening taxiways .....700 feet
IFR approach and departure with approach to near threshold .....2500 feet
less 100 ft. for each 500 ft. of threshold stagger to a minimum of 1000 ft.

Runway centerline to parallel runway centerline simultaneous operations when wake turbulence is a factor:

VFR operations .....2500 feet
IFR departures ..... 2500 feet
IFR approach and departure with approach to near threshold 2500 feet
IFR approach and departure with approach to far threshold .....2500 feet
plus 100 feet for each 500 feet of threshold stagger.
IFR approaches .....3400 feet

Runway centerline to parallel taxiway/taxilane centerline	239.4	240 feet
Runway centerline to edge of aircraft parking	250.0	250 feet
Taxiway centerline to parallel taxiway/taxilane centerline	104.8	105 feet
Taxiway centerline to fixed or movable object	65.3	65.5 feet
Taxilane centerline to parallel taxilane centerline.....	96.9	97 feet
Taxilane centerline to fixed or movable object	57.4	57.5 feet

Runway protection zone at the primary runway end:

Length .....1000 feet

Width 200 feet from runway end		500 feet
Width 1200 feet from runway end		700 feet

Runway protection zone at other runway end:

Length		1000 feet
Width 200 feet from runway end		500 feet
Width 1200 feet from runway end		700 feet

Departure runway protection zone:

Length		1000 feet
Width 200 feet from the far end of TORA		500 feet
Width 1200 feet from the far end of TORA		700 feet

Runway obstacle free zone (OFZ) width	400.0	400 feet
Runway obstacle free zone length beyond each runway end		200 feet
Approach obstacle free zone width	400.0	400 feet
Approach obstacle free zone length beyond approach light system		200 feet
Approach obstacle free zone slope from 200 feet beyond threshold		50:1
Inner-transitional surface obstacle free zone slope		0:1

Runway width		75 feet
Runway shoulder width		10 feet
Runway blast pad width		95 feet
Runway blast pad length		150 feet
Runway safety area width		150 feet
Runway safety area length beyond each runway end or stopway end, whichever is greater		300 feet
Runway object free area width		500 feet
Runway object free area length beyond each runway end or stopway end, whichever is greater		600 feet
Clearway width		500 feet
Stopway width		75 feet

Taxiway width	24.0	35 feet
Taxiway edge safety margin		7.5 feet
Taxiway shoulder width		10 feet
Taxiway safety area width	79.0	79 feet
Taxiway object free area width	130.6	131 feet
Taxilane object free area width	114.8	115 feet
Taxiway wingtip clearance	25.8	26 feet
Taxilane wingtip clearance	17.9	18 feet

Threshold surface at primary runway end:

Distance out from threshold to start of surface ..... 0 feet
Width of surface at start of trapezoidal section ..... 400 feet
Width of surface at end of trapezoidal section .....1000 feet
Length of trapezoidal section ..... 1500 feet
Length of rectangular section ..... 8500 feet
Slope of surface 20:1

Threshold surface at other runway end:

Distance out from threshold to start of surface ..... 0 feet
Width of surface at start of trapezoidal section..... 400 feet
Width of surface at end of trapezoidal section ..... 1000 feet
Length of trapezoidal section ..... 1500 feet
Length of rectangular section ..... 8500 feet
Slope of surface 20:1

REFERENCE: AC 150/5300-13, AIRPORT DESIGN.

AIRPORT DESIGN STANDARDS
ARC B-II - LARGE AIRCRAFT
NON-PRECISION INSTRUMENT APPROACHES

Aircraft Approach Category B
Airplane Design Group II (Large Airplanes)
Airplane wingspan ..... 78.99 feet
Primary runway end is nonprecision instrument > 3/4-statute mile
Other runway end is visual
Airplane undercarriage width (1.15 x main gear track) .....9.00 feet
Airport elevation..... 525 feet

RUNWAY AND TAXIWAY WIDTH AND CLEARANCE STANDARD DIMENSIONS

Runway centerline to parallel runway centerline simultaneous operations when wake turbulence is not treated as a factor:

Airplane Group/ARC

VFR operations ..... 700 feet
VFR operations with intervening taxiway .....700 feet
VFR operations with two intervening taxiways .....700 feet
IFR approach and departure with approach to near threshold .....2500 feet
less 100 ft for each 500 ft. of threshold stagger to a minimum of 1000 ft.

