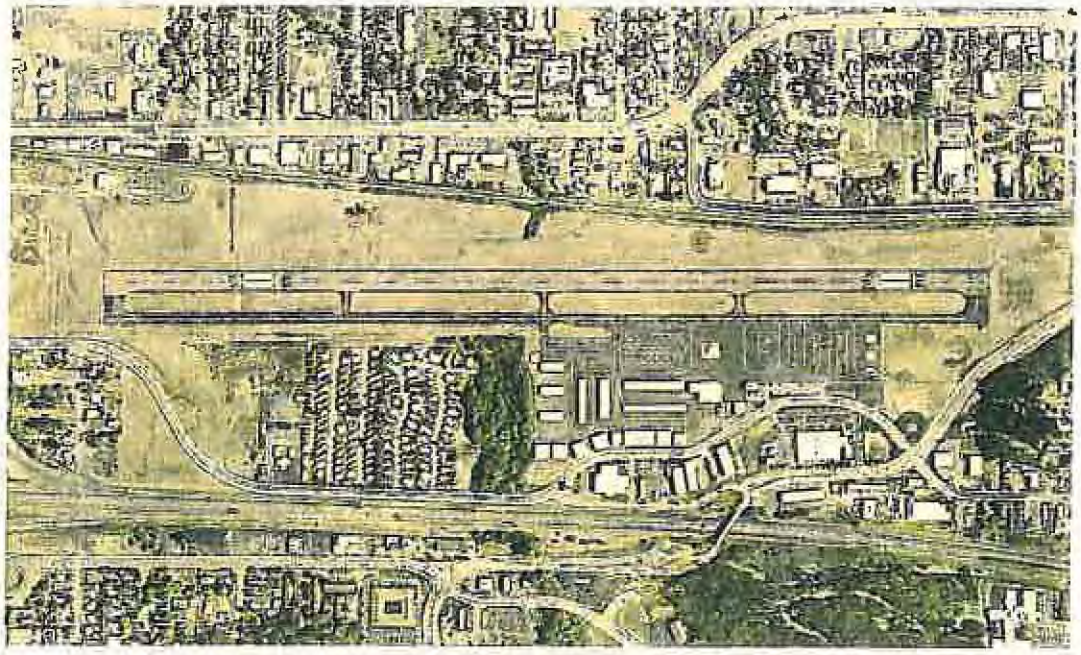
ROSEBURG REGIONAL AIRPORT

AIRPORT LAYOUT PLAN REPORT



CITY OF ROSEBURG
ROSEBURG, OREGON

CENTURY WEST
ENGINEERING CORPORATION
6650 S.W. Redwood Lane, Suite 300
Portland, Oregon 97224
503-419-2130 phone • 503-639-2710 fax
www.centurywest.com

Aron Faegre & Associates
Gazeley & Associates

FINAL REPORT

Roseburg Regional Airport

Airport Layout Plan Update
2005-2024

FINAL REPORT

Prepared for
City of Roseburg, Oregon



David M. Miller, AICP
Century West Engineering
6650 SW Redwood Lane, Suite 300
Portland, Oregon 97224
Tel. (503) 419-2130
Fax (503) 639-2710
www.centurywest.com

◆

In Association With

Aron Faegre & Associates
Portland, Oregon

◆

Gazeley & Associates
Corvallis, Oregon

The preparation of this document may have been supported, in part, through the Airport Improvement Program financial assistance from the Federal Aviation Administration as provided under Title 49, United States Code, section 47104. 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 with appropriate public laws.

TABLE OF CONTENTS

CHAPTER ONE INTRODUCTION 1-1
OVERVIEW 1-1
PUBLIC INVOLVEMENT 1-2
AIRPORT LAYOUT PLAN REPORT CONCLUSIONS 1-3
SUMMARY OF ALP REPORT RECOMMENDATIONS 1-5

CHAPTER TWO INVENTORY OF EXISTING CONDITIONS 2-1
INTRODUCTION 2-1
AIRPORT LOCALE 2-2
SOCIOECONOMIC CONDITIONS 2-2
Population *2-2*
Economy *2-2*
CLIMATE 2-3
GEOLOGY/SOILS 2-4
Airport Environment *2-4*
Airport History *2-4*
Commercial Air Service *2-5*
AIRFIELD FACILITIES 2-7
Runways and Taxiways *2-11*
Aircraft Apron *2-12*
Agricultural Aircraft Facilities *2-14*
Airfield Pavement Condition *2-14*
LANDSIDE FACILITIES 2-16
Hangars and Airport Buildings *2-16*
Airport Lighting *2-16*
AIRSPACE AND NAVIGATIONAL AIDS 2-18
AIRPORT SUPPORT FACILITIES/SERVICES 2-21
Aircraft Fuel *2-21*
Airport Rescue and Fire Fighting *2-21*
Surface Access and Vehicle Parking *2-22*
Fencing *2-22*
Utilities *2-22*
LAND USE PLANNING AND ZONING 2-22
AIRPORT SERVICE AREA 2-23

CHAPTER THREE AVIATION ACTIVITY FORECASTS 3-1
INTRODUCTION 3-1
Population *3-1*
Recent Historic Activity *3-2*
REVIEW OF EXISTING FORECASTS 3-4
1995 Airport Master Plan (AMP) *3-5*
Oregon Aviation System Plan (OASP) *3-7*
FAA Terminal Area Forecasts (TAF) *3-8*
Updated Forecasts *3-8*
Air Traffic Distribution/Design Aircraft *3-9*

CHAPTER FOUR FACILITY REQUIREMENTS 4-1
INTRODUCTION 4-1
1995 Airport Master Plan Overview 4-1
Five Year Capital Improvement Plan 4-3
Airspace 4-4
Airport Design Standards 4-5
Runway Safety Area (RSA) 4-10
Runway Object Free Area (OFA) 4-11
Obstacle Free Zone (OFZ) 4-12
Taxiway Safety Area 4-13
Taxiway Object Free Area 4-13
Building Restriction Line (BRL) 4-13
Runway Protection Zones (RPZ) 4-14
Aircraft Parking Line (APL) 4-15
Runway - Parallel Taxiway Separation 4-16
FAR PART 77 SURFACES 4-16
Approach Surfaces 4-19
Primary Surface 4-19
Transitional Surface 4-19
Horizontal Surface 4-20
Conical Surface 4-20
AIRSIDE REQUIREMENTS 4-21
Runways 4-21
Runway Orientation 4-21
Runway Length 4-22
Runway Width 4-25
Airfield Pavement 4-25
Airfield Capacity 4-26
Taxiways 4-27
Airfield Instrumentation, Lighting and Marking 4-27
On-Field Weather Data 4-28
LANDSIDE FACILITIES 4-28
Hangars 4-28
Aircraft Parking and Tiedown Apron 4-29
FBO Facilities 4-31
Surface Access Requirements 4-32
SUPPORT FACILITIES 4-32
Aviation Fuel Storage 4-32
Airport Utilities 4-32
Security 4-33
FACILITY REQUIREMENTS SUMMARY 4-35

CHAPTER FIVE AIRPORT DEVELOPMENT ALTERNATIVES AND AIRPORT LAYOUT PLAN DRAWINGS 5-1
INTRODUCTION 5-1
PRELIMINARY ALTERNATIVES 5-2
Alternative A 5-2
Alternative B 5-3
Alternative C 5-3

PREFERRED ALTERNATIVE 5-4
AIRPORT LAYOUT PLAN DRAWINGS 5-9
Airport Layout Plan *5-9*
Airspace Plan *5-10*
Runway 16/34 Approach Surface Plan & Profile *5-12*
Airport Land Use Plan with 2009 Noise Contours *5-12*

CHAPTER SIX FINANCIAL MANAGEMENT AND DEVELOPMENT PROGRAM 6-1
AIRPORT DEVELOPMENT SCHEDULE AND COST ESTIMATES 6-2
Short-Term Projects *6-3*
Long-Term Projects *6-4*
FINANCING OF DEVELOPMENT PROGRAM 6-9
Federal Grants *6-9*
State Funding *6-9*
Financing the Local Share of Capital Improvements *6-10*

CHAPTER SEVEN ENVIRONMENTAL CHECKLIST 7-1
INTRODUCTION 7-1
NOISE EVALUATION 7-5
Noise Modeling and Contour Criteria *7-7*
Noise and Land-Use Compatibility Criteria *7-8*
OTHER ENVIRONMENTAL CONSIDERATIONS 7-10

LIST OF TABLES

Table 2-1 Airport Data 2-8
Table 2-2 Runway 16/34 Data 2-11
Table 2-3 Taxiway Data 2-12
Table 2-4 Aircraft Apron Data 2-13
Table 2-5 Summary of Airfield Pavement Condition 2-15
Table 2-6 Airport Buildings 2-16
Table 2-7 Airport Lighting 2-18
Table 2-8 Navigational Aids and Related Items 2-19
Table 2-9 Local Airspace Obstructions/Features 2-20
Table 2-10 Airspace/Instrument Routes 2-21
Table 2-11 Public Use Airports in Vicinity 2-24
Table 3-1 2003 Based Aircraft 3-2
Table 3-2 Summary of ODA Activity Counts 3-4
Table 3-3 Existing Aviation Forecasts 3-7
Table 3-4 Updated Forecasts 3-11
Table 4-1 Summary of 1995 Airport Master Plan Recommended Projects and Current Status 4-2
Table 4-2 Typical Aircraft & Design Categories 4-7
Table 4-3 Airport Design Standards Summary 4-8
Table 4-4 Compliance With FAA Design Standards 4-9
Table 4-5 FAR Part 77 Airspace surfaces 4-18
Table 4-6 Business Aircraft Runway Requirements 4-23
Table 4-7 FAA-Recommended Runway Lengths 4-24
Table 4-8 Summary of Recommended Airfield Pavement Maintenance 4-26

Table 4-9 Changes in Aircraft Parking Capacity with Relocated Parallel Taxiway 4-30
Table 4-10 Apron and Hangar Facility Requirements Summary 4-34
Table 4-11 Facility Requirements Summary 4-36
Table 6-1 20-Year Capital Improvement Program 2005 to 2025 6-6
Table 7-1 Summary of Land Use and Zoning in Vicinity of Airport 7-3
Table 7-2 Land-Use Compatibility with DNL 7-9
Table 7-3 Roseburg Regional Airport Environmental Checklist 7-14

LIST OF FIGURES

Figure 2-1 Existing Conditions and Site Map 2-9
Figure 2-2 Terminal Area Facilities 2-10
Figure 3-1 Summary of ODA Activity Counts & TAF Data 3-4
Figure 3-2 ODA RENS Counts & 1995 Master Plan Forecast 3-6
Figure 3-3 Updated Based Aircraft Forecast 3-12
Figure 3-4 Updated Aircraft Operations Forecast 3-12
Figure 4-1 Part 77 diagram 4-17
Figure 5-1 Alternative A 5-6
Figure 5-2 Alternative B 5-7
Figure 5-3 Alternative C 5-8

LIST OF DRAWINGS

Drawing 1 Cover Sheet 5-14
Drawing 2 Airport Layout Plan 5-15
Drawing 3 Airport Airspace Plan 5-16
Drawing 4 Runway 16/34 Approach Plan & Profile 5-17
Drawing 5 Airport Land Use Plan 5-18

Roseburg Regional Airport
Airport Layout Plan Report

Chapter One

Introduction

CHAPTER ONE
INTRODUCTION

The City of Roseburg, in cooperation with the Oregon Department of Aviation (ODA), is updating the Airport Layout Plan (ALP) for Roseburg Regional Airport. The purpose of the study is to define the current, short-term and long-term needs of the airport. The 2005 Airport Layout Plan Report replaces the Roseburg Regional Airport Master Plan, completed in the mid-1990s, as the primary planning guidance for future airport development.[1] Prior master plan recommendations have been reviewed and revised as necessary to reflect current conditions and any changes in activity, utilization, or facility development that may affect future demand for aviation facilities.

Funding for the ALP project is provided through a Federal Aviation Administration (FAA) Airport Improvement Program grant (90 %) and local match (10 %) from the City of Roseburg. Overall project coordination was provided by the Oregon Department of Aviation through administration of a multiple airport layout plan grant.

OVERVIEW

Roseburg Regional Airport is located in Douglas County and is included in the "Core System of Airports" in the 2000 Oregon Aviation Plan (OAP).[2] Core system airports are defined as having "a significant role in the statewide aviation system." The Airport is included in the "Business or High Activity General Aviation Airport" category based on its current functional role. Business/High Activity GA airports typically accommodate corporate aviation activity, including business jets, helicopters and other general aviation activities. Local airport activity includes business and general aviation users, commercial air charter service, government users, regional firefighting and visitors to Roseburg and the surrounding area.

Business/High Activity GA airports are significant components in the statewide transportation system generating both direct (employment, etc.) and indirect economic benefits for the local

[1] Roseburg Regional Airport Master Plan W&H Pacific (1995).
[2] Oregon Aviation Plan (Dye Management/Century West), © Oregon Department of Transportation 2000.

community or region. Commercial-related aviation businesses, such as fixed base operators and aircraft maintenance shops located at Business/High Activity GA airports typically provide the services required by business aviation and complex turbine aircraft, in addition to providing other GA services.

Business/High Activity GA airports provide a high level of facility capabilities required to accommodate business and personal travel, including commercial air charter activity. The availability of a safe, well-maintained general aviation airport is often a key factor in a business decision to locate in, or serve a small community that does not have nearby commercial air service. The Airport provides convenient general aviation and business aviation access to this area, with the nearest commercial air service more than one hour away in Eugene or Medford.

The Airport is included in the National Plan of Integrated Airport Systems (NPIAS), administered by the FAA. NPIAS airports are eligible for federal funding of improvements through FAA programs such as the current Airport Improvement Program (AIP). The FAA requires that all NPIAS airports periodically update their airport plans to maintain effective long-term planning. Completion of this project will enable the City to meet the FAA's requirement to maintain an up-to-date plan.

The primary objective of the Airport Layout Plan Report is to identify current and future facility needs and the improvements necessary to maintain a safe and efficient airport that is economically, environmentally, and socially sustainable.

The Airport Layout Plan Report:

- *Examines previous recommendations and development alternatives as appropriate to meet the current and projected airport facility needs;*
- *Determines current and future activity and facility requirements;*
- *Updates the airport layout plan, airspace plan, and land-use plan for the airport and its surrounding areas; and*
- *Schedules priorities of improvements and estimate development costs for the current 20-year planning period.*

PUBLIC INVOLVEMENT

The public involvement element of the planning process provided opportunities for all interested individuals, organizations, or groups to participate in the project. A list of stakeholders was

developed for the project, which included airport users, local citizens, businesses, and local, state and federal government agencies, and community leaders.

At the project kickoff, a Joint Planning Conference (JPC) was held for agencies and organizations with a specific interest or responsibility (land use, environmental, natural resources, transportation, etc.) associated with the airport or its vicinity. The purpose of the JPC was to identify any concerns or issues, which needed to be addressed as part of this airport layout plan update. The JPC provided valuable information used in formulating the plan.

The City's Airport Commission served in the role of planning advisory committee (PAC) to assist the Consultant and City staff in developing the updated plan. The Commission reviewed and commented on draft work products and provided local knowledge and expertise to the planning process.

Following completion of preliminary work products, the Draft ALP Report was prepared to present the culmination of the entire work effort, reflecting the input provided by all participants in the planning process. Following a period of review, all public and agency comments received were integrated into the Final Airport Layout Plan Report and drawing set.

AIRPORT LAYOUT PLAN REPORT CONCLUSIONS

1. Roseburg Regional Airport is owned and operated by the City of Roseburg.

2. The Airport is categorized as a "Business or High Activity General Aviation Airport" in the 2000 Oregon Aviation Plan and is included in Oregon's core system of airports, which denotes its significance in Oregon's aviation system.

3. The Airport is included in the National Plan of Integrated Airport System (NPIAS), making it eligible for federal funding through the Federal Aviation Administration (FAA).

4. The Airport has a single paved and lighted runway (4,602 by 100 feet), oriented in a north-south direction (16/34). Both ends of the runway have displaced landing thresholds to provide improved obstruction clearance from close-in terrain.

5. Runway 16/34 has a published weight bearing capacity of 42,000 pounds for aircraft with single-wheel (SW) landing gear configurations; 54,000 for dual wheel; and 88,000 pounds for dual tandem (DT). This pavement strength is consistent with the airport's need to accommodate larger business aircraft.

6. Runway 16/34 has a full-length parallel taxiway on its west side. The airfield facilities are generally designed to meet FAA Airport Design Group (ADG) II standards associated with business aircraft.

7. Airfield lighting currently includes medium intensity runway edge lights (MIRL), runway threshold lights and the airport beacon. A visual approach slope indicator (VASI) is installed on Runway 34; runway end identifier lights (REIL) are located on both runway ends (at the displaced landing thresholds)

8. Landside facilities (aircraft parking apron, fuel, hangars, etc.) are located on the west side of the runway, adjacent to the main apron and parallel taxiway.

9. A major property acquisition and redevelopment project is underway on the west side of the airport that will significantly expand the airport's landside capacity. The area formerly accommodated a large mobile home park, which was not a compatible land use with airport operations.

10. The most recent air traffic data provided by ODA through its acoustical counting program is for 2002. ODA estimated 18,835 annual operations at Roseburg Regional in 2002, down from its estimate of 29,657 in 1999. It is noted that the 2002 activity count is for the 12-month period from October 2001 to 2002. Most U.S. airports experienced a significant decline in activity during the months following September 11, 2001. As such, the 2002 ODA counts are not believed to be an accurate reflection of current activity. Current FAA Terminal Area Forecast data lists 97 based aircraft and 23,360 annual operations at Roseburg Regional in 2005.

11. The Airport operates under day and night visual flight rules (VFR) and instrument flight rules (IFR) and has a nonprecision instrument approach capabilities. The Airport currently has two non-precision approaches (VOR-A approach and GPS-B approach). Both approaches route arriving aircraft from the south toward the Roseburg VORTAC and the airport with circle-to-land procedures.

12. Aviation fuel (AVGAS and Jet A) and major aircraft maintenance services are available at the airport.

12. Scheduled commercial air service by FAR Part 121 operators such as Horizon Air is not anticipated during the current twenty-year planning period. However, in the event that this level of service can be assured in the future by a particular airline, the City would need to have Roseburg Regional certified under FAR Part 139, as a commercial-service airport. Under current regulations, airlines operating aircraft with more than 9 passenger

seats must be certified under FAR Part 121 and can only provide scheduled passenger service at Part 139 airports. Certificated airports must comply with a variety of requirements that are summarized in an airport certification manual (ACM); these include airfield pavement management, airport rescue and firefighting (ARFF), airport security, snow and ice control, safety inspections, airport emergency plans, and wildlife hazard management.

13. Based on current airline industry market conditions, it is believed that scheduled commercial air service may now be feasible for Roseburg by carriers operating under FAR Part 135 (commuter). Based on regulatory limits, Part 135 service is provided by aircraft with 9 passenger seats or less, such as the Cessna Caravan. Roseburg Regional can currently accommodate Part 135 (commuter) scheduled air service without any additional FAA-mandated upgrades in facilities or capabilities that would be required to accommodate an FAR Part 121 airline.

SUMMARY OF ALP REPORT RECOMMENDATIONS

The recommendations of previous planning efforts were examined and revalidated or modified as appropriate based on current considerations, FAA-approved activity forecasts and current FAA design standards:

1. A regular schedule of pavement maintenance (vegetation control, crack filling, slurry seals, patching, etc.) should be conducted on airfield pavements to maximize the useful life and optimize life cycle maintenance expenditures. Continued participation in the Pavement Maintenance and Management Program (PMMP), currently administered by the Oregon Department of Aviation (ODA), is recommended.

2. Current and future design standards for Runway 16/34 are based on FAA airport reference code (ARC) B-II.

3. Phased development of the north hangar area is recommended to accommodate future demand for T-hangars, conventional hangars and aircraft parking. The first phase of development includes taxiway/taxilane connections, vehicle access and site preparation for T-hangars and conventional hangar sites in the southern section of the area. The second phase of development includes additional lease areas for conventional hangars, a new aircraft tiedown apron, taxiway/taxilane connections, and vehicle access and parking.

4. A 40-foot western relocation of the parallel taxiway is recommended to meet the B-II runway-parallel taxiway separation standard (240 feet). Existing aircraft parking

positions and tiedowns located within the future taxiway object free area (within 65.5 feet of taxiway centerline) will be removed/relocated in conjunction with the relocation project. The relocated parallel taxiway will be 35 feet wide based on ADG II standards.

5. The addition of aircraft holding areas at both ends of the runway (on parallel taxiway) is recommended to facilitate efficient aircraft movement.

6. The City of Roseburg should request development of a wide area augmentation system (WAAS) instrument approach by FAA for Runway 16/34 to supplement the existing instrument approaches.

7. Approximately 4.6 acres of property acquisition is recommended along the Newton Creek drainage, from the parallel taxiway to Aviation Drive.

8. A 400-foot extension to Runway 16/34 is recommended at the north end of the runway. However, due to the presence of close-in terrain obstructions, the existing Runway 16 landing threshold location should be retained. The future runway length will be 5,002 feet and the Runway 16 threshold would be displaced 1,098 feet from the end of the runway. The current landing distance available on Runway 16 would be unaffected; landing distance available on Runway 34 and takeoff distances available for both runway ends would be increased to 5,002 feet from the current 4,602 feet. Standard ADG II runway safety area, object free area and obstacle free zones will be provided beyond the future north end of Runway 16/34.

9. An additional runway improvement reserve is located beyond the future north end of the runway. The 400-foot long, 500-foot wide reserve could accommodate a clearway, stopway or paved overrun. Development of an unpaved clearway, combined with the recommended 400-foot runway extension would increase "available runway" to 5,402 feet for turbine aircraft in certain takeoff calculations on Runway 34 through the use of declared distances. As a short-term improvement, it is recommended that the north end of the *existing* runway be graded to meet FAA clearway standards (500 foot width and maximum 1.25 percent upward slope) as soon as possible, which could increase "available runway" for turbine aircraft until the runway extension project is completed. The clearway grading would also be compatible with the grading needed to construct the runway and parallel taxiway extensions.

10. A commercial air terminal area development reserve is recommended near the northwest corner of the airport. This area is reserved for terminal facility development in the event that large-scale commercial air service is provided to Roseburg. As noted in Conclusion #13, it is anticipated that scheduled service by smaller aircraft (9 passenger seats or less) presents a more realistic air service option for the community, based on market

conditions and regulatory requirements. It is anticipated that this type of service could be accommodated within the main apron and adjacent lease areas and would require only minimal passenger terminal facilities.

11. Fencing should be added along the entire airport boundary to limit unauthorized human, animal and vehicle access to the airfield. Additional fencing and electronic (keypad combination or proximity reader cards) vehicle gates should be provided to control access to existing and new apron and hangar areas.

12. The City of Roseburg and Douglas County should ensure that airport overlay zoning reflects the updated boundaries of the FAR Part 77 airspace surfaces defined in this plan and complies fully with Oregon state law (ORS Ch. 836.600-634). The ordinance language and mapping developed and maintained by the land use jurisdictions should be consistent to ensure overall compatibility.

13. The City of Roseburg and Douglas County should ensure through their comprehensive planning that development of rural lands in the vicinity of the airport is compatible with airport activities. Maintaining Manufacturing zoning in the areas surrounding the airport provides effective land use compatibility with airport operations. Development of new residential areas, or increasing the densities of existing rural residential areas within the boundaries of the protected airspace surfaces of the airport should be discouraged to ensure the long-term viability of the airport as an important transportation facility within the region.

14. The City of Roseburg should require that applicants for all leases or development proposals involving construction of structures on the airport demonstrate compatibility with the airport's protected airspace surfaces. The applicant should be required to provide all documentation necessary for the sponsor to obtain "no objection" finding by FAA resulting from the review of FAA Form 7460-1 – Notice of Proposed Construction or Alteration, prior to approval of ground leases. Any proposal that receives an objection by FAA should not be approved without first addressing FAA concerns.

15. Local (City or County) planning and building officials should require that applicants for all proposed development within the boundaries of the airport overlay zone (as defined by the updated Airport Airspace Plan) demonstrate coordination with FAA through review of proposed development (FAA Form 7460-1) prior to approval of building permits, plats, binding site plans, etc. It is recognized that the mountainous terrain in the vicinity of the airport will result in a larger than usual number of Part 77 penetrations when structures are constructed on terrain that already penetrates horizontal or conical surfaces. Preventing new penetrations to the outer Part 77 surfaces is not considered

highly feasible; however, all proposed development should have the benefit of coordinated review.

16. It is recommended that any proposed changes in land use or zoning within the boundaries of the airport overlay zone be coordinated with the Oregon Department of Aviation (ODA) to ensure consistency with Oregon airport land use guidelines.

17. The City of Roseburg should adopt the Airport Layout Plan Report and drawings in a timely manner to guide airport activities. Douglas County and the City of Roseburg should also adopt the Airport Layout Plan Report and drawings for incorporation into local comprehensive and transportation planning.

18. The Exhibit "A" Property Plan for the airport should be updated to clearly depict current airport boundaries and total airport acreage, in addition to any avigation easement held for runway protection zones.

19. The City of Roseburg should prepare necessary documentation for FAA review to support proposed non-aviation use and potential sale of airport property located near the north end of the airport (beyond the future runway protection zone), on the north side of Edenbower Road, consistent with current planning.

20. The City should conduct a survey of the existing Runway 34 VASI glide path to document the absence/presence of obstructions within the defined glide path. In the event that obstructions are identified, they should be removed or options for steepening the glide path angle should be considered. Based on current FAA instrument approach and obstruction clearance criteria, demonstrating that Runway 34 has an unobstructed VASI glide path may allow the existing night-authorized instrument approaches to remain in effect. If that cannot be demonstrated, the City may be required to seek a modification to standards or displace the Runway 34 threshold an additional 200 feet to meet FAA criteria for night-authorized circling approaches. The current obstruction clearance approach (OCA) for Runway 34 meets the criteria defined for day and night visual approaches and daytime only instrument approach procedures.

21. An updated obstruction survey should be performed to verify location and heights of obstructions in the vicinity of the runway, particularly within the FAR Part 77 primary, approach and transitional surfaces in support of a new GPS (WAAS, RNAV, etc.) approach.

22. The City of Roseburg should initiate the recommended improvements and major maintenance items in a timely manner, requesting funding assistance under FAA and other federal or state funding programs for all eligible capital improvements.

Roseburg Regional Airport
Airport Layout Plan Report

Chapter Two

Inventory of Existing Conditions

CHAPTER TWO
INVENTORY OF EXISTING CONDITIONS

INTRODUCTION

This chapter documents existing conditions and aviation activity at the airport. Existing forecasts of aviation activity will be evaluated, and updated as necessary, to identify in broad terms, anticipated trends that may affect development needs at Roseburg Regional Airport through the twenty-year planning period and beyond. The existing airfield facilities were also examined during recent on-site inspections. Historical data from a variety of sources are used in this evaluation:

- **Roseburg Regional Airport – Master Plan Update 1995-2014** (W&H Pacific, Inc., 1996)
- **Roseburg Regional Airport – Airport Layout Plan** (W&H Pacific, Inc., 1996)
- **Roseburg Airport Pavement Evaluation Maintenance-Management Program** (Pavement Consultants, Inc., 2003)
- **Oregon Continuous Aviation System Plan – Volume I: Inventory and Forecasts; Volume III: Recommended Development Plan** (AirTech, 1997)
- **Oregon Aviation Plan** (Dye Management Group, 2000)
- **FAA Airport Master Record Form** (5010-1), **APO Terminal Area Forecasts.**
- **Klamath Falls Sectional Aeronautical Chart; IFR Enroute Low Altitude (L-2) Chart** – US DOT Federal Aviation Administration National Charting Office.
- **Instrument Approach Procedure Charts** - Jeppesen Airway Manual
- Other local documents and regional socioeconomic data.

AIRPORT LOCALE

Roseburg is situated in the Umpqua Valley in Southwestern Oregon, situated between the Cascade and Coastal mountains. Roseburg is located adjacent to U.S. Interstate 5 (I-5), 67 miles south of the state's second largest city, Eugene, and 123 miles north of the California border. Roseburg is approximately 80 miles east of Reedsport and Coos Bay via State Highways 38 and 42. Highway 138 continues east from Roseburg along the North Umpqua River, which provides access to central Oregon and Crater Lake National Park.

SOCIOECONOMIC CONDITIONS

Population

According to data compiled by the U.S. Census Bureau and Portland State University Center for Population Research and Census, the population of Douglas County in 2003 was 101,800. Roseburg is the largest community in the county with the population of 20,200 (2001). Between 1980 and 2001, the population of Roseburg increased by 21 percent, while the Douglas County population increased by 8 percent. Between 1980 and 2001, the population within the incorporated areas of Roseburg increased at an average annual rate of 0.93 percent. The net increase of 3,556 residents over 21 years equals an average increase of 169 residents per year.

Long-term population forecasts for Douglas County reflect modest growth. The Oregon Office of Economic Analysis projects Douglas County population will increase to 123,341 in 2025 (+22.7%) and 140,619 by 2040 (+39.9%). These long-term forecasts equate to average annual growth rates of approximately 0.8 percent. City officials indicate that annual population growth of approximately 2 percent is used for local planning purposes.

Economy

Douglas County's vast land area extends from the Pacific Ocean to the Cascade Mountains and includes the entire Umpqua River watershed and nearly 2.8 million acres of commercial forest lands. Approximately 25% of Douglas County's labor force is employed in the forest products industry which includes numerous sawmills, veneer plants and other wood products plants. The wood products industry has always been Douglas County's mainstay, as some of the nation's largest timber stands are located in the county. Agriculture is an important factor in the economy with field crops, orchards and livestock as major products. Douglas County's agricultural production provides a diversity of jobs and income with total annual gross sales of nearly $40

million. The mild climate and rich variety of soil types contribute to the successful cultivation of such crops as grapes, berries, nuts, melons, apples, plums and nurseries growing everything from exotic plants to Christmas trees. The area is major sheep and cattle producer. Seven wineries produce award-winning varieties as part of Oregon's wine industry.

Historically, the region's natural resource-based economy has been subject to seasonal peaks, economic boom-and-bust cycles, and persistently high unemployment. According to Oregon Employment Department data, the unemployment rate in Douglas County in 2001 was approximately 9 percent, which was above the statewide average.

The five largest employers in Douglas County, as of October 2000, were Roseburg Forest Products Co., Mercy Medical Center, Douglas County, Cow Creek Government Offices, and Veterans Affairs Medical Center.[3] Diversification of Douglas County's industrial and economic base is being aggressively pursued, and new enterprises provide additional employment. Specialty electronics, research and development, business forms, and unique law enforcement rain gear are just some of the items manufactured in the Roseburg area. New firms with manufacturing facilities in Douglas County include a major pleasure boat company, an electrical cable manufacturer, and various secondary wood products firms.

The Oregon Employment Department projects that Douglas County's non-farm payroll employment will increase by 4,410 jobs (11.9%) between 2002 and 2012. Although most industry sectors are expected to grow, the sole exception is lumber and wood products employment, which is projected to decline 3.4 percent (-210 jobs) by 2012.

Overall, the economy of Roseburg and Douglas County is expected to grow with continued diversification. The wood products industry, although not expected to grow significantly, will likely continue being the dominant economic engine for the community and region for the foreseeable future. Roseburg's role as a center for regional business activity is expected to continue contributing to demand for airport services, particularly business and general aviation activity.

CLIMATE

Roseburg's climate is uniquely affected by its location between the Coastal and Cascade mountain ranges, with moderate seasonal variation in temperature and precipitation. Detailed climatic data for Roseburg was available for a 29-year period between 1971 and 2000.[4] The

[3] Oregon Economic and Community Development Department (2002)
[4] Western Regional Climate Center.

average maximum temperature is 86.3 degrees Fahrenheit (August) and the average minimum temperature is 34.8 degrees (January). The daily extreme temperatures for Roseburg are 28 degrees Fahrenheit (March) and 109 degrees (July). Roseburg averages 33.65 inches of precipitation annually, which is considerably less than nearby coastal areas, but higher than areas east of the Cascade Range. The prevailing winds for Roseburg are primarily north-south, although occasional westerly flows also occur, particularly during the summer and fall.

GEOLOGY/SOILS

Roseburg is located in the Interior Valley Lowlands, which is situated between the Coastal Range Mountains and the Western Cascade Mountains. The terrain at the airport site is generally level with some gentle sloping, although steeper slopes are located nearby. The dominant soil in the vicinity of the airport is classified as Bashaw clay, moderately deep and poorly drained with 0 to 1 percent slope.[5] Bashaw clay soils are typically formed in terraces and have a depth to bedrock of 60 inches or more. At the north end of the airport, the soils become a mix of Curtin clay and Natroy clay which are formed in alluvial deposits with varying slopes up to 12 percent. The clay soils are also poorly drained, with very slow permeability.

Airport Environment

Roseburg Regional Airport serves Roseburg and Douglas County and is owned by the City of Roseburg, Oregon. The airport is located approximately one mile north of downtown Roseburg, immediately east of U.S. Interstate 5. The airport area is approximately 184 acres. The airport's landside development and services (hangars, FBO, aircraft parking, fueling, aircraft maintenance, etc.) are located on the west side of the runway. A location and site map are shown in **Figure 2-1**, on Page 2-7.

Airport History

The site for the Roseburg Regional Airport was acquired in 1928 using funds from a municipal bond issue. The initial airport development consisted of a runway and related facilities on approximately 80 acres. The airport has been in continuous operation since that time making it one of the oldest airports in the state. The airport currently consists of approximately 184 acres.

[5] U.S. Department of Agriculture, Soil Conservation Service (2003.

The original 3,800-foot runway 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. West Coast Airlines used Roseburg Airport as a stop on their Seattle to San Francisco flights in Douglas DC-3 aircraft.

Scheduled commercial service was discontinued due to "high hills at either end of the runway". As a result of the following study, a plan was made to improve existing facilities. Upon completion of a runway extension, West Coast Airlines resumed service in 1951 and continued it until 1973. In 1967, scheduled air service was established between Roseburg and Eugene that was provided in smaller airplanes that were used on the flights from Seattle to San Francisco. Since 1973, there has been no sustained scheduled air service to Roseburg.

The airport has continued to improve and modernize its facilities and is recognized as one of Oregon's leading business use airports. Improvements made since the last master plan was completed in 1996 include installation of a new aviation fuel system, an automated weather observation system, hangar construction, aircraft wash rack, and the recent redevelopment activities in the residential mobile home park that was located on the west side of the airport. Significant changes in surface access routes around the airport have also occurred and the areas of high terrain located near the north end of the runway are gradually being lowered.

Commercial Air Service

As noted above, Roseburg has had commercial air service in the past, although it has been a number of years since scheduled service was maintained. Much of the focus of the 1995 Airport Master Plan was related to providing for commercial air service facility needs, based on an expectation that commercial service would resume during the planning period. However, in the ten years that have passed since the 1995 master plan was completed, no sustained scheduled air service has been established at Roseburg. Current trends in the airline industry suggest that entry into smaller markets, such as Roseburg, is not the current focus of established regional air carriers like Horizon Air. Even communities that have historically been served by regional airlines, such as Pendleton, Salem or Port Angeles (WA) have struggled to keep service or have lost it altogether.

However, despite current trends in the regional air service industry, many smaller communities currently accommodate scheduled flights from "commuter airlines" operating under FAR Part 135. Under FAR Part 135, air carriers are limited to operating aircraft with 9 passenger seats or less, which makes service to smaller markets from larger connecting hub airports more

economically feasible. It appears that Roseburg has high potential for supporting this level of air service during the current twenty-year planning period.

Based on these considerations, it appears reasonable to continue preserving the option of accommodating regional air service in the future, within the physical limits of the airfield and its surroundings, through use of terminal area development reserves.

Regulatory Changes

Recent changes in FAA regulations significantly affect commercial air service options for smaller communities. Under current regulations, aircraft with more than 9 passenger seats can only be operated in scheduled service by commercial air carriers, certified under FAR Part 121. FAR Part 121 is the same set of regulations applied to both large airlines (i.e., Alaska, United, Southwest, etc.) and regional airlines (Horizon, Mesa, United Express, etc.). Based on these requirements, a prospective airline operating an 18- or 19-seat turboprop, such as a Metroliner or Beech 1900D would be subject to the same regulations applied to larger airlines. This represents a significant increase in cost and complexity for a small upstart airline. The economics of serving smaller markets with this cost and regulatory structure are largely unproven.

In addition, an airport accommodating this type of activity must be certified under FAR Part 139, as a commercial service airport. This requires the airport owner to meet very high performance standards for airport operations, safety and security. The cost of complying with Part 139 standards, including staffing and equipment is substantial, both initially and on an ongoing basis. Since the introduction of air service into any new market is highly speculative, the rate of failure is also very high. As such, the ability of a new air carrier to provide any long-term guarantees of service or specific financial reimbursements to the airport or community is virtually non-existent. In this scenario, a community making an investment to upgrade their airport to Part 139 standards should consider their long-term ability to support scheduled airline service, rather than betting on the prospects of a single airline.

It is recommended that a detailed assessment of the community's air service potential be completed before local financial commitments are made either to attract or accommodate a prospective carrier or to promote a desired level of air service. It is important that any assessment of local air service market feasibility address the potential for service in the context of the required public commitment of resources, including the financial implications of failed or interrupted service.

As noted above, the regulatory environment and small market economics have contributed to growth in scheduled passenger service by carriers operating under FAR Part 135. Unlike service from an FAR Part 121 airline, this level of air service could be pursued without requiring a substantial facility or staffing upgrade. One significant exception is the need to find a financially

feasible method for addressing passenger security screening for flights that connect to other commercial service airports. Without TSA[6]-approved screening, locally boarded passengers and their baggage cannot directly enter the secured areas of any FAR Part 139 airport terminal (i.e. Eugene, Medford, PDX, etc.) on a connecting flight.

Market Changes

Historically, 18-passenger turboprops were used by regional airlines to serve smaller markets throughout the U.S. From the late 1960s (de Havilland Twin Otter, Beech 99, etc.) through the mid-1990s (Metroliner, Beech 1900, etc.), 18-passenger aircraft comprised a large portion of the regional airline fleet. However, over the last ten years, regional air carriers have modernized their fleets with larger turboprops and regional jets, many of which carry 55 to 110 passengers. Regional airlines have largely moved away from the 18 to 30 passenger aircraft in favor of models with greater payload, range and speed. As fleet capabilities increased, the typical regional airline route structure and local market definitions also changed. In recent years, regional airlines have increased service levels in larger markets; maintained, decreased or eliminated service in many smaller markets; and have stretched their route systems to take advantage of greater aircraft range, speed and seating capacity. In smaller markets, formerly served largely by 18-seat turboprops, the shift to larger capacity aircraft has resulted in reduced service (fewer flights with more seats available per flight) or elimination of service entirely.

