Boardman Airport
Airport Layout Plan Report

Final Report - August 2002

Prepared for

The Port of Morrow
Boardman, Oregon

Prepared by

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U.S. Department
of Transportation

**Federal Aviation
Administration**

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

October 23, 2002

Mr. Gary Neal
General Manager
Port of Morrow
P.O. Box 200
Boardman, OR 97818

Dear Mr. Neal:

The Boardman Airport Layout Plan (ALP), prepared by Century West Engineering, and bearing your signature, is approved and the Airport Layout Plan Report is accepted. A signed copy of the approved ALP is enclosed.

An aeronautical study (no. 2002-ANM-2167-NRA) was conducted on the proposed development to determine its effect on the safe and efficient utilization of the navigable airspace by aircraft. If applicable, the aeronautical study also evaluated existing and proposed instrument flight procedures and navigational aids associated with the airport and the subject approved plans.

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

An approved Exhibit 'A' Airport Property Map is also a prerequisite for development or land acquisition grants under the AIP. Since the Port of Morrow has not previously received such grants, we do not have an Exhibit 'A' for Boardman Airport on file. We recommend that you prepare one, consistent with this approved ALP's delineation of the airport property encompassing 881 acres of the larger Port property. Field surveying may be necessary. Preparation of the Exhibit 'A' Property Map for FAA approval is eligible for subsequent reimbursement as a project formulation cost in an upcoming AIP development grant. Attached is our checklist outlining Exhibit 'A' Property Map requirements.

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

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

Sincerely,

ORIGINAL SIGNED BY

J. Wade Bryant
Manager,
Seattle Airports District Office

Enclosures

cc:
Ann Crook, Oregon Dept. of Aviation
David Miller, Century West Engineering

SEA-600:JWBryant;dml:x2652:10/23/02
FILE:Site: Boardman, OR:ALP

CHAPTER ONE
INTRODUCTION AND CONCLUSIONS

This study examines the configuration of facilities, addresses both current and long-term airport needs, and updates the previous recommendations contained in the 1986 Airport Master Plan and Airport Layout Plan. The Port of Morrow, with technical support of Oregon Department of Aviation (ODA), has undertaken the Airport Layout Plan Report project, with the funding support of the Federal Aviation Administration (FAA).

The Port of Morrow recognizes the importance of the airport as part of the overall transportation system of the area, which supports an expanding economic base. In its role as a general aviation airport, Boardman Airport serves a wide range of users, including agricultural, business, general aviation and government users. Although activity levels at Boardman Airport have historically been low, the improvement of facilities and services at the airport are considered to be important factors in the future development and use of the airport.

The primary objective of this Airport Layout Plan Report is to identify current and future facility needs and the improvements necessary to maintain a safe, efficient, economical, and environmentally acceptable air transportation facility. The Airport Layout Plan Report:

- *Examines the recommended improvements from the 1986 Airport Master Plan and Airport Layout Plan;*
- *Determines current and future aviation activity and facility requirements;*
- *Examines previous recommendations and development alternatives as appropriate to meet the current and projected airport facility needs;*
- *Updates the airport layout plan, airspace plan, and land-use plan for the airport and its surrounding areas; and*
- *Schedules priorities of improvements and estimates development costs.*

The review and approval of the Airport Layout Plan drawing by the Federal Aviation Administration (FAA) will enable the Port to apply for federal Airport Improvement Program (AIP) grants for eligible facility improvement projects. AIP funds are an essential source of funding for airport projects at general aviation projects. This plan was funded with a 90 percent grant from the Federal Aviation Administration, with the remaining 10 percent, funded by the Port of Morrow.

During the course of the Airport Layout Plan Update project, the Port of Morrow was also involved with a project to develop a large-scale motor speedway on undeveloped land in the northern section of the airport. The effective coordination of the speedway development proposal with the ALP update was an important element in defining long-term aviation needs for the airport site. A 50-year aviation demand study was completed separately for the Port to identify aviation facility and land requirements and to identify the amount of airport property that could support non-aviation uses. The updated Airport Layout Plan includes several long-term development reserves based on the findings of the 50-year study.

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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.

PUBLIC INVOLVEMENT

The public involvement element of the planning process provided opportunities for all interested individuals, organizations, or groups to participate in the project. At the project kickoff, a Joint Planning Conference (JPC) was held in which all parties with specific interest in the airport were invited to attend. 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 input provided by Port staff, airport users, local citizens, and a variety of state and federal government agencies, provided valuable information that is being used in preparing the plan.

During the study, several draft working papers were prepared and coordination meetings were held in the local community. Through this coordination process, a preferred development alternative was selected for the airport. Based on these recommendations, the Draft Final Report and Airport Layout Plans drawings were completed for review. Following a final review

period, public and agency comments were then integrated into the Final Airport Layout Plan Report and Plans set.

AIRPORT LAYOUT PLAN REPORT CONCLUSIONS

1. Boardman Airport is owned, operated and maintained by Port of Morrow. The airport accommodates general aviation, business, agricultural and government aviation users serving the local area.

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

3. Boardman Airport has a single paved and lighted runway (4,200 feet by 150 feet). The airport facilities were originally designed to meet the needs of large military aircraft. The published single-wheel weight bearing capacity for the runway is 75,000 pounds.

4. The runway pavement condition was rated "poor" during the last inspection in 2000. The runway will require resurfacing within the next several years in order to avoid major reconstruction if the pavement falls into the "very poor" or "failed" category. The aircraft apron areas are in good condition.

5. The ultimate critical aircraft type previously identified for the airport (1986 Airport Layout Plan) was an unspecified transport category aircraft. The majority of aircraft currently using the airport on a regular basis weigh 12,500 pounds or less, including business and agricultural turbine aircraft. A small, but growing portion of air traffic consists of medium business jet aircraft typically weighing between 12,500 and 30,000 pounds. These aircraft are most commonly included in Airplane Design Group (ADG) II and Aircraft Approach Category B (B-II).

6. Boardman Airport has a general aviation parking apron with eight aircraft tiedowns and two agricultural loading areas. The apron is located immediately adjacent to the east end of the runway, which conflicts with several FAA-recommended runway clearances. The recommended solution for this non-standard configuration will be identified in the preferred alternative and depicted on the ALP.

7. All existing landside facilities (AG loading storage areas, two hangars, caretaker residence, etc.) are located on the south side of the runway, adjacent to the aircraft apron.

8. Airfield lighting is limited to medium-intensity runway edge lighting (MIRL) and threshold lights at each runway end. The airport has acquired a rotating beacon, which will be installed in 2002. The airfield lighting is in good condition.

9. The airport access road enters the terminal area along the extended centerline of the runway at its east end. The location of the road conflicts with several FAA-recommended runway clearances. The recommended solution for this non-standard configuration will be identified in the planning process and depicted on the ALP.