Runway centerline to parallel runway centerline simultaneous operations when wake turbulence is a factor:

VFR operations ..... 2500 feet
IFR departures..... 2500 feet
IFR approach and departure with approach to near threshold ..... 2500 feet
IFR approach and departure with approach to far threshold ..... 2500 feet
plus 100 feet for each 500 feet of threshold stagger
IFR approaches ..... 3400 feet

Runway centerline to parallel taxiway/taxilane centerline	239.4	240 feet
Runway centerline to edge of aircraft parking.....	250.0	250 feet
Taxiway centerline to parallel taxiway/taxilane centerline	104.8	105 feet
Taxiway centerline to fixed or movable object	65.3	65.5 feet
Taxilane centerline to parallel taxilane centerline.....	96.9	97 feet
Taxilane centerline to fixed or movable object	57.4	57.5 feet

Runway protection zone at the primary runway end:

Length		1700 feet
Width 200 feet from runway end		500 feet
Width 1900 feet from runway end		1010 feet

Runway protection zone at other runway end:

Length		1000 feet
Width 200 feet from runway end		500 feet
Width 1200 feet from runway end		700 feet

Departure runway protection zone:

Length		1000 feet
Width 200 feet from the far end of TORA		500 feet
Width 1200 feet from the far end of TORA		700 feet

Runway obstacle free zone (OFZ) width	400.0	400 feet
Runway obstacle free zone length beyond each runway end		200 feet
Approach obstacle free zone width	400.0	400 feet
Approach obstacle free zone length beyond approach light system		200 feet
Approach obstacle free zone slope from 200 feet beyond threshold		50:1
Inner-transitional surface obstacle free zone slope		0:1

Runway width		75 feet
Runway shoulder width		10 feet
Runway blast pad width		95 feet
Runway blast pad length		150 feet
Runway safety area width		150 feet
Runway safety area length beyond each runway end or stopway end, whichever is greater		300 feet
Runway object free area width		500 feet
Runway object free area length beyond each runway end or stopway end, whichever is greater		600 feet
Clearway width		500 feet
Stopway width		75 feet

Taxiway width	24.0	35 feet
Taxiway edge safety margin		7.5 feet
Taxiway shoulder width		10 feet
Taxiway safety area width	79.0	79 feet
Taxiway object free area width	130.6	131 feet
Taxilane object free area width	114.8	115 feet
Taxiway wingtip clearance	25.8	26 feet

Taxilane wingtip clearance ..... 17.9 18 feet

Threshold surface at primary runway end:

Distance out from threshold to start of surface ..... 0 feet
Width of surface at start of trapezoidal section..... 400 feet
Width of surface at end of trapezoidal section..... 1000 feet
Length of trapezoidal section ..... 1500 feet
Length of rectangular section ..... 8500 feet
Slope of surface..... 20:1

Threshold surface at other runway end:

Distance out from threshold to start of surface ..... 0 feet
Width of surface at start of trapezoidal section ..... 400 feet
Width of surface at end of trapezoidal section..... 1000 feet
Length of trapezoidal section ..... 1500 feet
Length of rectangular section ..... 8500 feet
Slope of surface 20:1

REFERENCE: AC 150/5300-13, AIRPORT DESIGN.

Appendix C
Integrated Noise Model
Input Cases

1995 Noise Contours
Integrated Noise
Model Input Case

BEGIN.

SETUP:

TITLE <ROSEBURG 1995 1/15/95>
AIRPORT <ROSEBURG REGIONAL AIRPORT>

ALTITUDE 525
TEMPERATURE 83 F

RUNWAYS
RW 16-34 0 0 TO 4600 0

AIRCRAFT:

TYPES
AC CNA500
AC COMJET
AC CNA441
AC BEC58P
AC GASEPV
AC GASEPF

TAKEOFFS BY FREQUENCY:

TRACK TR1 RWY 34 STRAIGHT 5000 LEFT 180 D 400
STRAIGHT 40000
OPER BEC58P STAGE 1 D=0.237 N=0.012
OPER GASEPV STAGE 1 D=0.359 N=0.019
OPER GASEPF STAGE 1 D=0.937 N=0.049

TRACK TR2 RWY 34 STRAIGHT 8500 LEFT 180 D 4000
STRAIGHT 40000
OPER CNA441 STAGE 1 D=0.291 N=0.015
OPER BEC58P STAGE 1 D=0.237 N=0.012
OPER GASEPV STAGE 1 D=0.359 N=0.019
OPER GASEPF STAGE 1 D=0.937 N=0.049

TRACK TR3 RWY 34 STRAIGHT 7000 RIGHT 20 D 5000
STRAIGHT 2000 LEFT 20 D 5000
STRAIGHT 40000

OPER CNA500	STAGE 1	D=1.249	N=0.066
OPER COMJET	STAGE 1	D=0.106	N=0.006
OPER CNA441	STAGE 1	D=1.164	N=0.061
OPER BEC58P	STAGE 1	D=1.899	N=0.100
OPER GASEPV	STAGE 1	D=2.873	N=0.151
OPER GASEPF	STAGE 1	D=7.496	N=0.395