This shift in regional air service has created opportunities for scheduled air service provided by FAR Part 135-certified operators, such as Seattle-based Kenmore Air Express. Kenmore's scheduled operations use 9-passenger Cessna Caravans for service to several small communities in Northwestern Washington; this service supplements their highly successful charter seaplane service. In recent years, efforts to establish scheduled air service to smaller Oregon communities, such as Astoria, Corvallis and Newport have been made by other carriers. While long-term success remains illusive, the potential does exists for a carrier to develop an effective business model and find the right market niche that can sustain profitable air service.

AIRFIELD FACILITIES

Table 2-1 summarizes airport data. **Figures 2-1** and **2-2** depict existing airfield and terminal area facilities.

[6] TSA – Transportation Security Administration.

TABLE 2-1
AIRPORT DATA

Airport Name/Designation	Roseburg Regional Airport (RBG)
Airport Owner	City of Roseburg
Date Established	1928
Airport Category	National Plan of Integrated Airport Systems (NPIAS) General Aviation. FAA Airport Reference Code: B-II
Oregon Aviation System Designation	Business/High Activity General Aviation Airport (Category 2)
Airport Acreage	Approximately 184 Acres
Airport Coordinates	N 43°14.33' W 123° 21.35'
Airport Elevation	525 feet Mean Sea Level (MSL)
Airport Traffic Pattern Configuration/Altitude	Left Traffic – 800 to 1,000 feet AGL

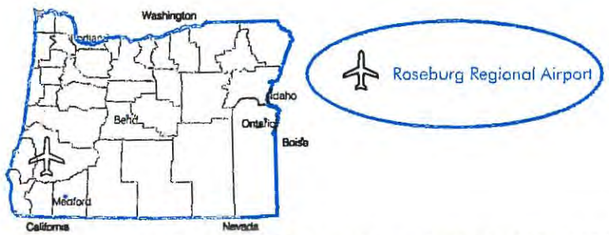
LEGEND

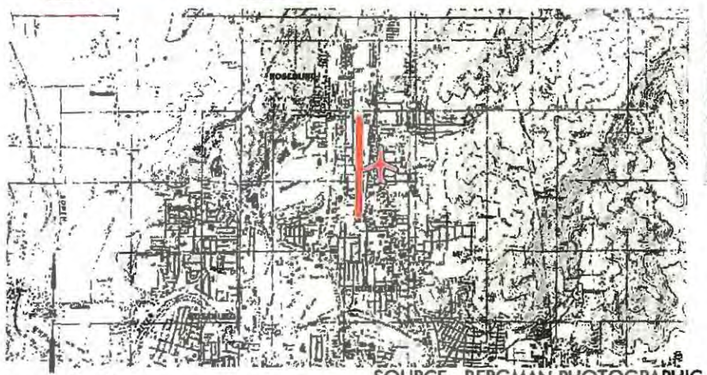
1. RUNWAY 16-34: 4602' X 100'
2. PARALLEL TAXIWAY
3. FIXED BASE OPERATOR
4. FUELING AREA
5. AIRCRAFT TIEDOWN APRON
6. AIRCRAFT PARKING APRON
7. HANGARS
8. COMMERCIAL BUILDING
9. AIRPORT BEACON
10. ASOS
11. HELICOPTER PARKING
12. VEHICLE PARKING
13. RAILROAD

TERMINAL AREA FACILITIES (SEE FIGURE 2-2 FOR DETAIL)

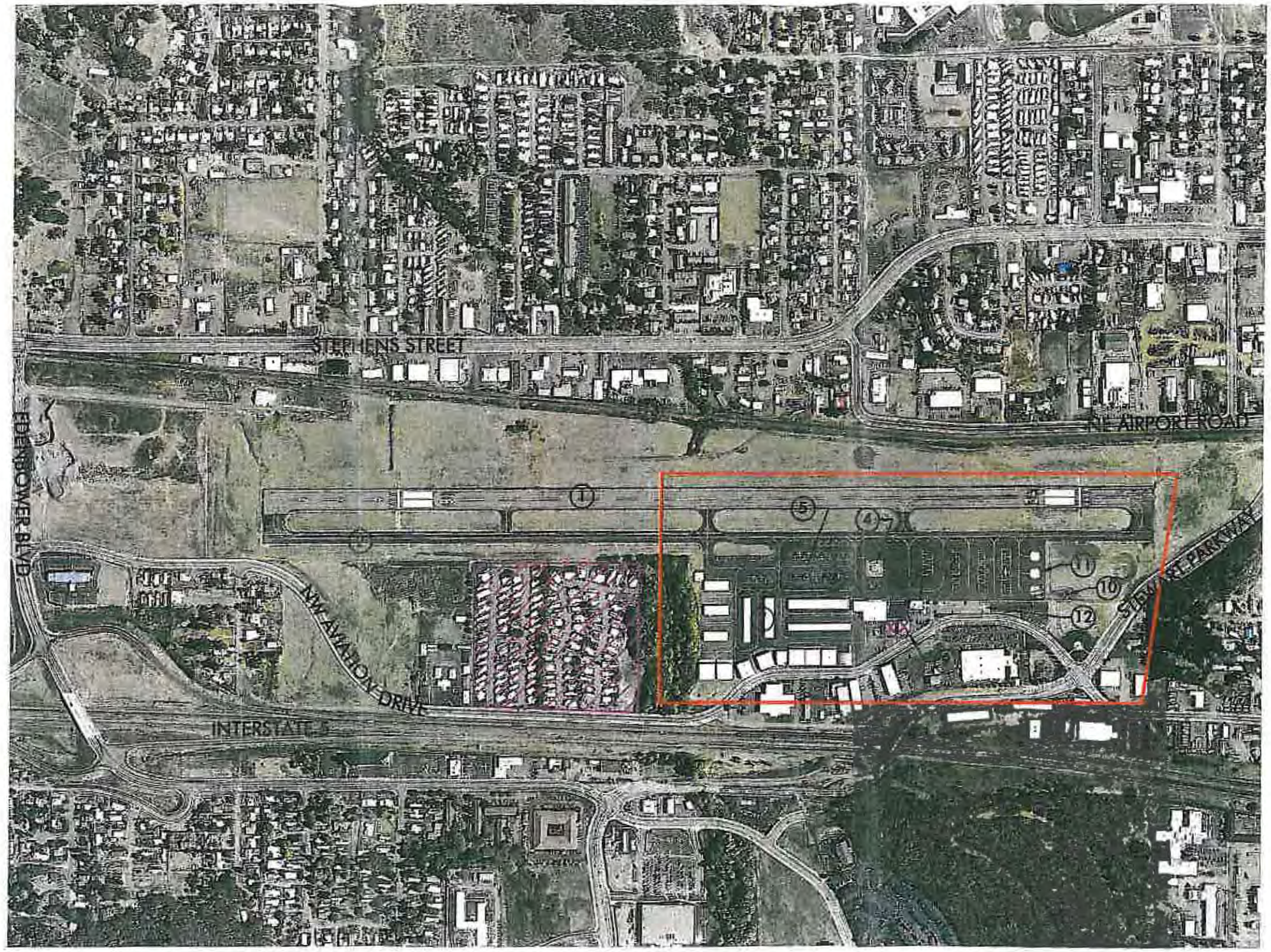
AREA REDEVELOPED FOR AVIATION USE

X BUILDING REMOVED





Not to Scale



N

SCALE: 1" = 300'

SOURCE: BERGMAN PHOTOGRAPHIC SERVICES, INC. (10-01-01)

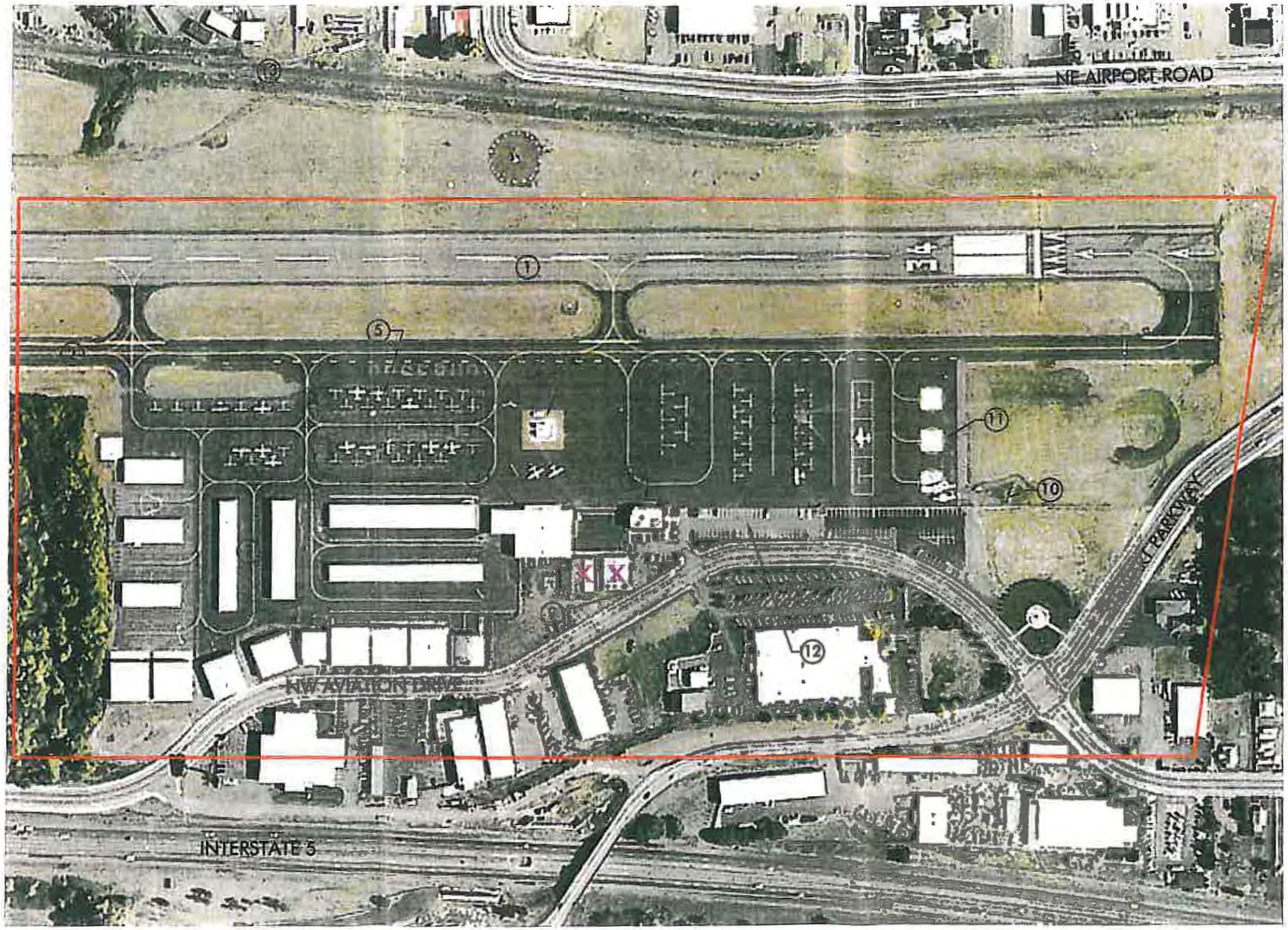
CENTURY WEST ENGINEERING CORPORATION

ROSEBURG REGIONAL AIRPORT
EXISTING CONDITIONS AND SITE MAP

FIGURE 2-1

LEGEND

①	RUNWAY 16-34: 4602' X 100'
②	PARALLEL TAXIWAY
③	FIXED BASE OPERATOR
④	FUELING AREA
⑤	AIRCRAFT TIEDOWN APRON
⑥	AIRCRAFT PARKING APRON
⑦	HANGARS
⑧	COMMERCIAL BUILDING
⑨	AIRPORT BEACON
⑩	ASOS
⑪	HELICOPTER PARKING
⑫	VEHICLE PARKING
⑬	RAILROAD
	TERMINAL AREA FACILITIES (SEE FIGURE 2-2 FOR DETAIL)
	AREA DEVELOPED FOR AVIATION USE
X	BUILDING REMOVED



SCALE: 1" = 120'



Not to Scale

SOURCE: BERGMAN PHOTOGRAPHIC SERVICES, INC. (10-01-01)

CENTURY WEST ENGINEERING CORPORATION

ROSEBURG REGIONAL AIRPORT
TERMINAL AREA FACILITIES

FIGURE 2-2

Runways and Taxiways

Roseburg Regional Airport has one paved, lighted runway (16/34), oriented in a north-south direction. Runway 16/34 is 4,600 by 100 feet wide. Both ends of the runway have displaced thresholds due to terrain obstructions to the runway approaches. The runway has nonprecision instrument runway markings which are consistent for use in instrument flight rules (IFR) conditions. The runway utilizes a standard left traffic pattern.

Runway 16/34 is served by a full-length parallel taxiway on its west side with five 90-degree exit taxiways. The parallel taxiway has a runway separation of 200 feet, which is less than the standard 240-foot separation recommended based on the airport reference code (ARC).[7] There are no aircraft holding/run-up areas located adjacent to the parallel taxiway; aircraft hold lines are located 175 feet from runway centerline on all taxiways that connect to the runway. The parallel taxiway has edge lighting. **Tables 2-2 and 2-3** summarize existing runway and taxiway facilities.

TABLE 2-2
RUNWAY 16/34 DATA

Dimensions	4,602 x 100 feet Displaced Thresholds: Runway 34 (371 Feet); Runway 16 (700 feet)
Effective Gradient	0.61%
Surface	Asphalt (excellent condition)
Weight Bearing Capacity[1]	42,000 pounds – Single Wheel Landing Gear 54,000 pounds – Dual Wheel Landing Gear 88,000 pounds – Dual Tandem Wheel Landing Gear
Marking	Nonprecision Instrument (runway numbers, threshold markings, centerline stripe, displaced threshold markings, taxiway lead-in striping, etc.)
Lighting	Medium Intensity Runway Edge Lighting (MIRL); threshold lights; REIL (Rwy 16 & 34); Visual Approach Slope Indicator (VASI) (Rwy 34)
Wind Coverage	96.6 percent (All Weather) with a 12 mph crosswind [2]

1. Pavement Strength as published in U.S. Airport/Facility Directory
2. As depicted on 1996 ALP; NOAA Data: 16 observations per day (1/60-12/64)

[7] As depicted on 1996 Airport Layout Plan (W&H Pacific)

TABLE 2-3
TAXIWAY DATA

Taxiway	Dimensions/Configuration
Parallel Taxiway	
Dimensions	4,602 x 40 feet with (5) 90-degree exit taxiways
Surface	Asphalt (excellent condition)
Marking	Centerline stripe; hold lines 175 feet from Rwy centerline on all exit taxiways
Lighting/Reflectors	Medium Intensity (MITL)
Runway-Parallel Taxiway Separation	200 feet

The west parallel taxiway has five access taxiways connections with the runway. The taxiway abuts the outer edge of the aircraft parking apron and has painted taxilane lead-in lines to direct aircraft to the parking areas, fueling and hangars. A separate taxiway connection to the parallel taxiway is located at the north end of the apron and hangar area (south of Newton Creek), adjacent to the aircraft wash rack.

During the inventory site visit for this project, the runway and parallel taxiway appeared to have been recently sealcoated and remarked, and were in excellent condition. It was observed that aircraft apron was also in good condition. The southern two-thirds of the aircraft apron appeared to be in very good condition, although the northern sections of apron were in fair condition. Most of the hangar taxilanes appeared to be in fair or good condition, with isolated areas of poor pavement condition in some hangar rows.

The 1996 airport layout plan included a wind rose created for the runway based on data collected at the airport from 1960 through 1964. The data indicates that Runway 16/34 has approximately 96.6 percent coverage at 12 miles per hour. This level of runway wind coverage meets (exceeds) the FAA recommended coverage of 95 percent.

Aircraft Apron

The airport has one large aircraft apron that extends 1,750 feet along the west side of the runway. The apron is approximately 340 feet deep and a large portion directly abuts the west edge of the parallel taxiway. The apron is divided into several sections for local and itinerant fixed wing and helicopter parking; aircraft fueling; and fixed base operator (FBO) operations. The FBO hangar and other commercial buildings are located near the midpoint of the apron. The aircraft fuel

storage tanks and dispensing facility are located on the apron, opposite the FBO hangar. The fuel system consists of aboveground tanks and fuel pumps with aircraft access provided on all sides.

Aircraft storage hangars are located behind the northern section of the apron with taxilanes established through the aircraft parking areas. An aircraft wash rack is located at the north end of the apron, adjacent to the north row of T-hangars. **Table 2-4** summarizes existing apron facilities at the airport.

The south tiedown area is configured with three helicopter hardstands; three itinerant drive-through parking positions for UPS and FedEx cargo aircraft; and three rows of light itinerant aircraft (tail-in) tiedowns facing north-south. The northern section of the apron has two rows of light aircraft (tail-in) tiedowns facing east-west. The airport currently has 66 designated aircraft parking positions.

TABLE 2-4
AIRCRAFT APRON DATA

Main Apron *(South Section)*	Approximately 690 x 315 ' (24,150 square yards) Asphalt Concrete Cargo Aircraft Parking; Light Aircraft Tiedowns Heavy Helicopter Parking – (3) 45' x 45' Portland Cement Concrete (PCC) Hardstands
Main Apron *(FBO Section)*	Approximately 320 x 315' (11,200 square yards) Asphalt Concrete Aircraft Fueling; FBO Apron
South Hangar Apron	Approximately 115 x 90' (1,150 square yards) Asphalt Concrete Hangar Frontage
Main Apron *(North Section)*	Approximately 415 x 285' (13,142 square yards) Asphalt Concrete Light Aircraft Tiedowns
Wash Rack	Approximately 50 x 50' (280 square yards) Portland Cement Concrete (PCC)
North Hangar Apron	Approximately 400 x 200' (8,889 square yards) Light Aircraft Tiedowns; Hangar Frontage Asphalt Concrete

An unimproved helicopter staging area is located near the southeast corner of the airport, within the departure runway protection zone (RPZ) for Runway 34. The staging area is used by Douglas Forest Protective Association, which has an office located nearby. Vehicle access is provided via Stewart Parkway through a locked gate.

Agricultural Aircraft Facilities

Roseburg Regional Airport has no designated agricultural (AG) aircraft loading areas, although seasonal fire-response aircraft operations are accommodated at the south end of the apron and in the staging area located at the southeast corner of the airport.

Airfield Pavement Condition

As part of the **Oregon Aviation System Plan**, the Oregon Department of Aviation manages a program of pavement evaluation and maintenance for Oregon's general aviation airports. This evaluation provides standardized pavement condition index (PCI) ratings, pavement features and current conditions. Through the use of MicroPAVER computer software, current pavement condition ratings are entered into the system with the specifics of each pavement section. The program is able to predict the future condition of the pavements if no action is taken (i.e. rate of deterioration) while also identifying the recommended measures needed to extend the useful life of the pavement section.

Table 2-5 summarizes airfield pavement conditions for Roseburg Regional Airport based on the most recent inspection conducted in October 2002. The 2002 pavement ratings ranged from "excellent" to "poor." Runway 16/34, the parallel taxiway and a large portion of the aircraft apron were all rated "excellent." The north end of the apron was rated "fair" and the other pavements surrounding hangars ranged from "good" to "excellent." A small area of pavement located along the western corporate hangars was rated "poor." **The average PCI for all airfield pavements at the airport is 85, which corresponds to a "very good" pavement condition rating.** During recent site visits, the airfield pavements were observed to be generally consistent with the most recent formal pavement evaluations. The runway and parallel taxiway pavements have been sealcoated and re-marked since the 2002 inspection, which would be expected to increase the PCI ratings for those sections.

TABLE 2-5
SUMMARY OF AIRFIELD PAVEMENT CONDITION
(October 2002)

Pavement	Section Design/Age	PCI Rating[1]	Condition
Runway 16/34	2.5" AC (1992); 2" AC (1953); 6" Crushed Aggregate Base (1953); 6" Aggregate Subbase (1953)	91 (South Section) 93 (Center Section) 91 (North Section)	Excellent
West Parallel Taxiway & Exits (south section)	3" AC (1990); 2" AC (1953); 8" Crushed Aggregate Base (1953); 6" Aggregate Subbase (1953)	83 (south section)	Very Good
West Parallel Taxiway & Exits (north section)	3" AC (1990); 2" AC (1969); 6" Crushed Aggregate Base (1969); 5" Aggregate Subbase (1969)	91 (north section)	Excellent
Main Apron (south section)	3.5" AC (1998); 7" Crushed Aggregate Base (1998)	98	Excellent
South Hardstands	6" PCC (1998); 4.5" Crushed Aggregate Base (1998)	92-93	Excellent
Main Apron (FBO/Fueling Area)	3.5" AC (1998); 7" Crushed Aggregate Base (1998); 8.5" Aggregate Subbase (1998)	99	Excellent
South Hangar Apron (south of FBO)	2" AC (1974); 3.5" Crushed Aggregate Base (1974); 9" Aggregate Subbase (1974)	48	Fair
Main Apron (center-north section)	2" AC (1974); 3.5" Crushed Aggregate Base (1974); 9" Aggregate Subbase (1974)	49	Fair
Main Apron (north section)	2" AC (1981); 7" Crushed Aggregate Base (1981); 6" Aggregate Subbase (1981)	64	Good
North Hangar Apron/Taxilanes	3" AC (1997); 12" Aggregate Base (1997)	98	Excellent
West Hangar Apron/Taxilanes	Varies: 2 - 3.5" AC (1974-1988) 3.5" Aggregate Base (1974); 9" Aggregate Subbase (1974);some sections 7" Crushed Aggregate Base (1998)	29-85	Poor to Very Good

1. The Pavement Condition Index (PCI) scale ranges from 0 to 100, with seven general condition categories ranging from "failed" to "excellent." For additional details, see *Oregon Aviation System Plan Pavement Evaluation/Maintenance Management Program* for Roseburg Regional Airport.

LANDSIDE FACILITIES

Hangars and Airport Buildings

In 2004, the airport had 18 aviation-related buildings, all located on the west side of the runway. There were seven T-hangars; nine corporate conventional hangars; the FBO maintenance hangar/office; and one office building. According to a 2004 tenant list provided by the City, there were 51 T-hangar units (spaces) in addition to the conventional hangars, which typically house multiple aircraft. Two older hangars located near the southwest corner of the FBO hangar were removed in 2004 to provide lease area for a larger commercial hangar. A former city maintenance shop is located near the northeast corner of the airport. Approximately 21 non-aviation buildings, housing individual mini storage units, are located near the northeast corner of the airport. This area is elevated above well the runway and is not accessible with aircraft. Airport buildings are summarized in **Table 2-6.**

TABLE 2-6
AIRPORT BUILDINGS

Building	Existing Use
FBO Hangar/Office	FBO Operations; Aircraft Maintenance
Corporate Hangars (9)	Aircraft Storage
T-Hangar "B"	Aircraft Storage (14 units)
T-Hangar "C"	Aircraft Storage (10 units)
T-Hangar "D"	Aircraft Storage (5 units)
T-Hangar "E"	Aircraft Storage (7 units)
T-Hangar "F"	Aircraft Storage (5 units)
T-Hangar "G"	Aircraft Storage (5 units)
T-Hangar "H"	Aircraft Storage (5 units)
Aviation Suites Building	Commercial Office Space
Shop Building	Non-Aviation Use
Mini Storage Units	Non-Aviation Use

The mobile home park that was previously located along the west edge of the airport has been cleared to accommodate aviation related use. Once the property was acquired and the mobile

homes removed, the initial site development work, including extensive fill, was completed. New hangar taxiways, a vehicle access road, and large retaining wall were constructed in late 2005. As currently planned, the area will accommodate both T-hangars and conventional hangars in the first phase; the second phase of development will provide additional hangar lease area and aircraft parking apron. Initial hangar construction is expected in 2006.

Airport Lighting

Roseburg Regional Airport accommodates day and night operations in visual flight rules (VFR) and instrument flight rules (IFR) conditions. Runway 16/34 is equipped with medium intensity runway edge lighting (MIRL) and threshold lights. The runway lights are in good condition and are set on a dusk-to-dawn automatic (photocell) switch.

Runway 34 is equipped with a visual approach slope indicator (VASI), with a 3.0-degree glide path. Runways 16 and 34 are both equipped with runway end identifier lighting (REIL), which are pilot-activated on the radio frequency 122.8 MHz. The REIL consists of two high-intensity strobes located near each corner of the runway that flash in short sequences to improve the identification of the runway end for pilots landing in darkness or reduced visibility conditions. The REILS are installed adjacent to the displaced thresholds at each end of Runway 16/34.

The parallel taxiway has medium intensity edge lighting (MITL). Unlighted airfield guidance and distance remaining signs are used on the airfield. The airport rotating beacon is mounted on a tower located adjacent to the FBO hangar. The airport has a segmented circle and wind cone located near mid-field on the east side of the runway. An unlighted wind cone is mounted on the aircraft fuel tanks. **Table 2-7** summarizes existing airport lighting.

Overhead flood lighting is provided in the hangar areas. Additional overhead lighting is located in the aircraft fuel area and in the vehicle parking areas.

TABLE 2-7
AIRPORT LIGHTING

Component	Type	Condition
Runway Lighting	Medium Intensity Runway Edge Lighting (MIRL); threshold lights	Good
Approach/Other Runway Lights	Runway End Identifier Lights (REIL) Rwy 16 & 34	Good
Taxiway Lighting or Reflectors	Medium Intensity Taxiway Lighting (MITL)	Good
Lighted Airfield Signage	Unlighted Directional/Informational Signage	Good
Visual Guidance Indicators	Visual Approach Slope Indicator (VASI) Rwy 34	Good
Airport Lighting	Airport Rotating Beacon	Good

Airspace and Navigational Aids

Roseburg Regional Airport operates under visual flight rules (VFR) and instrument flight rules conditions. The Roseburg VOR/DME[8] is located 3 miles south of the runway and serves as the primary land-based navigational aid for the airport. The airport has two published nonprecision instrument approaches. Roseburg has a published IFR departure procedure for all aircraft to climb direct to the RBG VOR to reach the required minimum enroute altitude (MEA), with all maneuvering west of the VOR. **Table 2-8** summarizes existing navigational aids and related items.

VOR- A

A VOR-A instrument approach is authorized as a "circle-to-land" procedure. Circle-to-land procedures allow pilots to proceed visually for landing on any runway once visual contact with the "airport environment" is made and maintained during the instrument approach. It is noted that the procedure is not authorized east of the runway. The approach guides aircraft inbound from the south on a final approach course of 337 degrees, which is within a few degrees of the extended runway centerline. The minimum descent altitude (MDA) for the approach is 1,740 feet MSL (1,215 feet AGL) for most aircraft with minimum visibility requirements ranging from 1 ¼ to 3 miles, depending on the aircraft approach category. The MDA increases to 2,600 feet when the DME is not available.

[8] Very High Frequency Omnidirectional Range (VOR) with Distance Measuring Equipment (DME)

The missed approach point is located near the south end of the runway at 3.0 DME (three miles north of the VOR). The missed approach procedure calls for aircraft to climb to 4,000 feet MSL outbound on the RBG VOR 337 degree radial within 15 nautical miles, then make a climbing left turn to 5,000 feet MSL and return direct to the VOR to hold.

GPS-B[9]

A GPS-B instrument approach is also authorized as a "circle-to-land" procedure (also not authorized east of the runway). The approach guides aircraft inbound from the south on a final approach course of 342 degrees, which is within a few degrees of the extended runway centerline. The minimum descent altitude (MDA) for the approach is 1,700 feet MSL (1,175 feet AGL) for most aircraft with minimum visibility requirements ranging from 1 ¼ to 3 miles, depending on the aircraft approach category. The missed approach point is also located near the south end of the runway and the missed approach procedure is similar to the VOR-A approach.

Weather Observation

The airport has an automated surface observation system (ASOS) located near the south end of the airport on the west side of the runway. The ASOS provides important weather information to pilots operating both in VFR and IFR conditions and also meets on-site weather requirement to support the instrument approach.

TABLE 2-8
NAVIGATIONAL AIDS AND RELATED ITEMS

Type	Facilities
Electronic Navigational Aids	None on site. Nearest Locations: Roseburg VOR/DME (3.4 nm S) – 108.2 MHz
Instrument Approaches	None
Weather Observation	Automated Surface Observation System (ASOS) - 135.47 MHz
Communication	Common Traffic Advisory Frequency (CTAF) - 122.8 MHz

Roseburg Regional Airport is surrounded by Class E airspace with floor 700 feet above ground level. Class E airspace requires an ATC clearance during IFR conditions, although there are no entry or radio communication requirements during VFR conditions.

[9] Global Positioning System (GPS)

Tables 2-9 and 2-10 summarize notable obstructions, special airspace designations and IFR routes in the vicinity of Roseburg Regional Airport, as identified on the Klamath Falls Sectional Aeronautical Chart. Local airport operations and flight activity is not affected by the noted airspace or obstructions located in the vicinity of the airport. The airport is surrounded by mountainous terrain, which affects instrument flight procedures and visual aircraft arrival and departures. Mast Hill (and the physical structures located on the hill) obstructs the approach to Runway 16, approximately 3,800 to 5,800 feet from the runway end. The 700-foot displaced threshold significantly improves obstruction clearance when combined with the FAA obstacle clearance approach (OCA) slope, although a clear 20:1 is not provided. The 371-foot displaced threshold on Runway 34 was designed to provide an unobstructed 20:1 approach over close-in terrain through use of an OCA. However, recent growth of trees and other built items appear to extend well above the underlying terrain clearance. The location and heights of these items should be verified through an updated obstruction survey and removed or lowered as necessary.

TABLE 2-9
LOCAL AIRSPACE OBSTRUCTIONS/FEATURES
(10 nautical mile radius)

Type of Obstruction	Description	Distance From Airport
Terrain	Mast Hill and mounted obstructions 845-894 feet MSL	¾ mile north of Runway 16 end (700' displaced threshold)
Terrain	Hill and Trees 540+- feet MSL	600 feet south of Runway 34 end (371' displaced threshold)
Overhead Power Line	Transmission Line	1.5 miles east of airport
Overhead Power Line	Transmission Line	2.5 miles southeast of airport
Tower	752' MSL (265' height above ground)	4 miles southwest of airport
Tower	1,635' MSL(240' height above ground)	8.5 miles southwest of airport
Tower	1,537' MSL(215' height above ground)	8 miles south of airport

TABLE 2-10
AIRSPACE/INSTRUMENT ROUTES

Airspace Item	Description	Location
Low Altitude Enroute Airway	Victor 495 – 7,000 feet mean sea level minimum enroute altitude (MEA) (4,000 feet MSL in vicinity of RBG VOR)	Directly over airport. Extends from Roseburg VOR on the 335 degree radial.
Low Altitude Enroute Airway	Victor 448 - 5,000 feet mean sea level minimum enroute altitude (MEA)	Directly over airport. Connects Roseburg and Eugene VORs on a 343-167 degree course.
Low Altitude Enroute Airway	Victor 121 - 5,000 feet mean sea level minimum enroute altitude (MEA)	3 miles southwest. Connects Roseburg and North Bend VORs on a 093-272 degree course.
Class E Airspace	Associated with low altitude federal airways (700 feet above ground level)	Directly over the airport; 5 statute mile radius with an 8-mile southern extension

AIRPORT SUPPORT FACILITIES/SERVICES

Aircraft Fuel

Aviation gasoline (AVGAS) and jet fuel (Jet A) is available for sale at the airport. The airport has two new 12,000-gallon double-wall aboveground fuel storage tanks (one each for AVGAS and Jet A) and a small fuel truck. The aviation fuel facilities are located in front of the FBO building on the main apron. Two additional privately owned underground jet fuel tanks are maintained by local corporate aviation users.

Airport Rescue and Fire Fighting

The City recently acquired a surplus fire response vehicle for use at the airport. The vehicle carries water and foam (aqueous film forming foam – AFFF) and is specifically designed for airport fire response. Options for fire vehicle storage will be addressed in the alternatives evaluation.

Surface Access and Vehicle Parking

Vehicle access to the airport is provided by NW Aviation Drive, which runs along the entire west side of the airport. NW Aviation Drive connects to SW Stewart Parkway near the south end of the airport and NW Edenbower Blvd. near the north end of the airport. Vehicle parking on the airport includes a large parking area (approximately 100 spaces) that extends from the aviation suites office building to the south end of the apron. Additional paved and unpaved vehicle parking areas are located adjacent to FBO and adjacent to individual hangars.

Fencing

The airport has chain link fencing along most of its boundary, with controlled access gates to west-side airport operations areas. Several electronic controlled vehicle gates are located adjacent to the aircraft apron and hangar areas from NW Aviation Drive. A project is currently planned to replace/upgrade approximately 4,600 feet of existing chain link fencing located along the eastern edge of the airport.

Utilities

The airport is located within city limits and has water, sewer, natural gas, electric and telephone service. Electrical service is provided by Pacific Power & Light; water service is provided by the City of Roseburg; sanitary sewer service is provided by the Roseburg Urban Sanitary Authority; natural gas is provided by WP Natural Gas. Fire projection on the west side of the airport is provided by a system of fire hydrants connected to the City water system.

LAND USE PLANNING AND ZONING

Roseburg Regional Airport is located within the City of Roseburg city limits and urban growth boundary. Zoning on the airport property is City of Roseburg "Airport District – AD." Aviation related uses are permitted outright in this zone, and other uses that do not conflict with airport planned development are permitted as conditional uses. The City zoning ordinance also includes an overlay zone, which coincides with the FAR Part 77 airspace surfaces. The zone should be reviewed based on the recommendations of master plan update to ensure consistency.

The airport is surrounded by a variety of mixed uses including residential, industrial and commercial. There are a number of structures located beyond airport boundaries within the departure runway protection zone (RPZ) for Runway 34 (adjacent to Fairmont Avenue). A more

detailed description of land use will be included in the Environmental Review chapter of this report.

AIRPORT SERVICE AREA

Roseburg Regional Airport is categorized as a "High Activity/Business Aviation" airport in the Oregon Aviation Plan. High Activity/Business airports are capable of accommodating all-weather day and night operations normally associated with business, medevac, or government aviation activities, in addition to the typical range of general aviation users.

The airport service area refers to the area surrounding an airport that is directly affected by the activities at that airport. Normally a 30 or 60-minute surface travel time is used to approximate the boundaries of a service area. There are a number of small communities located within the Roseburg airport service area that have significant travel distances to the next nearest public use airport. **Table 2-11** lists the public airports in the vicinity of Roseburg Regional Airport.

It is not unusual for High Activity/Business airports to have several smaller airports within their service area that compete for a segment of general aviation activity (i.e., hangar space, based aircraft, fuel sales, etc.). For most private pilots, convenience and cost are often among the most significant considerations when choosing an airport from which to operate. To this extent, events at all airports within the area service area can impact development and operations at Roseburg Regional. However, since the level of airfield facilities and services available at Roseburg Regional are not available elsewhere in the local service area, the business-related nature of the airport will continue being a key factor in defining airport activity. The nearest airports with comparable or better capabilities are Eugene and Rogue Valley Regional, both of which are located in larger population centers, 70 to 100 miles from Roseburg.

TABLE 2-11
PUBLIC USE AIRPORTS IN VICINITY
(WITHIN 45 NAUTICAL MILES)

Airport	Location	Runway Dimension (feet)	Surface	Lighted Runway ?	Fuel Available ?
Myrtle Creek Municipal	15 NM southeast	2,600 x 50	Asphalt	Yes	No
George Felt Field	2.5 NM southwest	2,300 x 100	Turf	No	No
Grants Pass	44 miles south	3,999 x 75	Asphalt	Yes	Yes
Tokatee State	41 miles east	5,350 x 60	Dirt	No	No
North Bend	40 miles west-northwest	5,321 x 150 (primary rwy)	Asphalt	Yes	Yes
Cottage Grove State	36 miles north-northeast	3,200 x 60	Asphalt	Yes	Yes

Roseburg Regional Airport
Airport Layout Plan Report

Chapter Three

Aviation Activity Forecasts

CHAPTER THREE
AVIATION ACTIVITY FORECASTS

INTRODUCTION

The purpose of this chapter is to prepare updated forecasts of aviation activity for the twenty-year planning period addressed in the Airport Layout Plan Update (2004-2024). The updated activity forecasts will provide the basis for estimating future facility needs at Roseburg Regional Airport. The scope of work for this project suggests use of the most recent Oregon Aviation System Plan (OASP)[10] forecasts (1994-2018), with revision as required, to reflect current conditions. However, airport master plan[11] forecasts (1995-2014) are also available that reflect more airport-specific detail than is provided in statewide aviation forecasts. These forecasts, combined with the Federal Aviation Administration (FAA) Terminal Area Forecasts (TAF) will be compared with actual activity data to determine their applicability for use in this planning update. Once the relevance of existing forecasts is determined, a judgment can then be made regarding their use in developing updated projections for the current twenty-year planning period.

Population

As noted in the previous chapter, population growth within Roseburg and Douglas County has been low-to-moderate over the last twenty years and that trend is expected to continue in the future. Between 1980 and 2001, the population of Roseburg increased by 21 percent, which equals an average annual increase of 0.93 percent. During the same period, Douglas County population increased by 8 percent, which equals an average annual increase of 0.4 percent.

Long-term population forecasts for Douglas County also reflect modest growth. The Oregon Office of Economic Analysis projects Douglas County population will increase 22.7 percent by 2025 and 39.9 percent by 2040. These long-term forecasts equate to average annual growth rates of less than 1 percent. Based on historic patterns, it is reasonable to assume that Roseburg's

[10] Oregon Continuous Aviation System Plan, Volume I Inventory and Forecasts (1997, AirTech).
[11] Roseburg Regional Airport Master Plan 1995-2014 (W&H Pacific, 1996)

population will continue to grow at a slightly higher rate than the county. The expectation of modest population growth for the community suggests that demand for aviation services at Roseburg Regional Airport will increase during the current planning period at rates roughly comparable to other socioeconomic indicators.

Recent Historic Activity

Based Aircraft

In 2004, the number of based aircraft at Roseburg Regional Airport was estimated at 97.[12] This total appeared to be consistent with tenant data provided by the City, which listed 51 T-hangar units (spaces), 9 larger conventional hangars, and 13 rented tiedowns. **Table 3-1** summarizes (2004) based aircraft at Roseburg Regional Airport.