10. Boardman Airport has a land area of 2,620 acres. The airport is zoned "Air/Industrial" by Morrow County. The airport is located entirely outside the Boardman city limits and urban growth boundary (UGB). See Recommendation No. 1 regarding proposed changes in defined airport land area.

11. Much of the airport's substantial land base is currently undeveloped and is capable of accommodating aviation demands through the current planning period and well beyond, including a substantial amount of non-aviation or aviation-related development.

12. Boardman Airport had 2 to 3 based aircraft and an estimated 3,500 to 5,000 operations in the year 2001. The airport has an usually high percentage of itinerant air traffic, which reflects the airport's role as a transportation facility that serves a large rural agricultural and industrial economy.

13. It is estimated that turbine-powered agricultural (AG) aircraft currently account for 90 percent of airport traffic. Although AG activity is expected to increase during the planning period, growth in local and itinerant general aviation, including business aviation, is expected to account for more than one-third of airport traffic by 2020.

14. Boardman Airport operates under visual flight rules (VFR) only and does not have instrument approach capabilities or on-site weather observation.

15. Restricted airspace and the Boardman Military Operations Areas (MOA) are located directly above Boardman Airport. The airspace needed for local airport operations (arrivals, departures and traffic pattern) is clear from the ground surface to 3,500 feet above mean sea level (MSL). Other nearby restricted airspace extends from the surface of the ground upward.

16. The FAA Flight Procedures Branch has indicated that procedures will need to be established to provide convenient clearance of civilian aircraft through the nearby military controlled airspace before an instrument approach can be developed at Boardman Airport. The bombing range is controlled by the U.S. Navy (Whidbey Island Naval Air Station). Currently, requests for clearance through the airspace must be made

hours in advance. In order to accommodate instrument approach procedures, the clearances will need to be provided in minutes (when the airspace is not in active military use). Flight Procedures staff have indicated that no further analysis will be conducted for Boardman Airport until the airspace control issue is resolved.

AIRPORT LAYOUT PLAN REPORT RECOMMENDATIONS

The recommendations of previous planning efforts were examined and revalidated or modified as appropriate, based on current considerations and design standards.

1. The airport property boundary should be modified based on the recommendations of the Boardman Airport 50-Year Development Plan. The revised boundary is depicted on the updated airport layout plan drawing with a revised acreage of approximately 881 acres. The remaining 1,740 acres of land is designated for non-aviation commercial/industrial development for the Port of Morrow. The Port of Morrow should update the Exhibit "A" drawing for the airport to reflect the new airport boundary.

2. The Port of Morrow should initiate coordination with the U.S. Navy and FAA to address civilian access requirements for nearby restricted military use airspace to support the development of an instrument approach at Boardman Airport. No development of instrument approach capabilities at Boardman will be supported by FAA until the airspace clearance issues are resolved.

3. FAA Airport Design Group II (ADG II) dimensional standards and a "larger than utility" nonprecision instrument (FAR Part 77) designation are recommended for Runway 4/22. The current design aircraft selected are a Beechcraft King Air 200 and a turbine-powered agricultural (AG) aircraft, such as the Air Tractor 602. These aircraft represent the typical business and AG aircraft currently using the airport. Although both of these types of aircraft are commonly included in ADG II, the combination of the two represents significantly different physical airfield requirements.

4. Runway extension reserves based on transport category aircraft are recommended to preserve the airport's ability to accommodate this activity.

5. Long-term aviation development reserves based on potential transport category aircraft needs previously identified should be maintained. The recommended improvements defined for the current twenty–year planning period should also be compatible with the long-term development reserves and associated setbacks whenever possible to reduce the potential of future facility relocation (i.e., hangars, aircraft parking, fuel facilities, etc.).

6. A cost-benefit study should be completed as part of the next major pavement project on Runway 4/22 to evaluate runway width options. The existing 150-foot width exceeds ADG II and ADG III (basic) standards. The cost of relocating the existing runway edge lighting and the initial and life cycle costs of pavement will be key consideration in the cost-benefit analysis. In the event that the FAA recommends reducing the runway width, the Port of Morrow may consider maintaining the existing runway pavement with local funds.

7. The current pavement strength of the runway is adequate to accommodate a wide range of general aviation and business aviation aircraft and a limited amount of transport category aircraft activity. Normal resurfacing (2" asphalt overlay) will maintain existing pavement strength. However, if the runway pavement significantly deteriorates or fails before resurfacing is completed, a new runway pavement section would be designed based on a 30,000-pound single-wheel weight bearing capacity.

8. A routine 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.

9. The existing airport access road should be relocated away from the east end of the runway to eliminate non-standard approach and primary surfaces; runway safety area, object free area, and obstacle free zone.

10. The existing aircraft apron and related facilities should be relocated away from the runway to provide adequate clearance for the primary surface, obstacle free zone, runway safety area and other defined setbacks.

11. New aviation landside developments are recommended on the south side of the runway. The planned development of a major speedway facility north of the airport may create additional demand for itinerant aircraft parking and related facilities. Substantial aviation-use development reserves are identified on the airport layout plan to accommodate additional demand beyond current projections. As the details of the speedway development and any access requirements for airport facilities are defined, refined evaluations of future north-side facilities will be required.

12. A south-side parallel taxiway is recommended to serve Runway 4/22. The recommended runway-taxiway separation (300 feet) is based on ADG II standards with lower than ¾ statute mile instrument approach visibility minimums. The airport has ample land area to accommodate increased setbacks and protect for lower instrument approach minimums. If the parallel taxiway is constructed in phases, developing the eastern section of taxiway would be the highest priority based on the location and configuration of planned landside facilities and existing user needs.

13. Recommended upgrades to airport lighting include an airport beacon, precision approach path indicators on Runways 4 and 22, and lighted wind cones at both ends of the runway. Runway end identifier lights (REIL) are also recommended in conjunction with the addition of an instrument approach. It is also recommended that obstruction lighting be added to the eleven BPA electrical transmission line towers that penetrate Boardman Airport airspace north of the runway (See Airport Airspace Drawing 2a).

14. Overhead flood lighting and security fencing should be provided in the terminal area (hangars, aircraft parking, aircraft fuel storage/dispensing areas) and along public access roads. Adding perimeter fencing around the entire airport boundary is also recommended.

15. Electrical service should be extended to the new south landside development area (apron, hangars and AG area). The existing water service lines will also need to be relocated/reconfigured based on the development of new AG facilities, hangars, fueling, aircraft parking, etc.

16. Approximately 33 acres of private property located east of the runway, along Tower Road, should be acquired and reserved for long-term aviation use (i.e. runway extension). An additional 54 acres of property acquisition is identified at the west end of the runway for a long-term aviation development reserve.

17. Morrow County and the City of Boardman should jointly develop an airport overlay zone that coincides with the FAR Part 77 Airspace Surfaces for the airport. Local governments must adopt and map airport overlay zoning consistent with state law (ORS Ch. 836.600-630).