TRACK TR4 RWY 16 STRAIGHT 7000 RIGHT 90 D 4000
STRAIGHT 40000

OPER CNA441	STAGE 1	D=0.055	N=0.003
OPER BEC58P	STAGE 1	D=0.756	N=0.0234
OPER GASEPV	STAGE 1	D=0.135	N=0.007
OPER GASEPF	STAGE 1	D=0.351	N=0.018

TRACK TR5 RWY 16 STRAIGHT 7000 RIGHT 20 D 4000
STRAIGHT 2000 LEFT 20 D 4000
STRAIGHT 40000

OPER CNA500	STAGE 1	D=0.312	N=0.016
OPER COMJET	STAGE 1	D=0.027	N=0.001
OPER CNA441	STAGE 1	D=0.073	N=0.004
OPER BEC58P	STAGE 1	D=0.119	N=0.006
OPER GASEPV	STAGE 1	D=0.180	N=0.009
OPER GASEPF	STAGE 1	D=0.0468	N=0.025

TRACK TR6 RWY 16 STRAIGHT 7000 LEFT 85 D 4000
STRAIGHT 40000

OPER CNA441	STAGE 1	D=0.018	N=0.001
OPER BEC58P	STAGE 1	D=0.030	N=0.002
OPER GASEPV	STAGE 1	D=0.045	N=0.002
OPER GASEPF	STAGE 1	D=0.117	N=0.006

TRACK TR19 RWY 16 STRAIGHT 7000 LEFT 180 D 4000
STRAIGHT 40000

OPER GASEPV	STAGE 1	D=0.539	N=0.028
OPER GASEPF	STAGE 1	D=1.405	N=0.074
OPER BEC58P	STAGE 1	D=0.356	N=0.019
OPER CNA441	STAGE 1	D=0.218	N=0.011

LANDING BY FREQUENCY:

TRACK TR8 RWY 34 STRAIGHT 10000 LEFT 90 D 5000
STRAIGHT 8000 LEFT 90 D 5000
STRAIGHT 6500
OPER CNA441 PROF=STD3D D=1.213 N=0.012
OPER COMJET PROF=STD3D D=0.089 N=0.001
OPER CNA500 PROF=STD3D D=1.042 N=0.011

TRACK TR9 RWY 34 STRAIGHT 10000 LEFT 20 D 10000
STRAIGHT 100 RIGHT 20 D 10000
STRAIGHT 6000
OPER CNA441 PROF=STD3D D=0.303 N=0.003
OPER COMJET PROF=STD3D D=0.022
OPER CNA500 PROF=STD3D D=0.260 N=0.003

TRACK TR10 RWY 34 STRAIGHT 8000 RIGHT 23 D 5000
STRAIGHT 7500 LEFT 84 D 5000
STRAIGHT 7000 LEFT 90 D 4000
STRAIGHT 3000 LEFT 90 D 4000
STRAIGHT 6000
OPER BEC58P PROF=STD3D D=0.119 N=0.006
OPER GASEPV PROF=STD3D D=0.018 N=0.009
OPER GASEPF PROF=STD3D D=0.468 N=0.025

TRACK TR11 RWY 34 STRAIGHT 8000 RIGHT 15 D 5000
STRAIGHT 8000 LEFT 90 D 4000
STRAIGHT 3000 LEFT 90 D 4000
STRAIGHT 6000
OPER BEC58P PROF=STD3D D=1.068 N=0.056
OPER GASEPV PROF=STD3D D=1.616 N=0.085
OPER GASEPF PROF=STD3D D=4.216 N=0.222

TRACK TR12 RWY 34 STRAIGHT 8000 LEFT 15 D 5000
STRAIGHT 8000 LEFT 90 D 4000
STRAIGHT 3000 LEFT 90 D 4000
STRAIGHT 6000
OPER BEC58P PROF=STD3D D=2.0802 N=0.064
OPER GASEPV PROF=STD3D D=1.078 N=0.057
OPER GASEPF PROF=STD3D D=2.811 N=0.148