TABLE 3-1
2004 BASED AIRCRAFT
(ROSEBURG REGIONAL AIRPORT)

Aircraft Type	2004 (Estimate)
Single Engine Piston	84
Multi-Engine Piston	6
Turboprop	2
Business Jet	3
Helicopters	2
Total	**97**

Source: FAA 5010/TAF Data; airport management data

Based on available data, it appears that the number of based aircraft at Roseburg Regional Airport declined slightly in recent years. Such a trend would not be inconsistent with local economic conditions and broader national trends within the general aviation industry. However, it is also possible that the previous master plan's count may have been slightly overestimated. It is also noted that the airport's ability to develop new hangar space has been constrained in recent years due to limited land availability. The former mobile home park located on the west side of airfield has now been cleared to accommodate hangar development. The City has indicated that

[12] FAA 5010 Airport Record Form.

there is an existing waiting list for hangars. It is reasonable to assume that the availability of this new development area will have a positive effect on the based aircraft fleet, particularly in the next few years, when demand for hangar space can be addressed through new construction as market conditions permit.

Aircraft Operations

Aircraft operations estimates for Roseburg Regional Airport are available for six separate years between 1994 and 2002, through the Oregon Department of Aviation's automated acoustical (RENS) activity counting program. In the absence of air traffic control tower records, RENS counts generally provide the most reliable estimates of activity for uncontrolled airports. The RENS program uses a counting device that is triggered by specific noise level (aircraft engine noise) normally associated with an aircraft takeoff. Four seasonal on-site data samples are normally collected over a twelve-month period (October to October) for use in creating statistically derived estimates of operations.

Table 3-2 summarizes the RENS activity counts conducted for Roseburg Regional since 1994-95. With the exception of the 1999-2000 count, most of RENS counts have been 25 to 50 percent lower than the 1994 estimate of 30,794 operations used to develop the 1995 master plan forecasts. The 1995 RENS count (16,521) was 46 percent lower than the 1994 estimate, developed just a year earlier. The 2000 RENS count is 40 to 60 percent higher than other recent counts, including the 1999 and 2002 counts; it is unknown whether this peak activity level can be sustained or whether it represents an anomaly. Although there is considerable fluctuation between individual counts, a modest upward trend is visible over the last eight years.

The sharp decline in activity counts between the 2000 and 2002 counts appears to reflect the major downturn in activity experienced by most airports following September 11th 2001. Immediate flight restrictions effectively shut down general aviation for a brief period, although the lingering effects on the industry extended well beyond Fall 2001. An extended period of poor national economic conditions also contributed to reduced airport activity levels in 2001 and 2002. The most recent RENS count for Roseburg Regional Airport (October 2001 to October 2002) directly coincided with these negative conditions.

Figure 3-1 depicts the RENS counts in relation to historic operations estimates from FAA TAF. The older TAF data is difficult to verify, although the recent TAF data appears to be comparable to the periodic RENS counts the updated estimate of operations for 2003.

For purposes of defining current aircraft operations levels, it is estimated that the 2001-2002 RENS activity count (18,835) was 20 percent below "normal" activity levels. On a national level, many general aviation airports have now recovered to "pre 9/11" levels. Based on these

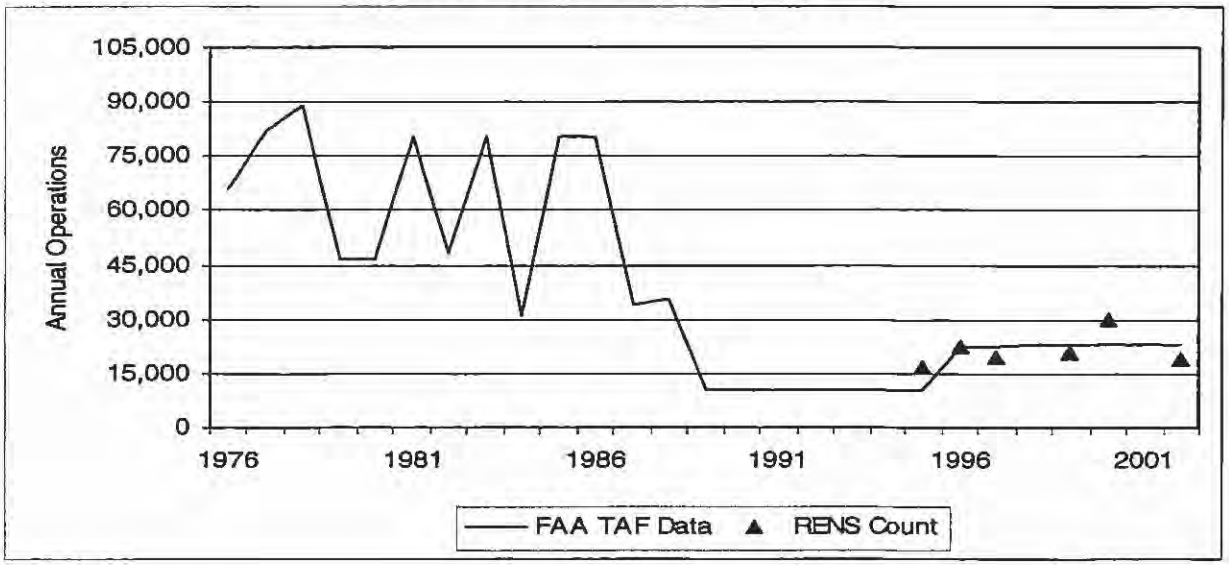
factors and recent airport activity levels, aircraft operations at Roseburg Regional Airport are estimated at 23,500 for 2003.

TABLE 3-2
SUMMARY OF ODA ACTIVITY COUNTS
ROSEBURG REGIONAL AIRPORT

	1995	1996	1997	1999	2000	2002
Annual Operations	16,521	22,533	19,527	20,899	29,657	18,835
Net Increase or Decrease Over Prior Count	--	+36.4%	-13.3%	+7.0%	+41.9%	-36.5%

Source: Oregon Department of Aviation, RENS acoustical counts.

FIGURE 3-1
SUMMARY OF ODA ACTIVITY COUNTS & TAF DATA
ROSEBURG REGIONAL AIRPORT



REVIEW OF EXISTING FORECASTS

The existing aviation forecasts for Roseburg Regional Airport are summarized below and in **Table 3-3.**

1995 Airport Master Plan (AMP)

The master plan forecasts included both general aviation and commercial aviation elements, including the resumption of scheduled commercial air service by 1999. Based aircraft were projected to increase from 108 to 150 (+39%) by 2014, which equals an annual average growth of 1.66 percent. The current estimate of 96 based aircraft is 35 aircraft below the master plan forecast for 2004.

Aircraft operations were projected to increase by 49 percent, from 30,794 in 1994 to 45,884 in 2014. This equals an annual average growth of 2.0 percent. The aircraft operations forecasts assumed the introduction of commuter airline activity by 1999, with 3,400 annual operations of 21-33 passenger turboprops forecast through the planning period. Without commuter aircraft operations, forecast aircraft operations at Roseburg Regional increase at an average annual rate of 1.62 percent. The most recent activity count (18,835) conducted in 2001-2002 is approximately 50 percent lower than the master plan operations forecast for 1999 or 2004. As indicated in **Figure 3-2**, the recent RENS activity counts have consistently fallen below the 1995 master plan operations forecasts, although a comparable upward trend is evident in both.

The 1995 master plan forecasts assumed annual population growth to be approximately 1 percent with the airport's service area, which extends to Winston, Myrtle Creek, Sutherlin and Canyonville. Current population forecasts also reflect modest growth, which indicates that the underlying assumptions related to population growth used in the 1995 forecasts have not changed significantly in recent years.

FIGURE 3-2
ODA RENS COUNTS & 1995 MASTER PLAN FORECAST
ROSEBURG REGIONAL AIRPORT

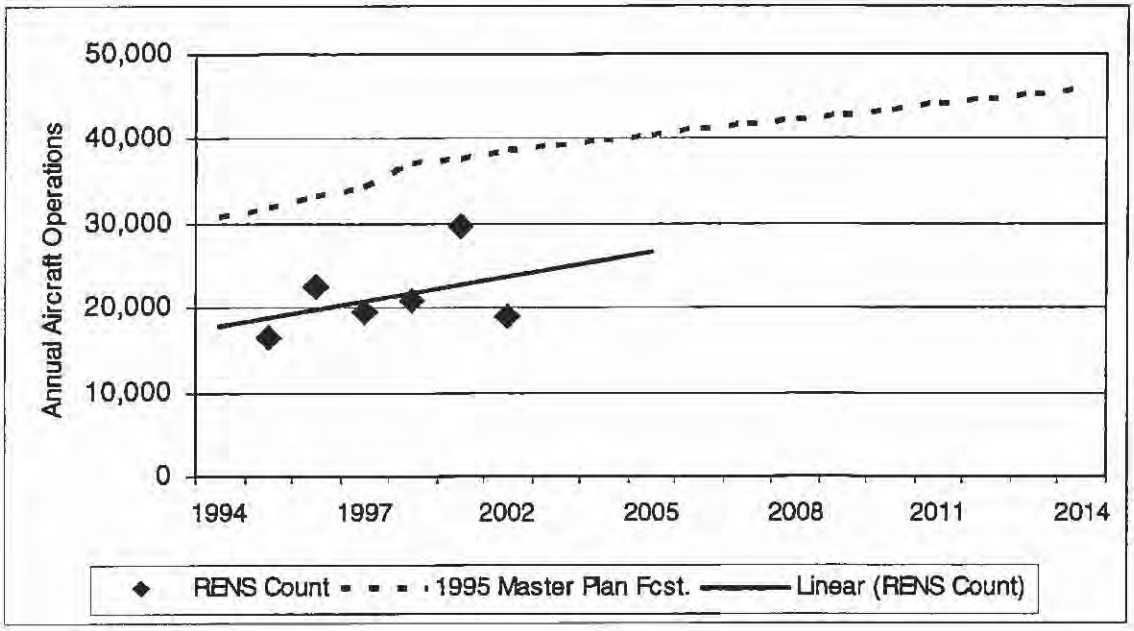


TABLE 3-3
EXISTING AVIATION FORECASTS

Source	1994	1999	2004	2009	2014	2018	2020
Based Aircraft *2003 Estimate: 96*							
1995 Airport Master Plan *(1.66% AAR)*	108	118	129	140	150	--	--
1997 / 2000 OASP *(3% AAR)*	108	125	145	170	195	219	--
TAF *(0.72% AAR: 2001-2020)*		96	97	100	103	105	110
Aircraft Operations *2003 Estimate: 23,500**							
1995 Airport Master Plan *(2% AAR)*	30,794	37,069	39936	42910	45884	--	--
1997 / 2000 OASP *(3% AAR)*	30,794	35,640	41,300	48,470	55,600	62,578	--
TAF *(0.64% AAR: 2001-2020)*		22,899	23,207	23,975	24,742	25,356	25,664

* Century West Engineering Estimate based on recent RENS county and FAA national trend data on post-9/11 activity.

Oregon Aviation System Plan (OASP)

The 1997 OASP forecasts reflect growth in based aircraft and aircraft operations that significantly exceed the 1995 master plan forecasts. Overall, based aircraft and operations at Roseburg Regional Airport were both forecast to increase by 81 percent between 1994 and 2014, which equals an annual average growth of **3.0 percent**. Based aircraft were projected to increase from 108 to 195 between 1994 and 2014. Aircraft operations were projected to increase from 30,794 to 55,600 between 1994 and 2014. The 2000 Oregon Aviation Plan updated the 1997 forecasts by extrapolating previously defined growth rates out to 2018. For 2018, based aircraft were projected to increase to 219, with aircraft operations increasing to 62,578.

The 1997 OASP forecasts and 1995 master plan forecasts used identical base year (1994) data. However, the OASP forecasts quickly outpaced the master plan forecasts and consequently run well above documented activity levels in recent years.

FAA Terminal Area Forecasts (TAF)

The Federal Aviation Administration (FAA) maintains forecasts for Roseburg Regional in the TAF. The TAF projects an increase in based aircraft from 96 (2001 base year estimate) to 110 in 2020. This reflects an increase of nearly 15 percent, which translates into an average annual growth rate of 0.72 percent. The TAF projects aircraft operations to increase from 22,747 (2001) to 25,664 in 2020. The increase of about 13 percent translates into an average annual growth rate of 0.64 percent over the twenty-year period. The TAF forecasts reflect very modest growth in based aircraft and aircraft operations, which would provide a reasonable baseline (low) projection. However, it is apparent that a factor such as a waiting list for hangar space could generate activity far beyond the TAF.

Updated Forecasts

Based on the review of existing forecasts, an updated forecast of based aircraft and aircraft operations was developed to reflect recent shifts in activity, prospective near-term development of new hangar space on the airport, and the long-term growth expectations for the community and region. The updated forecasts are summarized in **Table 3-4**. The FAA TAF forecast is also provided for comparison. The updated forecasts are depicted in **Figures 3-3 and 3-4**.

The updated (ALP 2004) forecast of based aircraft ranges from the current 96 aircraft to 138 in 2024. The net increase of 42 aircraft (+43.8%) equates to an average annual growth rate of **1.83 percent**. The current composition of the based aircraft fleet is expected to remain relatively consistent, with growth in all aircraft types anticipated.

The 2003 estimate of 23,500 operations and 96 based aircraft results in a ratio of 238 operations per based aircraft. An updated forecast of aircraft operations was developed based on historic aircraft utilization levels and the updated based aircraft forecast. For this projection, aircraft utilization is projected to increase from 238 (current average) to 265 operations per based aircraft by the end of the twenty-year planning period. It is noted that the recent high activity count (2000) resulted in a utilization ratio of approximately 300 operations per based aircraft, although a ratio of 195 to 240 is more typical for recent activity. The gradually increasing ratio reflects a balance between current and recent utilization levels and also reflects the airport's ability to continue developing a strong user base through the planning period. Gradually rising aircraft utilization ratios result in aircraft operations increasing at a slightly higher rate than based aircraft. Aircraft operations are forecast to increase from 23,500 to 36,570 operations by 2024, which equals an average annual increase of **2.24 percent**.

The 1995 master plan preferred forecast assumed the resumption of scheduled air service with 4 to 5 daily flights with 21-33 passenger turboprops by 1999. Based on the current state of the regional airline industry, a narrowed market focus (toward larger markets and larger capacity regional aircraft) and the marginal financial health of the airline industry in general, establishing service into new smaller markets by established air carriers appears unlikely for the foreseeable future. However, the emergence of new carriers offering scheduled service with aircraft such as the Cessna Caravan other turboprops that have been phased out of the regional airline fleet in favor of regional jets or large-capacity turboprops, may be provide a business model that is compatible with the local air service market. It is difficult to predict what changes may occur in small market air service over the next twenty years. However, given the economics involved, the use of smaller capacity aircraft appears to be the most viable option. Since there is no clear expectation that scheduled air service would be reestablished in the near future, previous forecasts of scheduled commuter airline service have been eliminated in the updated forecasts.

Air Traffic Distribution/Design Aircraft

The 1995 master plan forecasts assumed that local operations accounted for 36 to 37 percent of total airport activity and itinerant operations (GA, air taxi, commuter) accounted for 61 to 62 percent during the planning period. Local operations include flights that begin and end at the airport (i.e., aircraft within the traffic pattern (touch and go), aircraft operating near the airport, etc.). The other available forecasts for Roseburg Regional Airport reflect lower levels of local aircraft operations (OASP 20%; FAA TAF 7-8%). In the absence of significant volumes of flight training activity, local operations typically account for relatively low percentage of overall activity. For the purposes of updating the forecasts, the 20%/80% local/itinerant split will be assumed for the current planning period.

The 1995 airport master plan identified a small/medium business jet aircraft, such as the Cessna Citation II, as the critical aircraft for Roseburg Regional Airport. By FAA definition, the "design aircraft" must have a minimum of 500 itinerant annual operations. Business jet activity is currently estimated at approximately 1,250 annual operations, and most of those aircraft fall into the B-II design category of the Citation II. According to available data, the airport currently accommodates several locally based business jets in addition to regular itinerant activity.

The airport accommodates larger aircraft on an occasional basis, but at a level well below the FAA's threshold for use as design aircraft. The available runway length limits operations by larger business jets on warmer days and generally requires reductions in operating weights (reduced passenger or fuel loads). One airport tenant recently acquired a Falcon 10 business jet. Although the Falcon 10 is a B-I aircraft, its runway requirements are greater than a comparably

sized Citation. The Falcon operator has indicated that a runway length of approximately 5,500 feet would provide significantly greater operational flexibility, particularly in fuel loading for longer flights. The operator indicated that providing a stopway or clearway beyond the north end of the runway would also benefit turbine aircraft takeoff calculations, through use of declared distances.

The current level of package carrier aircraft activity at the airport is expected to remain steady during the planning period. The use of typical single and multi-engine turboprop aircraft (i.e., Beech 99, Cessna Caravan, etc.) is also expected to continue.

Design aircraft operations are expected to account for about 6 percent of total airport operations during the planning period and are summarized in **Table 3-4.**

TABLE 3-4
UPDATED FORECASTS
ROSEBURG REGIONAL AIRPORT

	Base Year 2004	2009	2014	2019	2024
2004 ALP Forecast (Preferred)					
Based Aircraft					
Single Engine	84	95	103	112	114
Multi Engine Piston	6	7	8	9	10
Turboprop (SE & ME)	2	1	2	3	4
Business Jet	3	3	4	4	5
Helicopter	2	3	4	4	5
Total	97	109	121	132	138
Aircraft Operations					
Local (30%)	7,050	8,175	9,257	10,296	10,971
Itinerant (70%)	16,450	19,075	21,598	24,024	25,599
Total	23,500	27,250	30,855	34,320	36,570
Average Operations per Based Aircraft	*242*	*250*	*255*	*260*	*265*
Operations by Critical Aircraft B-II (Citation II)	*1,250*	*1,500*	*1,700*	*1,900*	*2.,200*
FAA TAF					
Based Aircraft					
Single Engine	83	86	89	92	93
Multi Engine	6	6	6	6	5
Jet	4	4	4	4	7
Helicopter	4	4	4	4	5
Other	0	0	0	0	0
Total	97	100	103	106	110*
Aircraft Operations					
Local	1,960	1,960	1,960	1,960	1,960
Itinerant	21,094	22,015	22,782	23,350	21,094
Total	23,054	23,975	24,742	25,510	25,664
Average Operations per Based Aircraft	*238*	*240*	*240*	*241*	*233*

*2020 TAF

FIGURE 3-3
UPDATED BASED AIRCRAFT FORECAST
ROSEBURG REGIONAL AIRPORT

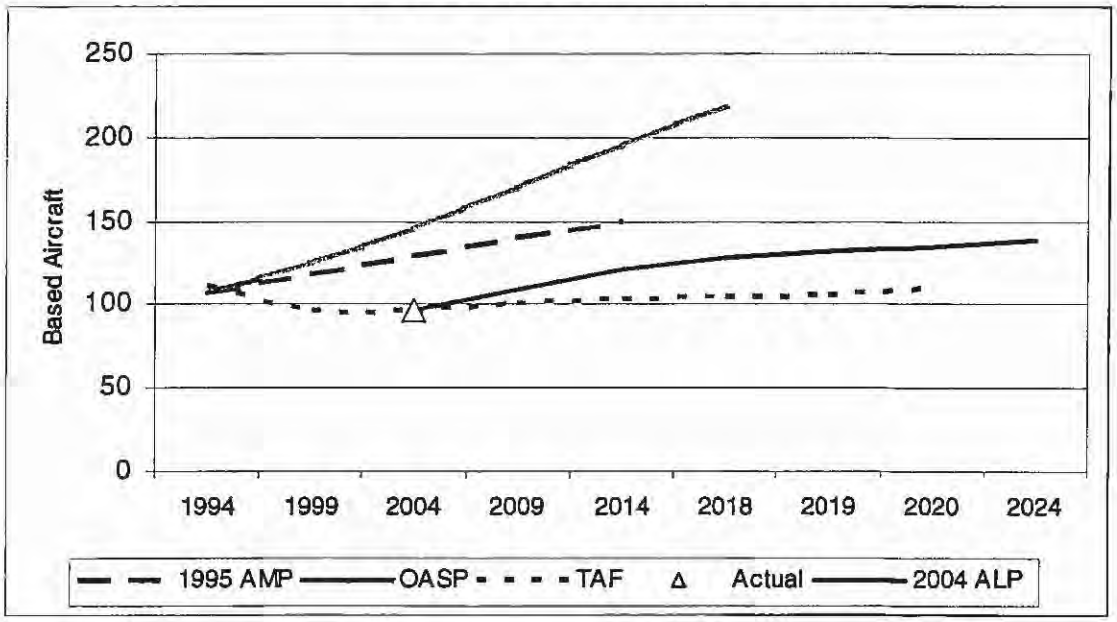
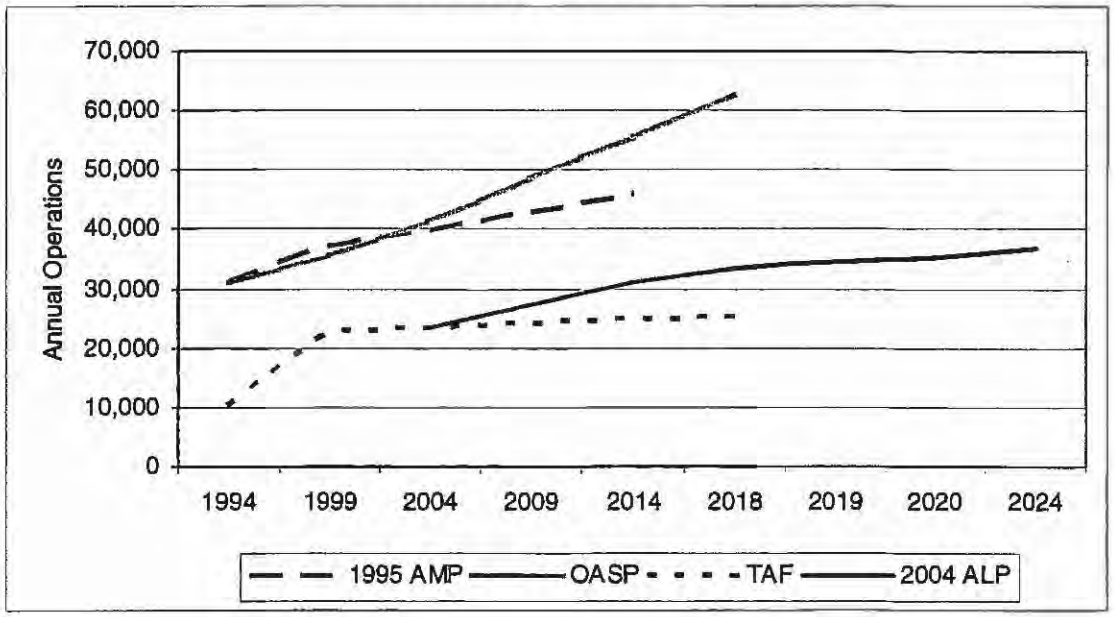


FIGURE 3-4
UPDATED AIRCRAFT OPERATIONS FORECAST
ROSEBURG REGIONAL AIRPORT



Roseburg Regional Airport
Airport Layout Plan Report

Chapter Four

Facility Requirements

CHAPTER FOUR
FACILITY REQUIREMENTS

INTRODUCTION

This chapter uses the results of the inventory and forecast conducted in **Chapters Two** and **Three**, as well as established planning criteria, to determine the airside and landside facility requirements through the current twenty-year planning period. Airside facilities include runways, taxiways, navigational aids and lighting systems. Landside facilities include hangars, fixed base operator (FBO) facilities, aircraft parking apron, aircraft fueling, automobile parking, utilities and surface access. The facility requirements evaluation is used to identify the adequacy or inadequacy of existing airport facilities and identify what new facilities may be needed during the planning period based on forecast demand. Options for providing these facilities will be evaluated in **Chapter Five** to determine the most cost effective and efficient means for implementation.

1995 Airport Master Plan Overview

The 1995-2014 Airport Master Plan (finalized in 1996) recommended a variety of facility improvements at Roseburg Regional Airport for the 20-year planning period. The projects summarized in **Table 4-1** were included in the airport's 20-year capital improvement program. The recommended projects were reviewed to identify those which have been completed (noted in the table). The previously recommended facility improvements which have not been implemented will be revalidated, modified or eliminated based on the updated facility needs assessment and FAA guidelines.

TABLE 4-1: SUMMARY OF 1995 AIRPORT MASTER PLAN RECOMMENDED PROJECTS AND CURRENT STATUS

Completed? Yes/No	Projects
	PHASE I
Yes	North End Fence Relocation
Yes	Property Acquisition - West Side – 8 acres
Yes	Electric Auto Gate – Corporate Hangar Area
No	PAPI - Rwy 16
Yes	Construct 10 T-Hangars
No	Pave Gravel Parking Lot by Rotating Beacon
Yes	Overlay/Restripe Office/Term. Bldg Ramp
Yes	Overlay/Restripe South T-Hangar/FBO Ramp
Yes	Construct 6 Replacement T-Hangars
Yes	Replace City Owned Fuel Storage Tanks
	PHASE II
Yes	North T-Hangar Development Taxiway
Yes	Runway Slurry Seal/Restriping
Yes	Construct 6 Replacement T-Hangars
Yes	Taxiway Slurry Seal/Restriping
No	Develop South Ramp
Yes	Replace Obstruction Light – Mast Hill
Yes	Replace Obstruction Light – Mt. Nebo
	PHASE III
No	Runway Overlay
No	Taxiway Overlay
Yes	Replace Rotating Beacon
No	Replace Rwy 34 VASI with PAPI
No	Slurry Seal/Restripe Office/Term. Bldg Ramp
No	Slurry Seal/Restripe South T-Hangar/FBO Ramp
No	Lower Mast Hill
No	Airline Terminal Development
No	Fire Station Development
Yes	Purchase Fire Truck
Yes	Mobile Home Park Acquisition

In addition to the master plan-recommended items completed, several other projects have been completed:

- Development of aircraft wash rack
- Corporate Hangar Construction (private)
- Terminal area redevelopment/hangar removal (SW of FBO - 2004)
- Acquisition and relocation of mobile homes; preliminary site preparation for hangar development
- Terrain removal (beyond north end of runway)

Five Year Capital Improvement Plan

The City of Roseburg adopted an updated five-year capital project list in 2003 that addresses several facility needs. A summary of these projects is presented below:

Item 1: *Remove Existing Hangars (completed in 2004)*
Item 2: *Removed Buried Fuel Tanks (adjacent to FBO; completed in 2004)*
Items 3 & 4: *Apron Rehabilitation (main apron)*
Item 5: *Box Culvert Extension (Newton Creek)*
Item 6: *Initial Parallel Taxiway and Taxilane Separation*
Item 7: *Initial Hangar Apron Development (north of Newton Creek)*
Item 8: *New North Entrance (east side of runway)*
Item 9: *Replace Fence – East Side*
Item 10: *Retaining Wall Extension (west corporate hangar area)*
Item 11: *Aircraft Run-Up Areas*
Item 12: *North Parallel Taxiway and Lighting*
Item 13: *South Parallel Taxiway and Lighting*
Item 14: *New Apron Site Development (north hangar area)*
Item 15: *Remaining Apron Development – Hangar Taxilanes (Pavement)*
Item 16: *Airport Vehicle Parking Lot (FBO area)*

Airspace

The 1995 Airspace Plan (drawing approved in 1996) depicted future airspace surfaces for Runway 16/34 based on standards for "other-than-utility" runways (designed for aircraft weighing more than 12,500 pounds). This criterion continues to be appropriate for the airport based on current and forecast large aircraft activity.

The 1995 Airspace Plan depicts future straight-in non-precision instrument approach capabilities for Runway 16 with a larger and flatter (34:1) approach slope. This appears to be feasible only if Mast Hill can be eliminated as an obstruction, although it is not known whether other obstruction clearance requirements (i.e., missed approach procedure) can be met. However, in the absence of definitive TERPS airspace assessment, it is reasonable to retain the prior recommendation to guide future actions (i.e. obstruction removal, etc.) and master planning.

The "existing" airspace surfaces are also depicted (separately) on the airspace plan and are based on visual approaches and large aircraft. Since the existing instrument approaches are defined as "circle-to-land" procedures, rather than "straight-in," visual approach surfaces are consistent with current instrument capabilities. However, under FAA guidelines, Airspace Drawings are to be prepared based on the "*ultimate runway lengths...and Part 77 Subpart C approaches*".[13] The FAA has indicated that once approved, the ultimate airspace configuration is to be used for airspace-related evaluations such as review of proposed construction (FAA Form 7460-1) in the vicinity of the airport.

Extensive areas of terrain penetration are identified within the airport's airspace surfaces, in all directions. Both runway ends have displaced thresholds to address close-in obstructions within the approach surfaces. The 1995 ALP[14] depicts "Type C" (currently designated "Category C" by FAA) Obstruction Clearance Approach (OCA)[15] surfaces for both runway ends. The use of the OCA is recommended to meet obstacle clearance requirements for approaches when clear Part 77 approach surfaces cannot be provided due to obstructions. Type C OCA surfaces (20:1 slope) begin *at* the displaced runway threshold, rather the standard 200 feet beyond the displaced threshold, thereby providing addition vertical clearance for landing aircraft above obstructions. Standard FAR Part 77 approach surfaces begin 200 feet beyond the physical end of the runway.

[13] FAA AC 150/5340-13, Appendix 7 (Airport Layout Plan Components and Preparation)
[14] Runway Approach and RPZ (Sheets 5 and 6)
[15] FAA Advisory Circular 150/5340-13, Appendix 2.

As depicted on the 1995 ALP (sheets 5 and 6), use of Type C OCAs in conjunction with displaced thresholds, provided an unobstructed 20:1 surface for Runway 34 and reduced the Mast Hill terrain penetration in the Runway 16 approach. However, a review of the Type C OCA criteria and the airport's existing instrument approaches capabilities indicates that a Type C OCA is not appropriate for Runway 16/34. For approach ends of runways expected to support instrument night circling operations (as currently authorized with RGB existing approaches), a Type D OCA is recommended. The Type D OCA begins 200 feet out from the displaced threshold, at a slope of 20:1 and extends 10,000 feet. Based on this review, the OCAs depicted in 1995 ALP are not consistent with FAA criteria. Coordination with the FAA's Seattle Flight Procedures Office (FPO)[16] confirms that based on existing instrument approach capabilities, the Type D OCA would be consistent with FAA airport design standards and FAA Order 8260 - TERPS (Terminal Instrument Procedures) paragraph 251, which is used to define required obstruction clearance for instrument approach procedures.

It appears that a Type D OCA for Runway 34 will not be clear due to terrain/tree penetration. Based on FAA requirements, a clear 20:1 TERPS surface is required for an airport to support night authorized instrument procedures. In cases where a clear 20:1 cannot be obtained, the obstacles need to surveyed and lighted or removed. The existing obstruction lighting within the approaches to both runway ends may need to be modified to coincide with the Type D OCA and TERPS paragraph 251 in order to preserve the night authorization for airport's existing instrument approach procedures.

Airport Design Standards

The selection of the appropriate design standards for airfield facilities is based primarily upon the characteristics of the aircraft that are expected to use the airport. The most critical characteristics are the approach speed and wingspan of the design aircraft anticipated for the airport. The design aircraft is defined as the most demanding aircraft type operating at the airport (or runway) with a minimum of 500 annual itinerant operations (takeoffs and landings). Planning for future aircraft use is important because design standards are used to determine separation distances between facilities that could be very costly to relocate at a later date.

Federal Aviation Administration (FAA) **Advisory Circular (AC) 150/5300-13, Airport Design**, serves as the primary reference in planning airfield facilities. **FAR Part 77, Objects Affecting Navigable Airspace**, defines airport imaginary surfaces which are established to protect the airspace immediately surrounding a runway. The airspace and ground areas surrounding a

[16] David Miller telephone contact with Victor Zembruski, FAA Seattle APO (6/04)

runway should be free of obstructions (i.e., structures, parked aircraft, trees, etc.) to the greatest extent possible.

FAA **Advisory Circular 150/5300-13** groups aircraft into five categories based upon their approach speed. Categories A and B include small propeller aircraft, many small or medium business jet aircraft, and some larger aircraft with approach speeds of less than 121 knots. Categories C, D, and E consist of the remaining business jets as well as larger jet and propeller aircraft generally associated with commercial and military use; these aircraft have approach speeds of 121 knots or more. The advisory circular also establishes six aircraft design groups, based on the physical size (wingspan) of the aircraft. The categories range from Airplane Design Group (ADG) I, for aircraft with wingspans of less than 49 feet, to ADG VI for the largest commercial and military aircraft. Aircraft with a maximum gross takeoff weight of above 12,500 pounds are classified as "large aircraft" by the FAA. A summary of typical aircraft and their respective design categories is presented in **Table 4-2.**

Roseburg Regional Airport regularly accommodates a wide variety of single-engine and multi-engine piston; turboprop; and business jet fixed wing aircraft in addition to helicopters. Most of these aircraft are in Airplane Design Group I and II and Approach Categories A or B. The airport also accommodates occasional activity associated with larger business jet or military aircraft, although the available runway length limits larger aircraft activity, particularly on warmer days.

A factor that should be considered in the evaluation of long-term facility needs is a trend within business aviation toward larger and faster aircraft. Business jet production is among the fastest growing segments of general aviation manufacturing and the number of new business jets included in Airplane Approach Category C is increasing at a significant rate. Examples of Approach Category C business jets are included in **Table 4-2**. Many general aviation airports with substantial business aviation activity are finding that higher performance business jet operations are increasing as the aircraft fleet evolves. The physical planning characteristics of Approach Category C&D aircraft are considerably more demanding than A&B for any corresponding design group. While the future design aircraft for Roseburg Regional Airport is currently anticipated to be a B-II aircraft, it is reasonable to expect that activity from Category C business aircraft may increase during the current twenty-year planning period. However, it is difficult to predict to what degree the ongoing changes in the business aircraft fleet may affect operations at Roseburg Regional Airport. It is also apparent that the feasibility of upgrading Roseburg Regional Airport to meet a C-II or D-II standard is limited. The current length of Runway 16/34 effectively limits larger aircraft use. The ability of a larger/faster aircraft to operate at a particular airport is based on a variety of factors (runway length, pavement strength, etc.) and is determined by the pilot and/or airport operator. A summary of B-II design standards are presented in **Table 4-3**; for comparison, C-II design standards are also summarized.

TABLE 4-2: TYPICAL AIRCRAFT & DESIGN CATEGORIES

Aircraft	Airplane Design Group	Aircraft Approach Category	Maximum Gross Takeoff Weight (lbs)
Cessna 182	A	I	3,110
Lancair Columbia 300	A	I	3,400
Cessna 206	A	I	3,600
Beechcraft Bonanza A36	A	I	3,650
Piper Seneca V (PA-34)	A	I	4,750
Socata/Aerospatiale TBM 700	A	I	6,579
Beechcraft Baron 58	B	I	5,500
Cessna 340	B	I	5,990
Cessna Citation CJ1	B	I	10,600
Beech King Air B100	B	I	11,800
Cessna Citation I	B	I	11,850
Dassault Falcon 10	B	I	18,740
Piper Malibu (PA-46)	A	II	4,340
Cessna Caravan 1	A	II	8,000
Pilatus PC-12	A	II	9,920
Air Tractor 502B	A	II	9,700
Beech King Air B200	B	II	12,500
Cessna Citation CJ2	B	II	12,300
Cessna Citation II	B	II	13,300
Beech King Air 350	B	II	15,000
Cessna Citation Excel	B	II	20,000
Dassault Falcon 20	B	II	28,660
Bombardier Learjet 55	C	I	21,500
Hawker (HS125-700A)	C	I	25,000
Gulfstream 100	C	II	24,650
Beechcraft Hawker 800XP	C	II	28,000
Cessna Citation Sovereign	C	II	30,250
Gulfstream 200	C	II	30,450
Cessna Citation X	C	II	36,100
Bombardier Challenger 300	C	II	37,500
Gulfstream IV	D	II	71,780

Source: AC 150/5300-13, change 7; aircraft manufacturer data.

TABLE 4-3: AIRPORT DESIGN STANDARDS SUMMARY (DIMENSIONS IN FEET)

Standard	Runway 16/34 (Existing Conditions)	ADG II[1] A&B Aircraft (Cessna Citation II typ.)	ADG II[1] C&D Aircraft (Gulfstream 200 typ.)
Runway Length	4,602	4,960 / 6,550[2]	4,960 / 6,550[2]
Runway Width	100	75	100
Runway Shoulder Width	10	10	10
Runway Safety Area Width	150	150	500
Runway Safety Area Length (Beyond Runway End)	300	300	1,000
Obstacle-Free Zone	400	400	400
Object Free Area Width	500	500	800
Object Free Area Length (Beyond Runway End)	Rwy 16: 300 Rwy 34: 190	300	1,000
Primary Surface Width	500	500	500
Primary Surface Length (Beyond Runway End)	Rwy 16: 200 Rwy 34: 190	200	200
Runway Protection Zone Length	1,000	1,000	1,700
Runway Protection Zone Inner Width	500	500	500
Runway Protection Zone Outer Width	700	700	1,010
Runway Centerline to:			
Parallel Taxiway Centerline	200	240	300
Aircraft Parking Area	265	320[3]	365.5[5]
Building Restriction Line	425	376[4]	393[6]
Taxiway Width	40	35	35
Taxiway Shoulder Width	10	10	10
Taxiway Safety Area Width	79	79	79
Taxiway Object Free Area Width	131	131	131
Taxiway Centerline to Fixed/Movable Object	65.5	65.5	65.5

1. Other-than-Utility runways (Per FAR Part 77); all other dimensions reflect visual runways and runways with not lower than 3/4-statute mile approach visibility minimums (per AC 150/5300-13, Change 7). RPZ dimensions bases on visual and not lower than 1-mile approach visibility minimums.
2. Runway length required to accommodate 75% large airplane fleet (60,000 pounds or less) at 60 and 90 percent useful load. 83 degrees F, 28-foot change in runway centerline elevation.
3. Distance to accommodate 10-foot aircraft tail height (at the APL) without penetrating the 7:1 Transitional Surface; this dimension is also compatible with standard 240-foot B-II parallel taxiway separation.
4. Distance to protect standard B-II parallel taxiway object free area and accommodate an 18-foot structure (at the BRL) without penetrating the 7:1 Transitional Surface.
5. Distance to protect C-II parallel taxiway object free area and accommodate an 10-foot tall height without penetrating the 7:1 Transitional Surface
6. Distance to protect standard C-II parallel taxiway object free area and accommodate an 18-foot structure (at the BRL) without penetrating the 7:1 Transitional Surface.