18. The Port of Morrow, Morrow County and the City of Boardman should adopt the Airport Layout Plan Report and drawings in a timely manner for incorporation into local comprehensive and transportation plans.

19. The Port of Morrow should request funding assistance under FAA and other federal or state funding programs for all eligible capital improvements.

20. The Port of Morrow should initiate the recommended improvements in a timely manner, as demand for facilities warrants.

21. As demand at the airport increases during the planning period, the Port of Morrow should request that the Oregon Department of Aviation re-categorize Boardman Airport as a "Category 4 – Community General Aviation Airport," which would more appropriately reflect the airport's functional role based on the standards defined in the Oregon Aviation Plan.

CHAPTER TWO
INVENTORY AND FORECASTS

INTRODUCTION

This chapter documents the type and condition of existing airport facilities and other items that may affect the long-term planning and operation of the airport. Developing a thorough understanding of existing facilities, including current deficiencies, is an important first step in evaluating future airport needs. Historical data from a variety of sources are used in this evaluation:

- **Oregon Continuous Aviation System Plan** Volume I - Inventory and Forecasts (AirTech, 1997)
- **Oregon Aviation Plan** (Dye Management Group, 2000)
- **Boardman Airport Pavement Evaluation Maintenance-Management Program** (Pavement Consultants Inc., 2000)
- **Boardman Airport Master Plan Report** (Devco Aviation Consultants, 1986)
- **LCDC Goal Exception Statement** (Devco Aviation Consultants, 1985)
- **Boardman Airport Environmental Assessment** (Devco Aviation Consultants, 1985)
- **Morrow County Transportation Plan** (KCM, Inc., 1998)
- FAA Airport Master Record Form 5010-1.
- Local documents, zoning ordinances and regional socioeconomic data.

AIRPORT LOCALE

Boardman is located in northern Morrow County. Morrow County, located in northeastern Oregon, was formed from part of Umatilla County in 1885. Heppner, the county seat, is located 44 miles southeast of Boardman on Highway 207/74. Irrigon is located seven miles northeast of Boardman, on Highway 730.

Boardman is located along U.S. Interstate 84 (I-84), approximately 12 miles east of Heppner Junction, 160 miles east of Portland and 46 miles west-southwest of Pendleton. I-84 passes immediately north of the airport and serves as the primary surface access route, via the Tower Road Exit, to the airport. Boardman Airport is located approximately five miles west of the city center.

Boardman is located within the Columbia Plateau Ecoregion, a rich agricultural region, which has been converted into dry land wheat and irrigated agriculture production over the last 150 years. This region produces the majority of wheat grown in Oregon. The region is comprised of agriculture and rangelands bordered by the Columbia River to the north, the Cascade Mountains to the west, and the Blue Mountains to the south and east. The Columbia River represents the northern border for Morrow County and Oregon. The Umatilla National Wildlife Refuge is located along the Columbia River, immediately north of Boardman.

CLIMATE

Moderate temperatures and low precipitation characterize the region. A summary of weather data for the period 1971 to 2000 indicates that Boardman averages 8.7 inches of precipitation and 8.0 inches of snowfall annually. The average maximum temperature is 89.5 degrees Fahrenheit (July) and the average minimum temperature is 26.6 degrees (January). The prevailing winds in the area generally follow a broad westerly-easterly pattern. Local pilots indicate the runway alignment generally provides adequate wind coverage.

GEOLOGY

According to the General Soil Map, prepared by the U.S. Department of Agriculture, Soil Conservation Service, the geology of the Morrow County includes several distinct soil types and zones within the overall Columbia River Plateau. The overall area is dominated by "well to somewhat poorly drained soils formed in Loess and recent Alluvium and well drained shallow, stony soils on 0 to 70 percent slopes in a 9 to 14 inch precipitation zone."

The area surrounding the Boardman Airport is part of the Roloff-Rock Association, which consists of a narrow band of gently sloping terrain about 2 to 3 wide along the southern edge of the Columbia River. This area consists of soils, which have fair suitability for irrigated crops, with slopes of less than 12 percent and rooting depths of over 20 inches.

SOCIOECONOMIC CONDITIONS

Population

According to data maintained by the Portland State University Center for Population Research and Census, the population of Morrow County was estimated at 11,000 in 2000. The population of Morrow County is distributed primarily between the northern and central part of the county. In 1998, Boardman's population was estimated at 2,795. Boardman and Irrigon, located at the north end of the county, account for about 44 percent of the County's population; Lexington, Ione, and Heppner account for 22 percent; and the remaining population (34 percent) resides in unincorporated areas of the county.

The Oregon Office of Economic Analysis projects Morrow County's population to increase to 16,624 by the year 2040, representing an overall increase of more than 51 percent above current levels.

Economy

The economy of northern Morrow County is heavily dependent on the production of natural resources. Agriculture, manufacturing, government, transportation and service sectors are among the leading employers in the county. The Port of Morrow supports a broad range of economic development activities through its facilities, including the Boardman Airport, the Boardman Industrial Park, and the south Morrow Industrial Park. The Boardman Industrial Park currently accommodates several industrial businesses including major food processors (Lamb-Weston, Oregon Potato, Boardman Foods) and barge terminal used to transport grains, wood products and a variety of other commodities.

According to data maintained by the Oregon Department of Employment, the annual average unemployment rates for Morrow County, ranged from 7.3 to 10.6 percent between 1990 and 1998. The local area has consistently experienced unemployment levels that are 2 to 3 percentage points higher than the statewide average. Between 1990 and 1998, Morrow County's annual unemployment rate averaged approximately one percentage point higher than adjacent Umatilla County.

The 1992 Agricultural Census identified more than 1.1 million acres in farms, 450,000 acres in cropland, and 220,000 acres as harvested cropland in Morrow County. In addition to wheat, which is Morrow County's leading crop, other leading agricultural products include livestock, barley, and hay. In 1996, the market value of Morrow County agricultural products sold was estimated at nearly $118 million.

Airport History

Boardman Airport was constructed in May 1943 as a U.S. Army facility on lands owned by the State of Oregon. In subsequent years, the airport was leased to the Boeing Company (1962) as part of a 100,000-acre parcel from Oregon Department of Veteran Affairs. The property was transferred back to the State of Oregon in the summer of 1984. In October 1984, the Port of Morrow leased the 2,700 acres comprising the airport area from the State of Oregon and subsequently exercised an option to purchase the property. The Port of Morrow has operated the airport since 1984 and has made several facility improvements.

Airport Environment

Boardman Airport is located approximately five miles west of Boardman. The airport boundary is defined by Tower Road to the east; I-84 to the north; a railroad spur line (identified as a P.G.E. Rail Spur on County Assessor Maps) to the west; and line that defines south border of Sections 19, 20, 21 and 22 of Township 4 North Range 24 East to the south. A paved airport access road enters the east end of the airport approximately one-half mile south of the freeway interchange on Tower Road. **Figure 2-1** depicts the airport vicinity.