TRACK TR13 RWY 34 STRAIGHT 14000 LEFT 90 D 4000
STRAIGHT 7000 LEFT 90 D 4000

```
        STRAIGHT 9500 LEFT 90 D 4000
        STRAIGHT 3500 LEFT 90 D 4000
        STRAIGHT 6000
OPER GASEPV     PROF=STD3D D=0.718  N=0.038
OPER GASEPF     PROF=STD3D D=1.874  N=0.099
OPER BEC58P     PROF=STD3D D=0.475  N=0.025

TRACK TR14 RWY 16 STRAIGHT 8000 RIGHT 10 D 5000
        STRAIGHT 100 LEFT 10 D 5000
        STRAIGHT 3500
OPER CNA500     PROF=STD3D D=0.260  N=0.003
OPER COMJET     PROF=STD3D D=0.022
OPER CNA441     PROF=STD3D D=0.303  N=0.003
OPER BEC58P     PROF=STD3D D=0.356  N=0.019
OPER GASEPV     PROF=STD3D D=0.431  N=0.023
OPER GASEPF     PROF=STD3D D=1.405  N=0.074

TRACK TR15 RWY 16 STRAIGHT 1000 LEFT 90 D 5000
        STRAIGHT 5500 LEFT 90 D 5000
        STRAIGHT 2500 LEFT 90 D 4000
        STRAIGHT 3500
OPER GASEPV     PROF=STD3D D=0.431  N=0.006
OPER GASEPF     PROF=STD3D D=0.351  N=0.018
OPER BEC58P     PROF=STD3D D=0.089  N=0.005

TRACK TR16 RWY 16 STRAIGHT 15000 LEFT 90 D 5000
        STRAIGHT 2500 LEFT 90 D 4000
        STRAIGHT 3500
OPER GASEPV     PROF=STD3D D=0.18  N=0.009
OPER GASEPF     PROF=STD3D D=0.586  N=0.031
OPER BEC58P     PROF=STD3D D=0.148  N=0.008
OPER CNA441     PROF=STD3D D=0.076  N=0.001
OPER COMJET     PROF=STD3D D=0.006
OPER CNA500     PROF=STD3D D=0.065  N=0.001

TOUCHNGOS BY FREQUENCY:

TRACK TR17 RWY 34 STRAIGHT 7000 LEFT 90 D 2500
        STRAIGHT 2500 LEFT 90 D 2500
        STRAIGHT 10500 LEFT 90 D 2500
        STRAIGHT 2500 LEFT 90 D 2500
        STRAIGHT 3500
OPER GASEPV STAGE 1 PROF=STD3D D=7.410   N=0.151
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OPER GASEPF STAGE 1   PROF=STD3D D=19.332  N=0.395
OPER BEC58P STAGE 1   PROF=STD3D D=0.0258  N=0.005

TRACK TR18 RWY 16 STRAIGHT 9000 LEFT 90 D 2500
      STRAIGHT 3000 LEFT 90 D 2500
      STRAIGHT 12500 LEFT 90 D 2500
      STRAIGHT 3000 LEFT 90 D 2500
      STRAIGHT 3500
OPER GASEPV STAGE 1   PROF=STD3D D=1.853   N=0.151
OPER GASEPF STAGE 1   PROF=STD3D D=4.833   N=0.099
OPER BEC58P STAGE 1   PROF=STD3D D=0.064   N=0.001

PROCESSES:

CONTOUR LDN AT 55 60 65 70 75
WITH TOLERANCE=1
REFINE=6
XSTART=-10000
YSTART=-10000
XSTOP=10000
YSTOP=10000
PLOT

END.
```

BEGIN.

SETUP:

TITLE <ROSEBURG 2014 2/8/95>
AIRPORT <ROSEBURG REGIONAL AIRPORT>

ALTITUDE 525
TEMPERATURE 83 F

RUNWAYS
RW 16-34 0 0 DT 500 TO 4600 0 DT 371

AIRCRAFT:

TYPES
AC CNA500
AC COMJET
AC CNA441
AC BEC58P
AC GASEPV
AC GASEPF

TAKEOFFS BY FREQUENCY:

TRACK TR1 RWY 34 STRAIGHT 5000 LEFT 180 D 4000
STRAIGHT 40000
OPER BEC58P STAGE 1 D=0.363 N=0.019
OPER GASEPV STAGE 1 D=0.549 N=0.029
OPER GASEPF STAGE 1 D=1.433 N=0.075

TRACK TR2 RWY 34 STRAIGHT 8500 LEFT 180 D 4000
STRAIGHT 40000
OPER CNA441 STAGE 1 D=0.455 N=0.023
OPER BEC58P STAGE 1 D=0.363 N=0.019
OPER GASEPV STAGE 1 D=0.549 N=0.029
OPER GASEPF STAGE 1 D=1.433 N=0.075

TRACK TR3 RWY 34 STRAIGHT 7000 RIGHT 20 D 5000
STRAIGHT 2000 LEFT 20 D 5000
STRAIGHT 40000

OPER CNA500	STAGE 1	D=1.911	N=0.101
OPER COMJET	STAGE 1	D=0.162	N=0.009
OPER CNA441	STAGE 1	D=1.781	N=0.094
OPER BEC58P	STAGE 1	D=2.904	N=0.153
OPER GASEPV	STAGE 1	D=4.395	N=0.231
OPER GASEPF	STAGE 1	D=11.465	N=0.603

TRACK TR4 RWY 16 STRAIGHT 7000 RIGHT 90 D 4000
STRAIGHT 40000

OPER CNA441	STAGE 1	D=0.083	N=0.004
OPER BEC58P	STAGE 1	D=0.136	N=0.007
OPER GASEPV	STAGE 1	D=0.206	N=0.011
OPER GASEPF	STAGE 1	D=0.537	N=0.026