A summary of Roseburg Regional Airport's conformance with recommended B-II design standards and the standards associated with C-II aircraft are presented in **Table 4-4**. As indicated in the table, the existing runway-taxiway configuration would be unable to meet several C-II dimensional standards without major airfield reconfiguration and relocation of major roadways, such as Stewart Parkway. In general, it appears that an upgrade to C-II or higher design standards is not highly feasible for Roseburg Regional Airport.

TABLE 4-4: ROSEBURG REGIONAL AIRPORT CONFORMANCE WITH FAA DESIGN STANDARDS

Item	Airplane Design Group II[1] A & B Aircraft	Airplane Design Group II[2] C & D Aircraft
Runway Safety Area	Yes	No[9]
Runway Object Free Area	No[3]	No[10]
Runway Obstacle Free Zone	No[4]	No[4]
Taxiway Safety Area	Yes* [5]	No[11]
Taxiway Object Free Area	Yes* [5]	No[11]
Building Restriction Line	Yes	Yes
Aircraft Parking Line	Yes	No[12]
Runway Protection Zones	No[6]	No[6]
Runway-Parallel Taxiway Separation	No[7]	No[7]
Runway Width	Yes	Yes
Runway Length	No[8]	No[8]
Taxiway Width	Yes	Yes

1. Runway design standards for approach category A&B visual runways and runways with not lower than ¾-statute mile approach visibility minimums.
2. Runway design standards for approach category C&D runways.
3. Extended OFA beyond Rwy 34 is 190 feet (limited by Stewart Parkway).
4. Parallel Taxiway located within OFZ.
5. Existing parallel taxiway has adequate safety area and OFA, although runway-separation is non-standard.
6. Roads and structures located within Runway 16 and 34 protection zones.
7. Parallel taxiway has 200-foot runway separation.
8. Per FAA Runway Length Model – length needed to accommodate 75% of large airplanes (less than 60,000#) at 60% and 90% useful load.
9. C/D-II RSA would be limited by existing roads and structures (south end).
10. C/D-II OFA would be limited by existing roads, structures (south end), and aircraft parking areas.
11. C/D-II Taxiway OFA and Safety Area associated with a standard C/D-II runway separation (340 feet) would be limited by existing roads, aircraft fueling facilities and aircraft parking areas.
12. The outer (eastern) portions of the aircraft parking areas would be located within a standard C/D-II parallel taxiway object free area.

By FAA definition, the "design aircraft" must have a minimum of 500 itinerant annual operations. The 1995 ALP listed the existing and future airport reference code (ARC) as B-II for Runway 16/34. The existing design (or critical) aircraft was identified as a Cessna Citation II business jet. The future design aircraft was identified as Dornier 328 twin-engine turboprop, commonly used by commuter airlines at the time. Despite the fact that air service has not been reestablished, the planned use of a B-II future critical aircraft (DO-328) does not require any changes to planning from the current design aircraft (Cessna Citation II). Activity generated by locally based business jets and other comparable itinerant business aircraft meet the FAA's activity threshold for use as the design aircraft. **Based on these factors, the continued use of Airport Reference Code (ARC) B-II is recommended for Runway 16/34.**

Airport Design Standards Note:

The following airport design standards are recommended for Roseburg Regional Airport:

***Runway 16/34: Existing and Future Airport Design Standards** based on Airport Reference Code (ARC) B-II; visual runways and runways with not lower than ¾ statute mile approach visibility minimums. Runway protection zones (RPZ) based on the approach visibility standard "visual and not lower than 1-mile" for aircraft approach categories A and B. Ultimate FAR Part 77 airspace planning criteria based on "other- than- utility runways" with non-precision approaches.*

All references to the "standards" are based on these assumptions, unless otherwise noted. (Per FAA Advisory Circular 150/5300-13, change 7; FAR Part 77.

Runway Safety Area (RSA)

The FAA defines runway safety area (RSA) as "A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway." Runway safety areas are most commonly used by aircraft that inadvertently leave (or miss) the runway environment during landing or takeoff.

By FAA design standard, the RSA *"shall be:*

(1) cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations;

(2) drained by grading or storm sewers to prevent water accumulation;

(3) capable, under dry conditions, of supporting snow removal equipment, aircraft rescue and firefighting equipment, and the occasional passage of aircraft without causing structural damage to the aircraft; and

(4) free of objects, except for objects that need to be located in the runway safety area because of their function. Objects higher than 3 inches above grade should be constructed on low impact resistant supports (frangible mounted structures) of the lowest practical height with the frangible point no higher than 3 inches. Other objects, such as manholes, should be constructed at grade. In no case should their height exceed 3 inches."

The recommended transverse grade for the lateral RSA ranges between 1½ and 5 percent from runway shoulder edges. The recommended longitudinal grade for the first 200 feet of extended RSA beyond the runway end is 0 to 3 percent. The remainder of the RSA must remain below the runway approach surface slope. The maximum negative grade is 5 percent. Limits on longitudinal grade changes are plus or minus 2 percent per 100 feet within the RSA.

The Runway 16/34 RSA meets the B-II dimensional standards and appears to be free of physical obstructions and within grade standard.

Runway edge lights and threshold lights located within the RSA are mounted on frangible supports. Any future lighting (such as PAPI) located within the RSA will also need to meet the FAA frangibility standard. The City should regularly clear the RSA of brush or other debris and periodically grade and compact the RSA to maintain FAA standards.

Runway Object Free Area (OFA)

Runway object free areas (OFA) are two dimensional surfaces intended to be clear of ground objects that protrude above the runway safety area edge elevation. Obstructions within the OFA may interfere with aircraft flight in the immediate vicinity of the runway. The FAA defines the OFA clearing standard:

"The OFA clearing standard requires clearing the OFA of above ground objects protruding above the runway safety area edge elevation. Except where precluded by other clearing standards, it is acceptable to place objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes and to taxi and hold aircraft in the OFA. Objects non-essential for air navigation or aircraft ground maneuvering purposes are not to be placed in the OFA. This includes parked airplanes and agricultural operations."

The OFA beyond the south end extends approximately 190 feet from the end of Runway 34 at its full width (500 feet) and is limited by Stewart Parkway. The remainder of the OFA meets the B-II dimensional standards and appears to be free of physical obstructions. The 1995 ALP includes a note recommending an indefinite modification to standards based on the impracticality of relocating the parkway. No other action was recommended to address the OFA deficiency. The City should periodically inspect the OFA and remove any objects that protrude into the OFA.

Obstacle Free Zone (OFZ)

The OFZ is a plane of clear airspace extending upward to a height of 150 feet above runway elevation, which coincides with the FAR Part 77 horizontal surface elevation. The FAA defines the following clearing standard for the OFZ:

"The OFZ clearing standard precludes taxiing and parked airplanes and object penetrations, except for frangible visual NAVAIDs that need to located in the OFZ because of their function."

The OFZ may include the Runway OFZ, the Inner-approach OFZ (for runways with approach lighting systems), and the Inner-transitional OFZ (for runways with lower than ¾-statute mile approach visibility minimums. For Runway 16/34, only the Runway OFZ is required based on runway configuration and instrument approach capabilities. The FAA defines the Runway OFZ as:

"The runway OFZ is a defined volume of airspace centered above the runway centerline. The runway OFZ is the airspace above a surface whose elevation at any point is the same as the elevation of the nearest point on the runway centerline. The runway OFZ extends 200 feet beyond each end of the runway."

The parallel taxiway is partially located within the OFZ, which results in aircraft taxiing or holding on the taxiway being located within the OFZ. Aircraft hold lines are located 175 feet from runway centerline (on the east side of the parallel taxiway) on the four exit taxiways that connect the parallel taxiway and runway. Relocation of the parallel taxiway to meet B-II runway separation standards will also eliminate the existing OFZ penetrations. There are no permanent penetrations to the OFZ, other than objects with locations fixed by function (i.e., runway lights, REILS, VASI, directional signage, and distance-to-go signs, etc.) All items located within the OFZ must meet the FAA frangibility standard.

Taxiway Safety Area

The recommended safety area dimension for the parallel taxiway is based on ADG II taxiway design standards and extends 39.5 feet on either side of centerline. The parallel taxiway safety area appears to be free of obstructions and meets the ADG II dimensional standard, although the runway-taxiway separation is non-standard. The taxiway safety area should be regularly cleared of brush or other debris and periodically graded and compacted to maintain FAA standards. Any future relocation of the parallel taxiway will be required to meet taxiway safety area dimensional and compaction standards.

Taxiway Object Free Area

The recommended object free area (OFA) dimension for the parallel taxiway is based on ADG II taxiway design standards and extends 65.5 feet on either side of centerline. The parallel taxiway OFA appears to be free of obstructions and meets the ADG II dimensional standard, although the runway-taxiway separation is non-standard. The taxiway OFA should be regularly cleared of brush or other debris to maintain FAA obstruction clearance standards. Any future relocation of the parallel taxiway will be required to meet taxiway OFA dimensional standards, which would require some removal/relocation of existing aircraft parking positions.

All facilities (fuel pumps, etc.) and parked aircraft located along the taxiways should have a minimum setback of 65.5 feet, which corresponds to the outer edge of the taxiway OFA. Aircraft hold lines should be located on all taxilanes or taxiways that connect to the parallel taxiway to protect the taxiway OFA (minimum of 65.5 feet from taxiway centerline).

Building Restriction Line (BRL)

The 1995 ALP depicts a building restriction line (BRL) on the west side of the runway, 425 feet from runway centerline. Based on the airport's airspace structure, the BRL would accommodate structures up to 25 feet above runway elevation (along the BRL) without penetrating the runway's 7:1 transitional surface slope. This distance also provides adequate clearance of B-II parallel taxiway and taxiway OFA. No BRL is depicted on the east side of the runway; although the east side of the runway has limited development potential, a BRL should be established to ensure that any proposed development does not conflict with airfield setbacks or protected airspace, particularly due to rising terrain near the north end of the runway.

The location of BRLs will be reviewed and revised, as necessary based on the recommended configuration of airfield facilities on the updated airport layout plan.

Runway Protection Zones (RPZ)

The FAA provides the following definition for runway protection zones (RPZ):

"The RPZ's function is to enhance the protection of people and property on the ground. This is achieved through airport owner control over RPZs. Such control includes clearing RPZ areas (and maintaining them clear) of incompatible objects and activities. Control is preferably exercised through the acquisition of property interest in the RPZ. The RPZ is trapezoidal in shape and centered about the extended runway centerline. The RPZ begins 200 feet beyond the end of the area useable for takeoff or landing."

RPZs with buildings, roadways, or other items do not fully comply with FAA standards. The development located in the vicinity of the airport is relatively dense and includes a variety of land uses and major surface streets. It is generally recognized that realigning surface roads or all structures outside RPZs may not always be feasible. However, where possible, the local land use authority should discourage future development within the RPZs (particularly structures or new roads) that is inconsistent with FAA standards. Residential structures would be considered among the least compatible with RPZ criteria, in addition to being more sensitive to airport noise and should be removed whenever possible. Manufacturing, industrial or other related land uses are relatively compatible with airport operations and are generally acceptable if they do not conflict with airport operations.

The recommended RPZ dimensions for Runways 16 and 34 are based on Aircraft Approach Categories A & B with approach visibility minimums "visual and not lower than 1-mile." Both RPZs extend beyond airport property. The displaced threshold on each runway requires an arrival RPZ in addition to the standard RPZ (departure) that begins 200 feet beyond each runway end. The arrival RPZs on both runway ends are considerably less developed than the departure RPZs, although roads still exist and some structures are located within the arrival RPZ for Runway 34.

A helicopter loading area is located within the arrival and departure RPZs for Runway 34 (on the east side of the runway). Although not generally recommended, several airports have existing taxiways or aircraft parking areas located within an RPZ to do not interfere with runway operations or create obstructions to the runway approach. Helicopters operating in this area should observe the airport traffic pattern procedures to ensure compatibility with other aircraft.

In addition to several residential structures, a privately owned industrial building is located on City-owned property within the departure RPZ for Runway 34. The site is immediately adjacent to, but not part of the airport (separated by Stewart Parkway). The property owner has periodically expressed interest in purchasing the land beneath his building from the City, although concerns about its location within the RPZ have been raised. However, in 1984, the FAA indicated that since the City-owned land was acquired without federal assistance and the 30-foot high building did not obstruct navigable airspace, the structure was "acceptable." [17] From an airport protection standpoint, the primary concern would be to ensure that incompatible land uses are prevented. With adequate development controls in place (surface and overlay zoning) to prevent potential incompatibilities, a change in the ownership of the property would not directly affect the compatibility or incompatibility of a particular use. In addition, since the land does not involve FAA funds and is not otherwise obligated under any airport agreements, a potential sale would not affect revenue generation or the airport's land base. Based on these conditions, it appears that a change in property ownership for this site would not adversely affect airport operations.

Aircraft Parking Line (APL)

All existing aircraft parking areas at the airport are located adjacent to the parallel taxiway. The 1995 ALP does not depict aircraft parking lines (APL), although taxiway object free area (OFA) lines are depicted to define clear areas for aircraft parking adjacent to the parallel taxiway. The taxiway OFA line (west side) is depicted approximately 265.5 feet from the runway centerline.

Future aircraft parking areas that may be developed should be compatible with runway/taxiway design and airspace clearances. The recommended APL will reflect the minimum separations required to provide adequate tail height clearances and wingtip clearances from adjacent taxiways. The standard APL for B-II runways is 250 feet from runway centerline, although at least 320 feet is needed to provide a 10-foot tail-height clearance for the runway transitional surface; this distance is also adequate to protect a B-II parallel taxiway. Tail heights of 10 feet or less are typical of most light aircraft, although business aircraft often have tail heights ranging from 10 to 25 feet. Larger aircraft parking areas should be located to avoid transitional surface penetrations.

[17] FAA Correspondence dated March 12, 1984 to City of Roseburg Planning Department.

Runway - Parallel Taxiway Separation

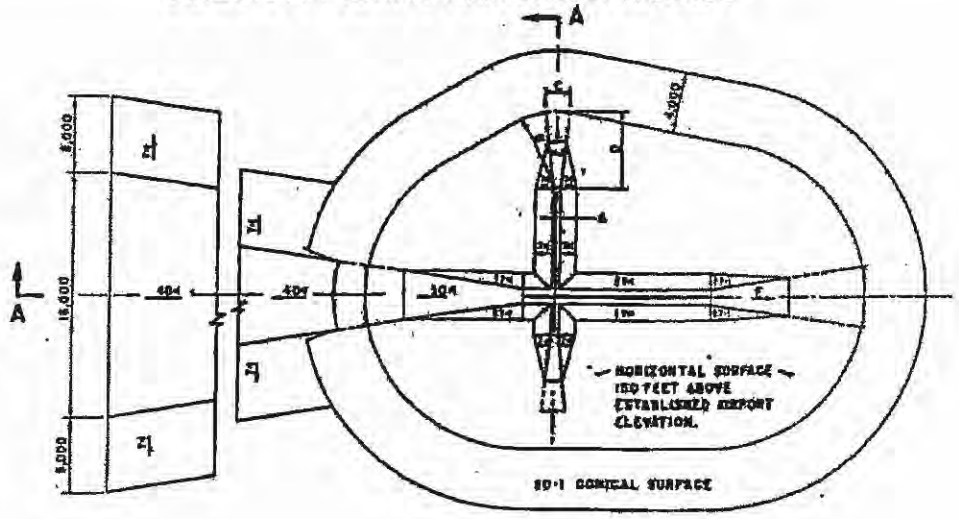
The parallel taxiway on Runway 16/34 has a 200-foot runway separation, which is 40 feet less than the B-II standard (240 feet). The 1995 ALP noted the nonstandard separation, but recommended *"an indefinite modification to standards"* rather relocating the taxiway. The 1995 ALP also recommended that *"at such a time as the runway is narrowed and/or the taxiway is 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."*

While a 40-foot relocation of the parallel taxiway would result in the loss of several existing aircraft parking positions, this option appears to be more feasible than shifting both the runway and taxiway. It is noted that the City's 2003 CIP includes a project to relocate the parallel taxiway, which appears to make the 1995 ALP recommendation obsolete.

FAR PART 77 SURFACES

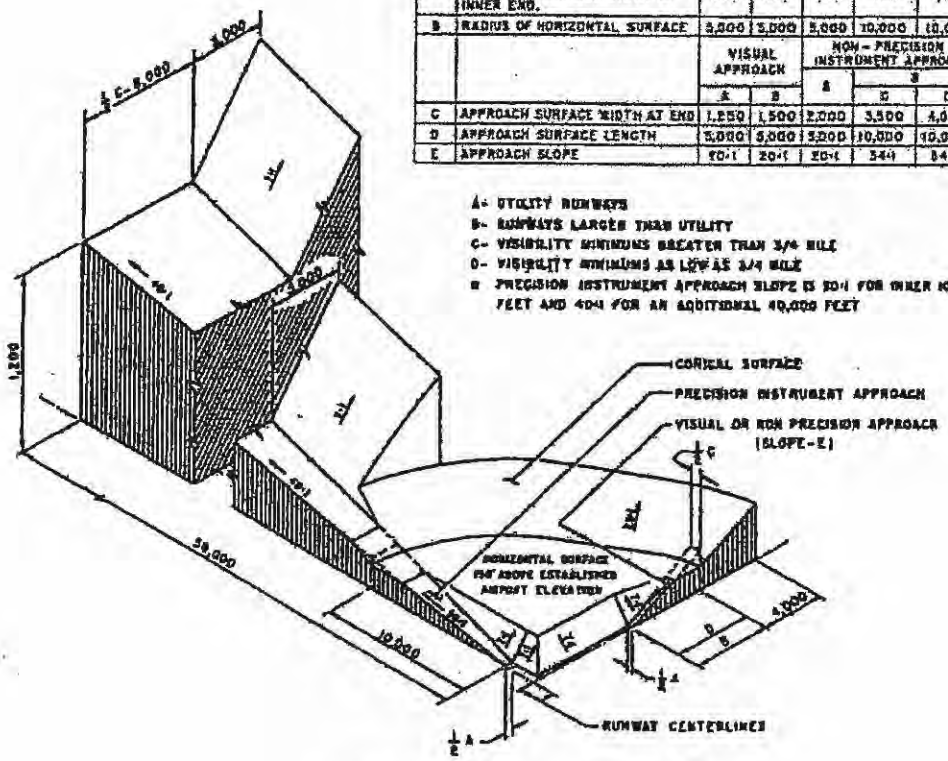
Airspace planning for U.S. airports is defined by Federal Air Regulations (FAR) Part 77 – Objects Affecting Navigable Airspace. FAR Part 77 defines imaginary surfaces (airspace) to be protected surrounding airports. **Figure 4-1** on the following page illustrates plan and isometric views of the Part 77 surfaces. Airspace planning reflects the classification and instrument approach capabilities of each runway end. As noted earlier, Runway 16/34 routinely accommodates aircraft weighing more 12,500 pounds and has a non-precision instrument approach with a circle-to-land procedure to the airport environment.

OBJECTS AFFECTING NAVIGABLE AIRSPACE



DIM	ITEM	DIMENSIONAL STANDARDS (FEET)					
		VISUAL RUNWAY		NON-PRECISION INSTRUMENT RUNWAY			PRECISION INSTRUMENT RUNWAY
		A	B	A	B		
					C	D	
A	WIDTH OF PRIMARY SURFACE AND APPROACH SURFACE WIDTH AT INNER END.	250	500	500	500	1,000	1,000
B	RADIUS OF HORIZONTAL SURFACE	5,000	5,000	5,000	10,000	10,000	10,000
		VISUAL APPROACH		NON-PRECISION INSTRUMENT APPROACH			PRECISION INSTRUMENT APPROACH
		A	B	A	B		
					C	D	
C	APPROACH SURFACE WIDTH AT END	1,250	1,500	2,000	3,500	4,000	16,000
D	APPROACH SURFACE LENGTH	5,000	5,000	5,000	10,000	10,000	*
E	APPROACH SLOPE	20:1	20:1	20:1	34:1	34:1	*

A- UTILITY RUNWAYS
B- RUNWAYS LARGER THAN UTILITY
C- VISIBILITY MINIMUMS GREATER THAN 3/4 MILE
D- VISIBILITY MINIMUMS AS LOW AS 3/4 MILE
* PRECISION INSTRUMENT APPROACH SLOPE IS 50:1 FOR INNER 10,000 FEET AND 40:1 FOR AN ADDITIONAL 40,000 FEET



ISOMETRIC VIEW OF SECTION A-A

§ 77.25 CIVIL AIRPORT IMAGINARY SURFACES

DESIGNED BY: DM	FAR PART 77 DIAGRAM	CENTURY WEST ENGINEERING CORPORATION 6650 S.W. Redwood Lane, Suite 300 Portland, Oregon 97224 503-419-2130 phone • 503-639-2710 fax www.centurywest.com	FIGURE 4-1
DRAWN BY: JLM			
SCALE: NTS			

As noted earlier, the 1995 Airspace Plan is based on "larger-than-utility" aircraft and depicts approach surfaces that are consistent with a future non-precision instrument on Runway 16 and visual approaches on Runway 34. As noted earlier, the feasibility of establishing a straight-in non-precision instrument approach for Runway 16 has not been determined through formal airspace evaluation conducted by the FAA. However, for airspace planning purposes, it is reasonable to maintain the recommendation on the updated airspace plan drawing and protect the (future) approach surface through airport overlay zoning.

Instrument approach visibility minimums cannot generally be reduced below 1-mile without the addition of an approach lighting system. Based on the terrain located beyond the runway ends, it appears that installation of an approach lighting system may be difficult. However, in the event that a clear 34:1 approach surface can eventually be achieved for Runway 16, installation of an approach lighting system may be feasible.

The addition of a medium intensity approach light (MALS) or omni directional approach lighting system (ODALS) may allow the current 1 ¼ to 3 mile approach visibility minima to be reduced to as low as 1 mile. **Table 4-5** summarizes the standard airspace dimensions recommended for Roseburg Regional Airport.

TABLE 4-5: ROSEBURG REGIONAL AIRPORT FAR PART 77 AIRSPACE SURFACES
(as depicted on 1995 Airspace Plan)

Item	Runway 16 *Larger than Utility (Non-Precision)*	Runway 34 *Larger than Utility (Visual)*
FAR Part 77 Designation	C(NP)[1]	B(V)[2]
Width of Primary Surface	500 feet	500 feet
Radius of Horizontal Surface	10,000 feet	10,000 feet
Approach Surface Width at End	3,500 feet	1,500 feet
Approach Surface Length	10,000 feet	5,000 feet
Approach Slope	34:1	20:1

1. Runways Larger than Utility; Nonprecision Instrument Runway with visibility minimums greater than ¾ mile.
2. Larger than utility runways; visual runway C = visibility minimums greater than ¾ mile.

Approach Surfaces

Runway approach surfaces extend outward and upward from each end of the primary surface, along the extended runway centerline. As noted earlier, the dimensions and slope of approach surfaces are determined by the type of aircraft intended to use the runway and most demanding approach existing or planned for the runway.

Runway 16

Based on the airspace planning criteria described above, the previously recommended approach surface for Runway 16 is 10,000 feet with a slope of 34:1. Mast Hill is a major obstruction within the nonprecision instrument approach slope; unless the terrain can be removed, it will not be possible to establish an unobstructed 34:1 approach slope for Runway 16. As noted earlier, the displaced threshold and the use of the alternative OCA surface reduces the obstructions within the 20:1 visual approach surface.

Runway 34

The recommended approach surface for Runway 34 is 5,000 feet with a slope of 20:1. There are existing terrain, tree and man-made obstructions to the Runway 34 approach surface. However, as noted earlier, the displaced threshold and the use of the alternative OCA surfaces significantly reduces the obstructions within the approach.

Primary Surface

The primary surface is a rectangular plane of airspace, which rests on the runway (at centerline elevation) and extends 200 feet beyond the runway end. The primary surface should be free of any penetrations, except items with locations fixed by function (i.e., VASI, runway or taxiway edge lights, etc.). The primary surface end connects to the inner portion of the runway approach surface. The primary surface for Runway 16/34 appears to be relatively level and free of obstructions. The primary surface extending beyond the south end of Runway 34 does not fully meet the dimensional standard (fence and road located approximately 190 feet from runway end).

Transitional Surface

The transitional surface is located at the outer edge of the primary surface, represented by a plane of airspace that rises perpendicularly at a slope of 7 to 1, until reaching an elevation 150 feet

above runway elevation. This surface should be free of obstructions (i.e., parked aircraft, structures, trees, etc.). The 1995 Airspace Plan does not identify any obstructions to the transitional surfaces.

However, a review of existing aircraft parking indicates that the parking positions nearest the runway are located immediately adjacent to runway primary surface and the beginning of the runway transitional surface 7:1 slope. As a result, parked aircraft located in the outer positions penetrate the transitional surface. It is recognized that these obstructions are relatively minor when compared to the terrain penetrations to the approaches and other airspace surfaces. However, the recommended relocation of the parallel taxiway will require changes in aircraft parking configuration, which would also reduce transitional surface penetrations. Future aircraft parking areas should be configured to avoid obstructions to the transitional surface.

Horizontal Surface

The horizontal surface is a flat plane of airspace located 150 feet above runway elevation with its boundaries defined by the radii that extend from each runway end. The outer points of the radii for each runway are connected to form an oval, which is defined as the horizontal surface. The 1995 Airspace Plan depicts large areas of terrain penetration within the horizontal surface in all directions from the runway. The status of these areas of terrain penetration will be reviewed when the airspace plan is updated.

Conical Surface

The conical surface is an outer band of airspace, which abuts the horizontal surface. The conical surface begins at the elevation of the horizontal surface and extends outward 4,000 feet at a slope of 20:1. The top elevation of the conical surface is 200 feet above the horizontal surface and 350 feet above airport elevation.

The 1995 Airspace Plan depicts several areas of terrain penetration within the conical surface in all directions. The status of these areas of terrain penetration will be reviewed when the airspace plan is updated.

AIRSIDE REQUIREMENTS

Airside facilities are those directly related to the arrival and departure and movement of aircraft:

- *Runways*
- *Taxiways*
- *Airfield Instrumentation and Lighting*

Runways

The adequacy of the existing runway at Roseburg Regional Airport was analyzed from a number of perspectives including runway orientation, airfield capacity, runway length, and pavement strength.

Runway Orientation

The orientation of runways for takeoff and landing operations is primarily a function of wind velocity and direction, combined with the ability of aircraft to operate under adverse wind conditions. When landing and taking off, aircraft are able to maneuver on a runway as long as the wind component perpendicular to the aircraft's direction of travel (defined as crosswind) is not excessive. FAA planning standards indicate that an airport should be planned with the capability to operate under allowable wind conditions at least 95 percent of the time. For runway planning and design, a direct (90-degrees to the direction of takeoff/landing) crosswind component is considered excessive at 12 miles per hour for smaller aircraft (gross takeoff weight 12,500 pounds or less) and 15 miles per hour for larger aircraft.

Wind data for the airport is available for the period between January 1960 and December 1964.[18] Wind coverage for Runway 16/34 is estimated at 96.6 percent at 12 miles per hour (10.5 knots). Prevailing winds are from north and local pilots indicate that Runway 34 is most often used. This wind coverage exceeds the FAA-recommended 95 percent coverage for primary runways for small aircraft based on the 12 mile per hour crosswind coverage. Although not specifically calculated, the data suggests that Runway 16/34 would also meet the FAA standard for larger aircraft, based on 15 miles per hour crosswind coverage. Calm winds (0-3 mph) accounted for

[18] Source: NOAA-EDS, Ashville, NC, January 1960 to December 1964.

38.34 percent of observations. The automated weather observation system data is not routinely recorded or tabulated for use in developing updated wind roses.

Runway Length

Runway length requirements are based primarily upon airport elevation, mean maximum daily temperature of the hottest month, runway gradient, and the critical aircraft type expected to use the runway. The 1995 Airport Master Plan concluded that the existing 4,600-foot runway length was adequate to meet current and forecast demand. A review of the FAR Part 25 takeoff distances[19] for the design aircraft (Cessna Citation II) confirms that Runway 16/34 has adequate length to accommodate at or near maximum gross takeoff weights up to approximately 86 degrees F. For comparison, the runway length requirements for a variety of business aircraft are summarized in **Table 4-6.**

A summary of FAA-recommended runway lengths for a variety of aircraft types and load configurations are described in **Table 4-7**. Runway 16/34 accommodates large aircraft (above 12,500 pounds) operations on a regular basis. As a result, the evaluation of runway length requirements should be based on the FAA's model for "large airplanes of 60,000 pounds or less." However, within this category, small and medium business jets weighing 30,000 pounds or less represent the majority of "large airplane" activity. Therefore, it is reasonable to evaluate Runway 16/34 based on the lower increment within this category (75 percent of these large airplanes at 60 percent useful load) available in the FAA model.

[19] FAR 25 defines takeoff distance as the greater of accelerate-stop, accelerate-go with one engine inoperative, or 115% of the all engine takeoff distance to a point 35 feet above the runway.

TABLE 4-6: BUSINESS AIRCRAFT RUNWAY REQUIREMENTS

Aircraft	Passengers (typical configuration)	Maximum Takeoff Weight	Runway Length Required for Takeoff[1]	Runway Length Required for Landing[2]
Beechcraft King Air 200	6-8	12,500	3,600	2,600
Cessna Citation CJ1	6-7	10,600	4,220(a)	2,860(a)
Cessna Citation CJ2	6-7	12,375	3,820(a)	3,080(a)
Cessna Citation CJ3	6-7	13,870	3,610(b)	3,140(b)
Cessna Citation II	6-9	14,100	4,580(a)	2,600(a)
Cessna Citation S/II	6-9	15,100	4,590(a)#	3,270(a)
Cessna Citation Bravo	7-11	14,800	4,160(a)	3,380(a)
Cessna Citation Encore	7-9	16,630	3,920(a)	2,880(a)
Cessna Citation Excel	7-8	20,000	4,060(a)	3,300(a)
Citation Sovereign	9-12	30,000	3,831(c)	3,214(c)
Cessna Citation X	8-12	36,100	5,530(a)	3,590(a)
Learjet 45	7-9	20,500	4,350(d)	2,660(d)
Challenger 300	8-15	37,500	4,950(d)	2,600(d)
Gulfstream 100 (Astra)	6-8	24,650	5,395(d)	2,920(d)
Gulfstream 200 (G-II)	8-10	35,450	6,080(d)	3,280(d)
Gulfstream 300 (G-III)	11-14	72,000	5,100(d)	3,190(d)

1. FAR Part 25 Balanced Field Length (Distance to 35 Feet Above the Runway); Sea Level, 89-degrees F; Zero Wind, Dry Level Runway, 15-Degrees Flaps, except otherwise noted.
2. Distance from 50 Feet Above the Runway; Flaps Land, Zero Wind.
   (a) *Distances calculated based on 86 degrees F. (# = 7 degrees flap setting)*
   (b) *Distances calculated based on 77 degrees F.*
   (c) *Distances calculated based on 79 degrees F*
   (d) For general comparison only. **Distances based on sea level and standard day temperature** (59-degrees F) at maximum takeoff/landing weight; higher airfield temperatures will require additional runway length and/or reduction in operating weights.

Source: Aircraft manufacturers operating data, flight planning guides.

TABLE 4-7:
FAA-RECOMMENDED RUNWAY LENGTHS
(FROM FAA COMPUTER MODEL)

Runway Length Parameters for Roseburg Regional Airport

- *Airport Elevation: 525 feet MSL*
- *Mean Max Temperature in Hottest Month: 83 F*
- *Maximum Difference in Runway Centerline Elevation: 28 Feet*
- *Existing Runway Length: 4,602'*

Small Airplanes with less than 10 seats	
75 percent of these airplanes	*2,600 feet*
95 percent of these airplanes	*3,130 feet*
100 percent of these airplanes	*3,750 feet*
Small airplanes with 10 or more seats	*4,240 feet*
Large Airplanes of 60,000 pounds or less	
75 percent of these airplanes at 60 percent useful load	***4,960 feet***
75 percent of these airplanes at 90 percent useful load	*6,550 feet*
100 percent of these airplanes at 60 percent useful load	*5,570 feet*
100 percent of these airplanes at 90 percent useful load	*8,190 feet*
Airplanes of more than 60,000 pounds	*5,200 feet*

Based on local conditions and the methodology outlined in **AC 150/5325-4A**, a runway length of 4,960 feet is required to accommodate 75 percent of large airplanes (60,000 pounds or less maximum gross takeoff weight) at 60 percent useful load. This distance is 358 feet greater than the existing length of Runway 16/34. Given the physical site characteristics of the airport and its surroundings, it may not be considered practical to extend the runway significantly beyond its current length. However, based on the level of locally based and itinerant business jet activity, it would be prudent to increase the runway length based on the FAA's runway length guidelines. In addition to providing a modest runway extension, providing a paved stopway or unpaved clearway beyond the end of Runway 16 could be used to increase the "runway" available for turbine aircraft in several takeoff distance calculations through the use of declared distances. Regardless of the runway improvements selected, no changes to the location of the existing runway thresholds would be recommended due to close-in terrain obstructions.

Runway Width

Runway 16/34 is 100 feet wide, which exceeds the B-II standard of 75 feet. The 1995 ALP lists the future runway width at 75 feet. However, based on the current pavement condition (excellent) and the existing investment in runway lighting, signage and drainage systems, the substantial costs associated with narrowing suggests that the existing width should be maintained until the next major runway rehabilitation project. At that time, a detailed cost-benefit analysis should be performed to determine the economic feasibility of narrowing the runway when all associated costs are also considered.

Airfield Pavement

According to the data contained in the 2003 pavement condition report, airfield pavements at Roseburg Regional Airport generally ranged from "fair" to "excellent" with only a small section of hangar taxilane rated "poor." **Table 4-8** summarizes the five-year maintenance program recommended for Roseburg Regional Airport[20] and additional pavement maintenance items anticipated (with approximate timelines) during the current twenty-year planning period. The rate of deterioration of airfield pavements increases significantly as they age. A regular maintenance program of vegetation control, crackfilling, isolated patching, and sealcoating is also required to extend the useful life of all airfield pavements

Runway 16/34

The 2003 PCI report indicates that without recommended maintenance, the condition of the runway will decline from "excellent" to "very good" by 2010. Based on the age and condition of the runway pavement, an asphalt overlay will likely be needed late in the twenty-year planning period. The existing 42,000 pound (single wheel); 54,000 pound (dual wheel) pavement strength is adequate to accommodate regular operations with most medium or larger business aviation aircraft.

Parallel Taxiway

The 2003 PCI report indicates that the southern section of the parallel taxiway will deteriorate to "poor" condition by 2010 without recommended maintenance. The northern section is expected to be in "very good" condition.

[20] Pavement Consultants Inc. (3/14/03).

Aircraft Aprons

The 2003 PCI report indicates that sections of the existing aprons will deteriorate to "poor" condition by 2010 without recommended maintenance. Other sections are expected to be in "fair" or "very good" condition. Most of the hangar taxilanes will be in "fair" condition by 2010 without recommended maintenance.

TABLE 4-8:
SUMMARY OF RECOMMENDED
AIRFIELD PAVEMENT MAINTENANCE

Pavement	5-Year Recommended Maintenance	Other Recommended Maintenance During 20-Year Planning Period[1]
Runway 16/34	Slurry Seal (2003) (completed)	Overlay (2015) Slurry Seal (2009, 2022)
Parallel Taxiway	Slurry Seal (2003) (completed)	Overlay (2014) Slurry Seal (2009, 2020)
North T-Hangar Taxilanes	Slurry Seal (2004)	Overlay (2010-2020 -varies by section) Fog/Slurry Seal (2010, 2016)
Aircraft Apron *(south section, FBO, fueling area)*	Fog Seal (2004)	Overlay (2018) Slurry Seal (2010, 2016)
Aircraft Apron *(north tiedown section)*	Overlay (2004)	Slurry Seal (2010, 2016, 2022)
Corporate Hangar/West T-Hangar Taxilanes	Varies by Area: Reconstruct and Overlay (2004); Slurry Seal (2005 and 2006)	Slurry Seal (2010, 2016, 2022 – varies by section)

Airfield Capacity

The 1995 master plan estimated the annual service volume (ASV) for the airport at 230,000 operations. This number represents a theoretical capacity level that is commonly used for master planning single runway airports. However, the number is only valid when the airport has a 24-hour air traffic control tower, full radar coverage to coordinate instrument operations, and an instrument landing system (ILS). As an uncontrolled field, without radar coverage, the capacity of a single runway with a full-length parallel taxiway is generally estimated at more than 72 operations per hour during visual flight rules (VFR) conditions. Hourly capacity during instrument flight rules (IFR) conditions is generally more limited by the efficiency of the airspace structure and the control procedures available for enroute flight and terminal instrument procedures than runway configuration.

Overall, existing airport capacity appears adequate to meet forecast demand without significant delay, through the twenty-year planning period and beyond.

Taxiways

The existing parallel taxiway provides aircraft access to the entire runway. The location and number of exit taxiways on the runway provides for the efficient movement aircraft to/from the runway. Based on forecast demand, it appears that the existing taxiway configuration will be adequate through the planning period. However, if peak period traffic volumes increase significantly, the addition of one or more high-speed exit taxiways could be considered as replacements for 90-degree exit taxiways. Plans to add aircraft run-up areas adjacent to the parallel taxiway at both ends of the runway will also improve aircraft taxiing efficiency.

According to airport pavement data, the parallel taxiway is 40 feet wide, although the 1995 ALP indicates that portions of the taxiway are 48 feet wide. The ADG II standard taxiway width is 35 feet. The future (relocated) parallel taxiway should be designed based on ADG II standards.

Airfield Instrumentation, Lighting and Marking

Runway 16/34 has medium-intensity runway edge lighting (MIRL), the standard for general aviation runways. The MIRL system appears to be in good fair operational condition. Runway 16/34 also has threshold lighting at both ends and at the displaced thresholds. Both runway ends are equipped with Runway End Identifier Lights (REIL). Runway 34 has a visual approach slope indicator (VASI). The parallel taxiway has medium-intensity taxiway edge lighting (MITL). It is noted in the City's updated CIP that the MITL will be replaced as part of the parallel taxiway relocation project.

The existing non-precision runway markings include longitudinal stripes located at the threshold, runway end numbers and centerline stripes. For runways longer than 4,000 feet that are used by jet aircraft, aiming point bars are recommended 1,020 feet from each runway threshold. The existing "distance-remaining" signs located along the runway are adequate.

The 1995 master plan recommended precision approach path indicators (PAPI) for Runway 34 (replacement for the existing VASI) and for Runway 16 (after Mast Hill terrain removal).

On-Field Weather Data

The airport has an automated surface observation system (ASOS), which allows aircraft licensed under FAR Part 135 (air taxi/charter) to operate in IFR conditions.