The airport is located in an area of low-density agricultural use and is located entirely outside the city limits and urban growth boundary (UGB) of the City of Boardman. The airport is zoned by Morrow County as "Air/Industrial." Permitted uses include airport and related uses; industrial park for businesses which are airport related or airport dependent."

Boardman Airport sits directly under the Boardman Military Operations Area (MOA) and Restricted Area 5706. These areas have defined airspace levels located above the airport, however, the airspace extending from the ground surface to 3,500 feet above mean sea level (MSL) is located below the floor of these controlled areas. Aircraft operating at Boardman Airport must avoid flying into these areas of controlled airspace unless permission is granted in advance by the controlling agency (U.S. Navy).

The 1986 Airport Layout Plan lists airport acreage at 2,700 acres. A review of the current Morrow County Assessor Map (No. 4N 24) identifies six parcels totaling 73.37 acres, mostly located on the airport's eastern edge (western frontage to Tower Road), that are no longer included as part of airport property. The airport area is listed at 2,620.63 acres.

Three major electrical Bonneville Power Authority (BPA) transmission lines are located between the runway and I-84 along a 300-foot wide easement established near the northern edge of the airport. The line's support towers have top elevations ranging from 500 to 590 feet above mean sea level (MSL), approximately 100 to 200 feet above airport elevation. At their nearest point, the transmission lines are located approximately 3,000 feet north of the runway; the lines cross

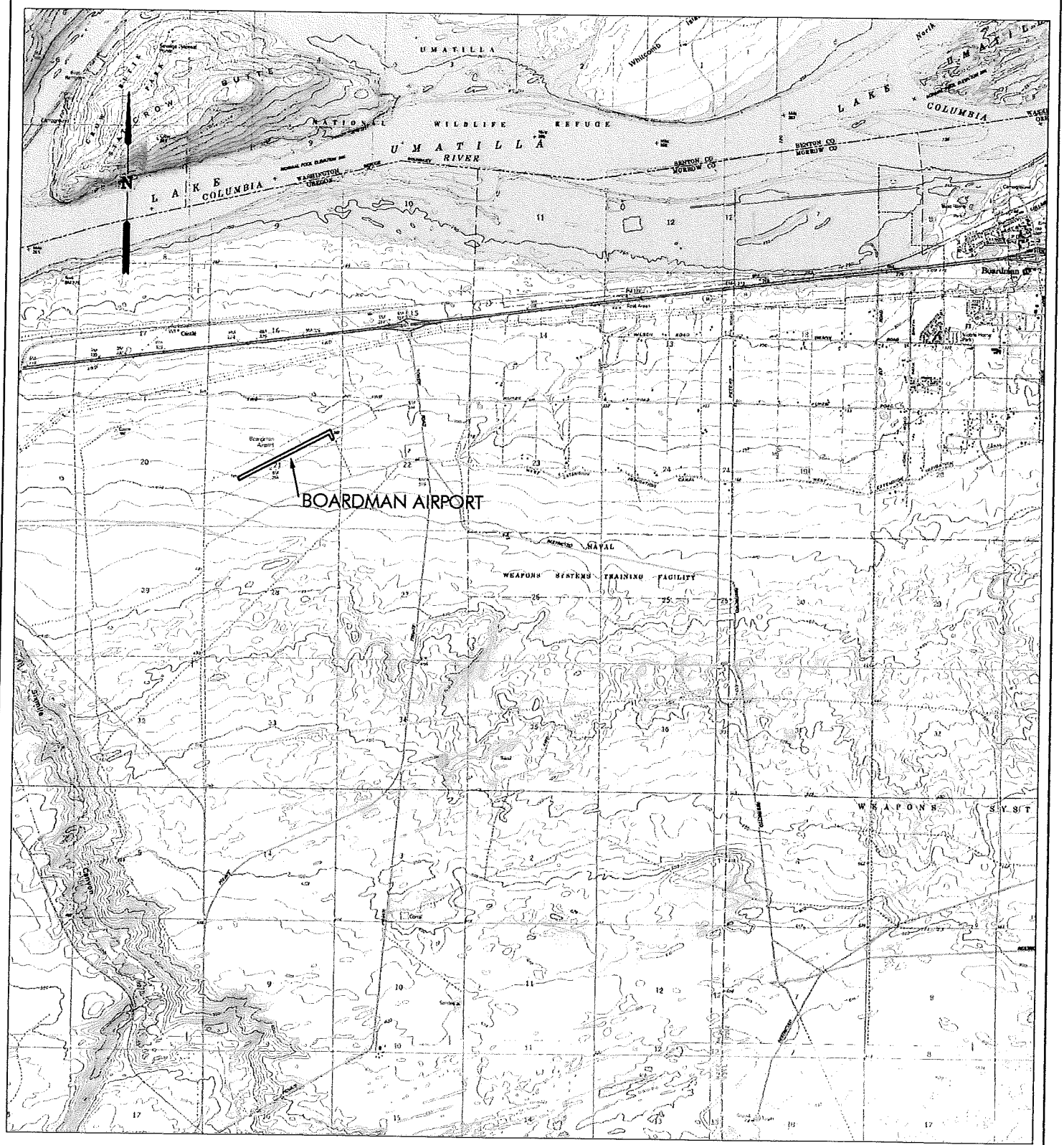
the extended centerline of Runway 22, approximately 9,500 feet from the runway end. Local pilots have requested that orange obstruction marker balls be added to the BPA power lines and the Umatilla electric lines off the Runway 22 approach (east side of Tower Road) to improve visibility for pilots. Several of the BPA transmission towers were identified as obstructions to the runway's horizontal surface on the previous ALP. All man-made obstructions to airspace surfaces should be marked and lighted.

AIRFIELD FACILITIES

Historically, Boardman Airport has served military aviation and a variety of general aviation users, including agricultural aviation. The original airport consisted primarily of the runway and related facilities, constructed in 1943 for military use. The current aircraft tiedown apron was constructed in 1980 as part of the most recent runway overlay project. Two small agricultural aprons were constructed in 1998. The runway edge lighting was upgraded within the last five years. **Table 2-1** summarizes airport data and **Figure 2-2** depicts existing conditions at the airport.