TRACK TR5 RWY 16 STRAIGHT 7000 RIGHT 20 D 4000
STRAIGHT 2000 LEFT 20 D 4000
STRAIGHT 40000

OPER CNA500	STAGE 1	D=0.478	N=0.025
OPER COMJET	STAGE 1	D=0.041	N=0.002
OPER CNA441	STAGE 1	D=0.111	N=0.006
OPER BEC58P	STAGE 1	D=0.182	N=0.010
OPER GASEPV	STAGE 1	D=0.275	N=0.014
OPER GASEPF	STAGE 1	D=0.717	N=0.038

TRACK TR6 RWY 16 STRAIGHT 7000 LEFT 85 D 4000
STRAIGHT 40000

OPER CNA441	STAGE 1	D=0.028	N=0.001
OPER BEC58P	STAGE 1	D=0.045	N=0.002
OPER GASEPV	STAGE 1	D=0.069	N=0.004
OPER GASEPF	STAGE 1	D=0.179	N=0.009

TRACK TR19 RWY 16 STRAIGHT 7000 LEFT 180 D 4000
STRAIGHT 40000

OPER GASEPV	STAGE 1	D=0.824	N=0.043
OPER GASEPF	STAGE 1	D=2.150	N=0.113
OPER BEC58P	STAGE 1	D=0.545	N=0.029
OPER CNA441	STAGE 1	D=0.334	N=0.029

LANDING BY FREQUENCY:

TRACK TR8 RWY 34 STRAIGHT 10000 LEFT 90 D 5000
STRAIGHT 8000 LEFT 90 D 5000
STRAIGHT 6500
OPER CNA441 PROF=STD3D D=1.856 N=0.019
OPER COMJET PROF=STD3D D=0.135 N=0.001
OPER CNA500 PROF=STD3D D=1.593 N=0.016

TRACK TR9 RWY 34 STRAIGHT 10000 LEFT 20 D 10000
STRAIGHT 100 RIGHT 20 D 10000
STRAIGHT 6000
OPER CNA441 PROF=STD3D D=0.464 N=0.005
OPER COMJET PROF=STD3D D=0.034
OPER CNA500 PROF=STD3D D=0.398 N=0.004

TRACK TR10 RWY 34 STRAIGHT 8000 RIGHT 23 D 5000
STRAIGHT 7500 LEFT 84 D 5000
STRAIGHT 7000 LEFT 90 D 4000
STRAIGHT 3000 LEFT 90 D 4000
STRAIGHT 6000
OPER BEC58P PROF=STD3D D=0.185 N=0.010
OPER GASEPV PROF=STD3D D=0.275 N=0.014
OPER GASEPF PROF=STD3D D=0.717 N=0.038

TRACK TR11 RWY 34 STRAIGHT 8000 RIGHT 15 D 5000
STRAIGHT 8000 LEFT 90 D 4000
STRAIGHT 3000 LEFT 90 D 4000
STRAIGHT 6000
OPER BEC58P PROF=STD3D D=1.634 N=0.086
OPER GASEPV PROF=STD3D D=2.472 N=0.130
OPER GASEPF PROF=STD3D D=6.449 N=0.339

TRACK TR12 RWY 34 STRAIGHT 8000 LEFT 15 D 5000
STRAIGHT 8000 LEFT 90 D 4000
STRAIGHT 3000 LEFT 90 D 4000
STRAIGHT 6000
OPER BEC58P PROF=STD3D D=1.089 N=0.057
OPER GASEPV PROF=STD3D D=1.648 N=0.067
OPER GASEPF PROF=STD3D D=4.299 N=0.226

TRACK TR13 RWY 34 STRAIGHT 14000 LEFT 90 D 4000
STRAIGHT 7000 LEFT 90 D 4000

STRAIGHT 9500 LEFT 90 D 4000
STRAIGHT 3500 LEFT 90 D 4000
STRAIGHT 6000
OPER GASEPV PROF=STD3D D=1.099 N=0.058
OPER GASEPF PROF=STD3D D=2.866 N=0.151
OPER BEC58P PROF=STD3D D=0.726 N=0.038

TRACK TR14 RWY 16 STRAIGHT 8000 RIGHT 10 D 5000
STRAIGHT 100 LEFT 10 D 5000
STRAIGHT 3500
OPER CNA500 PROF=STD3D D=0.398 N=0.004
OPER COMJET PROF=STD3D D=0.034
OPER CNA441 PROF=STD3D D=0.464 N=0.005
OPER BEC58P PROF=STD3D D=0.545 N=0.029
OPER GASEPV PROF=STD3D D=0.659 N=0.035
OPER GASEPF PROF=STD3D D=2.150 N=0.113