LANDSIDE FACILITIES

The purpose of this section is to determine the space requirements during the planning period for landside facilities. The following types of facilities are associated with landside aviation operations areas:

- *Hangars*
- *Aircraft Parking and Tiedown Apron*
- *Fixed Base Operator (FBO) Facilities*

Hangars

In Spring 2004, Roseburg Regional Airport had seven T-hangar buildings, nine corporate conventional hangars and one FBO maintenance hangar/office. Two older conventional hangars located adjacent to the FBO were recently removed and a new FBO maintenance hangar is planned for the site. According to a tenant list provided by the City, there are currently 51 T-hangar units (spaces) and 9 larger conventional hangars, which typically house multiple aircraft. The conventional hangars accommodate a combination of aircraft storage and aviation related business uses; the T-hangars are used primarily for aircraft storage.

The 2004 estimate of 97 based aircraft included 13 aircraft parked in reserved tiedowns. Based on these numbers, it is estimated that 86 percent of the airport's current based aircraft are stored in hangars. The City indicates that there is currently a waiting list for hangar spaces and a project to develop new hangar space is planned. For long-term planning purposes, the current level of hangar utilization is expected to continue during the planning period. It is also assumed that all existing hangar space is committed and future demand will be met through new construction.

A planning standard of 1,500 square feet per based aircraft stored in hangars is used to project gross space requirements, based on a combination of T-hangar and conventional hangar demand. As indicated in the aviation activity forecasts, the number of based aircraft at Roseburg Regional Airport is projected to increase by 41 aircraft during the twenty-year planning period. Based on a projected 86% hangar utilization level, long-term demand for new hangar space hangars is

estimated to 35 spaces (approximately 52,500 square feet). The projected hangar needs at Roseburg Regional Airport are presented in **Table 4-10**, located on page 4-33.

Individual aircraft owners needs vary and demand can be influenced by a wide range of factors beyond the control of an airport. In addition, the forecasts of based aircraft reflect relatively modest growth rates that could be easily exceeded if hangar development conditions are favorable. For this reason, it is recommended that additional hangar development reserves be identified to accommodate any unanticipated demand. Reserves should be established to accommodate a combination of conventional hangars and T-hangars, roughly equal to 100 percent of the forecast demand.

Aircraft Parking and Tiedown Apron

Aircraft parking aprons accommodate locally based aircraft that are not stored in hangars and transient aircraft visiting the airport. At Roseburg Regional Airport, the existing apron has two light aircraft tiedown areas (58 positions), a tiedown area for twin-engine aircraft (6 positions), three itinerant drive-through parking positions for UPS and FedEx cargo aircraft, and three helicopter hardstands. As noted earlier, 13 tiedowns are currently leased/rented by locally based aircraft and the cargo positions are leased by UPS and FedEx. The open area between the FBO hangar and fueling area is used for passenger loading/unloading and fueling.

As noted earlier, the parallel taxiway does not meet FAA B-II runway separation standards. Relocating the taxiway 40 feet to the west is recommended to the meet design standards. However, this will result in the elimination of the tiedowns located within the future taxiway object free area. A new aircraft parking line (APL) would be established to protect the taxiway OFA (a minimum of 305.5 feet from the runway centerline). However, as noted earlier in the chapter, penetrations to the runway transitional surface are created by the aircraft parking positions located nearest the runway. An APL located 320 feet from runway centerline is needed to provide a 10-foot tail-height clearance beneath the runway transitional surface; this distance is also adequate to protect a B-II parallel taxiway OFA. Tail heights of 10 feet or less are typical of most light aircraft, although business aircraft often have tail heights ranging from 10 to 25 feet. Larger aircraft parking positions should also be located to avoid transitional surface penetrations.

Table 4-9 summarizes the impact on existing aircraft parking associated with parallel taxiway relocation. For the purposes of evaluating aircraft parking requirements, it is assumed that the B-II taxiway impacts will occur early in the planning period. With a significant reduction in available parking capacity anticipated, it will be particularly important to define adequate aircraft parking development reserves regardless of forecast demand.

TABLE 4-9: CHANGES IN AIRCRAFT PARKING CAPACITY WITH RELOCATED PARALLEL TAXIWAY

Apron Areas	Existing Aircraft Parking Capacity	Change with Relocated B-II Parallel Taxiway (APL @ 320' - Rwy CL)	Future Aircraft Parking Capacity (Existing Apron)
North Light AC Tiedown	13 tiedowns	-7 tiedowns	6 tiedowns
North-Center Light AC Tiedown	27 tiedowns	-14 tiedowns	13 tiedowns
South Light AC Tiedown	18 tiedowns	-4 tiedowns	14 tiedowns
South Large AC Tiedown	5 tiedowns	-2 tiedowns	3 tiedowns
South Cargo AC Parking	3 parking positions	-1 parking position	2 parking positions
South Helicopter Parking	3 hardstands	-1 hardstand	2 hardstands
Total	**69 parking positions**	**-29 parking positions (42% of available parking)**	**40 parking positions**

Projected Demand

As noted earlier, it is assumed that the airport's high percentage of hangar utilization (86%) will continue in the current planning period. With an estimate of 14 percent of locally based aircraft requiring apron parking, demand increases to 19 aircraft tiedowns by the end of the planning period (2024). Locally based aircraft tiedowns are planned at 300 square yards per position.

FAA **Advisory Circular 150/5300-13** suggests a methodology by which itinerant parking requirements can be determined from knowledge of busy-day operations. The 1995 master plan estimated peak month activity to be 10 percent, which appears to be reasonable based on the airport's relatively steady year-round use by business aircraft. Within the peak month, a busy day estimate is generated from the typical week in the peak month. For planning purposes it is assumed that the busy day accounts for 20 percent of a typical week's activity during the peak month. The demand for itinerant parking spaces was estimated based on 25 percent of busy day itinerant operations (25% of busy day itinerant operations divided by two, to identify peak parking demand). The FAA planning criterion of 360 square yards per itinerant aircraft was applied to the number itinerant spaces to determine future itinerant ramp requirements. Based on these assumptions, typical peak itinerant parking demand is estimated to be 15 positions by the end of the twenty-year planning period (2024).

In addition to light aircraft parking positions, the airport accommodates itinerant business aircraft including turboprops and business jets. The anticipated reduction in existing parking apron space associated with the taxiway relocation is expected to constrain itinerant business aircraft parking more significantly due to the limited number of existing spaces. Replacing lost business aircraft parking either through reconfiguration or new construction is recommended to maintain current capacity. Reserving additional space for business aircraft parking is also recommended to address demand that may exceed long-term forecast demand. The development of drive-through parking positions for business aircraft is recommended (similar to the existing cargo aircraft parking) to accommodate larger turboprops and jet aircraft.

The loss of the outer rows of tiedowns would require consolidating local and itinerant parking to the remaining parking areas. With the current configuration, the north half of apron (north of fuel area) would have 19 light aircraft tiedowns and the south half of the apron would have tiedowns for 14 light aircraft and 3 larger aircraft, for a total of 33 tiedowns. The cargo aircraft parking and helicopter hardstands (3 positions each) would be reduced to 2 positions. The three existing cargo positions are currently leased to UPS and FedEx. It is expected that one alternative parking space will need to be provided immediately to accommodate current tenant use.

The three helicopter hardstands located at the south end of the apron are used occasionally by larger helicopters associated with a variety of activities. The relocation of the parallel taxiway would require eliminating the hardstand closest to the runway. It appears that based on current demand, replacement of the outer hardstand may not be required unless there is a change in helicopter activity. The hardstands should be reserved for active aircraft use; long-term aircraft storage should be accommodated elsewhere. Seasonal fire-response helicopters use an unimproved area on the east side of the runway for ground operations.

As with aircraft hangars, reserve areas should be identified to accommodate unanticipated demand for aircraft parking, which may exceed current projections. A development reserve area equal to 100 percent of the 20-year parking demand will provide a conservative planning guideline to accommodate unanticipated demand, changes in existing apron configurations, and demand beyond the current planning period. The location and configuration of the development reserves will be addressed in the alternatives analysis. The aircraft parking area requirements are summarized in **Table 4-10.**

FBO Facilities

FBO facilities are currently located in the large office/hangar located adjacent to the main apron and fuel area. In 2003, a redevelopment project was started adjacent to the FBO to allow

development of a new FBO maintenance hangar and vehicle parking. Two older conventional hangars were removed to allow construction of the new hangar.

Although it appears unlikely that Roseburg Regional Airport would be able to support more than one FBO during the current planning period, space should be reserved for an additional FBO, should that interest develop. If demand exists, the airport needs to provide equal access to prospective tenants, without discrimination. A development reserve for a second FBO should be identified on the airport during the alternatives evaluation with adequate access to the runway-taxiway system.

Surface Access Requirements

Surface access to the airport appears to be adequate. Additional access road connections may be required to serve new landside development areas. Vehicle parking in the terminal areas appears to be adequate based on current needs, although additional parking areas should be provided in conjunction with future hangar projects. The requirements for providing designated vehicle parking areas adjacent to hangars vary greatly at small airports. A planning standard of 0.5 to 1.0 vehicle parking spaces per based aircraft will accommodate the most common parking demand levels. For larger hangars, a formula based on the square footage of the building is often used to determine vehicle parking requirements. This is a common approach for establishing off-street parking in most communities. As noted earlier, a current redevelopment project adjacent to the FBO will include additional vehicle parking.

SUPPORT FACILITIES

Aviation Fuel Storage

The airport's two 12,000-gallon fuel storage tanks and dispensing system are new and appear adequate for the planning period. Based on typical fuel sale volumes for larger general aviation airports, the existing tank capacity and frequency of restocking does not appear to significantly constrain fueling operations.

Airport Utilities

The existing utility service on the airport appears to be adequate for current and projected needs. As needed, extensions of water, sanitary sewer, electrical, and telephone service lines may be

required to serve future landside developments. Overhead electrical and telephone lines should be buried whenever possible; new electrical connections to hangars or other airfield developments should also be placed underground.

Security

The airport has chain link fencing on its boundary and automated vehicle gates located at key points on the west side of the runway to provide access to apron and hangar areas. The City has identified replacement of a section of older fencing on the eastern airport boundary with new chain link fencing. The future development of aviation use facilities in the former mobile home park area of the airport will also require new fencing and gates at primary access points to maintain adequate security.

Flood lighting should be provided in new aircraft parking and hangar areas and any other new development areas on the airport to maintain adequate security.

TABLE 4-10:
APRON AND HANGAR
FACILITY REQUIREMENTS SUMMARY

Item	Existing	2009	2014	2019	2024
Based Aircraft (Forecast)	97	109	121	132	139
Aircraft Parking Apron *(assumes parallel taxiway relocation)*					
Light Aircraft Tiedowns	33				
Twin Engine Tiedowns[1]	3				
Cargo Aircraft Spaces	2				
Helicopter Parking Spaces	2				
Total Parking	40				
Projected Needs (Demand)[2]					
Itinerant Aircraft Parking (@ 360 SY each)		11 spaces / 3,960 sy	12 spaces / 4,320 sy	14 spaces / 5,040 sy	15 spaces / 5,400 sy
Locally-Based Tiedowns (@ 300 SY each)		15 spaces / 4,500 sy	17 spaces / 5,100 sy	18 spaces / 5,400 sy	19 spaces / 5,700 sy
Business Aircraft Parking Demand (@ 625 SY each)		2 spaces / 1,250 sy	3 spaces / 1,875 sy	3 spaces / 1,875 sy	4 spaces / 2,500 sy
Cargo Aircraft Parking (@ 450 SY each)		3 spaces / 1,350 sy	3 spaces / 1,350 sy	3 spaces / 1,350 sy	3 spaces / 1,350 sy
Helicopter Parking (Hardstands) (@ 925 SY each)		3 spaces / 2,775 sy	3 spaces / 2,775 sy	3 spaces / 2,775 sy	3 spaces / 2,775 sy
Total Apron Needs		**34 spaces 13,835 SY**	**38 spaces 15,420 SY**	**41 spaces 16,440 SY**	**44 spaces 17,725 SY**
Aircraft Hangars *(Existing Facilities)*					
Existing Hangar Spaces	86 spaces[3]				
Projected Needs (Demand)					
(New) Hangar Space Demand (@ 1,500 SF per space) *(Cumulative 20-year projected demand: 35 spaces / 52,500 SF)*		**+10 spaces / 15,000 sf**	**+10 spaces / 15,000 sf**	**+10 spaces / 15,000 sf**	**+5 spaces / 7,500 sf**

1. Limited parking for business aircraft adjacent to FBO; additional areas of apron are also available.
2. Aircraft parking demand levels identified for each forecast year represent forecast gross demand.
3. Assumes that existing hangar spaces are at full capacity.
4. Hangar demand levels identified for each forecast year represent the net increase above current hangar capacity.

FACILITY REQUIREMENTS SUMMARY

The projected twenty-year facility needs for Roseburg Regional Airport are summarized in **Table 4-11**. The primary facility requirements needs are related to addressing the runway-parallel taxiway separation deficiency and the accompanying impacts on existing aircraft parking. The airport's developable areas appear capable of accommodating projected landside facility demands (hangar and aircraft parking). Runway 16/34 has adequate length to accommodate regular airport users. However, based on the FAA's runway length model, the runway is about 400 shorter than recommended for large aircraft. Options for extending the runway or otherwise increasing the distance available for aircraft takeoff calculations should be evaluated in the alternatives analysis to determine feasibility based on the physical characteristics of the airport and the surrounding terrain. The condition of airfield pavements is very good and they will require routine maintenance periodically throughout the planning period. Most pavements on the airport will require rehabilitation (overlay or reconstruct) during the planning period as they reach the end of their useful life.

The forecasts of aviation activity contained in Chapter Three anticipate modest growth in activity that will result in modest airside/landside facility demands beyond existing capabilities. The existing airfield facilities have the ability to accommodate a significant increase in activity, with targeted facility improvements. For the most part, the need for new or expanded facilities, such as aircraft hangars, will be market driven, although there will be other costs associated with site preparation, utility extensions, road extensions, and taxiway access.

TABLE 4-11: FACILITY REQUIREMENTS SUMMARY

Item	Short Term	Long Term
Runway 16/34	Pavement Maintenance[1]	Runway Overlay Pavement Maintenance[1] 400' Runway Extension 400' Stopway/Clearway Reserve Narrow Runway to 75 Feet
Taxiways	Relocate Parallel Taxiway to meet B-II standards (rwy separation and width) Taxiways to New Hangar Areas Pavement Maintenance[1]	Pavement Maintenance[1] Taxiways to New Hangar Areas
Aircraft Aprons	Pavement Maintenance[1] Reconfigure Aircraft Tiedowns/Parking	Pavement Maintenance Apron Expansion Apron Development Reserves
Hangars	New Hangar Development	Reserves for T-hangar and Conventional Hangar Development
Navigational Aids and Lighting	MITL (replacement system for new parallel taxiway) PAPI (Rwy 34) Evaluate Obstruction Lighting within Runway 16 & 34 Category D OCA slopes	Additional Flood Lighting As Required PAPI (Rwy 16) – requires obstruction removal (Mast Hill)
Fuel Storage	None	Fuel Storage Reserve
FBO Terminal	Maintenance Hangar Vehicle Parking	Reserve for 2nd FBO
Utilities	Extend to New Facilities	Same
Roadways	Extend Roads to New Development Areas	Same
Security	Fencing Upgrades; Flood Lighting	Same

[1] Vegetation control, crackfill, sealcoat, slurry seal, localized patching, joint rehabilitation, etc., as required

Roseburg Regional Airport
Airport Layout Plan Report

Chapter Five

Airport Development Alternatives and Airport Layout Plan Drawings

CHAPTER FIVE
AIRPORT DEVELOPMENT ALTERNATIVES AIRPORT LAYOUT PLAN DRAWINGS

INTRODUCTION

This chapter presents development alternatives for accommodating the facility needs defined in the previous chapters. The process begins by evaluating several preliminary development options. The conceptual options are intended to encourage an open discussion of development needs and priorities through a collaborative process between the consultant, city staff, members of the airport commission, the FAA and airport users. The process will allow the widest range of ideas to be considered and the most effective facility development concept to be defined.

Through the process of evaluating preliminary concepts, a preferred alternative will emerge that can best accommodate all required facility improvements. The refinement of the preferred alternative will continue as it is integrated into the airport layout plan drawing. A brief summary of each alternative is presented on the following pages and are also presented graphically at the end of the chapter.

Three preliminary options are presented to address future facility needs:

Alternative A *– Maintains the 1995 Airport Master Plan recommended facility development scheme.*

Alternative B *– Integrates some elements from the 1995 master plan and more recent facility layouts prepared by City staff.*

Alternative C *- Depicts alternative uses for the northwest corner of the airport and integrates other improvements to the parallel taxiway and south end of the main apron.*

Runway/Taxiway Separation

As noted in the facility requirements analysis, the existing runway-parallel taxiway separation (200 feet), does not meet the FAA B-II design standard of 240 feet.

The 1995 master plan noted the nonstandard separation on the airport layout plan, but recommended *"an indefinite modification to standards"* rather than relocating the taxiway. The 1995 ALP also recommended that *"at such a time as the runway is narrowed and/or the taxiway is 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."*

It is noted that the City's 2003 CIP includes a project to relocate the parallel taxiway, which appears to make the 1995 ALP recommendation obsolete. However, for the purposes of evaluating options, the original recommendation of the 1995 ALP is retained as one option.

PRELIMINARY ALTERNATIVES

Alternative A

Alternative A reflects the recommendations of the 1995 Airport Master Plan and the currently approved airport layout plan (ALP) that is recognized by the FAA. This option assumes that the parallel taxiway is maintained in its current location and locates the new landside development areas at the far north and south ends of the west side of the airport. The southern end of the main apron is extended to accommodate additional aircraft parking and a second FBO site and/or airport fire station, adjacent to the ASOS.

The north end development includes sites for three T-hangars, an airline terminal building, an alternative ARFF building site, an airline parking ramp, underground aviation fuel storage, and vehicle parking. The north end terminal facilities would be access from a new access road that ties into NW Aviation Drive.

The area formerly occupied by the mobile home park is not specifically planned for future aviation development on the 1995 ALP, although that area has now been acquired and cleared for hangar and apron development.

Alternative B

Alternative B reflects updated development planning conducted by City staff that occurred following acquisition of the west side mobile home park. The process of clearing the site began in 2003 and preliminary development plans were generated in 2004.

In this option, the proposed north aviation development is configured to accommodate aircraft hangars. The proposed layout has three parallel rows of T-hangars that extend westward from the parallel taxiway setback. As proposed, the area would accommodate six 18-unit T-hangars with a total capacity of 108 units. An additional 22 small/medium box hangars are located around the periphery of the hangar development area and one larger conventional hangar or mixed-use building is located near the future access road. A single hangar access road with automated vehicle gate is located near the south end of the development area, north of Newton Creek.

The hangar development option is compatible with the relocation of the parallel taxiway that has been recommended to meet B-II design standards. However, this option does not provide any new aircraft parking apron development areas or reserves to accommodate future parking needs. As noted in the facility requirements analysis, the relocation of the parallel taxiway will eliminate up to 29 existing aircraft parking positions, including a large number of light aircraft tiedowns and the outer positions for business aircraft, cargo aircraft and the helicopter hardstands. The southern expansion of the main apron, depicted on the 1995 ALP (Alternative A) is retained in this option, although it will also need to be reconfigured to accommodate the relocated taxiway.

Alternative C

Alternative C incorporates aircraft parking and industrial development areas into the north hangar development concept identified in Alternative B and also includes the relocated parallel taxiway.

As noted earlier, the loss of aircraft parking positions on the main apron due to the parallel taxiway relocation will require that additional aircraft parking space be developed to accommodate forecast demand during the current twenty-year planning period. The north development area is the only remaining site on the west side of the runway that has space to accommodate significant expansion of aircraft parking. The need to reconfigure business and cargo aircraft parking into a narrower main apron area may also require some additional displacement of light aircraft tiedowns that may accelerate the need to provide additional parking.

By also accommodating aircraft parking, the hangar development area would be narrowed and would best accommodate rows of hangars aligned perpendicular to the runway. Small/medium conventional hangars could also be accommodated in the development area. Light aircraft tiedowns would be located adjacent to the parallel taxiway and vehicle parking would be located adjacent to NW Aviation Drive.

The northern section of the development area is identified to accommodate aviation-related industrial land uses that could generate additional revenues to support airport operations. This area is identified for development of the future airline terminal building in Alternative A and as hangar development area in Alternative B.

PREFERRED ALTERNATIVE

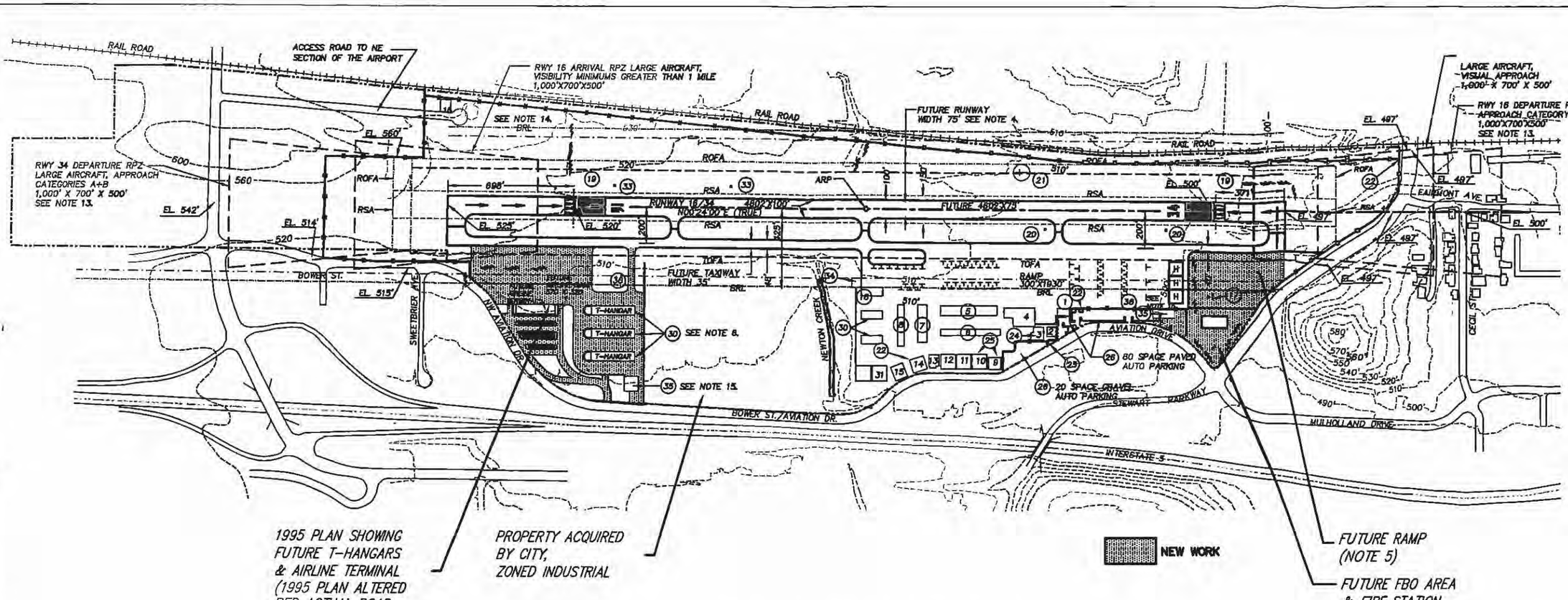
Based on their review of the preliminary options presented, the City of Roseburg Airport Commission and staff supported a preferred alternative (*see Airport Layout Plan drawing at the end of this chapter for detailed configurations, including post-coordination refinements*) that contained the following elements:

- Relocated parallel taxiway to meet B-II design standards for runway separation (240 feet) with aircraft hold areas located at both runway ends.
- A modified landside development for the north apron and hangar area to accommodate a combination of hangar types and sizes and additional aircraft parking apron. The mobile home park previously located in this area has been removed and extensive site preparation has been completed for the first development phase. The north hangar area will be developed in phases based on demand and availability of funding. The first phase of development includes access taxilanes for three rows of T-hangars aligned parallel to the runway. The back row will accommodate approximately five conventional hangars; additional conventional hangar sites may also be developed along the south side of the T-hangar development. The hangar development will have a taxiway connection to the parallel taxiway; additional taxiway connections will be added as the area is expanded. A substantial portion of the site preparation (grading and fill) has been completed; additional site preparation will be required on the north section and the area immediately adjacent to Aviation Drive. The northern section of the development area is configured with aircraft parking apron and lease area for several conventional hangars.
- A 400-foot runway extension is located at the north end of Runway 16/34. Standard B-II runway safety area and object free area will be provided for the extended runway. However, due to close-in terrain penetrations, it is recommended that the threshold for

Runway 16 be maintained in its current position with the extension configured as displaced threshold. The 400-foot extension will increase the takeoff distances available for both runways and the landing distance available for Runway 34.

- A development reserve is maintained near the northwest corner of the airport to accommodate a commercial airline terminal (building, apron, vehicle parking). Although scheduled commercial air service is not anticipated at a level that would justify major development of terminal area facilities during the current 20-year planning period, the reserve ensures that space remains available should that demand occur.
- Infill/redevelopment within the existing landside area (adjacent to main apron) including FBO hangar expansion, reconfiguration of aircraft parking.
- Based on market opportunities, development of airport-compatible (manufacturing, commercial, etc.) non-aviation land uses is recommended for airport land located beyond the runway protection zone for Runway 16. This area is physically separated from the airfield by a major surface street and is located on the opposite (north) side of high terrain located within the RPZ. Based on these factors, developing this area in an aviation-related use (with aircraft access) is not considered practical.
- Maintain ARC B-II airport design standards and larger-than-utility runway designation for airspace planning purposes.

Based on all comments provided, the input was incorporated into the airport layout plan drawing. The preliminary conceptual development options presented in this chapter illustrate the progressive process of alternatives evaluation and do not necessarily reflect the final preferred configuration of facilities depicted on the airport layout plan that resulted from the overall review process. Additional detail has been added to the ALP drawing for future aircraft apron, hangar and access road configurations. The draft set of airport layout plan drawings is presented at the end of this chapter.



ALP ALTERNATIVE A
(1995 MASTER PLAN)

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

ABBREVIATIONS	
EPS	PRIMARY SURFACE (EXISTING) (500' WIDE x 3440' LONG)
FPS	PRIMARY SURFACE (FUTURE) (500' WIDE x 3440' LONG)
ERSA	RUNWAY SAFETY AREA (EXISTING) (120' WIDE x 3520' LONG)
FRSA	RUNWAY SAFETY AREA (FUTURE) (150' WIDE x 3640' LONG)
EOFZ	RUNWAY OBSTACLE FREE ZONE (EXISTING) (400' W x 3440' L)
FOFZ	RUNWAY OBSTACLE FREE ZONE (FUTURE) (400' W x 3440' L)
EROFA	RUNWAY OBJECT FREE AREA (EXISTING) (400' W x 3520' L)
FROFA	RUNWAY OBJECT FREE AREA (FUTURE) (500' W x 3640' L)
TOFA	TAXIWAY OBJECT FREE AREA (131' WIDE)
BRL	BUILDING RESTRICTION AREA (MAX. 18' HEIGHT THIS LINE)(376' W)
APL	AIRCRAFT PARKING LINE (240' + 65.5' = 305.5' FROM RUNWAY CENTER LINE) (MAX. 8' HEIGHT THIS LINE)

LEGEND		
ITEM	EXISTING	FUTURE
AIRFIELD PAVEMENT		
ROAD		
PAVEMENT TO BE REMOVED		
PERIMETER FENCE		
AIRPORT PROPERTY LINE		
ON-AIRPORT BUILDINGS	99	99
BUILDINGS		
BUILDINGS TO BE REMOVED		-
TOPOGRAPHIC CONTOURS (40 FT)	00	-
TOPOGRAPHIC CONTOURS (10 FT)	00	-
WIND CONE		
AIRPORT REFERENCE POINT		
THRESHOLD LIGHTS		
REIL		
ROTATING BEACON		
HOLD LINE	-	-
POWER LINE		
PAPI (PRECISION APPROACH PATH INDICATOR)		
AVIGATION EASEMENTS	NONE	
PROPERTY TO BE ACQUIRED		
MAJOR DRAINAGE WAY		

MAGNETIC DECLINATION 17.8° E

NORTH

GRAPHIC SCALE

300 0 150 300

1"=300'

VERIFY SCALE

Sheet may be printed at 50% size.

APPROVAL BLOCK
SIGNATURES
FEDERAL AVIATION ADMINISTRATION:
See approval letter dated: _____
SIGNATURE
Manager, Seattle Airports District Office
CITY OF ROSEBURG
SIGNATURE
TITLE: PUBLIC WORKS DIRECTOR DATE

ARON FAEGRE and ASSOCIATES
520 S.W. Yamhill, Roofgarden 1
Portland, Oregon - 97204
(503)222-2546 - fax. (503)222-8529
www.faegre.org

IN ASSOCIATION WITH:
CENTURY WEST
ENGINEERING CORPORATION
8659 SW Tualatin Road, Suite 300
Tualatin, Oregon 97224
503-419-2100 ph. 503-639-2710 fax
www.centurywest.com

ROSEBURG AIRPORT
AIRPORT LAYOUT PLAN UPDATE

AIRPORT LAYOUT PLAN

SCALE: 1" = 300'-0"

DRAWING FILE NAME: ALPLAYOUTA

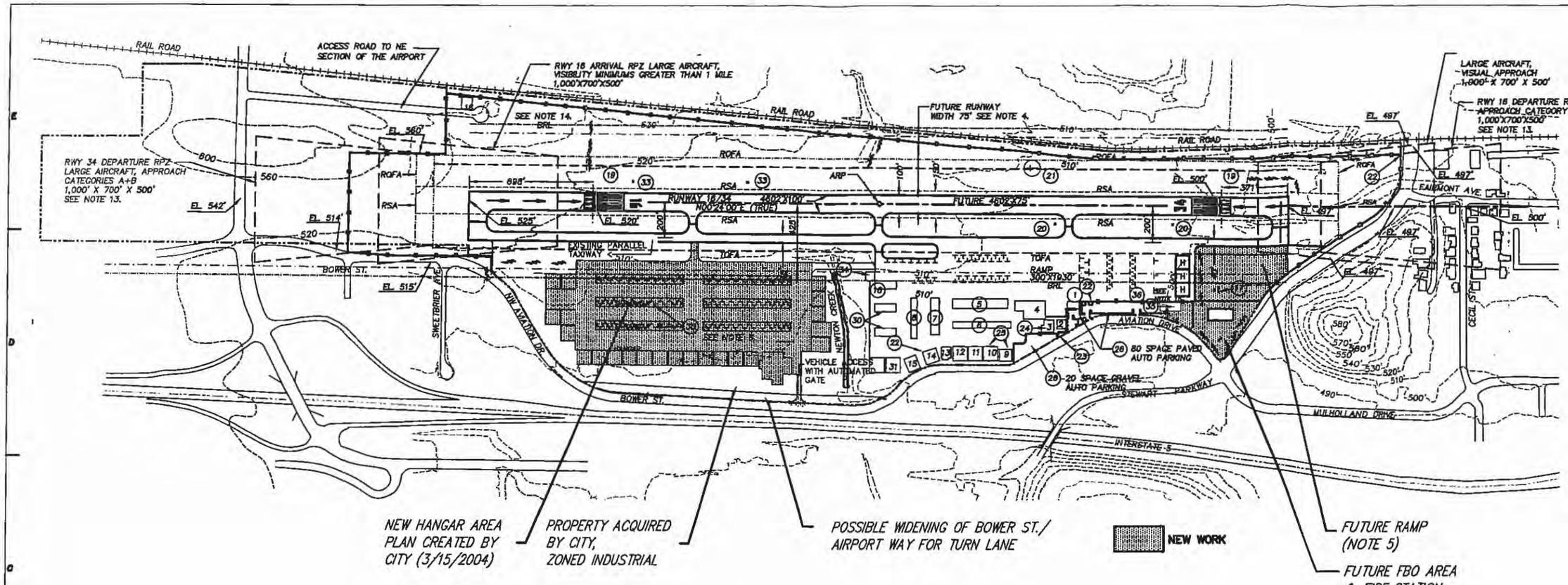
THE PREPARATION OF THIS DOCUMENT MAY HAVE BEEN SUPPORTED, IN PART, THROUGH THE AIRPORT IMPROVEMENT PROGRAM FINANCIAL ASSISTANCE FROM THE FEDERAL AVIATION ADMINISTRATION AS PROVIDED UNDER TITLE 49, UNITED STATES CODE, SECTION 47104. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THESE DOCUMENTS BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY PROPOSED DEVELOPMENT. IT IS NOT PERMITTED TO USE THIS PLAN FOR PROPOSED DEVELOPMENT IF, BY INCONGRUITY, IT IS NOT IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS.

DESIGNED BY: JE
DRAWN BY: JM
LAST EDIT: 08/08/04
CHECKED BY: DM
APPROVED BY: JE
SCALE: 1" = 300'

NO.	DATE	BY	REVISION

SHEET 1A of 8

ALP1A



ALP ALTERNATIVE B

(RECENT AIRPORT COMMISSION PLAN)

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
28	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
38	UNDERGROUND FUEL STORAGE	CITY
39	VEHICLE GATE	CITY

ABBREVIATIONS		
EPS		PRIMARY SURFACE (EXISTING) (500' WIDE x 3440' LONG)
FPS		PRIMARY SURFACE (FUTURE) (500' WIDE x 3440' LONG)
ERSA		RUNWAY SAFETY AREA (EXISTING) (120' WIDE x 3520' LONG)
FRSA		RUNWAY SAFETY AREA (FUTURE) (150' WIDE x 3640' LONG)
EOFZ		RUNWAY OBSTACLE FREE ZONE (EXISTING) (400' W x 3440' L)
FOFZ		RUNWAY OBSTACLE FREE ZONE (FUTURE) (400' W x 3440' L)
EROFA		RUNWAY OBJECT FREE AREA (EXISTING) (400' W x 3520' L)
FROFA		RUNWAY OBJECT FREE AREA (FUTURE) (500' W x 3640' L)
TOFA		TAXIWAY OBJECT FREE AREA (131' WIDE)
BRL		BUILDING RESTRICTION AREA (MAX. 18' HEIGHT THIS LINE)(376' W)
APL		AIRCRAFT PARKING LINE (240' + 65.5' = 305.5' FROM RUNWAY CENTER LINE) (MAX. 8' HEIGHT THIS LINE)

LEGEND		
ITEM	EXISTING	FUTURE
AIRFIELD PAVEMENT		
ROAD		
PAVEMENT TO BE REMOVED		
PERIMETER FENCE		
AIRPORT PROPERTY LINE		
ON-AIRPORT BUILDINGS	99	99
BUILDINGS		
BUILDINGS TO BE REMOVED		-
TOPOGRAPHIC CONTOURS (40 FT)	00	-
TOPOGRAPHIC CONTOURS (10 FT)	00	-
WIND CONE		
AIRPORT REFERENCE POINT		
THRESHOLD LIGHTS		
REIL		
ROTATING BEACON		
HOLD LINE		-
POWER LINE		
PAPI (PRECISION APPROACH PATH INDICATOR)		
AVIGATION EASEMENTS	NONE	
PROPERTY TO BE ACQUIRED		
MAJOR DRAINAGE WAY		

MAGNETIC DECLINATION 17.8° E

NORTH

GRAPHIC SCALE

300 0 150 300

1"=300'

VERIFY SCALE

Sheet may be printed at 50% size.

APPROVAL BLOCK
SIGNATURES
FEDERAL AVIATION ADMINISTRATION:
See approval letter dated: _____
SIGNATURE
Manager, Seattle Airports District Office
CITY OF ROSEBURG
SIGNATURE
TITLE: PUBLIC WORKS DIRECTOR DATE

ARON FAEGRE and ASSOCIATES
520 S.W. Yamhill, Roadgarden 1
Portland, Oregon 97204
(503)222-2546 • fax: (503)222-6529
www.faegra.org

IN ASSOCIATION WITH:
CENTURY WEST
ENGINEERING CORPORATION
6950 S.W. Redwood Lane, Suite 300
Portland, Oregon 97224
503-419-2500 • fax: 503-419-2710
www.centurywest.com

ROSEBURG AIRPORT
AIRPORT LAYOUT PLAN UPDATE

AIRPORT LAYOUT PLAN

SCALE: 1" = 300'-0"

DRAWING FILE NAME: ALP1AYOUT.B

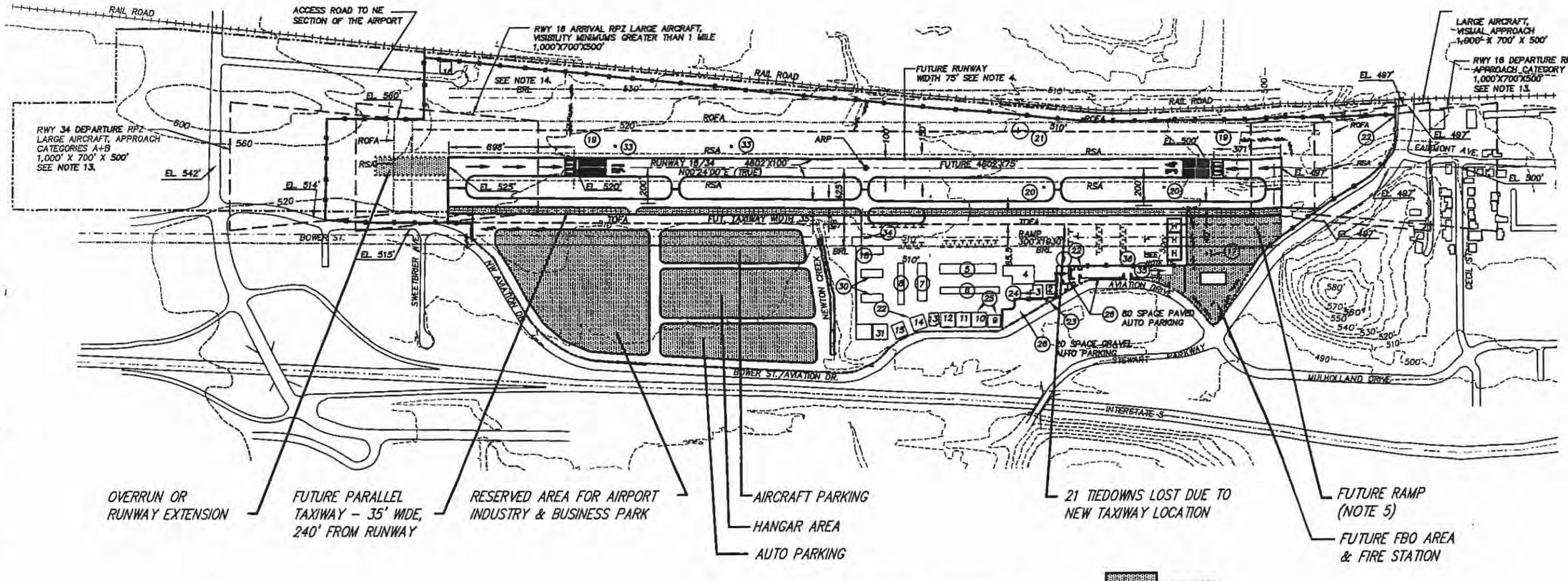
THE PREPARATION OF THIS DOCUMENT MAY HAVE BEEN SUPPORTED, IN PART, THROUGH THE AIRPORT IMPROVEMENT PROGRAM FINANCIAL ASSISTANCE FROM THE FEDERAL AVIATION ADMINISTRATION AS PROVIDED UNDER TITLE 49, U.S.C., SECTION 47104, SECTION 47104. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THESE DOCUMENTS BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED HEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS.