TABLE 2-1
AIRPORT DATA

Airport Name/Designation	Boardman Airport (M50)
Airport Owner	Port of Morrow
Date Established	May 1943
Airport Category	National Plan of Integrated Airport Systems (NPIAS) – General Aviation. FAA Airport Reference Code: B-II
Airport Acreage	2,700 Acres (as noted on 1986 ALP); currently estimated at 2,620 acres.
Airport Coordinates	N 45° 48.89' W 119° 49.23'
Airport Elevation	396 Feet Mean Sea Level (MSL)
Airport Traffic Pattern Configuration/Altitude	Right Traffic – 1,000 feet above ground level



NOT TO SCALE

SOURCE: USGS TOPO MAP

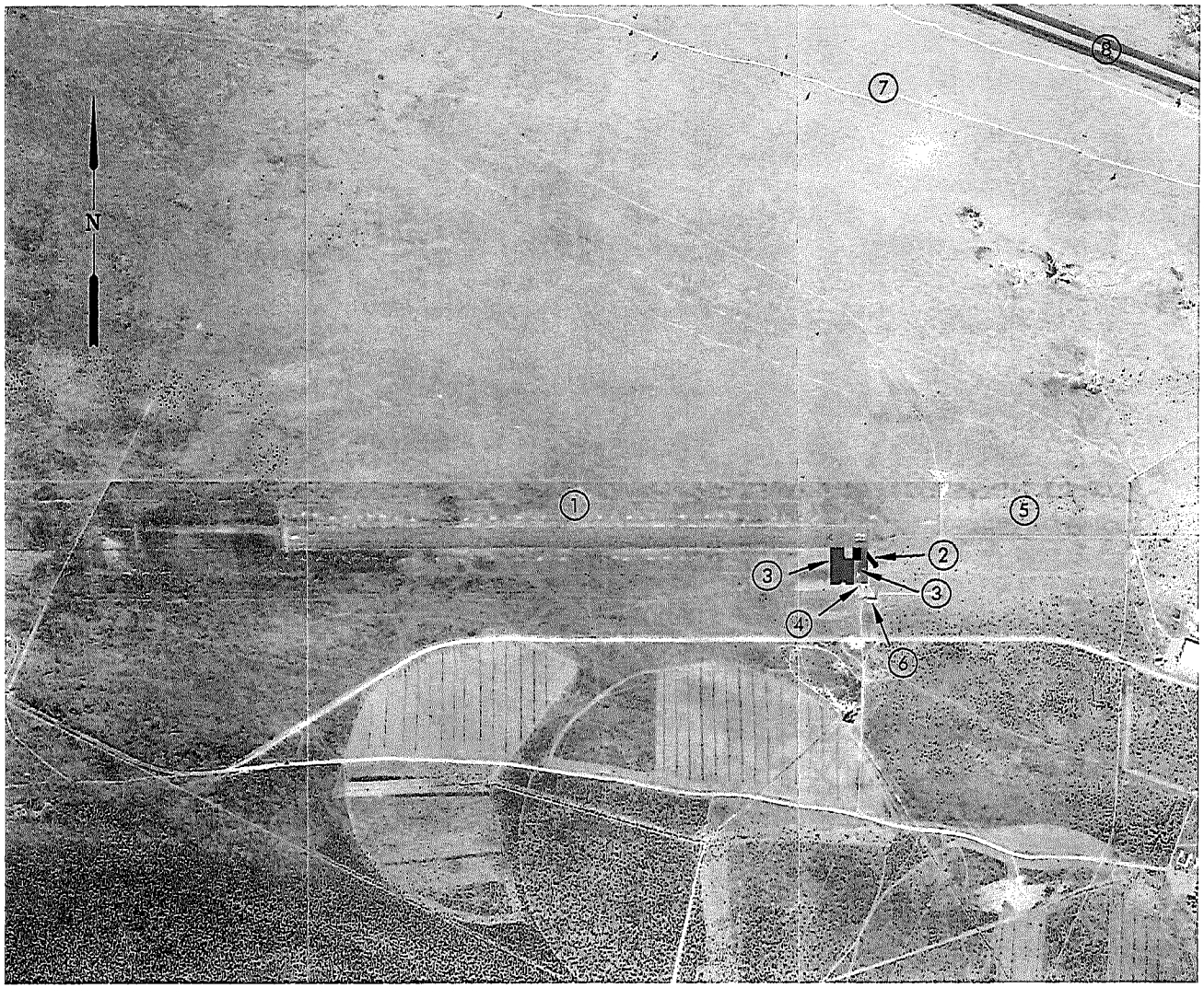
CENTURY WEST ENGINEERING CORPORATION

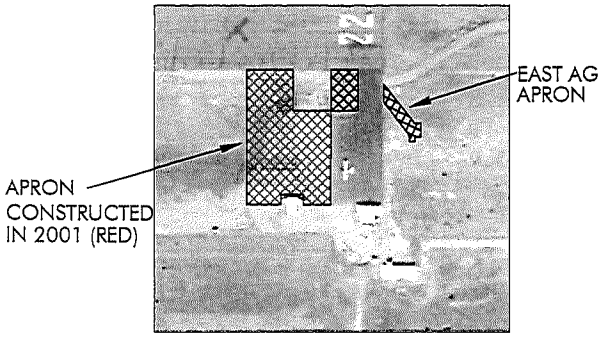
BOARDMAN AIRPORT SITE MAP

FIGURE 2-1

LEGEND

1. RUNWAY 4-22: 4200' X 150'
2. AG LOADING AREAS
3. AIRCRAFT APRON
4. GENERAL AVIATION HANGARS
5. EXISTING AIRPORT ACCESS ROAD
6. CARETAKER/RESTROOM
7. BPA TRANSMISSION LINE
8. U.S. INTERSTATE 84





NOT TO SCALE

SOURCE: BERGMAN PHOTOGRAPHIC SERVICES, INC. (8/98)

CENTURY WEST ENGINEERING CORPORATION

BOARDMAN AIRPORT EXISTING CONDITIONS

FIGURE 2-2

Runway and Taxiways

Boardman Airport has a single paved and lighted runway (4-22), which is oriented on a 040-220 degree magnetic alignment. The runway is not served by a parallel taxiway, connecting taxiways, or designated aircraft holding areas. The airport's aircraft apron facilities are located immediately adjacent to the end of Runway 22, which provides a small holding area for aircraft to remain clear of the runway. A narrow section of the apron functions as a taxilane, providing aircraft access between the runway and the aircraft parking and hangar areas. Runway and taxiway data is listed in **Table 2-2.**

The runway was constructed in 1943 at its current dimensions (4,200 x 150') to accommodate large military aircraft. According to pavement records, the runway was last resurfaced in 1980. A recent visual inspection of the runway indicated that the pavement is in fair-to-poor condition, showing normal signs of aging. Extensive crack filling has been maintained along the entire runway, although the surface has faded considerably and some loose aggregate was observed in sections of the runway. Vegetation control appears to have been conducted on a regular basis, although growth on the runway varied considerably during several seasonal observations made throughout the course of this study.