TRACK TR15 RWY 16 STRAIGHT 1000 LEFT 90 D 5000
STRAIGHT 5500 LEFT 90 D 5000
STRAIGHT 2500 LEFT 90 D 4000
STRAIGHT 3500
OPER GASEPV PROF=STD3D D=0.165 N=0.009
OPER GASEPF PROF=STD3D D=0.537 N=0.028
OPER BEC58P PROF=STD3D D=0.136 N=0.007

TRACK TR16 RWY 16 STRAIGHT 15000 LEFT 90 D 5000
STRAIGHT 2500 LEFT 90 D 4000
STRAIGHT 3500
OPER GASEPV PROF=STD3D D=0.275 N=0.014
OPER GASEPF PROF=STD3D D=0.896 N=0.047
OPER BEC58P PROF=STD3D D=0.227 N=0.012
OPER CNA441 PROF=STD3D D=0.116 N=0.001
OPER COMJET PROF=STD3D D=0.008
OPER CNA500 PROF=STD3D D=0.100 N=0.001

TOUCHNGOS BY FREQUENCY:

TRACK TR17 RWY 34 STRAIGHT 7000 LEFT 90 D 2500
STRAIGHT 2500 LEFT 90 D 2500
STRAIGHT 10500 LEFT 90 D 2500
STRAIGHT 2500 LEFT 90 D 2500
STRAIGHT 3500
OPER GASEPV STAGE 1 PROF=STD3D D=11.334 N=0.231

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OPER GASEPF     STAGE 1     PROF=STD3D D=29.567  N=0.603
OPER BEC58P     STAGE 1     PROF=STD3D D=0.394  N=0.008

TRACK TR18 RWY 16 STRAIGHT 9000 LEFT 90 D 2500
       STRAIGHT 3000 LEFT 90 D 2500
       STRAIGHT 12500 LEFT 90 D 2500
       STRAIGHT 3000 LEFT 90 D 2500
       STRAIGHT 3500
OPER GASEPV     STAGE 1     PROF=STD3D D=2.833    N=0.231
OPER GASEPF     STAGE 1     PROF=STD3D D=7.392    N=0.151
OPER BEC58P     STAGE 1     PROF=STD3D D=0.099    N=0.002

PROCESSES:

CONTOUR LDN AT 55 60 65 70 75
       WITH TOLERANCE=2
       REFINE=6
       XSTART=-10000
       YSTART=-10000
       XSTOP=10000
       YSTOP=10000
       PLOT