DESIGNED BY: JF	CHECKED BY: DM
DRAWN BY: JMR	APPROVED BY: JF
LAST EDIT: 08/06/04	SCALE: 1" = 300'

DATE	BY	REV#	REVISION	CK'D/APPR.

SHEET 18 of 8

ALP1B



ALP ALTERNATIVE C

NEW WORK

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

ABBREVIATIONS	
EPS	PRIMARY SURFACE (EXISTING) (500' WIDE x 3440' LONG)
FPS	PRIMARY SURFACE (FUTURE) (500' WIDE x 3440' LONG)
ERSA	RUNWAY SAFETY AREA (EXISTING) (120' WIDE x 3520' LONG)
FRSA	RUNWAY SAFETY AREA (FUTURE) (150' WIDE x 3640' LONG)
EOFZ	RUNWAY OBSTACLE FREE ZONE (EXISTING) (400' W x 3440' L)
FOFZ	RUNWAY OBSTACLE FREE ZONE (FUTURE) (400' W x 3440' L)
EROFA	RUNWAY OBJECT FREE AREA (EXISTING) (400' W x 3520' L)
FROFA	RUNWAY OBJECT FREE AREA (FUTURE) (500' W x 3640' L)
TOFA	TAXIWAY OBJECT FREE AREA (131' WIDE)
BRL	BUILDING RESTRICTION AREA (MAX. 18' HEIGHT THIS LINE)(376' W)
APL	AIRCRAFT PARKING LINE (240' + 65.5' = 305.5' FROM RUNWAY CENTER LINE) (MAX. 8' HEIGHT THIS LINE)

LEGEND		
ITEM	EXISTING	FUTURE
AIRFIELD PAVEMENT		
ROAD		
PAVEMENT TO BE REMOVED		
PERIMETER FENCE		
AIRPORT PROPERTY LINE		
ON-AIRPORT BUILDINGS	99	99
BUILDINGS		
BUILDINGS TO BE REMOVED		-
TOPOGRAPHIC CONTOURS (40 FT)	00	-
TOPOGRAPHIC CONTOURS (10 FT)	00	-
WIND CONE		
AIRPORT REFERENCE POINT		
THRESHOLD LIGHTS		
REIL		
ROTATING BEACON		
HOLD LINE	-	-
POWER LINE		
PAPI (PRECISION APPROACH PATH INDICATOR)		
AVIGATION EASEMENTS	NONE	
PROPERTY TO BE ACQUIRED		
MAJOR DRAINAGE WAY		

MAGNETIC DECLINATION 17.8° E

NORTH

GRAPHIC SCALE

300 0 150 300

1"=300'

VERIFY SCALE

Sheet may be printed at 50% size.

APPROVAL BLOCK
SIGNATURES
FEDERAL AVIATION ADMINISTRATION:
See approval letter dated: _____
SIGNATURE
Manager, Seattle Airports District Office
CITY OF ROSEBURG
SIGNATURE
TITLE: PUBLIC WORKS DIRECTOR DATE

ARON FAEGRE and ASSOCIATES
520 S.W. Yamhill, Roofgarden 1
Portland, Oregon 97204
(503)222-2546 - fax (503)222-6529
www.faegre.org

IN ASSOCIATION WITH:
CENTURY WEST
ENGINEERING CORPORATION
6650 S.W. Redwood Lane, Suite 300
Portland, Oregon 97224
503-419-2500 - fax 503-419-2710
www.centurywest.com

ROSEBURG AIRPORT
AIRPORT LAYOUT PLAN UPDATE

AIRPORT LAYOUT PLAN

SCALE: 1" = 300'-0" | DRAWING FILE NAME: ALPLAYOUTC

THE PREPARATION OF THIS DOCUMENT MAY HAVE BEEN SUPPORTED, IN PART, THROUGH THE AIRPORT IMPROVEMENT PROGRAM FINANCIAL ASSISTANCE FROM THE FEDERAL AVIATION ADMINISTRATION AS PROVIDED UNDER TITLE 49, UNITED STATES CODE, SECTION 47104. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THESE DOCUMENTS BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEFICIT INCURRED IN CONNECTION WITH ANY PROJECT THAT IS NOT DIRECTLY DEVELOPMENT EL SYNDICATE ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS.

DESIGNED BY AF | CHECKED BY DM
DRAWN BY MB | APPROVED BY AF
LAST EDIT: 06/09/04 | SCALE: 1" = 300'

DATE	BY	REVISION	CK'D/APP'D

SHEET 1C of 8

ALP1C

AIRPORT LAYOUT PLAN DRAWINGS

The options that were considered for the long-term development of Roseburg Regional Airport were described in the Alternatives section of this chapter. This evaluation resulted in the selection of a preferred alternative. The preferred alternative has been incorporated into the airport layout plan drawings, which are summarized in this section. The set of airport plans, which is referred to in aggregate as the "Airport Layout Plan" (ALP) has been prepared in accordance with FAA guidelines. The drawings illustrate existing conditions, recommended changes in airfield facilities, existing and recommended property ownership, land use, and obstruction removal. The ALP set is presented at the end of this chapter:

- *Drawing 1 – Cover Sheet*
- *Drawing 2 – Airport Layout Plan*
- *Drawing 3 – FAR Part 77 Airspace Plan*
- *Drawing 4 – Runway Approach Surface Plan & Profile*
- *Drawing 5 – Airport Land Use Plan with 2009 Noise Contours*

Airport Layout Plan

The Airport Layout Plan (ALP) presents the existing and ultimate airport layout and depicts the improvements that are recommended to enable the airport to meet forecast aviation demand. The existing and future airport reference code (ARC) is B-II based on a typical medium business jet design aircraft (Cessna Citation II). Airport vicinity and location maps, and data blocks for the overall airport and the runway are presented on the ALP. A declared distances table, legend of symbols and line types, and building/facility table (with corresponding numbers depicted on the airport layout plan drawing) are also provided.

The improvements depicted on the ALP reflect all major airfield developments recommended in the twenty-year planning period. The most significant change in development pattern from the previous (1995) ALP is the development of the north hangar area, which was previously recommended for acquisition, but was not specifically planned. The 1995 ALP also recommended southern expansion of the main apron; this recommendation has not been maintained due to the planned relocation of the parallel taxiway and construction of the aircraft holding area near the Runway 34 end.

Decisions made by the City regarding the actual scheduling of projects will be based on specific demand and the availability of funding. Long-term development reserves are also identified on

the ALP to accommodate potential demand that could exceed current expectations or could occur beyond the current twenty-year planning period.

The major items depicted on the ALP are summarized below:

- A 400-foot extension to the runway at the north (Runway 16) end with displaced threshold for obstruction clearance.
- Relocate parallel taxiway to provide ARC B-II runway separation standard (240 feet); future taxiway width: 35 feet.
- Add aircraft holding areas on parallel taxiway at both ends of the runway.
- Development of the north hangar area to accommodate future demand for parking and landside lease development. Taxilane access to be provided in first phase to accommodate three rows of T-hangars and one row of conventional hangars; extend vehicle access to north hangar development. The second phase of development includes new aircraft parking apron and additional conventional hangar sites.
- Acquisition of approximately 4.6 acres of property located along Newton Creek drainage (between the parallel taxiway and NW Aviation Drive).
- A commercial air terminal reserve located adjacent (west) to the end of Runway 16.
- Infill development of aircraft hangars within existing landside areas with taxiway access or apron frontage.
- A "non-aviation commercial industrial reserve" is depicted near the north end of the airport, beyond the future RPZ for Runway 16. This area (approximately 8 acres) is physically separated by Edenbower Blvd. and has several physical site limitations that prevent aviation-related development.

Projects such as maintenance or reconstruction of airfield pavements, which are not depicted on the ALP, are described in the Capital Improvements Program, in **Chapter Six.**

Airspace Plan

The FAR Part 77 Airspace Plan for Roseburg Regional Airport was developed based on Federal Aviation Regulations (FAR) **Part 77, Objects Affecting Navigable Airspace.** The Airspace Plan provides the plan view of the airspace surfaces, profile views of the runway approach surfaces, and a detailed plan view of the runway approach surfaces. This information is intended

to define and protect the airspace surfaces from encroachment due to incompatible land uses, which could adversely affect safe airport operations. By comparing the elevations of the airspace surfaces with the surrounding terrain, an evaluation of potential obstructions to navigable airspace was conducted.

The airspace surfaces depicted for Roseburg Regional Airport reflect the ALP-recommended (ultimate) runway length of 5,002 feet for Runway 16/34. Based on the current and planned use of B-II design standards, Runway 16/34 will be designed for use by aircraft weighing 12,500 pounds and above, which places it in the "other-than-utility" category under FAR Part 77. Both runway ends are currently limited to visual approach capabilities due to close-in terrain surrounding the airport. As noted in the facility requirements analysis, this airspace configuration is compatible with the existing non-precision instrument approaches that have circling procedures. However, for planning purposes, the "future" 10,000-foot horizontal surface radius from the previous airspace is retained based on the potential of future technological advances that could provide straight-in instrument approaches to the runway.

Extensive areas of terrain penetration are identified within the horizontal surface and conical surface in all directions of the runway, particularly to the east and west. Terrain obstructions are identified within both runway approach surfaces. Both runway ends have displaced thresholds to provide increased obstruction clearance. The amount of terrain penetration created by the knob located near the end of Runway 16 has been gradually reduced through excavation. It is anticipated that this area will continue to be used as a borrow source and the terrain will eventually be graded to eliminate any obstructions to FAR Part 77 surfaces. No significant obstructions are noted within the primary surface or transitional surfaces.

Terrain and roads located near both ends of the runway create obstructions to the standard FAR Part 77 20:1 approach surface. Type C Obstacle Clearance Approaches (OCA) were depicted on the previous ALP based on the guidelines contained in FAA AC 150/5300-13 (appendix 2). The Type C OCA is consistent for runways expected to serve large airplanes (visual day/night) or instrument minimums ≥ 1 mile (day only) with visual approaches. The OCA 20:1 slope begins at the runway threshold, rather than 200 feet beyond the runway end, which provides improved obstruction clearance. The 371-foot displaced threshold for Runway 34 was defined by providing an unobstructed 20:1 OCA surface over numerous terrain and built obstructions from the threshold. As noted in the facility requirements chapter, a Type D OCA is recommended for runways expected to serve instrument approaches with night circling. However, a Type D OCA begins 200 feet beyond the threshold, which cannot be accommodated (unobstructed) for Runway 34 without further displacement of the runway threshold. The FAA has indicated that providing an unobstructed VASI glide path may be sufficient to retain night-authorized instrument approach capabilities for the airport. An updated survey will be required to

demonstrate to FAA that the existing VASI glide path ensures a clear 20:1 approach surface for Runway 34.

The obstruction table depicted on the drawing lists 13 items, most of which were listed on the 1995 airspace plan. It is recommended that the City perform an updated obstruction survey to document the location and elevation of all items within the boundaries of the runway approach, primary and transitional surfaces.

Runway 16/34 Approach Surface Plan & Profile

The approach surface plan and profile drawing provides additional detail for the runway approaches and the runway protection zones. The existing and future 20:1 visual approach surfaces are depicted for both runway ends.

There are numerous terrain penetrations within the approach surfaces, particularly for Runway 16. Both runway ends have displaced thresholds to improve obstruction clearance for close-in obstructions (fences, trees, vehicles, etc.). The Type C obstacle clearance approaches (OCA) are depicted for both runway ends, corresponding to the displaced thresholds. Previous recommendations to lower Mast Hill remain valid, but are not considered highly feasible. For planning purposes, it is assumed that no significant reduction in terrain penetrations north of Runway 16 will be accomplished in the current planning period. Therefore, the approach for Runway 16 will be limited to 20:1 visual approaches. Efforts to remove obstructions within the Runway 34 approach surface are also recommended where practical.

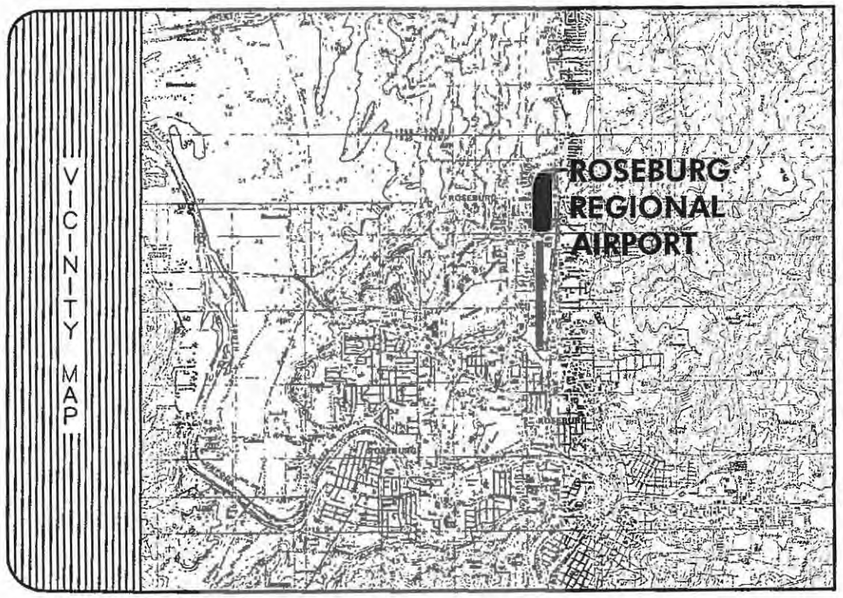
Airport Land Use Plan with 2009 Noise Contours

The Airport Land Use Plan for Roseburg Regional Airport depicts existing zoning in the immediate vicinity of the airport. The areas surrounding the airport are predominately zoned commercial and manufacturing, although large areas of residential zoning are located immediately south of the runway.

Noise exposure contours based on the 2009 forecasts of aircraft activity are depicted on the Land Use Plan. The noise contours were created using the FAA's Integrated Noise Model (INM). Data from activity forecasts and aircraft fleet mix are combined with common flight tracks and runway use to create a general indication of airport-generated noise exposure. The noise contours are plotted in 5 DNL increments starting at 55 DNL. The size and shape of the contours is consistent with the airport's runway utilization and aircraft traffic.

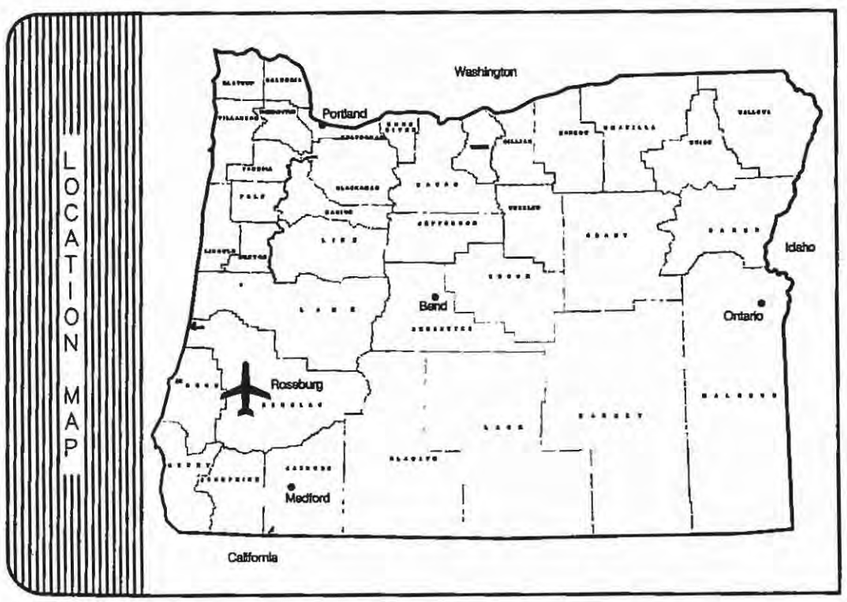
The close proximity of residential development under the extended runway centerline results in moderate levels (60 and 65 DNL) of noise exposure extending beyond Stewart Parkway. The majority of the areas north of the runway have manufacturing zoning; the 65 DNL contour and the majority of 60 and 55 DNL contours that extend north of the runway are contained within airport property.

Local planning authorities should discourage land use patterns that would increase population densities in the vicinity of the airport, particularly beneath the runway approach surfaces. It is recommended that the City of Roseburg and Douglas County update airport overlay zoning to reflect the boundaries of the FAR Part 77 airspace surfaces, consistent with the updated airport layout plan. See Chapter Seven for a detailed description of the noise analysis



ROSEBURG REGIONAL AIRPORT AIRPORT LAYOUT PLAN

ROSEBURG, OREGON
CWEC PROJECT NO. 40480004.01
AIP NO. 3-41-4100-15
MARCH 2006



INDEX

SHEET NUMBER	SHEET CONTENTS
1	COVER SHEET
2	AIRPORT LAYOUT PLAN
3	AIRSPACE PLAN
4	RUNWAY PLAN AND PROFILE WITH APPROACH
5	LAND USE PLAN WITH 2009 NOISE CONTOURS

CENTURY WEST
ENGINEERING CORPORATION
6650 S.W. Redwood Lane, Suite 300
Portland, Oregon 97224
503-419-2130 phone • 503-639-2710 fax
www.centurywest.com

LEGEND

	EXISTING	FUTURE
FACILITIES		
BUILDINGS		
RUNWAY		
BUILDING RESTRICTION LINE (BRL)	BRL (E)	BRL (F)
AIRCRAFT PARKING LINE (APL)	APL (E)	APL (F)
AIRPORT PROPERTY LINE		
RUNWAY SAFETY AREA (RSA)		
OBJECT FREE AREA (OFA)		
OBSTACLE FREE ZONE (OFZ)		
RUNWAY PROTECTION ZONE (RPZ)		
GROUND CONTOURS	530	520
AIRPORT REFERENCE POINT (ARP)		
AIRFIELD PAVEMENT/TO BE REMOVED		SAME
VISUAL GUIDANCE INDICATORS	VASI	PAPI
WIND INDICATOR		
AVIGATION EASEMENT		
FENCE		
PROPOSED ACCESS ROAD	NONE	
BEACON		SAME
THRESHOLD LIGHTS		
SEGMENTED CIRCLE WIND INDICATOR		
REIL		
SURFACE DRAINAGE		SAME
FUTURE PAVEMENT	NONE	
FUTURE PAVEMENT REMOVAL	NONE	

AIRPORT DATA

	EXISTING	FUTURE
AIRPORT ELEVATION (MSL)	524.7'	527.0'
DATUM FOR ALL ITEMS	NAD 83/NGVD 29	SAME
AIRPORT REFERENCE POINT COORDINATES (ARP)	LAT. N 43° 14' 19.619" LONG. W 123° 21' 21.103"	LAT. N 43° 13' 56.884" LONG. W 123° 21' 21.135"
AIRPORT MAGNETIC VARIATION	16° 30' E (2005)	SAME
MEAN MAXIMUM TEMPERATURE	83°	SAME
NPIAS ROLE	GA	GA
AIRPORT REFERENCE CODE (ARC)	B-II	B-II
AIRPORT CODE	RBG	SAME
LAND OWNED IN FEE (ACRES)	187.4 (SEE NOTE 17)	SAME

DECLARED DISTANCES

	RUNWAY 16		RUNWAY 34	
	EXISTING	FUTURE	EXISTING	FUTURE
TAKEOFF RUN AVAILABLE (TORA)	4602'	5002'	4602'	5002'
TAKEOFF DISTANCE AVAILABLE (TODA)	4602'	5002'	4602'	5002'
ACCELERATE-STOP DISTANCE (ASDA)	4602'	5002'	4602'	5002'
LANDING DISTANCE AVAILABLE (LDA)	3902'	SAME	4231'	4681'

RUNWAY DATA 16/34

		EXISTING	FUTURE
LENGTH AND WIDTH		4602' X 100'	5002' X 75'
PERCENT EFFECTIVE GRADIENT		0.61%	SAME
PERCENT WIND COVERAGE (12 MPH)		96.6% ALL WEATHER	SAME
PAVEMENT TYPE		ASPHALT CONCRETE	SAME
PAVEMENT STRENGTH		42,000 SW, 54,000 DW, 88,000 DTW	SAME
APPROACH SLOPE/TYPE		20:1/VISUAL	20:1/NONPRECISION INSTRUMENT (NPI)
RUNWAY LIGHTING		MEDIUM INTENSITY	SAME
RUNWAY MARKING		NPI	SAME
RUNWAY SAFETY AREA		5202' X 150'	5602' X 150'
OBJECT FREE AREA		5202' X 500'	5602' X 500'
OBSTACLE FREE ZONE		5002' X 400'	5402' X 400'
CRITICAL AIRCRAFT		CESSNA CITATION II	SAME
NAVIGATIONAL AIDS		GPS	WAAS
APPROACH AND LANDING AIDS	16	REIL	REIL
	34	VASI/REIL	PAPI/REIL
RUNWAY END COORDINATES (SEE NOTE 2)	16	LAT. 43°14' 42.337" LONG. 123° 21' 21.136"	LAT. 43°13' 56.824" LONG. 123° 21' 21.135"
	34	LAT. 43° 13' 56.901" LONG. 123° 21' 21.070"	SAME
TAXIWAY LIGHTING		MEDIUM INTENSITY	SAME

EXISTING BUILDING LEGEND

ID CODE	DESCRIPTION	OWNER
(1)	OFFICE BLDG.	PRIVATE
(2)	MAINT. HANGAR	CITY
(3)	MAINT. HANGAR	CITY
(4)	MAINT. HANGAR/FBO	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
(27)	AIRCRAFT WASH RACK	CITY
(28)	AIRCRAFT FUEL	CITY
(29)	MARION CARL MEMORIAL	CITY
(30)	MINI STORAGE FACILITY (LEASED)	CITY

FUTURE BUILDING LEGEND

ID CODE	DESCRIPTION	OWNER
(40)	CORPORATE AIRCRAFT PARKING	CITY
(41)	T-HANGAR	CITY
(42)	CORPORATE HANGAR	PRIVATE
(43)	PAPI	CITY/FAA
(44)	WASH RACK (RELOCATED)	CITY
(45)	FBO	CITY
(46)	AIRCRAFT TIEDOWN APRON	CITY
(47)	AUTO PARKING	CITY
(48)	FBO/TERMINAL RESERVE	CITY
(49)	AIRPORT-RELATED COMMERCIAL	CITY

NOTES:

1. LANDING THRESHOLDS WERE SITED USING AC 150/5300-13 AIRPORT DESIGN, APPENDIX 2, THRESHOLD SITING REQUIREMENTS.

2. THE SOURCE FOR EXISTING COORDINATES AND RUNWAY ELEVATIONS IS THE AIRPORT OBSTRUCTION CHART OC 8B8 FOR ROSEBURG REGIONAL AIRPORT, 7TH EDITION, FIELD SUMMARY MAY 1992, PUBLISHED MAY 1992. HORIZONTAL DATUM IS BASED UPON THE NORTH AMERICAN DATUM OF 1983. (NAD 1983), 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.) FOR A SMALL AREA AT STEWART PARKWAY. SEE ROFA MODIFICATION TO STANDARDS #1.

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' CENTERED OVER THE RUNWAY. SEE MODIFICATION TO STANDARD #2.

5. THE LAYOUT OF THE AIRLINE TERMINAL AND RESERVE APRON IS CONCEPTUAL. THE ACTUAL DESIGN WILL BE DETERMINED AT SUCH TIME AS THE DEMAND EXISTS FOR THE DEVELOPMENT.

6. THE 374' BUILDING RESTRICTION LINE (BRL) IS BASED UPON ALLOWING A 18' HIGH BUILDING AT THE BRL & ASSUMES THE GROUND IS LEVEL WITH THE RUNWAY.

7. 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.

8. FUTURE NON AVIATION DEVELOPMENT AREA (NO AIRCRAFT ACCESS). ALL DEVELOPMENT (STRUCTURES) TO BE COMPATIBLE WITH FAR PART 77 APPROACH SURFACE FOR RUNWAY 16.

9. THE AIRPORT IS NOT SUBJECT TO FLOODING.

10. THE ENTIRE AIRPORT PERIMETER IS FENCED. IN MOST AREAS, THE FENCE FOLLOWS THE AIRPORT PROPERTY LINE.

11. AIRCRAFT WASH RACK MAY BE RELOCATED TO ACCOMMODATE RELOCATED PARALLEL TAXIWAY.

12. THE CITY CURRENTLY OWNS MOST LAND WITHIN THE RPZS 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 RPZS 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.

13. 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 7. IT IS RECOMMENDED THAT A DETAILED SURVEY BE PREPARED OF THIS AREA AND A SPECIFIC BRL BE ESTABLISHED THAT ALLOWS A 25' HIGH BUILDING.

14. FUTURE AIRCRAFT PARKING POSITIONS LOCATED WITHIN PARALLEL TAXIWAY OFA TO BE REMOVED/RELOCATED.

15. AIRCRAFT HANGARS AND PARKING AREAS TO BE LOCATED TO PROVIDE ADG II TAXIWAY OFA CLEARANCE (MIN 65.5' FROM TAXIWAY CENTERLINE).

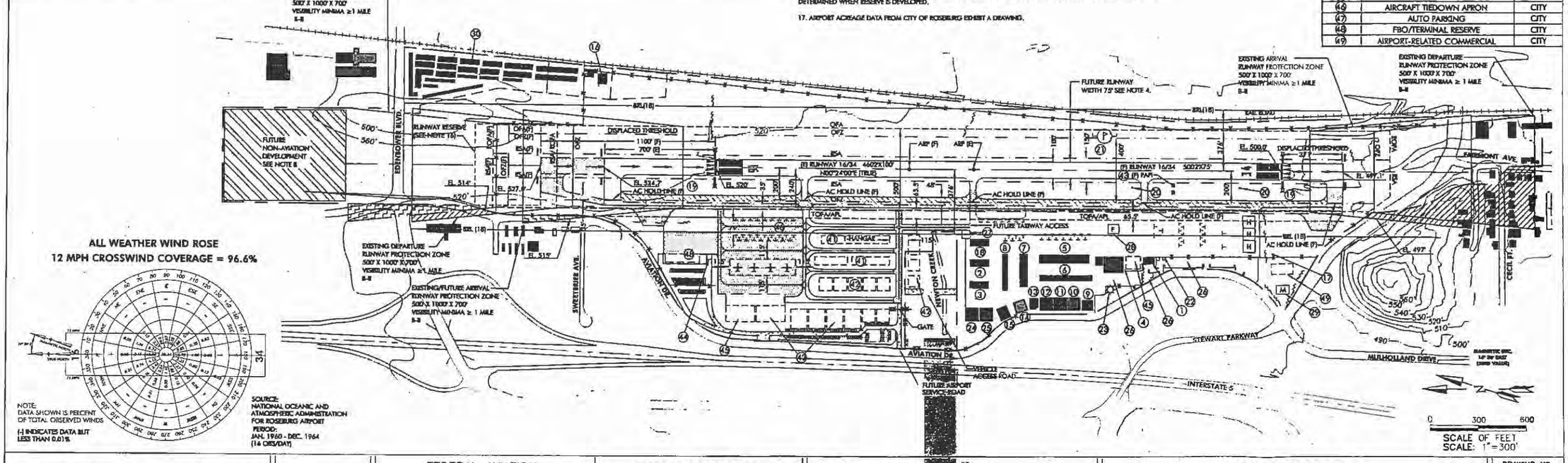
16. AREA DEPICTED IS RESERVED FOR 400' CLEARWAY, STOPWAY, OR OTHER EXTENSION. DECLARED DISTANCES TO BE DETERMINED WHEN RESERVE IS DEVELOPED.

17. AIRPORT ACREAGE DATA FROM CITY OF ROSEBURG EXHIBIT A DRAWING.

MODIFICATIONS TO STANDARDS

1. THE RUNWAY OBJECT FREE AREA (ROFA) AT 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'. PARALLEL TAXIWAY TO BE RELOCATED. AIRCRAFT PARKING POSITIONS THAT WILL BE LOCATED WITHIN FUTURE TAXIWAY OFA WILL BE RELOCATED/REMOVED.



"THE PREPARATION OF THIS DOCUMENT MAY HAVE BEEN SUPPORTED, IN PART, THROUGH THE AIRPORT IMPROVEMENT PROGRAM FINANCIAL ASSISTANCE FROM THE FEDERAL AVIATION ADMINISTRATION AS PROVIDED UNDER TITLE 49, UNITED STATES CODE, SECTION 47104. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THESE DOCUMENTS BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED HEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS."

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

FEDERAL AVIATION ADMINISTRATION APPROVAL
APPROVAL DATE: 6/6/06
J. Wade Bryant
MANAGER, SEATTLE ADO

CITY OF ROSEBURG APPROVAL
APPROVAL DATE: 6/12/06
SIGNATURE

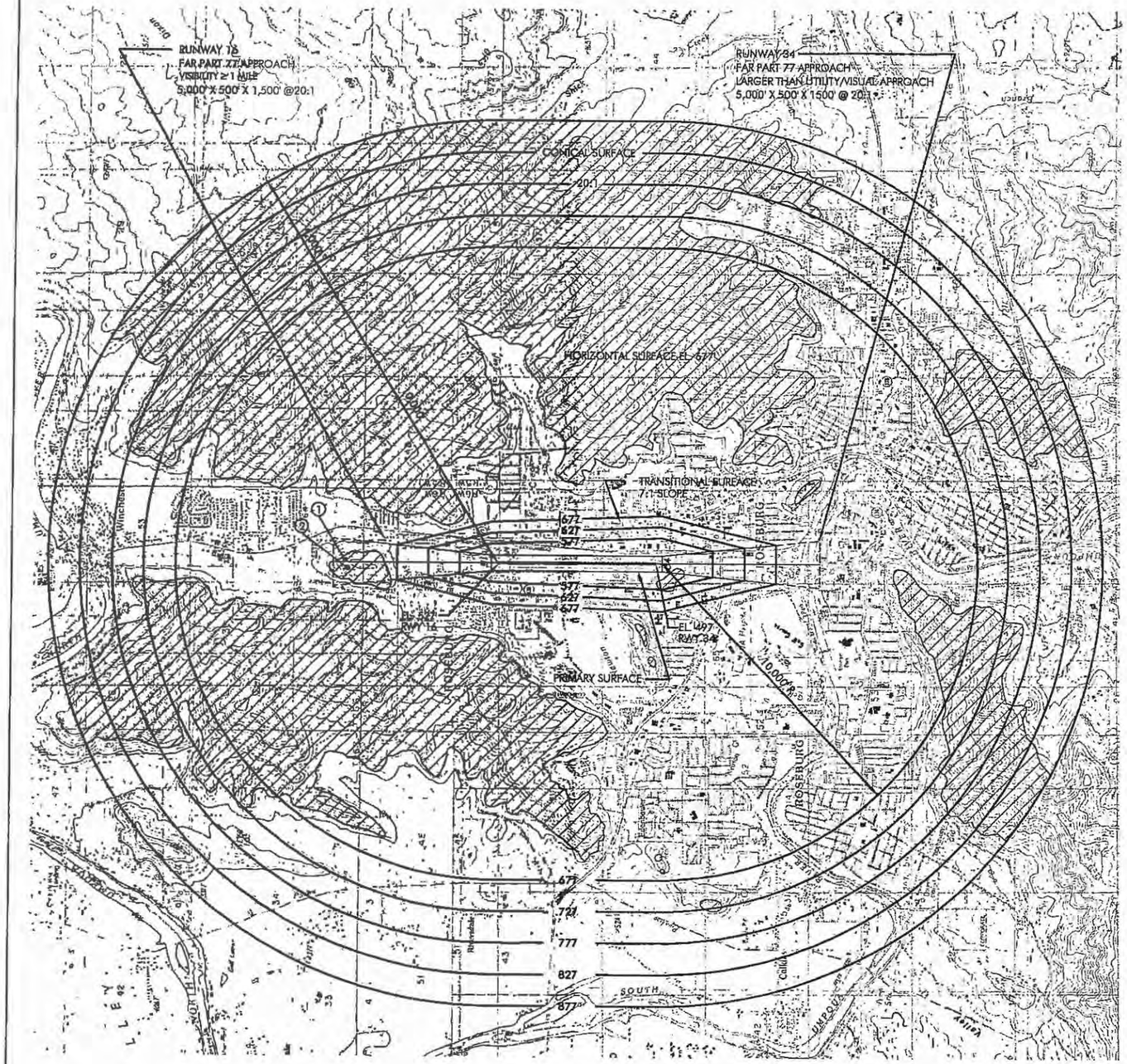
CENTURY WEST ENGINEERING CORPORATION

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SCALE:
DM	SLK	DM	AS SHOWN
DATE: MARCH 2006		PROJECT NO: 40480004.01	

ROSEBURG REGIONAL AIRPORT

AIRPORT LAYOUT PLAN

DRAWING NO. -
SHEET NO. 2 OF 5



NO.	ITEM	PART 77 SURFACE	ELEV	FROM RWY CL	FROM RWY END	PENETRATION (ESTIMATED)	PROPERTY	DISPOSITION
1	MAST HILL	APPROACH (RWY 16)	845'	68' L	4300'	113'	NO	OCA; DISPLACED THRESHOLD
2	OBSTRUCTION LIGHT	APPROACH (RWY 16)	894'	182' R	4490'	153'	NO	OCA; DISPLACED THRESHOLD
3	TREE - NEAR HILL	APPROACH (RWY 16)	642'	281' L	1070'	72'	NO	TOP/REMOVE
4	EDENBOWER STREET	APPROACH (RWY 16)	561'	60' L	850'	2'	NO	OCA; DISPLACED THRESHOLD
5	TERRRAIN - NEAR HILL	APPROACH (RWY 16)	608'	279' L	650'	59'	YES	REMOVE/LEVEL (SEE NOTE 3)
6	TREE - NEAR HILL	APPROACH (RWY 16)	622'	143' L	450'	83'	YES	REMOVE/LEVEL (SEE NOTE 3)
7	TREE	APPROACH (RWY 16)	584'	211' L	40'	55'	YES	REMOVE/LEVEL (SEE NOTE 3)
8	TREE - NEAR HILL	APPROACH (RWY 16)	567'	202' L	-80'	40'	YES	REMOVE/LEVEL (SEE NOTE 3)
9	STEWART PARKWAY	APPROACH (RWY 34)	512'	250' R	238'	14'	NO	OCA; DISPLACED THRESHOLD
10	FENCE	APPROACH (RWY 34)	502'	250' R	150'	5'	YES	(OBST. LT.) OCA; DISPLACED THRESHOLD
11	TREE	APPROACH (RWY 34)	540'	234' R	460'	31'	NO	(TOP/REMOVE) OCA; DISPLACED THRESHOLD
12	LIGHT ON POLE	APPROACH (RWY 34)	557'	127' R	754'	35'	NO	OCA; DISPLACED THRESHOLD
13	TREE	APPROACH (RWY 34)	533'	26' R	698'	3'	NO	(TOP/REMOVE) OCA; DISPLACED THRESHOLD
14								
15								
16								
17								
18								
19								
20								

NOTES:

1. SEE DRAWING 3 FOR LOCATION DETAIL OF OBSTRUCTIONS (NO 3-13).
2. FAR PART 77 AIRSPACE REFLECTS ULTIMATE RUNWAY CONFIGURATION DEPICTED ON 2005 AIRPORT LAYOUT PLAN DRAWING (2 OF 5)
3. SIGNIFICANT AREAS OF TERRAIN PENETRATION PRECLUDE STRAIGHT-IN INSTRUMENT APPROACHES W/ 34:1 OR 50:1 APPROACH SURFACES; ALL IAP PROCEDURES ARE CLASSIFIED AS "CIRCLING", WITH VISUAL APPROACH SURFACES (20:1).

AREAS OF TERRAIN PENETRATION

0 2000 4000
SCALE OF FEET
SCALE: 1"=2000'

MAGNETIC NEC. 19° 30' EAST (1985 VALUE)

"THE PREPARATION OF THIS DOCUMENT MAY HAVE BEEN SUPPORTED, IN PART, THROUGH THE AIRPORT IMPROVEMENT PROGRAM FINANCIAL ASSISTANCE FROM THE FEDERAL AVIATION ADMINISTRATION AS PROVIDED UNDER TITLE 49, UNITED STATES CODE. SECTION 47104. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THESE DOCUMENTS BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED HEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS."