TABLE 2-2
RUNWAY & TAXIWAY DATA

Dimensions	4,200 x 150 feet
Effective Gradient	0.6%
Pavement Design	Asphaltic Concrete (AC) 1.5" and 2" Sections 2" Crushed Aggregate Base; 8" Aggregate Subbase
Weight Bearing Capacity (WBC)	75,000 Pounds – Single Wheel Landing Gear[1] 100,000 Pounds – Dual Wheel Landing Gear[1] 150,000 Pounds –Dual Tandem Wheel Landing Gear[1]
Marking	Basic – runway numbers only; no centerline stripe, taxiway striping or hold lines observed.
Lighting	Medium Intensity Runway Edge Lighting (MIRL) Threshold Lights (8 fixtures on each runway end)
Wind Coverage	Greater than 95 % (estimated) at 12 and 15 mph (as noted on 1986 ALP)
Taxiway Type/Location	None

1. Pavement Strength as Published in U.S. Airport/Facility Directory

The condition of runway markings varied during a recent inspection. The numbers for Runway 22 were in good condition although the numbers for Runway 4 were worn and needed repainting. No runway centerline stripe or other markings were observed.

Numerous large rocks (8 to 12 inches high) were observed immediately adjacent to the runway edges during one inspection, particularly at the Runway 4 end (in-line with the runway threshold lights). Port staff indicated that this was probably due to local teenagers that occasionally access the airfield. The rocks are periodically removed during routine inspections by Port staff.

Aircraft Apron

Boardman Airport has aircraft apron facilities located immediately adjacent to the end of Runway 22 on the south side of the runway. The apron provides general aviation (GA) parking and two small agricultural (AG) aircraft aprons. During the summer 2001, the Port of Morrow doubled the size of the apron with a western addition and added a second connection to the runway. These improvements provided two access points between the apron and runway and improved the flow of aircraft movement through the area. Existing aircraft apron facilities areas are summarized in **Table 2-3**.

The main section of the apron is approximately 300 by 261 feet, with an unpaved 100 by 100-foot interior section used for AG equipment storage. The apron has eight light aircraft tiedowns. Three tiedown anchors are provided for each parking position. The anchors are set in concrete and have chains or ropes attached. Itinerant business aircraft parking is provided along the eastern row of tiedowns. A recent aerial photograph taken for Boardman Airport shows three Citation jets parked wingtip-to-wingtip in this area, which filled the entire parking row. The original section of apron is in very good condition with only minor cracking visible; the new apron section is in excellent condition.

The west AG area abuts the south edge of the runway near the tiedown apron and is incorporated into the overall apron. The east AG apron is connected to the north end of the main apron. It is approximately 40 feet wide by 150 feet long and provides a small staging area for AG aircraft ground operations. The apron is in excellent condition. The AG areas are used for mixing and loading spray applications into aircraft and the west loading area has curbing along its perimeter to provide limited spill containment.

One asphalt pad is located west of the main apron, approximately 75 feet south of the runway. The 1986 Airport Master Plan identified these as helipads, although they do not appear on the Airport Layout Plan drawing. The pads appear to have been part of the original airport construction and are not currently in use, nor are they included in the airport's pavement management record.

TABLE 2-3
AIRCRAFT APRON DATA

Main Apron	Overall Dimension: 300 x 261' (7,590 square yards useable area) Asphalt Surface - PCI 82 "Very Good" ; New Section PCI estimated: 100 "Excellent" 8 Aircraft tiedowns/parking for three larger itinerant aircraft
Agricultural Apron (west)	100 x 50' (555 square yards) Asphalt Surface – PCI 100 "Excellent" AG Aircraft loading/unloading
Agricultural Apron (east)	150 x 40' (667 square yards) Asphalt Surface – PCI 100 "Excellent" AG Aircraft loading/unloading
Helipads	1 - 50 x 50' Unknown condition; not marked or in current use.

Airfield Pavement Condition

The **Pavement Evaluation/Maintenance Management Program** is managed by the Oregon Department of Aviation to provide a systematic approach in managing airfield pavements at Oregon general aviation airports. The evaluation takes into account historical pavement condition index (PCI) ratings, pavement features, and current conditions. Through the use of MicroPAVER computer software, existing conditions data can be entered, and projections of future pavement condition and specific needs can be estimated.

Table 2-4 summarizes pavement condition at Boardman Airport based on the most recent inventory conducted in August 2000, and the condition noted in the previous inspections (1994 and 1998). The most recent apron expansion project was completed after the last pavement inspection. This pavement has not been rated, although it is in excellent condition (less than one year old).

TABLE 2-4
SUMMARY OF AIRFIELD PAVEMENT CONDITION

Pavement	PCI Rating (2000)[1]	Condition (2000)	PCI Rating 1998/1994	Condition 1998/1994
Runway	36	Poor	43/49	Fair/Fair
Aircraft Tiedown Apron[2]	82	Very Good	92/75	Excellent/Very Good
Ag Apron (east)	100	Excellent	N/A	N/A
Ag Apron (west)	100	Excellent	N/A	N/A

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* (August 2000) for Boardman Airport.
2. West expansion of apron constructed in 2001 and is not included in PCI ratings.

The main apron and the two agricultural apron pavements are all rated "very good" or "excellent." The runway pavement is currently rated "poor," having declined from a "fair" rating during the last inspection in 1998.

LANDSIDE FACILITIES

Airport Buildings

There are currently three aviation-related buildings located on the airport including two small aircraft hangars and a caretaker residence/public restroom located in a mobile home. The buildings are all located south of the existing aircraft apron. The hangar area has been filled and graded and appears to be well drained. **Table 2-5** summarizes existing airport hangars and other airport buildings.

Several former military support buildings are located near the southeast corner of the airport. Several large agricultural storage buildings are located near the eastern end of the airport, along Tower Road. None of the buildings are in aviation use or have access to the airfield facilities.

TABLE 2-5
AIRPORT BUILDINGS

Building	Existing Use
Aircraft Hangar	Aircraft Storage
Aircraft Hangar	Aircraft Storage
Mobile Home	Pilot/Passenger Services (Restroom, Telephone) Caretaker Residence

Airport Support Facilities

Aviation fuel (AVGAS or Jet Fuel) is not currently available at the airport. A pay telephone and indoor restroom are available for airport users in the mobile home located adjacent to the aircraft apron.

Agricultural Aircraft Facilities

Boardman Airport currently accommodates two aerial applicators (AG Northwest and West Flying Service). These operators are based at nearby airports but maintain limited facilities at

Boardman Airport. Two small agricultural aircraft areas have been constructed adjacent to the main apron during the last three years. Both areas have aboveground storage tanks and a variety of equipment located nearby. The operators indicate that the tanks are used for water storage only. Chemical products are delivered to the airport for loading into the aircraft. No aviation fuel is stored at the airport by the aerial applicators. The AG facilities are in good condition.

The west AG loading area was constructed by AG Northwest. The apron has 3-inch raised curb around the perimeter to provide secondary containment for potential spills. According to the operator, the containment area can contain two inches of water—or approximately 8,000 gallons based on its surface dimensions. Some minor cuts in the curbing were observed during a recent airport site visit but may have since been repaired. The apron appears have been sealed to provide a semi-impervious surface on the asphalt. A small aboveground PVC water line feeds into the water storage tank from a well located about 4,000 feet southwest of the hangars.