END.
```

Appendix D
Glossary of Aviation Terms

Glossary of Aviation Terms

Active Aircraft - Aircraft registered with the FAA and reported to have flown during the preceding calendar year.

ADO - Airports District Office. The "local" office of the FAA which coordinates planning and construction projects. Staff in the ADO are typically assigned to a particular state - ie: Oregon, Idaho, or Washington. The ADO for Oregon, Washington, and Idaho is located in Renton Washington.

AIP Funds - AIP stands for Airport Improvement Funds and is an FAA program which pays 90% of eligible airport improvement projects. The local sponsor of the project (ie: airport owner) has to come up with the remaining 10% known as the "match".

Air Taxi - Operations of aircraft "for hire" for specific trips, commonly referred to an aircraft available for charter.

Aircraft Approach Category - A grouping of aircraft based how fast they come in for landing. As a rule of thumb, slower approach speeds mean smaller airport dimensions, faster speeds mean larger dimensions from runway widths to the separation between runways and taxiways.

The aircraft approach categories are:

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; and,
Category E - Speed 166 knots or more.

Airplane Design Group - A grouping of airplanes based on wingspan. As with Approach Category, the wider the wingspan, the bigger the aircraft is, the more room it takes up for operating on an airport. The Airplane Design Groups are:

Group I:	Up to, but not including 49 feet
Group II:	49 feet up to, but not including 79 feet
Group III:	79 feet up to, but not including 118 feet
Group IV:	118 feet up to, but not including 171 feet
Group V:	171 feet up to, but not including 214 feet
Group VI:	214 feet up to, but not including 262 feet

Airport Reference Code (ARC) - An FAA airport coding system. The system looks at the types of aircraft which use an airport most often and then based upon the characteristics of those airplanes (approach speed and wing span), assigns a code. The code is then used to determine how the airport is designed and what design standards are used. An airport designed for a Piper Cub (an aircraft in the A-I approach/design group) would take less room than a Boeing 747 (an aircraft in the D-V approach/design group).

Aircraft Operation - A landing or takeoff is one operation. An aircraft which takes off and then lands creates two aircraft operations.

ALP - Airport Layout Plan - The FAA approved drawing which shows the existing and anticipated layout of an airport for the next 20 years or so. An ALP is prepared using FAA design standards.

Annual Service Volume (ASV) - An estimate of how many airplanes and airport can handle based upon the number and types of runways, the aircraft mix (big vs small, etc), and the weather conditions. Annual service volume is one of the bench marks used to determine when an airport is getting so busy that a new runway or taxiway are needed.

AOPA - Aircraft Owners and Pilots Association -

Approach End of Runway - The end of the runway a pilot tries to land - could be thought of as the "landing end" of the runway. Which end a pilot uses depends upon the winds. Pilots almost always try and land into the wind and will line up on the runway that best aligns with the wind.

Approach Surface - Also FAR Part 77 Approach or Obstacle Clearance Approach - An imaginary (invisible) surface which rises off the ends of a runway which must be kept clear to provide airspace for an airplane to land or take off in. The size of the approach surface will vary depending upon how big and how fast the airplanes are, and whether or not the runway has an instrument approach for landing in bad weather.

ARFF - Aircraft Rescue and Fire Fighting, ie: an on airport fire station.

AvGas - Gasoline used in airplanes with piston engines.

Based Aircraft - Aircraft stationed at an airport on an annual basis. Used as a measure of activity at an airport.

Capacity - A measure of the maximum number of aircraft operations which can be accommodated on the runways of an airport in an hour.

CAVU - Ceiling and Visibility Unlimited. Refers to weather which is clear blue sky - no clouds and very clear so that you can see "forever". What pilots always want to fly in.

Conical Surface - One of the "FAR Part 77 "Imaginary" Surfaces. The conical surface extends outward and upward from the edge of the horizontal surface at a slope of 20:1 for a horizontal distance of 4,000 feet.

Critical Aircraft - Aircraft which controls one or more design items based on wingspan, approach speed and/or maximum certificated take off weight. The same aircraft may not be critical to all design items.

Crosswind - When used concerning wind conditions, the word means a wind not parallel to the runway or the path of an aircraft. Sometimes used in reference to a runway as in "runway 7/25 is the crosswind runway" meaning that it is not the runway normally used for the prevailing wind condition.

FAA - Federal Aviation Administration. The FAA is the branch of the U.S. Department of Transportation which is responsible for the development of airports and air navigation systems.

FAR Part 77 - Federal Aviation Regulations which establish standards for determining obstructions in navigable airspace. FAR stands for Federal Aviation Regulations, Part 77 refers to the section in the regulations, ie: #77. FAR Part 77 is commonly used to refer to imaginary surfaces, the primary, transitional, horizontal, conical, and approach surfaces. These surfaces vary with the size and type of airport.

FBO - Fixed Base Operator - An individual or company located at an airport providing aviation services. Sometimes further defined as a "Full Service" FBO or a limited service. Full service FBO's typically provide a broad range of services (flight instruction, aircraft rental, charter, fueling, repair, etc) where a limited service FBO provides only one or two services (such as engine repair, or radio repair).

Fixed Wing - A plane with one or more "fixed wings" as opposed to a helicopter which is sometimes called a rotary wing aircraft.

FSS - Flight Service Station - An office where I pilot can call (both on the ground or in the air) to get weather and airport information. Flight plans are also filed with the FSS.

General Aviation - Also Called "GA" - All civil (non-military) aviation operations other than scheduled air services and non-scheduled air transport operations for hire.

GPS or Global Positioning System - GPS is a system of navigating which uses satellites to establish the location and altitude of an aircraft. GPS has recently been embraced by the FAA as a system with potential for application in traveling from point A to point B as well as for use in making landing approaches.

Hangar Queen - An airplane which is seldom flown spending most of its time in an aircraft hangar - may be highly polished and well maintained.

Hangar Flying - A situation in which pilots or aviation enthusiasts gather to talk about flying. May or may not be in a hangar. Exploits discussed may or may not be grounded in truth (can be somewhat akin to telling fish stories).