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

FEDERAL AVIATION ADMINISTRATION APPROVAL
APPROVAL DATE: _____
_____
MANAGER, SEATTLE ADO

CITY OF ROSEBURG APPROVAL
APPROVAL DATE: _____
_____
SIGNATURE

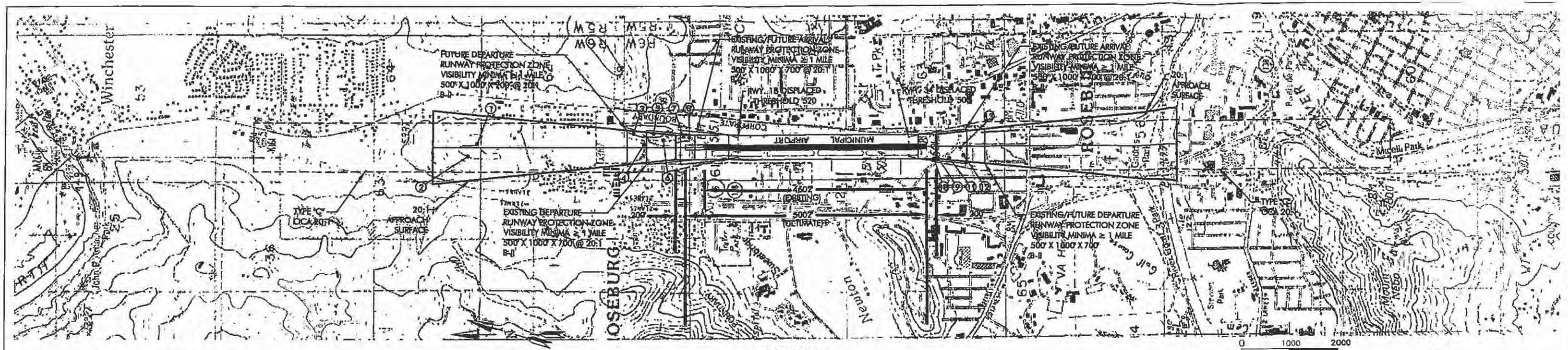
CENTURY WEST ENGINEERING CORPORATION
6400 S.W. Rockwood Lane, Suite 300
Portland, Oregon 97224
503-419-2100 phone • 503-639-2710 fax
www.centurywest.com

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SCALE:
DM	SLK	DM	AS SHOWN
DATE: MARCH 2006		PROJECT NO: 40480004.01	

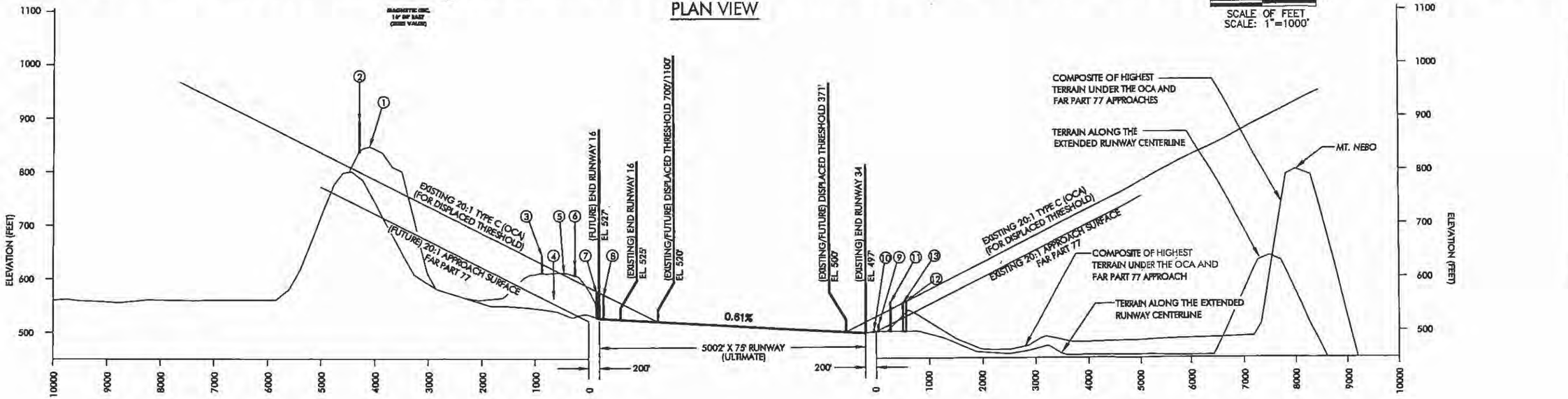
ROSEBURG REGIONAL AIRPORT

AIRSPACE PLAN

DRAWING NO. 3
SHEET NO. 3 OF 5



PLAN VIEW



PROFILE VIEW

0 1000 2000
SCALE OF FEET
HORIZONTAL SCALE: 1"=1000'

0 100 200
SCALE OF FEET
VERTICAL SCALE: 1"=100'

NO.	ITEM	PART 77 SURFACE	MSL ELEV	DISTANCE FROM RWY CL	DISTANCE FROM RWY END	AMOUNT OF PENETRATION (ESTIMATED)	AIRPORT PROPERTY	DISPOSITION
1	MAST HILL	APPROACH (RWY 16)	845'	68' L	4300'	113'	NO	OCA; DISPLACED THRESHOLD
2	OBSTRUCTION LIGHT	APPROACH (RWY 16)	894'	182' R	4490'	153'	NO	OCA; DISPLACED THRESHOLD
3	TREE - NEAR HILL	APPROACH (RWY 16)	642'	281' L	1070'	72'	NO	TOP/REMOVE
4	EDENBOWER STREET	APPROACH (RWY 16)	561'	60' L	850'	2'	NO	OCA; DISPLACED THRESHOLD
5	TERRRAIN - NEAR HILL	APPROACH (RWY 16)	608'	279' L	650'	59'	YES	REMOVE/LEVEL (SEE NOTE 3)
6	TREE - NEAR HILL	APPROACH (RWY 16)	622'	143' L	450'	83'	YES	REMOVE/LEVEL (SEE NOTE 3)
7	TREE	APPROACH (RWY 16)	584'	211' L	40'	55'	YES	REMOVE/LEVEL (SEE NOTE 3)
8	TREE - NEAR HILL	APPROACH (RWY 16)	567'	202' L	-80'	40'	YES	REMOVE/LEVEL (SEE NOTE 3)
9	STEWART PARKWAY	APPROACH (RWY 34)	512'	250' R	738'	14'	NO	OCA; DISPLACED THRESHOLD
10	FENCE	PRIMARY (RWY 34 END)	502'	250' R	150'	5'	YES	(OBST. LT.) OCA; DISPLACED THRESHOLD

NOTES:

1. TYPE C OBSTACLE CLEARANCE APPROACH (OCA) IS ESTABLISHED TO PROVIDE IMPROVED OBSTRUCTION CLEARANCE BASED ON DISPLACED THRESHOLD LOCATIONS, PER AC 150/5300-13.
2. DATA BASED ON ULTIMATE RUNWAY CONFIGURATION DEPICTED ON 2006 ALP.
3. ITEMS 5-8 MAY HAVE BEEN MODIFIED OR REMOVED AS PART OF ON-AIRPORT DEVELOPMENT; RECOMMEND UPDATED OBSTRUCTION SURVEY TO VERIFY.

NO.	ITEM	PART 77 SURFACE	MSL ELEV	DISTANCE FROM RWY CL	DISTANCE FROM RWY END	AMOUNT OF PENETRATION (ESTIMATED)	AIRPORT PROPERTY	DISPOSITION
11	TREE	APPROACH (RWY 34)	540'	234' R	460'	31'	NO	(TOP/REMOVE) OCA; DISPLACED THRESHOLD
12	LIGHT ON POLE	APPROACH (RWY 34)	557'	177' R	754'	35'	NO	OCA; DISPLACED THRESHOLD
13	TREE	APPROACH (RWY 34)	533'	26' R	698'	3'	NO	(TOP/REMOVE) OCA; DISPLACED THRESHOLD
14								
15								
16								
17								
18								
19								
20								

"THE PREPARATION OF THIS DOCUMENT MAY HAVE BEEN SUPPORTED, IN PART, THROUGH THE AIRPORT IMPROVEMENT PROGRAM FINANCIAL ASSISTANCE FROM THE FEDERAL AVIATION ADMINISTRATION AS PROVIDED UNDER TITLE 49, UNITED STATES CODE, SECTION 47104. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THESE DOCUMENTS BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED HEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS."

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING.
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

FEDERAL AVIATION ADMINISTRATION APPROVAL
APPROVAL DATE: _____
MANAGER, SEATTLE ADO

CITY OF ROSEBURG APPROVAL
APPROVAL DATE: _____
SIGNATURE

CENTURY WEST ENGINEERING CORPORATION
4400 S.W. Kruhland Lane, Suite 300
Portland, Oregon 97224
503-419-2150 phone • 503-639-2710 fax
www.centurywest.com

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SCALE:
DM	SLK	DM	AS SHOWN
DATE: MARCH 2008		PROJECT NO: 40480004.01	

ROSEBURG REGIONAL AIRPORT
RUNWAY PLAN & PROFILE WITH APPROACH

DRAWING NO. *

SHEET NO. 4 OF 5

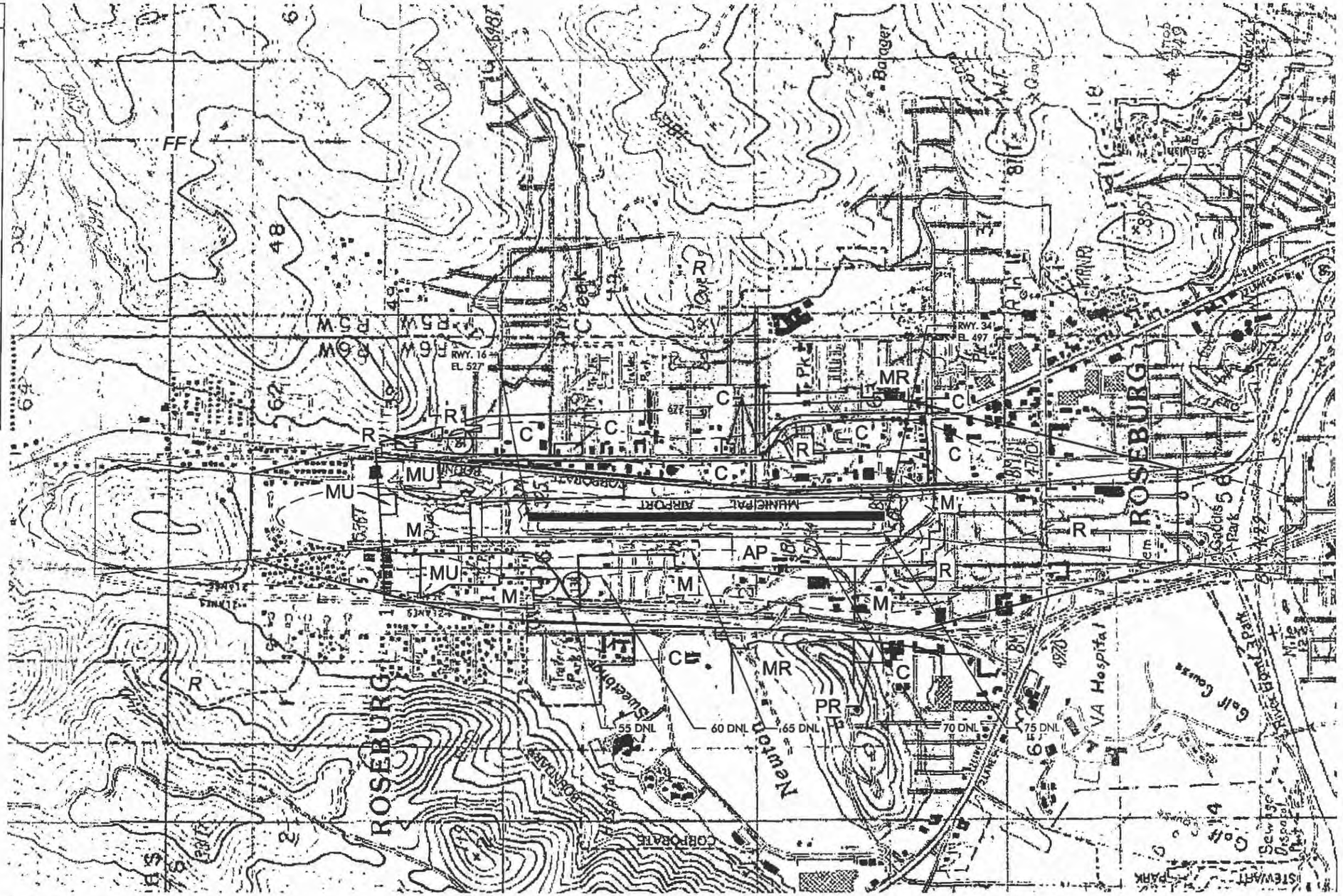
LEGEND

CITY OF THE ROSEBURG ZONING

———	ZONING BOUNDARY
– – – –	NOISE CONTOURS
AP	AIRPORT
C	COMMERCIAL
M	MANUFACTURING
R	RESIDENTIAL

DOUGLAS COUNTY

R	RURAL RESIDENTIAL, OTHER RESIDENTIAL
FF	FARM FOREST
FG	EFU-GRAZING



NOTES:

1. NOISE ANALYSES CONDUCTED BY CENTURY WEST ENGINEERING. THE NOISE CONTOURS WERE GENERATED USING THE FAA INTEGRATED NOISE MODEL (INM) VERSION 6.1. CONTOURS BASED ON 2009 FORECASTS.
2. THE RUNWAY CONFIGURATION DEPICTED ON THIS DRAWING IS CONSISTENT WITH THE EXISTING RUNWAY DEPICTED ON THE 2005 AIRPORT LAYOUT PLAN.
3. CITY AND COUNTY AIRPORT OVERLAY ZONES WILL NEED TO BE UPDATED TO REFLECT MODIFIED AIRFIELD CONFIGURATION DEPICTED ON ALP.

MAGNETIC INC. 16° 89' EAST (2010) VALUE

0 700 1400
SCALE OF FEET
SCALE: 1"=700'

"THE PREPARATION OF THIS DOCUMENT MAY HAVE BEEN SUPPORTED, IN PART, THROUGH THE AIRPORT IMPROVEMENT PROGRAM FINANCIAL ASSISTANCE FROM THE FEDERAL AVIATION ADMINISTRATION AS PROVIDED UNDER TITLE 49, UNITED STATES CODE, SECTION 47104. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THESE DOCUMENTS BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED HEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS."

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

FEDERAL AVIATION ADMINISTRATION APPROVAL

APPROVAL DATE: _____

_____
MANAGER, SEATTLE ADO

CITY OF ROSEBURG APPROVAL

APPROVAL DATE: _____

_____
SIGNATURE

CENTURY WEST ENGINEERING CORPORATION
4400 S.W. Kruse Way Lane, Suite 300
Portland, Oregon 97224
503-419-2100 phone • 503-639-3710 fax
www.centurywest.com

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SCALE:
DM	SLK	DM	AS SHOWN

DATE: MARCH 2006
PROJECT NO: 40480004.01

ROSEBURG REGIONAL AIRPORT
LAND USE PLAN WITH 2009 NOISE CONTOURS

DRAWING NO. 5

SHEET NO. 5 OF 5

Roseburg Regional Airport
Airport Layout Plan Report

Chapter Six

Financial Management and Development Program

CHAPTER SIX
FINANCIAL MANAGEMENT AND DEVELOPMENT PROGRAM

The analyses conducted in the previous chapters have evaluated airport development need based on forecast activity and the associated facility requirements. One of the most important elements of the master planning process is the application of basic economic, financial and management rationale so that the feasibility of the implementation can be assured. The amount of local and outside funding (state, federal, etc.) that will be available during the current twenty-year planning cannot be guaranteed. In cases when the overall capital needs of an airport exceed available funding, projects will be deferred until funding can be obtained. In this situation, it is particularly important to establish and maintain priorities so that completion of the most essential improvements is assured.

Historically, the primary source of funding for major capital projects at the airport has been federal aviation trust fund monies with local matching funds provided by the City. Hangar construction, which has not been eligible for FAA funding in the past, has been funded locally by the City (T-hangars) and private tenants (conventional hangars). Utility improvements at the airport are also not typically eligible for FAA funding and have been locally funded.

The maintenance of airfield pavements ranges from very minor items such as crack filling to fog seals or patching. Minor pavement maintenance items such as crackfilling are not included in the capital improvement program, but will need to be undertaken by the City on an annual or semi-annual basis. The Pavement Management Program (PMP) managed by the Oregon Department of Aviation (ODA) provides funding assistance for airfield pavement maintenance on established multi-year cycles. This program is intended to preserve and maintain existing airfield pavements in order to maximize their useful lives and the economic value of the pavement. As noted earlier, several short-term pavement maintenance projects are identified for Roseburg Regional Airport in the current PMP, which will require local matching funds.

AIRPORT DEVELOPMENT SCHEDULE AND COST ESTIMATES

The analyses presented in Chapters Four and Five, described the airport's overall development needs for the next twenty years. Estimates of project costs were developed for each project based on 2005 dollars. A 30 percent contingency overhead for engineering, administration, and unforeseen circumstances has been included in the estimated component and total costs. In future years, as the plan is carried out, these cost estimates can continue to assist management by adjusting the 2005-based figures for subsequent inflation. This may be accomplished by converting the interim change in the United States Consumer Price Index (USCPI) into a multiplier ratio through the following formula:

$$\frac{X}{I} = Y$$

Where:

X = USCPI in any given future year

Y = Change Ratio

I = Current Index (USCPI)

USCPI
193.3
(1982-1984 = 100)
March 2005

Multiplying the change ratio (Y) times any 2005-based cost figures presented in this study will yield the adjusted dollar amounts appropriate in any future year evaluation.

The following sections outline the recommended development program and funding assumptions. The scheduling has been prepared according to the facility requirements determined earlier. The projected staging of development projects is based upon anticipated needs and investment priorities. Actual activity levels may vary from projected levels; therefore, the staging of development in this section should be viewed as a general guide. When activity does vary from projected levels, implementation of development projects should occur when demand warrants, rather than according to the estimated staging presented in this chapter. In addition to major development projects, the airport will require regular facility maintenance.

A summary of development costs during the twenty-year capital improvement plan is presented in **Table 6-1**. The twenty-year CIP is divided between three phases for short-, intermediate-, and

long-term projects. The table provides a listing of the major capital projects included in the twenty-year CIP, including each project's eligibility for FAA funding. The FAA will not generally participate in vehicle parking, utilities, building renovations or projects associated with non-aviation developments. Some changes in funding levels and project eligibility were included in the current Airport Improvement Program (AIP) legislation (extends through FY 2007). FAA funding levels have been increased from 90 percent to 95 percent, although the FAA indicates that a return to the previous 90 percent funding level may occur in future bills. Therefore, for planning purposes, FAA-eligible projects beyond 2007 are estimated based on a 90 percent level of FAA funding.

The general aviation entitlement funding level is established up to $150,000 per year, with a maximum rollover of four years. Projects such as hangar construction or fuel systems, which have not traditionally been eligible for funding, are currently eligible, although the FAA indicates that this category of project would be funded only if there were no other project needs at a particular airport. Based on the overall facility needs and anticipated levels of federal funding, it has been assumed that hangar construction will not rely on FAA funds.

The first phase of the capital improvement program includes the highest priority projects recommended during the first five years. Phase II projects are anticipated to occur in a 5 to 10-year time frame. Phase III projects are expected to occur in a 10 to 20-year period, although changes in demand or other conditions could accelerate or slow demand for some improvements. As with most airports, pavement related improvements represent the largest portion of CIP needs at Roseburg Regional Airport during the current planning period.

Phase I Projects (2005-2010)

The short-term projects at Roseburg Regional Airport consists largely of items identified in the City's current Five Year Capital Improvement Program (adopted in March 2003). The project costs included in the City's CIP document have not been changed for this evaluation. Several initial projects related to the development of the north hangar area have been completed or scheduled for completion in 2005. To date, the majority of grading and site preparation has been completed on the southern section of the development area. The construction of a main access taxiway and three hangar taxilanes is planned for 2005. The first 18-unit T-hangar is planned for construction in 2006 or when adequate demand exists to justify the investment.

The projects are primarily related to the ongoing development of the north hangar area, improvements to the parallel taxiway, pavement rehabilitation, and fencing. The improvements to the parallel taxiway are divided into four projects. The first project is an extension of the existing box culvert for Newton Creek that is required to relocate the parallel taxiway. The

parallel taxiway relocation is planned in three phases (center, north section, and south section) over three years. A pavement rehabilitation project is planned for the main apron early in the short-term period.

Other improvements include access/vehicle parking improvements and extension of the retaining wall located along the east edge of NW Aviation Drive, adjacent to the western-most row of conventional hangars.

An obstruction survey is recommended for the Runway 34 VASI glidepath. As noted in the facility requirements analyses, the FAA has indicated that airports unable to document a "clean" 20:1 approach surface may not be able to retain night-authorized instrument approach procedures. Demonstrating an unobstructed VASI glidepath is considered the minimum-acceptable level of obstruction clearance. An update of the existing Exhibit "A" airport property plan is also identified as a short-term project. The existing Exhibit "A" does not clearly depict airport property boundaries.

Phase II Projects (2011-2015)

The recommended intermediate-term projects at Roseburg Regional Airport include the following:

- Airfield pavement preservation, resurfacing and reconstruction. This includes periodic slurry seals for all airfield pavements on a six-year cycle.
- Site preparation, including excavation for the north 400-foot runway extension (including grading within the extended RSA, OFA, OFZ, and primary surface).
- One 18-Unit T-hangar
- 400-foot extension of runway and parallel taxiway at Runway 16 end. Retain existing displaced threshold location for obstruction clearance.
- North Apron site preparation; vehicle access and parking improvements; apron construction and taxiway/taxilane extensions.
- Building construction (hangars, FBO hangar, etc.).
- Airport security fencing (north apron and hangar area) and electronic vehicle gates.
- Precision approach slope indicator (PAPI) to replace existing VASI on Runway 34 at end of useful life.

Phase III Projects (2016-2025)

The recommended long-term projects at Roseburg Regional Airport include the following:

- Airfield pavement preservation, resurfacing and reconstruction. This includes periodic slurry seals for all airfield pavements on a six-year cycle.
- The second phase of north hangar and apron construction
- One 18-Unit T-hangar
- Overlay Runway 16/34
- Overlay Main Apron and Hangar Taxilanes
- Terrain Removal on Mast Hill for improved obstruction clearance for Runway 16 approach
- Airline Terminal Development (based on potential commercial air service needs)

Pavement related projects listed in the CIP are listed in relative priority based on a general timeline. The actual timing for these projects may need to be periodically adjusted based on the City's need to accelerate or defer projects based on a variety of considerations. The specific years listed are intended to provide a general guide for project planning and illustrate the repetitive nature and substantial investment required in maintaining airfield pavements. The timing of development for new hangars on the airport will be dependent on market demand and the timing of other necessary improvements (surface access, site preparation, taxiway access, etc.).

TABLE 6-1:
20-YEAR CAPITAL IMPROVEMENT PROGRAM
2005 TO 2025

Project	Qty.	Unit	Unit $	Total Cost	FAA Eligible	Local
Phase I Projects (2005-2010)						
2005-2006						
18-unit T-Hangar	1	ea	$450,000	$450,000	$0	$450,000
Box Culvert Extension (City CIP Item 5)		LS	--	$702,083	$631,875	$70,208
N-S Landside Taxiway Connector (w/ culvert)	1,200	SY	$40.00	$98,000	$88,200	$9,800
North Runup Apron	1	ea	$175,000	$175,000	$157,500	$17,500
WAAS/GPS Survey	1	ea	$100,000	$100,000	$90,000	$10,000
Obstruction Survey - Runway 34 VASI Glidepath	1	ea	$10,000	$10,000	$9,000	$1,000
Parallel Taxiway Relocation - Phase 1 - Center Section (City CIP Item 6)		LS	--	$557,880	$502,092	$55,788
Subtotal				$2,092,963	$1,478,667	$614,296
Engineering & Contingency (30%)				$627,889	$443,600	$184,289
2005 Total				$2,720,852	$1,922,267	$798,585
2007						
Apron Rehabilitation (City CIP Item 3 & 4)		LS	--	$1,090,496	$981,446	$109,050
Airport Fencing (east property line) (City CIP Item 9)		LS	--	$130,781	$117,703	$13,078
Retaining Wall Extension (City CIP Item 10)		LS	--	$95,000	$85,500	$9,500
Phase I Parking, North Apron Area		LS	--	$50,000	$0	$50,000
Parallel Taxiway Relocation - Phase 2 - North Section w/ MITL (City CIP Item 12)		LS	--	$470,378	$423,340	$47,038
Subtotal				$1,836,655	$1,607,989	$228,666
Engineering & Contingency (30%)				$550,997	$482,397	$68,600
2007 Total				$2,387,652	$2,090,386	$297,265
2008						
Parallel Taxiway Relocation - Phase 3 - South Section w/ MITL (City CIP Item 13)		LS	--	$206,638	$185,974	$20,664
Terrain & Obstruction Survey (north end of airport to define clearway grading requirements; approach & transitional surfaces.)	1	ea	$20,000	$20,000	$18,000	$2,000
Update Exhibit "A" drawing to depict current airport boundaries and acreages.	1	ea	$7,500	$7,500	$6,750	$750
FBO/Hangar Area Vehicle Parking (City CIP Item 16)		LS	--	$80,000	$0	$80,000
Subtotal				$314,138	$210,724	$103,414
Engineering & Contingency (30%)				$94,241	$63,217	$31,024
2008 Total				$408,379	$273,941	$134,438

2009						
North Runup Area (City CIP Item No. 11)		LS	--	$880,248	$792,223	$88,025
New Electrical Building		LS	--	$91,842	$82,658	$9,184
Subtotal				$972,090	$874,881	$97,209
Engineering & Contingency (30%)				$291,627	$262,464	$29,163
2009 Total				$1,263,717	$1,137,345	$126,372
2010						
Electrical Building		LS	--	$150,000	$135,000	$15,000
Subtotal				$150,000	$135,000	$15,000
Engineering & Contingency (30%)				$45,000	$40,500	$4,500
2010 Total				$195,000	$175,500	$19,500
Total Phase I Projects				$6,975,600	$5,599,440	$1,376,160

TABLE 6-1 (CONTINUED)
20-YEAR CAPITAL IMPROVEMENT PROGRAM
2005 TO 2025

Project	Qty	Unit	Unit $	Total Cost	FAA Eligible	Local
Phase II Projects (Years 2011-2015)						
RSA/OFA Excavation & Grading for Rwy Extension	100,000	CY	$8.00	$800,000	$720,000	$80,000
18-unit T-Hangar	1	ea	$450,000	$450,000	$0	$450,000
Reconstruct/Overlay Corporate Hangar Taxilanes	6,000	SY	$24.00	$154,000	$138,600	$15,400
Construct North Hangar & Tiedown Apron - Phase 1	9,600	SY	$40.00	$384,000	$345,600	$38,400
NW Aviation Development Area Access Road & Parking	1,500	SY	$50.00	$75,000	$67,500	$7,500
Slurry Seal Airfield Pavements (2011-2015)	165,000	SY	$3.60	$604,000	$543,600	$60,400
400' Extension Runway 16/34 (north end)	4,500	SY	$40.00	$180,000	$162,000	$18,000
400' Extension Parallel Taxiway (north end)	2,540	SY	$40.00	$101,600	$91,440	$10,160
Property Acquisition - Newton Creek Drainage	4.6	Acres	$40,000	$184,000	$165,600	$18,400
Relocate Aircraft Wash Rack	1	ea	$25,000	$25,000	$22,500	$2,500
PAPI - Rwy 34 (Replace VASI)	1	ea	$60,000	$60,000	$54,000	$6,000
Subtotal Phase II Projects				$3,017,600	$2,310,840	$706,760
Engineering & Contingency (30%)				$905,280	$693,252	$212,028
Total Phase II Projects				$3,922,880	$3,004,092	$918,788
Phase III Projects (Years 2016-2025)						
Construct North Hangar & Tiedown Apron - Phase 2	8,000	SY	$40.00	$320,000	$288,000	$32,000
18-unit T-Hangar	1	ea	$450,000	$450,000	$0	$450,000
Overlay Runway 16/34 (5002 x100') (2015)	55,600	SY	$12.00	$667,200	$600,480	$66,720
Overlay Main Apron Hangar Taxilanes (2018)	17,000	SY	$12.00	$214,000	$192,600	$21,400
Slurry Seal Airfield Pavements (2016-2025)	165,000	SY	$3.60	$604,000	$543,600	$60,400
Airline Terminal Building	1	LS	$1,500,000	$1,500,000	$750,000	$750,000
Terrain Removal - Mast Hill	1	LS	$500,000	$500,000	$450,000	$50,000
Total Phase III Projects				$4,255,200	$2,824,680	$1,430,520
Engineering & Contingency (30%)				$1,276,560	$847,404	$429,156
Total Phase III Projects				$5,531,760	$3,672,084	$1,859,676
TOTAL PROJECTS (All Phases)				**$16,430,240**	**$12,275,616**	**$4,154,624**

Notes:
1. Projects Listed in Short Term Group are from City of Roseburg 5-Year CIP (version adopted 3/10/03 - may need to be revised based on updated project completions).
2. Specific years identified for pavement related projects are intended only as a guideline based on typical pavement maintenance requirements.

FINANCING OF DEVELOPMENT PROGRAM

Federal Grants

A primary source of potential funding identified in this plan is the Federal Airport Improvement Program (AIP). As proposed, approximately 75 percent of the airport's 20-year CIP will be eligible for federal funding. Funds from this program are derived from the Aviation Trust Fund, which is the depository for all federal aviation taxes collected on such items as airline tickets, aviation fuel, lubricants, tires, aircraft registrations, and other aviation-related fees. These funds are distributed under appropriations set by Congress to all airports in the United States that have certified eligibility. The funds are distributed through grants administered by the Federal Aviation Administration (FAA).

Under current FAA guidelines, the City receives 95 percent participation on eligible projects. Roseburg Regional Airport is eligible under the Airport Improvement Program (AIP) to receive discretionary grants and general aviation entitlement grants. Under the current authorization, the airport may receive up to $150,000 per year in the GA entitlement grants. The future availability of the GA non-primary entitlement funding is dependent on congressional reauthorization and may change during the planning period. However, based on current legislation, these grants have become a very significant source of FAA funding for general aviation airports. Airports may combine up to four years of GA entitlement funding for projects. As noted earlier, a return to the previous 90 percent level may occur in the next federal funding bill. For planning purposes, FAA-eligible projects beyond 2007 in the CIP are estimated based on a 90 percent level of FAA funding. Discretionary grants are also available to fund larger projects that require additional funding.

The constraints of AIP funding availability will dictate in large part, the actual schedule for completing airport improvement projects through the planning period. As a result, some projects included in the twenty-year CIP may be deferred beyond the twenty-year time frame.

State Funding

The Oregon Department of Aviation (ODA) manages a pavement maintenance funding program to enable regularly-scheduled investment in airfield pavements. The program funds pavement maintenance and associated improvements (crack filling, repair, sealcoats, etc.), which have not traditionally been eligible for FAA funding. The PMP may also be expanded to include pavement overlays. ODA also provides limited funding assistance through its Financial

Assistance to Municipalities (FAM) grant program. FAM grants are available for amounts up to $25,000 per year, with varying levels of local match required.

Financing the Local Share of Capital Improvements

As currently defined, the locally funded portion of the CIP is approximately 25 percent. For local airport sponsors, one of the most challenging aspects of financial planning is generating enough revenue to match available state or federal grants for large projects. As noted earlier, FAA AIP grants usually represent the single largest source of funding for major capital projects.

As currently defined, the local share for projects included in the twenty year planning period is estimated to be just over $4.1 million, which includes the local match for AIP-funded projects, and the full cost of non-eligible projects. It is important to note that two Phase III projects represent a significant portion of the overall CIP. Terrain removal on Mast Hill and the construction of an airline terminal building represent approximately 16 percent of the 20-year CIP totals and more than 25 percent of the City portion of the CIP, due to lower federal funding participation levels for terminal construction. It is also uncertain that FAA funding would be available in any given year for large projects requiring discretionary grants.

Hangar construction costs (T-hangars only) have been included in the CIP; hangars at the airport have historically been funded both by the City and through private tenants. Recent changes in AIP legislation allow some FAA funding to be used for hangar construction, however, this type of development is considered to be a much lower priority than airfield improvement projects. The FAA has indicated that they would consider a funding request only in cases where there were no other higher priority project needs outstanding. Since the projected twenty-year cost of improving and maintaining airport facilities exceeds current AIP funding levels, it appears unlikely that the City could justify a request for FAA funding for hangar construction any time in the near future.

Roseburg Regional Airport
Airport Layout Plan Report

Chapter Seven

Environmental Checklist

CHAPTER SEVEN
ENVIRONMENTAL CHECKLIST

INTRODUCTION

The purpose of the Environmental Checklist is to identify any physical, social and environmental conditions of record which may affect the ability to undertake future improvements at Roseburg Regional Airport. In comparison to an Environmental Assessment (EA) or Environmental Impact Statement (EIS), the project scope for this review is limited, and focuses on gathering and summarizing information of record from the applicable local, state and federal sources pertaining to the existing conditions of the subject site and its environs. The scope of the review research does not involve extensive professional interpretation of the information, in-depth analyses, or the more comprehensive follow-up correspondence and inquiries with affected agencies and persons that is normally associated with an EA or EIS.

All research activities, including correspondence, data collection and documentation, proceeded under the provisions of FAA Order 5050.4A, The Airport Environmental Handbook, which is intended to implement the requirements of Sections 1505.1 and 1507.3 of the National Environmental Policy Act (NEPA). This report briefly addresses each potential impact category identified by Order 5050.4A as to be investigated under the EIS or EA processes, and is comprised of a narrative and table summarizing the consultant's findings under each investigation heading or potential impact category. In instances where a particular potential environmental impact type does not appear to exist or apply to the subject project, the table is noted accordingly.

Included below is a brief summary of the impact categories in which potentially significant impacts were identified, or appear to be possible, and where notable ecological or social conditions appear pertinent to the future development of this facility.

As discussed in Chapter 2 of this report, the airport is located in Douglas County, and is entirely contained within the Roseburg city limits. City of Roseburg zoning on the airport property is Airport District (AP). This zone permits development and activities related to airports as outright permitted uses, although it does not specifically authorize aviation activities. Since this is

implied in the existing language, no change to this section of the Roseburg Development Code may be necessary in this respect; however, the zone description should be evaluated against the specific requirements for zoning public use airports as dictated by the State of Oregon (in ORS Ch. 836, please see below for further discussion).

Land uses and zoning surrounding the Roseburg Regional Airport are predominantly light and medium intensity industrial uses; commercial and retail; transportation facilities (surface roadways) and single-family residences. In addition, limited office uses and a manufactured home park also neighbor the airfield. Vehicular access to the facility is provided via Aviation Drive, on the southwest edge of the airport property. The site is entirely bordered by transportation facilities, including a railroad on the east; Stephens and Airport Roads farther east; Edenbower Road to the north, which crosses Interstate 5 west of the site; Aviation Drive / Bowers Street on the west; and Stewart Parkway to the south.

Chapter Four notes that "extensive areas of terrain (and trees) penetration are identified within the airport's airspace surfaces, in all directions." For instance, several residential structures are located within the arrival runway protection zone (RPZ) for Runway 34, and an industrial building under ownership of the City of Roseburg is also located within this RPZ. Additionally, terrain, trees, and man made obstructions also occur in the Runway 34 approach surface. Finally, Mast Hill is recognized as a major obstruction within the "non-precision instrument approach slope" for Runway 16. The consultant recommends these obstructions be removed or otherwise satisfactorily mitigated to the extent feasible.

No solid waste disposal / transfer sites, open water bodies, or other significant bird attractants are located nearby. No other issues of land use compatibility appear pertinent to the project. Land uses and zoning immediately abutting the airport are described in **Table 7-1**.

TABLE 7-1
SUMMARY OF LAND USE AND ZONING IN VICINITY OF AIRPORT

Land Use	Zoning
Airport Site:	City of Roseburg Airport District (AP)
North: Edenbower Road Limited Industrial Single Family Residential Various Retail	 Roseburg Light Industrial (M-1) / Roseburg Med. Industrial (M-2) Roseburg Mixed Use (MU) M-1 and MU
South: Steward Parkway, Single Family Residential Hillside Residential Development (SW) Limited Industrial	 Low Density Residential (R-1-7.5) M-1
East: Rail Road, Airport Road and Stephens Road, Various Limited Industrial, Retail, Office Single Family Residential	 M-1 / Roseburg General Commercial (C3) R-1-7.5
West: Retail and Office Uses Single Family Residential ODOT Interstate 5	 M-2 / MU MU M-2

The airfield is not located in a floodplain, according to the City Planner.

Oregon Revised Statutes (ORS) Chapter 836.600 through 836.630 addresses the appropriate zoning and protection of Oregon's airports and their surroundings. Under the statute, height restrictive zoning and, to some extent, use-restrictive zoning, are indicated as necessary components affecting land uses in the immediate vicinity of a public airport. An Airport Overlay Zone, which protects necessary airspaces and limits incompatible uses in proximity to an airfield, is the primary means of ensuring the compatibility of surrounding land uses with operations of a general aviation airstrip.

City zoning information provided by the City planner does not indicate any airport overlay zoning. The Douglas County Zoning Ordinance provides extensive airport protections through overlay zoning, though it is unclear whether the necessary designations appear on the County's official zone maps. Failure to depict airport hazard overlay zoning on the City and County zoning maps can cause this additional layer of regulations to be "missed" or intentionally ignored.

In addition to ensuring quality and cohesive mapping of all of the areas affected by the required Airport Overlay and related safety zones in both the City and County jurisdictions, the existing respective City and County development codes and transportation plan languages must be reviewed and amended to ensure full compliance with ORS Chapter 836. Among the provisions of this statute are the following (Please note: This is not intended to be a comprehensive summation of this legislation. Additional requirements may apply to this site under the cited or related statutes):

OAR 660-13-160(1) Requires jurisdictions to update Plan, land use regulations at Periodic Review to conform with provisions of this statute, or at next update of Transportation System Plan, per OAR 660-12-0015(4) and OAR 660-12-0045(2)(c)&(d). If more than one local government is affected by the Airport Safety Overlay (see below), a Coordinated Work Program for all jurisdictions is required, concurrent with timing of Periodic Review (or TSP update) for the jurisdiction having the most land area devoted to the airport use(s). An Inter-Governmental Agreement is one potential mechanism for complying with the requirement for a "coordinated work program" between concerned jurisdictions under this section. The City of Roseburg should initiate these discussions with Douglas County.

(8) Adopt map delineating Safety Zones, compatibility zones, and existing noise impact boundaries identified by OAR 340-35. See also OAR 660-13-0070(1) and Exhibits 1 & 2 to Division 13. Beyond ensuring applicable mapping depicts required safety zones, etc., consistent with the above, jurisdictions must ensure corresponding code language is also compliant.

This Airport Layout Plan Update Report will provide the information and graphics for incorporating into the City and County zoning data and mapping files in order to establish compliance with the requirement for mapping "noise impact boundaries." Additional analyses, safety and compatibility zone designations and mapping may likely be necessary to establish full conformity with this section.

OAR 660-13-0070(2): Review future development in Airport Safety Overlay for compliance with maximum height limitations. As stated, the consultant recommends that the City and Douglas County adopt and enforce height limitations, and other Airport Safety Overlay zoning implementation language, or where already existing, ensure that this is consistent with this and other applicable state laws and federal regulations.

In addition to Airport Hazard Overlay requirements described above, OAR 660-13-0040(1)-(3) also requires that jurisdictions adopt a map of existing and planned airport improvements.