The east AG loading is a long narrow paved area that is connected to the main apron near the runway edge. As with the west side facility, this area is used for aircraft loading and supports ground operations associated with aerial applicators (equipment storage, application mixing, etc.).

Airport Lighting

The airfield lighting at Boardman Airport accommodates day-night operations in visual conditions. The airport has runway edge lighting, runway threshold lights, and a lighted wind cone with segmented circle, which is located on the north side of the runway, near its mid-point. The runway edge lights are activated by radio contract with the common traffic advisory frequency (CTAF). The wind cone and all lighting components appear to be in good condition. Brush (6-12") was observed along the runway edges, in line with the runway edge lights. Periodic clearing is needed to maintain full visibility of the lights. The airport acquired an airport beacon in late 2001 and plans to install it south of the runway. The runway is not equipped with visual guidance indicators. Existing lighting systems are described in **Table 2-6.**

TABLE 2-6
AIRPORT LIGHTING

Component	Type	Condition
Runway Lighting	Medium Intensity Runway Edge Lighting (MIRL) Threshold Lighting both runway ends	Good
Taxiway Lighting	None	N/A
Airfield Signage	None	N/A
Visual Guidance Indicators	None	N/A
Airport Lighting	Wind Sock Illumination/Segmented Circle	Good

Limited overhead flood lighting is located on the main apron (mounted on hangar). A flush mounted light fixture was observed adjacent the main apron and the east agricultural area. It appeared to be in good condition, although its intended use was not determined.

Airspace and Navigational Aids

Boardman Airport operates under visual flight rules (VFR) conditions. The airport does not have a published instrument approach, although the Port has contacted the FAA about establishing a nonprecision global positioning system (GPS) instrument approach to the airport. There are no electronic navigational aids or automated weather observation system located on the field. The addition of an automated weather observation system (AWOS) at the airport was identified as a potential facility need. **Table 2-7** summarizes existing navigational aids and related items.

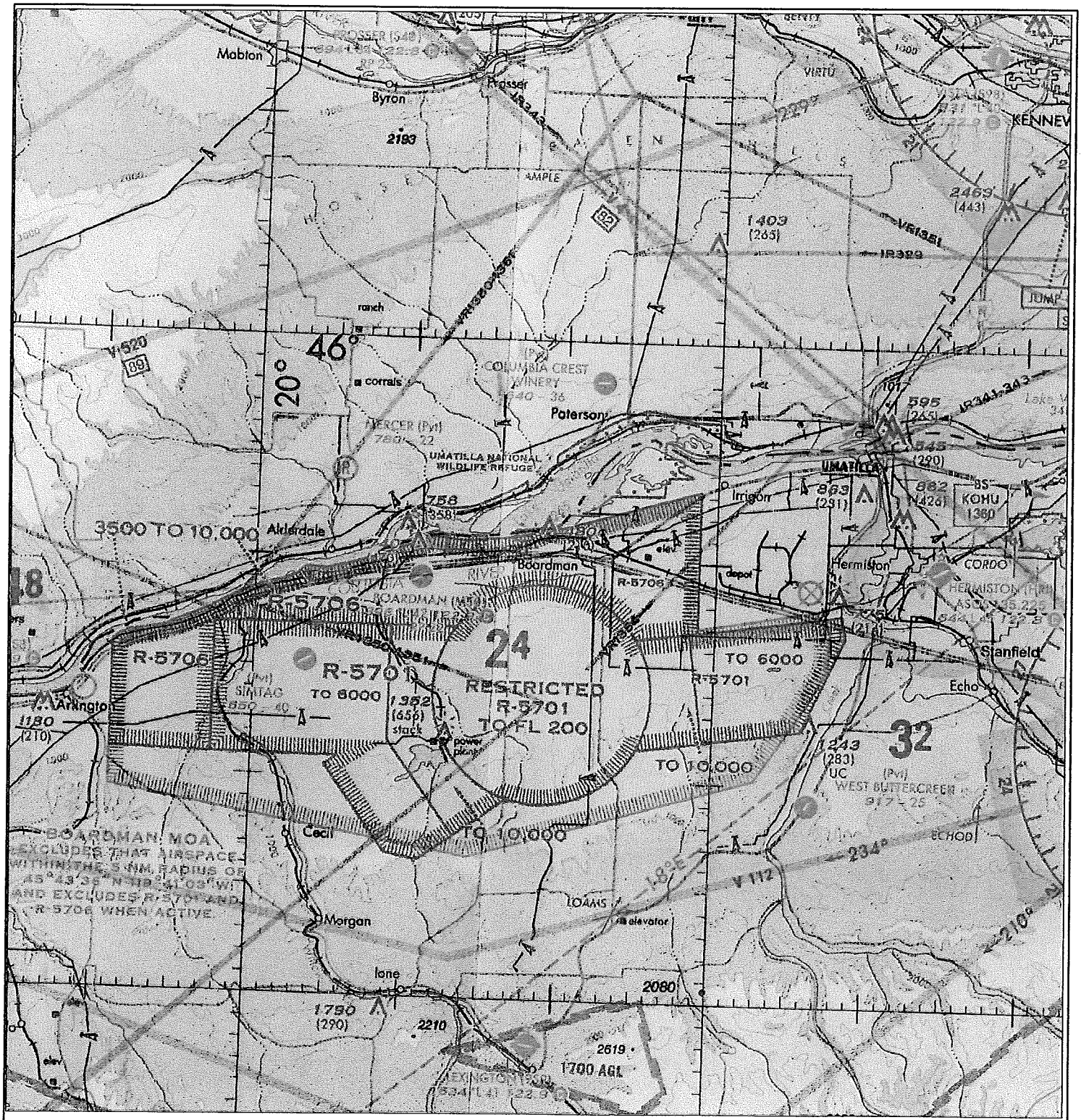
TABLE 2-7
NAVIGATIONAL AIDS AND RELATED ITEMS

Type	Facilities
Electronic Navigational Aids	VORTAC Pendleton (PDT) 114.7 MHz (37.7 NM on 261 degree radial); Nondirectional Beacon (NDB) Foris (PD) 230 LHz (46 NM) VORTAC Klickitat (LTJ) 112.3 MHz (54 NM on 062 degree radial);
Instrument Approaches	None
Weather Observation	None
Communication	Common Traffic Advisory Frequency (CTAF) (122.9 MHz)

The airport is not affected by natural terrain obstructions, although as noted earlier, three major Bonneville Power Authority (BPA) electric transmission lines travels the along the length of the airport on its north side. Several of the BPA towers were identified as obstructions to the runway's horizontal surface on the 1986 Airspace Plan.