HIRL - High Intensity Runway Lights. High intensity (ie: very bright) lights are used on instrument runways where landings are made in foggy weather. The bright runway lights help pilots to see the runway when visibility is poor.

Home Built Aircraft - An aircraft built by an amateur as opposed to an FAA Certified factory built aircraft.

Horizontal Surface - One of the FAR Part 77 Imaginary (invisible) Surfaces. The horizontal surface is an imaginary flat surface 150 feet above the established airport elevation, the perimeter of which is constructed by swinging arcs (circles) with a radius of 5,000 feet for all runways designated as utility or general; and 10,000 feet for all other runways from the center of each end of the primary surface and connecting the adjacent arc by straight lines. The resulting shape looks like a football stadium - and could also be described as a rectangle with half circles on each end with the runway in the middle.

IFR (Instrument Flight Rules) - IFR refers to the set of rules pilots must follow when they are flying in bad weather. Pilots are required to follow these rules when operating in controlled airspace with visibility (ability to see in front of themselves) of less than three miles and/or ceiling (a layer of clouds) lower than 1,000 feet.

ILS (Instrument Landing System) - An ILS is a system used to guide a plane in for a landing in bad weather. Sometimes referred to as a precision instrument approach, it is m designed to provide an exact approach path for alignment and descent of aircraft. Generally consists of a localizer, glide slope, outer marker, middle marker, and approach lights. This type of precision instrument system is being replaced by Microwave Landing Systems (MLS).

Instrument Runway - A runway equipped with systems to help a pilot land in bad weather.

Itinerant Operation - All aircraft operations at an airport other than local, ie: flights which come in from another airport.

Landing Area - That part of the movement area intended for the landing and takeoff of aircraft.

Large Aircraft - An aircraft which weights more than 12,500 lbs.

Ldn - Day-night sound levels, a method of measuring noise exposure.

Local Operation - Aircraft operation in the traffic pattern or within sight of the tower, or aircraft known to be departing or arriving from flight in local practice areas, or aircraft executing practice instrument approaches at the airport.

LORAN C - A navigation system using land based radio signals which allows a person to tell where they are and how fast they are moving, but not how high you are off the ground. (See GPS)

MALSR - Medium-intensity Approach Lighting System with Runway alignment indicator lights. An airport lighting facility which provides visual guidance to landing aircraft.

Minimums - Weather condition requirements established for a particular operation or type of operation.

MIRL - Medium Intensity Runway Lights. Runway lights which are not as intense as HIRL's (high intensity runway lights). Typical at medium and smaller airports which do not have sophisticated instrument landing systems requiring operations in fog.

MLS - Microwave Landing System. An instrument landing system operating in the microwave spectrum which provides lateral and vertical guidance to aircraft with compatible equipment, and also sometimes referred to at the Mythical Landing System.

Movement Area - The runways, taxiways and other areas of the airport used for taxiing, takeoff and landing of aircraft, ie: aircraft movement.

MSL - Elevation above Mean Sea Level.

Navigational Aid (Navaid) - Any visual or electronic device which helps a pilot navigate. Can be for use to land at an airport or for traveling from point A to point B.

NDB - Non-Directional Beacon which transmits a signal on which a pilot may "home" using equipment installed in the aircraft.

Non-Precision Instrument Approach - A non-precision instrument approach provides guidance to pilots trying to land in bad weather. It does not provide the "precision" guidance of an precision instrument approach/

OAS - Oregon Aeronautics Section.

Obstruction - An object (tree, house, road, phone pole, etc) which penetrates an imaginary surface described in FAR Part 77.

PAPI - Precision Approach Path Indicator. A system of lights located by the approach end of a runway which provides visual approach slope guidance to aircraft during approach to landing. The lights typically show green if a pilot is on the correct flight path, and turn red of a pilot is too low.

PIR - Precision Instrument Runway. A runway served by a "precision" instrument approach landing system. The precision landing systems allows property equipped airplanes and trained pilots to land in bad weather.

Precision Instrument Approach - A precision instrument approach is a system which helps guide pilots in for a landing in thick fog and provides "precise" guidance as opposed to a non-precision approach which is less precise.

Primary Surface - One of the FAR Part 77 Imaginary Surfaces, the primary surface is centered on top of the runway and extends 200 feet beyond each end. The width is from 250' to 1,000' wide depending upon the type of airplanes using the runway.

REILs - Runway End Identifier Lights. These are distinctive flashing lights which help a pilot identify the runway.

Rotorcraft - A helicopter.

RPZ - Runway Protection Zone - An area off the end of the runway which is intended to be clear in case an aircraft lands short of the runway. The size is small for airports serving only small airplanes and gets bigger for airports serving large airplanes. The RPZ used to be known as a clear zone - which was a good descriptive term because you wanted to keep it clear.

Segmented Circle - A system of visual indicators designed to show a pilot in the air which direction the airplanes fly in the landing pattern at that airport.

Small Aircraft - An aircraft which weights less than 12,500 lbs.

Tie down - A place where an aircraft is parked and "tied down". Can be grass or pavement.

T-Hangar - An aircraft storage hangars which resembles the shape of a "T".

Transitional Surfaces - One of the FAR Part 77 Imaginary Surfaces, the transitional surface extend outward and upward at right angles to the runway centerline and the extended runway centerline at a slope of 7:1 from the sides of the primary surface and from the sides of the approach surfaces.

Transport Airport - An airport designed and constructed to serve large commercial airliners. Portland International and SEATAC are good examples of transport airports.

Utility Airport - An airport designed and constructed to serve small planes. Aurora State Airport in Oregon, Nampa Airport in Idaho, or Arlington Airport in Washington are examples of utility airports.

VASI- Visual Approach Slope Indicator. A system of lights located by the approach end of a runway which provides visual approach slope guidance to aircraft during approach to landing. The lights typically show some combination of green and white if a pilot is on the correct flight path, and turn red of a pilot is too low.

War Bird - A military aircraft owned by a civilian. Most typically of World War II vintage, more recently Cold War era fighter jet aircraft from communist block countries.