The consultant recommends that a general review be performed of all County and City Ordinance and Comprehensive Plan language and mapping pertaining to the subject airport and its

immediate environs, to compare those with the requirements of the FAA and ORS Chapter 836.600-630 for airport compatibility. Any amendments to the City's and County's codes, Plans and or maps necessary in order to demonstrate compliance should be affected. Since the State has effectively frozen periodic review requirements through at least 2007, the two jurisdictions should pursue these changes through legislative zoning code and map amendments as soon as possible. It is further recommended that this Airport Layout Plan be adopted as part of the Transportation Elements of the respective City of Roseburg and Douglas County Comprehensive Plans.

Roseburg Regional Airport has historically been utilized for business, commercial, government, military and recreation purposes. Improvements will accrue positive social and socio-economic impacts through the creation of jobs and enhancement of the performance of the facility. Increased safety and security are among the key expected benefits of the preferred alternative.

NOISE EVALUATION

Noise is sometimes defined as unwanted sound. However, sound is measurable, whereas noise is subjective. The relationship between measurable sound and human irritation is the key to understanding aircraft noise impact. A rating scale has been devised to relate sound to the sensitivity of the human ear. The A-weighted decibel scale (dBA) is measured on a "log" scale, by which is meant that for each increase in sound energy level by a factor of 10, there is a designated increase of 1 dBA. This system of measurement is used because the human ear functions over such an enormous range of sound energy impacts. At a psychological level, there is a rule of thumb that the human ear often "hears" an increase of 10 decibels as equivalent to a "doubling" of sound.

The challenge to evaluating noise impact lies in determining what amount and what kind of sound constitutes noise. The vast majority of people exposed to aircraft noise are not in danger of direct physical harm. However, much research on the effects of noise has led to several generally accepted conclusions:

- The effects of sound are cumulative; therefore, the duration of exposure must be included in any evaluation of noise.
- Noise can interfere with outdoor activities and other communication.
- Noise can disturb sleep, TV/radio listening, and relaxation.
- When community noise levels have reached sufficient intensity, community wide objection to the noise will likely occur.

Research has also found that individual responses to noise are difficult to predict.[21] Some people are annoyed by perceptible noise events, while others show little concern over the most disruptive events. However, it is possible to predict the responses of large groups of people – i.e. communities. Consequently, community response, not individual response, has emerged as the prime index of aircraft noise measurement.

On the basis of the findings described above, a methodology has been devised to relate measurable sound from a variety of sources to community response. It has been termed "Day-Night Average Sound Level" (DNL) and has been adopted by the U. S. Environmental Protection Agency (EPA), the Department of Housing and Urban Development (HUD), and the Federal Aviation Administration (FAA) for use in evaluating noise impacts. In a general sense, it is the yearly average of aircraft-created noise for a specific location (i.e., runway), but includes a calculation penalty for each night flight.

The basic unit in the computation of DNL is the sound exposure level (SEL). An SEL is computed by mathematically summing the dBA level for each second during which a noise event occurs. For example, the noise level of an aircraft might be recorded as it approaches, passes overhead, and then departs. The recorded noise level of each second of the noise event is then added logarithmically to compute the SEL. To provide a penalty for nighttime flights (considered to be between 10 PM and 7 AM), 10 dBA is added to each nighttime dBA measurement, second by second. Due to the mathematics of logarithms, this calculation penalty is equivalent to 10-day flights for each night flight. [22]

A DNL level is approximately equal to the average dBA level during a 24-hour period with a weighing for nighttime noise events. The main advantage of DNL is that it provides a common measure for a variety of different noise environments. The same DNL level can describe an area with very few high noise events as well as an area with many low level events.

---

[21] Beranek, Leo, *Noise and Vibration Control*, McGraw-Hill, 1971, pages ix-x.

[22] Where Leq ("Equivalent Sound Level") is the same measure as DNL without the night penalty incorporated, this can be shown through the mathematical relationship of:

$$Leq_d = 10 \log \left(\frac{N_d \times 10^{(SEL/10)}}{86{,}400} \right) \qquad Leq_n = 10 \log \left(\frac{N_n \times 10^{((SEL+10)/10)}}{86{,}400} \right)$$

If SEL equals the same measured sound exposure level for each computation, and if $N_d = 10$ daytime flights, and $N_n = 1$ night-time flight, then use of a calculator shows that for any SEL value inserted, $Leq_d = Leq_n$.

Noise Modeling and Contour Criteria

DNL levels are typically depicted as contours. Contours are an interpolation of noise levels drawn to connect all points of a constant level, which are derived from information processed by the FAA-approved computer noise model. They appear similar to topographical contours and are superimposed on a map of the airport and its surrounding area. It is this map of noise levels drawn about an airport, which is used to predict community response to the noise from aircraft using that airport. DNL mapping is best used for comparative purposes, rather than for providing absolute values. That is, valid comparisons can be made between scenarios as long as consistent assumptions and basic data are used for all calculations. It should be noted that a line drawn on a map by a computer does not imply that a particular noise condition exists on one side of the line and not on the other. These calculations can only be used for comparing average noise impacts, not precisely defining them relative to a specific location at a specific time.

2009 Airport Noise Contours

The noise contours depicted on the Airport Land Use Plan drawing in Chapter Five are plotted in 5 DNL increments starting at 55 DNL based on the 2009 forecast activity levels. The size and shape of the contours is consistent with the airport's runway utilization and overall volume of aircraft traffic. Runway 34 is the primary landing and departure runway, which results in contours extending beyond the end of Runway 16 over a longer distance, reflecting the flatter climb profiles of aircraft takeoff.

Although areas of residential development exist immediately south of the airport, the majority of nearby development in the vicinity of the airport is commercial, industrial or manufacturing related, which are more compatible with airport noise. The area immediately south of the runway is developed predominantly in manufacturing and residential land uses. A large mobile home residential development, previously located immediately adjacent to the runway has been removed, resulting in a significant reduction in the number of residents located within moderate-to-high levels of noise exposure generated by both the airport and Interstate 5. Local planning authorities should continue to discourage land use patterns that would increase population densities in the vicinity of the airport, particularly beneath the runway approach surfaces.

The 2009 55 DNL noise contour extends approximately 6,400 feet beyond the end of Runway 16 and approximately 5,500 feet beyond the end of Runway 34. The areas located beyond the north end of the runway are predominantly manufacturing and sparsely populated lands.

Portions of the 2009 60 and 65 DNL contours extend beyond airport property at the south runway end and along the sides of the runway due where the airport property narrows. At the Runway 34

end, the 60 DNL contour extends approximately 2,300 feet beyond the runway end over a residential area located on the hillside immediately south of the runway. At the Runway 16 end, the 60 DNL extends approximately 3,000 feet beyond the runway, mostly within airport property. The 65 DNL contour extends approximately 1,000 feet beyond the end of Runway 16, and within 600 feet of the end of Runway 34. The majority of the 65 DNL noise contours are contained within airport boundaries. The 2009 70 and 75 DNL noise contours appear to be largely contained within airport property, with the exception of small areas that extend beyond Stewart Parkway, near the south end of the runway. An undeveloped strip of property (approximately 200 feet wide) located along the south edge of Stewart Parkway, at the base of the hill, provides an effective buffer for higher levels of noise exposure. Future development within this area should be restricted to uses that are compatible with higher levels of noise exposure.

Residential development within the 65 DNL and higher noise contour is not recommended and should be discouraged. Care should be taken by local land use authorities to avoid creating potential long-term land use incompatibilities in the vicinity of the airport by permitting development of incompatible land uses such as residential subdivisions within areas of moderate or higher noise exposure. Under federal guidelines, all land uses, including residential, are considered compatible with noise exposure levels of 65DNL and lower.

Noise and Land-Use Compatibility Criteria

Federal regulatory agencies of government have adopted standards and suggested guidelines relating DNL to compatible land uses. Most of the noise and land-use compatibility guidelines strongly support the concept that significant annoyance from aircraft noise levels does not occur outside a 65 DNL noise contour. Federal agencies supporting this concept include the Environmental Protection Agency, Department of Housing and Urban Development, and the Federal Aviation Administration.

Part 150, Airport Noise Compatibility Planning, of the Federal Aviation Regulations, provides guidance for land-use compatibility around airports. **Table 7-2** presents these guidelines. Compatibility or non-compatibility of land use is determined by comparing the noise contours with existing and potential land uses. All types of land uses are compatible in areas below 65 DNL. Generally, residential and some public uses are not compatible within the 65-70 DNL, and above. As noted in **Table 7-2**, some degree of noise level reduction (NLR) from outdoor to indoor environments may be required for specific land uses located within higher-level noise contours. Land uses such as commercial, manufacturing, some recreational uses, and agriculture are compatible within 65-70 DNL contours.

TABLE 7-2
LAND-USE COMPATIBILITY WITH DNL

Land Use	Yearly Day-Night Average Sound Level (DNL) In Decibels					
	Below 65	65-70	70-75	75-80	80-85	Over 85
Residential						
Residential, other than mobile homes & transient lodgings	Y	N(1)	N(1)	N	N	N
Mobile Home Parks	Y	N	N	N	N	N
Transient Lodgings	Y	N(1)	N(1)	N(1)	N	N
Public Use						
Schools	Y	N(1)	N(1)	N	N	N
Hospitals and Nursing Homes	Y	25	30	N	N	N
Churches, Auditoriums, and Concert Halls	Y	25	30	N	N	N
Governmental Services	Y	Y	25	30	N	N
Transportation	Y	Y	Y(2)	Y(3)	Y(4)	Y(4)
Parking	Y	Y	Y(2)	Y(3)	Y(4)	N
Commercial Use						
Offices, Business and Professional	Y	Y	25	30	N	N
Wholesale and Retail—Building Materials, Hardware and Farm Equipment	Y	Y	Y(2)	Y(3)	Y(4)	N
Retail Trade--General	Y	Y	25	30	N	N
Utilities	Y	Y	Y(2)	Y(3)	Y(4)	N
Communication	Y	Y	25	30	N	N
Manufacturing and Production						
Manufacturing General	Y	Y	Y(2)	Y(3)	Y(4)	N
Photographic and Optical	Y	Y	25	30	N	N
Agriculture (except livestock) and Forestry	Y	Y(6)	Y(7)	Y(8)	Y(8)	Y(8)
Livestock Farming and Breeding	Y	Y(6)	Y(7)	N	N	N
Mining and Fishing, Resource Production and Extraction	Y	Y	Y	Y	Y	Y
Recreational						
Outdoor Sports Arenas, Spectator Sports	Y	Y(5)	Y(5)	N	N	N
Outdoor Music Shells, Amphitheaters	Y	N	N	N	N	N
Nature Exhibits and Zoos	Y	Y	N	N	N	N
Amusements, Parks, Resorts and Camps	Y	Y	Y	N	N	N
Golf Courses, Riding Stables and Water Recreation	Y	Y	25	30	N	N

Y (Yes)	Land-use and related structures compatible without restrictions.
N (No)	Land-use and related structures are not compatible and should be prohibited.
NLR	Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into design and construction of the structure.
25, 30 or 35	Land uses and structures generally compatible; measures to achieve NLR or 25, 30, or 35 dB must be incorporated into design and construction of the structure.

NOTES:

1. Where the community determines that residential uses must be allowed, measures to achieve outdoor to indoor Noise Levels Reduction (NLR) of at least 25dB and 30dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dB; thus, the reduction requirements are often stated as 5, 10, or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year-round. However, the use of NLR criteria will not eliminate outdoor noise problems.
2. Measures to achieve NLR of 25 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low.
3. Measures to achieve NLR of 30 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low.
4. Measures to achieve NLR of 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received office areas, noise sensitive areas, or where the normal noise level is low.
5. Land-use compatible, provided special sound reinforcement systems are installed.
6. Residential buildings require an NLR of 25.
7. Residential buildings require an NLR of 30.
8. Residential buildings not permitted.

SOURCE: Federal Aviation Regulations, Part 150, Airport Noise Compatibility Planning, dated January 18, 1985.

OTHER ENVIRONMENTAL CONSIDERATIONS

Information from the Oregon Department of Environmental Quality web page indicates that air quality in the area is officially rated as "good" (see appendices). No significant increase over existing levels of air and/or surface traffic is anticipated under the Preferred Alternative. No adverse impact is anticipated in regard to air quality.

Water quality impacts are always a concern with any construction project, and especially when considering uses and sites where potentially hazardous materials, such as aviation fuel, fire retardants, de-icing agents, and/or agricultural chemicals are involved. The airfield has two 12,000 gallon, above ground fuel tanks for aircraft fueling. In this case, there are the concerns that customarily are associated with petroleum fueling areas and activities, and specific interest in ensuring the quality of any water which is permitted to enter Newton Creek. The Oregon Department of Environmental Quality (DEQ) routinely recommends for airport projects that, at a minimum, investigations be performed which document past agricultural spraying practices, aviation fuel storage facilities, and other potential sources for adverse water quality impacts associated with past, present and potential future activities at the site. Agricultural and/or forestry-related chemical operators and airport sponsors must ensure that wash down, collection, treatment and storage areas and devices comply with Oregon Administrative Rule 340-109 and all applicable environmental standards.

If any wastewater is currently being distributed to a septic drain field, Oregon Administrative Rule (OAR) 340-044 may apply, and may require an Underground Injection Control (UIC)

permit from DEQ. In addition to the requirement for securing wastewater permits for washing, maintenance, or deicing areas, the sponsor must secure a National Discharge Elimination System (NPDES) Permit for any project affecting one acre or more of land, and keep current NPDES permits on hand for discharging any storm water runoff. During construction, adherence to the applicable local, state, and federal regulations and standards; observance of DEQ's "Best Management Practices for Storm Water Discharges Associated with Construction Activities" (2000); and compliance with the guidelines of FAA Advisory Circular 150/5370-10, are all advised to protect against adverse water quality impacts.

As of April 15, 2001, the Oregon State Historic Preservation Office, SHPO, requires considerable documentation be provided by parties inquiring about existence of significant cultural resources in a given location. This procedure requires such information as architectural classification; window and roof types of all structures within the study area; if they may be considered a resource; dates of alterations; and "Significance Statements" for all types of resources.

SHPO has provided specific forms, "Section 106 (of the National Historic Preservation Act) Documentation Forms" and "Section 106 Level of Effect Forms", for use in making such a request. This level of investigation surpasses the scope of this ALP Update Report.

During preliminary stages of this study process, the consultant forwarded a letter to the Cow Creek Band of Umpqua Tribe of Indians. No response was received as of this writing.

A City planning official indicated no historic sites were known to be located on the airport property. If any historic or cultural resources are discovered during construction, the sponsor will be responsible for immediately notifying SHPO, the Tribes, and the other appropriate authorities. Work would be required to be halted until the physical extent and relative cultural significance of the resource(s) could be identified, and a protection plan developed and implemented, if warranted.

The Oregon Department of Fish and Wildlife (ODFW) did not provide input on the proposed improvements when solicited. A search of the database of the Oregon Natural Heritage Information Center revealed that Coho salmon (*Oncorhynchus kisutch pop. 3*) and Steelhead (*Oncorhynchus mykiss pop. 31*) may occur in the project vicinity, although the airfield is not adjacent to the river, so direct impacts on these species appears unlikely. Adverse impacts to these species could conceivably occur through pollution of surface waters leading to the river. The Coho is listed as "Threatened" by the US Fish and Wildlife Service (USFWS), and the Steelhead is a "Candidate" species for federal listing.

In addition, the database indicates two additional species of fish; a vertebrate mammal (the Ringtail, *Bassariscus astutus*); and the Northwestern pond turtle (*Emys marmorata marmorata*)

as species of interest or concern which have been recorded in the airport's vicinity. Numerous Northwestern pond turtles have been recorded in sections adjacent to the subject site. Two snakes were reported which are species of concern to either the USFWS or State of Oregon, and the Oregon cave amphipod (*Stygobromus oregonensis*), an invertebrate, water borne animal, was reported as occurring in the area in 1967. No status was provided for this rare species.

Finally, two insects and five species of flora are indicated as sensitive species or species of concern occurring in the general area of the Roseburg Regional Airport. Please see the attached database report for more information concerning these substantial numbers of plants and animals which could potentially be affected by the preferred alternative.

In addition to the above, the US Department of Interior's Fish and Wildlife Service (USFWS) lists two species of Threatened or Endangered plants as occurring in the project area, as well as seven species of bats; seven species of birds; two additional species of amphibians; two species of fish, including the Pacific lamprey (*Lampetra tridentata*); a bumblebee; and two additional species of flora which are Species of Concern for USFWS and which may be impacted by the preferred alternative at Roseburg Regional Airport. Species of concern are described by the USFWS as "Taxa whose conservation status is of concern to the Service, but for which further information is still needed." The USFWS correspondence states a Biological Assessment is required for "construction projects (or other undertakings having similar physical impacts) which are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (NEPA) (42 U.S.C. 4332 (2)(c)). For projects other than major construction activities," the USFWS' correspondence continues, "the Service suggests that a biological evaluation similar to the Biological Assessment be prepared to determine whether they may affect listed and proposed species."

Consistent with the above, a biological evaluation may be warranted in this instance, to protect the sponsor against liability associated with potential impacts upon these and / or other sensitive species.

According to a review of the US Fish and Wildlife Service's National Wetlands Inventory (NWI), wetlands do not occur on or adjacent to the southern half of the airport property. About midway up the airstrip, on the west side, Newton Creek is a Riverine wetland which goes on to cross under Interstate 5 farther to the west. Two small Palustrine (fresh water), "scrub shrub" wetlands appear on either side of the runway toward the northerly end, and appear to be on or adjacent to the subject site. Palustrine emergent and forested wetlands also occur north of the terminus of Runway 16. As a safe harbor approach, it is generally recommended that development maintain a minimum of thirty to fifty foot setback from wetlands of these types, if feasible, and if the wetlands resources are determined to be "jurisdictional", or protected, wetlands. Development activities which would impact a wetland resource by filling or removing

greater than fifty cubic yards of materials must be preceded by any necessary permit(s) from the Oregon Division of State Lands (DSL) and/or US Army Corps of Engineers (ACOE), as applicable.

No 100-year floodplain occurs on the subject property.

Because no federal lands are proposed to be committed or otherwise involved in the Preferred Alternative, the Farmland Protection Policy Act (FPPA) does not apply to this proposal, and no further analysis under this impact category is necessary to demonstrate compliance with NEPA. No conversion of farm land is contemplated under the preferred alternative.

Silt fences, runoff diversion tactics, and storm water detention are commonly implemented in similar construction projects, and should be utilized for any project on the airport in order to minimize adverse impacts of development related activities. FAA Advisory Circular 150/5370-10 provides additional measures which are advised to be implemented to minimize adverse impacts of airport construction activities. In addition, DEQ's 2000 publication "Best Management Practices for Storm Water Discharges Associated with Construction Activities" should be followed during all phases of the project. Please see the above related discussion regarding water quality impacts.

A summary of the environmental checklist items and preliminary findings is presented in **Table 7-3**.

TABLE 7-3
ROSEBURG REGIONAL AIRPORT ENVIRONMENTAL CHECKLIST

Potential Impact Category	Existing Conditions / Comments	Further Action Needed?
Noise	2009 65 DNL contours extend beyond airport property (south). Some residential in vicinity.	POSSIBLE
Compatible Land Use	Local governments must adopt and Map Airport Overlay Zoning, planned improvements, ensure consistency of zoning provisions with State law. Future uses in the vicinity must have the burden of demonstrating compatibility with aviation and compliance with ORS Ch. 836.600-630. Remove obstructions of critical airspaces as feasible.	YES
Social / Socio-Economic	Expected to be positive, as is typical with airport projects.	YES
Air Quality	Area is in attainment for air quality; no change in current conditions is anticipated.	NO
Water Quality	Any wastewater distributed to a septic drain field may require application for an Underground Injection Control (UIC) permit from DEQ. DEQ requires surface storm water runoff be contained, treated, prior to discharge to any natural drainage system, water body. NPDES Permit; maintaining maximum physical separation between construction and sensitive waterways, adherence to FAA Advisory Circular 150/5370-10 required. Document to DEQ, ODWF any chemicals stored on site. For fuel or agricultural chemical storage and handling, see Water Quality section of this Environmental Checklist, observe compliance with DEQ requirements. Surface water quality is of concern.	YES
Special Land Uses, DOT Act Section 4(f)	No parks, recreation areas, or refuge areas per this section affected.	NO

TABLE 7-3
ROSEBURG REGIONAL AIRPORT ENVIRONMENTAL CHECKLIST

Potential Impact Category	Existing Conditions / Comments	Further Action Needed?
Historic, Architectural, Archaeological, and Cultural Resources	Records no longer provided by SHPO. Halt construction if resources discovered, notify identified tribes, SHPO of all development plans.	POSSIBLE
Biotic Communities	Numerous species of fish, flora and fauna noted as occurring in the project vicinity. See Construction Impacts, Water Quality sections of Environmental Checklist narrative.	YES
Endangered and Threatened Species	Threatened, Endangered, and Species of Concern were identified as occurring in vicinity. A Biological Evaluation should be considered. Please see narrative.	YES
Wetlands	Avoid impacting wetlands where feasible; obtain a wetlands determination for resources occurring on site. Ensure permits approved prior to impacting wetlands.	POSSIBLE
Floodplain	Not applicable.	NO
Shoreline Management	Not Applicable to this facility.	NO
Coastal Barriers	Also Not Applicable.	NO
Wild and Scenic Rivers	Not Applicable.	NO
Farmland	Public airport improvement projects on private lands are exempt from Farmland Protection Policy Act (FPPA).	NO
Energy Supply and Natural Resources	No adverse impacts anticipated.	NO
Light Emissions and Glare	No hazards reported by local planners or operators, upon inquiry. No analysis of existing light emissions which might pose potential hazards to aviation performed.	POSSIBLE

TABLE 7-3
ROSEBURG REGIONAL AIRPORT ENVIRONMENTAL CHECKLIST

Potential Impact Category	Existing Conditions / Comments	Further Action Needed?
Solid Waste Impacts	Netwon Creek, other surface and ground water systems must be considered and protected from contamination during the handling of waste materials. Development under the Preferred Alternative would not considerably increase production of waste at the facility, except during construction phase.	YES
Construction Impacts	Temporary impacts will accrue during construction phase. Of particular concern is any runoff which might make its way to Newton Creek via surface or groundwater flow or other means. Adherence to the provisions of FAA Advisory Circular 150/5370-10 should preclude foreseeable adverse impacts.	YES

Roseburg Regional Airport
Airport Layout Plan Report

GLOSSARY OF AVIATION TERMS

Glossary of Aviation Terms



The following glossary of aviation terms was compiled and edited by David Miller, AICP for use in aviation planning projects.

Accelerate Stop Distance Available (ASDA) – The length of the takeoff run available plus the length of a stopway, when available.

Agricultural Aviation – The use of fixed-wing or rotor-wing aircraft in the aerial application of agricultural products (i.e., fertilizers, pesticides, etc.).

Air Cargo - All commercial air express and air freight with the exception of airmail and parcel post.

Air Carrier/Airline - All regularly scheduled airline activity performed by airlines certificated in accordance with Federal Aviation Regulations (FAR Part 121).

Air Taxi - Operations of aircraft "for hire" for specific trips, commonly referred to an aircraft available for charter (FAR Part 135).

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 and 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
Category E - Speed 166 knots or more

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

Aircraft Owners and Pilots Association (AOPA) – International aviation organization.

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 - A landing area regularly used by aircraft for receiving or discharging passengers or cargo, including heliports and seaplane bases.

Airport Improvement Program (AIP) - The funding program administered by the Federal Aviation Administration (FAA) with user fees which are dedicated to improvement of the national airport system. This program currently provides 95% of funding for eligible airport improvement projects. The local sponsor of the project (i.e., airport owner) provides the remaining 5% known as the "match."

Airport Layout Plan (ALP) - 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.

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).

Airport Reference Point (ARP) – The approximate mid-point of an airfield that is designated as the official airport location.

Airports District Office (ADO) - The "local" office of the FAA that coordinates planning and construction projects. Staff in the ADO is typically assigned to a particular state, i.e., Oregon, Idaho, or Washington. The ADO for Oregon, Washington and Idaho is located in Renton, Washington.

Airspace - The area above the ground in which aircraft travel. It is divided into corridors, routes, and restricted zones for the control and safety of traffic.

Alternate Airport – An airport that is available for landing when the intended airport becomes unavailable. Required for instrument flight planning in the event that weather conditions at destination airport fall below approach minimums (cloud ceiling or visibility).

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.

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.

Apron - An area on an airport designated for the parking, loading, fueling, or servicing of aircraft (also referred to as tarmac and ramp).

ARFF - Aircraft Rescue and Fire Fighting, i.e., an on airport response required for certificated commercial service airports (see FAR Part 139).

Automated Surface Observation System (ASOS) and Automated Weather Observation System (AWOS) – Automated observation systems providing continuous on-site weather data, designed to support aviation activities and weather forecasting.

AVGAS - Gasoline used in airplanes with piston engines.

Avigation Easement - A form of limited property right purchase that establishes legal land use control prohibiting incompatible development of areas required for airports or airport-related purposes.

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 that can be accommodated on the runways of an airport in an hour.

Ceiling – The height above the ground or water to base of the lowest cloud layers covering more than 50 percent of the sky.

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

Circle to Land or Circling Approach – An instrument approach procedure that allows pilots to "circle" the airfield to land on any authorized runway once visual contact with the runway environment is established and maintained throughout the procedure.

Common Traffic Advisory Frequency (CTAF) – A frequency used by pilots to communicate and obtain airport advisories at an uncontrolled airport.

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 to 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.

Decision Height (DH) – For precision instrument approaches, the height (typically in feet or meters above runway end touchdown zone elevation) at which a decision to land or execute a missed approach must be made by the pilot.

Airport - A landing area regularly used by aircraft for receiving or discharging passengers or cargo, including heliports and seaplane bases.

Airport Improvement Program (AIP) - The funding program administered by the Federal Aviation Administration (FAA) with user fees which are dedicated to improvement of the national airport system. This program currently provides 95% of funding for eligible airport improvement projects. The local sponsor of the project (i.e., airport owner) provides the remaining 5% known as the "match."

Airport Layout Plan (ALP) - 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.

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).

Airport Reference Point (ARP) – The approximate mid-point of an airfield that is designated as the official airport location.

Airports District Office (ADO) - The "local" office of the FAA that coordinates planning and construction projects. Staff in the ADO is typically assigned to a particular state, i.e., Oregon, Idaho, or Washington. The ADO for Oregon, Washington and Idaho is located in Renton, Washington.

Airspace - The area above the ground in which aircraft travel. It is divided into corridors, routes, and restricted zones for the control and safety of traffic.

Alternate Airport – An airport that is available for landing when the intended airport becomes unavailable. Required for instrument flight planning in the event that weather conditions at destination airport fall below approach minimums (cloud ceiling or visibility).

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.

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.

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

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

Glide Slope (GS) – For precision instrument approaches, such as an instrument landing system (ILS), the component that provides electronic vertical guidance to aircraft. Visual guidance indicators (VGI) define a glide slope (glide path) through a series of colored lights that are visible to pilots when approaching a runway end for landing.

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

Height Above Airport (HAA) – The height of the published minimum descent altitude (MDA) above the published airport elevation. This is normally published in conjunction with circling minimums.

High Intensity Runway Lights (HIRL) - High intensity (i.e., 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.

Hold/Holding Procedure – A defined maneuver in controlled airspace that allows aircraft to circle above a fixed point (often over a navigational aid or GPS waypoint) and altitude while awaiting further clearance from air traffic control.

Home Built Aircraft - An aircraft built by an amateur; not 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. Its perimeter 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. It could also be described as a rectangle with half circles on each end with the runway in the middle.

Initial Approach Point of Fix (IAP/IAF) – For instrument approaches, a designated point where an aircraft may begin the approach procedure.

Instrument Flight Rules (IFR) - 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.

Instrument Landing System (ILS)- 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).

Displaced Threshold – A runway threshold (landing point) that is located at a point other than the runway end. Usually provided to mitigate close-in obstructions to runway approaches for landing aircraft.

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

Enplanements - Domestic, territorial, and international revenue passengers who board an aircraft in the states in scheduled and non-scheduled service of aircraft in intrastate, interstate, and foreign commerce and includes intransit passengers (passengers on board international flights that transit an airport in the US for non-traffic purposes).

Entitlements - Distribution of Airport Improvement Plan (AIP) funds from the Airport & Airways Trust Fund to commercial service airport sponsors based on enplanements or cargo landed weights. Also, Non-Primary General Aviation Entitlements now incorporated in AIP funding for general aviation airports.

Federal Aviation Administration (FAA) - The FAA is the branch of the U.S. Department of Transportation that 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, i.e., #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.

FAR Part 139 - Federal Aviation Regulations which establish standards for airports with scheduled passenger commercial air service. Airports accommodating scheduled passenger service with aircraft more than 9 passenger seats must be certified as a "Part 139" airport. Airports that are not certified under Part 139 may accommodate scheduled commercial passenger service with aircraft having 9 passenger seats or less.

Final Approach Fix (FAF) – The fix (location) from which the final instrument approach to an airport is executed; also identifies beginning of final approach segment.

Final Approach Point (FAP) – For nonprecision instrument approaches, the point at which an aircraft is established inbound for the approach and where the final descent may begin.

Fixed Base Operator (FBO) - 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 FBOs 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 fueling, flight instruction or repair).

Fixed Wing - A plane with one or more "fixed wings," as opposed to a helicopter that utilizes a rotary wing.

Medevac - Fixed wing or rotor-wing aircraft used to transport critical medical patients. These aircraft are equipped to provide life support during transport.

Medium Intensity Runway Lights (MIRL) - Runway lights which are not as intense as HIRLs (high intensity runway lights). Typical at medium and smaller airports which do not have sophisticated instrument landing systems.

Microwave Landing System (MLS) - An instrument landing system operating in the microwave spectrum, which provides lateral and vertical guidance to aircraft with compatible equipment. It was touted as the replacement for the ILS but never achieved this status.

Minimum Descent Altitude (MDA) – The lowest altitude in a nonprecision instrument approach that an aircraft may descend without establishing visual contact with the runway or airport environment.

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

Missed Approach – A maneuver conducted by a pilot when an instrument approach cannot be completed to a landing.

Missed Approach Point (MAP) – The defined location in an nonprecision instrument approach where the procedure must be terminated if the pilot has not visually established the runway or airport environment.

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

MSL - Elevation above Mean Sea Level.

National Plan of Integrated Airport Systems (NPIAS). The NPIAS is the federal airport classification system that includes public use airports that meet specific eligibility and activity criteria. A "NPIAS designation" is required for an airport to be eligible to receive FAA funding for airport projects.

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

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

Non-Precision Instrument (NPI) Approach - A non-precision instrument approach provides horizontal (course) guidance to pilots for landing. NPI approaches often involve a series of "step down" sequences where aircraft descend in increments (based on terrain clearance), rather than following a continuous glide path. The pilot is responsible for maintaining altitude control between approach segments since no "vertical" guidance is provided

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

Instrument Meteorological Conditions (IMC) - Meteorological conditions expressed in terms of visibility, distance from clouds, and ceiling less than minima specified for visual meteorological conditions.

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, i.e., flights that come in from another airport.

Jet Fuel – Highly refined grade of kerosene used by turbine engine aircraft.

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

Landing Distance Available (LDA) – The length of runway which is available and suitable for the ground run of an airplane landing.

Left Traffic – a term used to describe which side of a runway the airport traffic pattern is located. Left traffic indicates that the runway will be to the pilot's left when in the traffic pattern. Left traffic is standard unless otherwise noted in facility directories at a particular airport.

Large Aircraft - An aircraft that weighs more than 12,500 lbs.

Local Area Augmentation System (LAAS) – GPS-based instrument approach that utilizes ground-based systems to augment satellite coverage to provide vertical (glideslope) and horizontal (course) guidance. LAAS approaches have the technical capabilities to provide approach minimums comparable to a Category I and II instrument landing system (ILS). The FAA indicates that a LAAS system can support approaches to multiple runways and potentially multiple airports within a range of approximately 30 nautical miles.

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.

Localizer – For precision instrument approaches, such as an instrument landing system (ILS), the component that provides electronic lateral guidance to aircraft.

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)

Magnetic Declination – also called magnetic variation, is the angle between magnetic north and true north. Declination is considered positive east of true north and negative when west. Magnetic declination changes over time and with location. Runway end numbers, which reflect the magnetic heading/alignment (within 5 degrees +/-), occasionally require change due to declination.

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

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.

Runway Safety Area (RSA) – A prepared ground area surrounding a runway that is intended to accommodate inadvertent aircraft passage without causing damage. The dimensions for the RSA increase for runways accommodating larger or faster aircraft.

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

Small Aircraft - An aircraft that weighs less than 12,500 lbs.

Straight-In Approach – An instrument approach that directs aircraft to a specific runway end.

T-Hangar - An aircraft storage hangar that resembles the shape of a "T."

Takeoff Distance Available (TODA) – the length of the takeoff run available plus the length of clearway, if available.

Takeoff Run Available (TORA) – the length of runway available and suitable for the ground run of aircraft when taking off.

Threshold – The beginning of that portion of a runway that is useable for landing.

Tiedown - A place where an aircraft is parked and "tied down." Surface can be grass, gravel or paved.

Traffic Pattern - The flow of traffic that is prescribed for aircraft landing, taxiing, or taking off from an airport.

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.

Vertical Navigation (VNAV) – vertical navigation descent data or descent path, typically associated with published GPS instrument approaches. The use of any VNAV approach technique requires operator approval, certified VNAV-capable avionics, and flight crew training.

Visual Approach Slope Indicator (VASI) - 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.

Obstruction Chart (OC) - A chart that depicts surveyed obstructions that penetrate an FAR Part 77 imaginary surface surrounding an airport. OC charts are developed by the National Ocean Service (NOS) based on a comprehensive survey that provides detailed location (latitude/longitude coordinates) and elevation data in addition to critical airfield data.

Passenger Facility Charge (PFC) – A user fee charged by public agencies controlling a commercial service airport can charge enplaning passengers a fee facility charge. Public agencies must apply to the FAA and meet certain requirements in order to impose a PFC.

Precision Approach Path Indicator (PAPI) - A system of lights located by the approach end of a runway that 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.

Precision Instrument Runway (PIR) - 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 that is less precise.

Primary Runway - That runway which provides the best wind coverage, etc., and receives the most usage at the airport.

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.

Procedure Turn (PT) - A maneuver in which a turn is made away from a designated track followed by a turn in an opposite direction to permit an aircraft to intercept the track in the opposite direction (usually inbound).

Relocated Threshold – A runway threshold (takeoff and landing point) that is located at a point other than the runway end. Usually provided to mitigate nonstandard runway safety area (RSA) dimensions beyond the end of a runway.

Rotorcraft - A helicopter.

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

Runway Object Free Area (OFA) – A defined area surrounding a runway that should be free of any obstructions that could in interfere with aircraft operations. The dimensions for the OFA increase for runways accommodating larger or faster aircraft.

Runway Protection Zone (RPZ) - An area off the end of the runway that 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

Roseburg Regional Airport
Airport Layout Plan Report

APPENDIX

FAA Airport Design Printouts

AIRPORT AND RUNWAY DATA

Airport elevation	525 feet
Mean daily maximum temperature of the hottest month	83.00 F.
Maximum difference in runway centerline elevation	23 feet
Length of haul for airplanes of more than 60,000 pounds	500 miles
Wet and slippery 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	5380 feet
75 percent of these large airplanes at 90 percent useful load	7000 feet
100 percent of these large airplanes at 60 percent useful load	5520 feet
100 percent of these large airplanes at 90 percent useful load	8140 feet
Airplanes of more than 60,000 pounds . . . . . Approximately	5200 feet

REFERENCE: Chapter 2 of AC 150/5325-4A, Runway Length Requirements for Airport Design, no Changes included.

AIRPORT DESIGN AIRPLANE AND AIRPORT DATA

Aircraft Approach Category B
Airplane Design Group II
Airplane wingspan . . . . . 78.99 feet
Primary runway end approach visibility minimums are not lower than 1 mile
Other runway end approach visibility minimums are visual exclusively
Airport elevation . . . . . 525 feet

RUNWAY WIDTH AND CLEARANCE STANDARD DIMENSIONS

	Airplane	Group/ARC
Runway centerline to parallel runway centerline simultaneous operations when wake turbulence is not treated as a factor:		
VFR operations with no intervening taxiway		700 feet
VFR operations with one 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 feet.
Runway centerline to parallel runway centerline simultaneous operations when wake turbulence is treated as 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	239.5	240 feet
Runway centerline to edge of aircraft parking	250.0	250 feet
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		300 feet
Clearway width		500 feet
Stopway width		75 feet
Obstacle free zone (OFZ):		
Runway OFZ width		400 feet
Runway OFZ length beyond each runway end		200 feet
Inner-approach OFZ width		400 feet
Inner-approach OFZ length beyond approach light system		200 feet
Inner-approach OFZ slope from 200 feet beyond threshold		50:1
Inner-transitional OFZ slope		0:1
Runway protection zone at the primary runway end:		

DECLARED DISTANCE LENGTHS (feet)

Aircraft Approach Category B
Airplane Design Group II
Runway 16 approach visibility minimums are not lower than 1 mile
Runway 34 approach visibility minimums are visual exclusively
Airport elevation . . . . . 525 feet

	Runway 16	and 34
Runway length	4602	4602
Stopway length	0	0
Clearway length	0	0
Runway safety area length beyond the stop end of runway	200	300
Runway object free area length beyond the stop end of runway	200	300

The following distances are positive in the direction of aircraft operations and negative in the opposite direction:

Distance from:		
the departure end of runway to the beginning of clearway	0	0
the departure end of runway to the beginning of departure RPZ	200	200
the approach end of runway to the start of takeoff	0	0
the approach end of runway to the threshold	700	371
the end of approach RPZ to the approach end of runway	200	200

The following lengths are standard RSA and ROFA lengths:

Runway safety area length to be provided:		
beyond the stop end of ASDA	300	300
beyond the stop end of LDA	300	300
before the approach end of LDA	300	300
Runway object free area length to be provided:		
beyond the stop end of ASDA	300	300
beyond the stop end of LDA	300	300
before the approach end of LDA	300	300

The following declared distances are for Approach Category A and B airplanes exclusively.

	Runway 16 (feet)	Runway 34 (feet)
Takeoff run available (TORA)	4602	4602
Takeoff distance available (TODA)	4602	4602
Accelerate-stop distance available (ASDA)	4502	4602
Landing distance available (LDA)	3802	4231
Usable stopway length	0	0
Distance from the stop end of LDA to runway end	100	0
Distance from the departure end of TORA to RPZ	200	200
Distance from the approach RPZ to the threshold	900	571

REFERENCE: Appendix 14 of AC 150/5300-13, Airport Design, including Changes 1 through 4.