Areas of special use airspace located in the vicinity of Boardman Airport, as identified on the Seattle Sectional Aeronautical Chart include the two "Restricted" areas and the Boardman Military Operations Area (MOA). Boardman Airport is located under a portion of the Restricted Area (R-5706), with altitude restrictions from 3,500 to 10,000 feet. R-5706 runs approximately 27 miles along the south side of the Columbia River. R-5701 is the Restricted Area located immediately south of the airport. R-5701 has several sections with different upper altitude restrictions. All portions of R-5701 begin at the surface and extend upward. The floor of the Boardman MOA is listed as 4,000 feet MSL and extends upward to 18,000 feet MSL. Both Restricted Areas and the MOA have published times of use listed as 7:30 AM to 11:59 PM, Monday through Friday, with notice provided 6 hours in advance by notice to airmen (NOTAM) at the FAA Flight Service Station (FSS). Aircraft operating in the vicinity of Boardman Airport (i.e. traffic pattern) beneath the bottom levels of restricted airspace are not affected. The airspace surrounding Boardman Airport is depicted in **Figure 2-3**.

No conflicts are known to exist with other nearby airports. The local airport traffic pattern altitude is 1,000 feet (AGL) with right traffic to Runway 22. The north-side location of the traffic pattern allows aircraft to avoid the area of restricted airspace that is controlled down to the ground surface. Some concerns about the MOA were expressed at the joint planning conference as related to the long-term use of the airport. Port staff expressed interest in meeting with military authorities at some time in the future to discuss the long-term options for the areas. The FAA has also indicated that military airspace issues will need to be resolved in order to develop and instrument approach for Boardman Airport. **Tables 2-8 and 2-9** summarize notable obstructions, special airspace designations and IFR routes in the vicinity of Boardman Airport.



NOT TO SCALE

SOURCE: SEATTLE SECTIONAL AERONAUTICAL CHART

CENTURY WEST
ENGINEERING CORPORATION

BOARDMAN AIRPORT AREA AIRSPACE

FIGURE
2-3

TABLE 2-8
LOCAL AIRSPACE OBSTRUCTIONS/FEATURES
(10 NAUTICAL MILE RADIUS)

Type of Obstruction	Description	Distance From Airport
Overhead Power Lines	Major Transmission Lines	¾ miles north
Tower	358-foot AGL Tower	3 miles north
Tower	470-foot AGL Tower	2 miles north
Military Training Routes	VR 1350-1351	3.5 mile southwest; 6 miles west-northwest
Restricted Airspace	R-5706 Boardman 3,500 to 10,000 feet MSL	Over Airport
Restricted Airspace	R-5701 Boardman Surface to 6,000 or 10,000 feet MSL; other restricted sections extend upward to FL200	2 miles south at nearest point; overall area extends approximately 27 miles in an east-west direction, south of the airport
Military Operations Area (MOA)	Boardman MOA 4,000 feet to FL180	Over Airport

Source: Seattle Sectional Aeronautical Chart; U.S. Terminal Procedures – Northwest Volume; National Oceanic and Atmospheric Administration, National Ocean Service

TABLE 2-9
AIRSPACE/INSTRUMENT ROUTES

Airspace Item	Description	Location
Low Altitude Enroute Airway	Victor 520 – 6,000 feet mean sea level minimum enroute altitude (MEA)	14 nautical miles northwest– connects to Pasco VOR-DME 229 degree radial
Low Altitude Enroute Airway	Victor 112 – 5,300 feet mean sea level minimum enroute altitude (MEA)	16 nautical miles south – connects to Pendleton VORTAC 234 degree radial
Low Altitude Enroute Airway	Victor 182 – 5,300 feet mean sea level minimum enroute altitude (MEA)	24 nautical miles south – connects to Klickitat VORTAC 089 degree radial
Low Altitude Enroute Airway	Victor 4 – 4,000 feet mean sea level minimum enroute altitude (MEA)	18 nautical miles northeast– connects to Pendleton VORTAC 290 degree radial

AIRPORT SUPPORT FACILITIES/SERVICES

Surface Access and Vehicle Parking

A paved airport access road enters the airport at its east end, from Tower Road. The access road travels west approximately 3/4 mile to the end of Runway 22 and the aircraft apron area. A portion of the access road is located within the extended runway safety area, object free area and obstacle free zone beyond the end of Runway 22. Vehicles traveling on the roadway also create an obstruction to the Runway 22 approach surface. The airport road is closely aligned with, although not connected to, a section of Ed Kunze Road located about one-half mile east of Tower Road.

Vehicle parking on the airport is accommodated in the gravel-surfaced areas located next to the aircraft hangars and apron.

Fencing

The airport has wire fencing along the property line and in various areas within the overall property. 4-strand wire fencing is located behind airport buildings near the main apron; wire fence is also located on the north side of the runway and in various other areas around the runway.

Utilities

Electrical service to the airport is provided by Umatilla Electric. Three-phase overhead lines extend from Tower Road along the east end of the airport, toward the main apron. Existing power service is provided to airport buildings and the runway lighting systems. Telephone service also extends to the terminal area. The airport caretaker building has a restroom, which uses a septic system.

Water service to the terminal area of the airport is provided through an on-site well. An above ground PVC pipe feeds an 8,000-gallon water storage tank located near the apron. The Port applied for water rights in 1996 for 2,225 gallons per minute of "municipal use," which is a "broad water use right" that could serve business and airport users. The majority of current water demand at the airport is related to supporting agricultural aviation users.

Land Use Planning and Zoning

Boardman Airport is located outside the City of Boardman Urban Growth Boundary (UGB) and city limits within Morrow County's jurisdiction. The airport is zoned Air/Industrial by Morrow County, which permits airport and related uses, and industrial parks for businesses that are airport related or airport dependent. Zoning of lands surrounding the airport included Exclusive Farm Use (EFU), Farm Residential (FR), and Industrial.

Current land uses on the airport are aviation related, with some agricultural leases located south of the runway. A more detailed discussion of on-site and nearby land uses, and their potential compatibility issues, will be provided in the Compatible Land Use Chapter and Environmental Checklist.

The 1986 Airport Layout Plan (Devco Aviation Consultants) identifies the majority of the northern section of the airport as "Industrial/Commercial Development," including a new access road and rail spur being developed to service the development area. A large portion of the southeast corner of the airport is identified for "Commercial/Industrial Development."

Airport Service Area

The airport service area refers to the area surrounding an airport that is directly affected by the activities at that airport. It is not uncommon to have other airports located within a service area, although the services or facilities available often define the size of the service area. Normally a 30 or 60-minute surface travel time is used to approximate the boundaries of a service area. **Table 2-10** lists the other public airports in the vicinity of Boardman.

Historically, it appears that aircraft use of Boardman Airport is primarily related to activities occurring within close proximity to the airport. Business, military, agricultural, or general aviation users with interests centered in the Boardman area or northern Morrow County appear to be the prime source of aircraft activity.

The absence of aviation services (fuel, aircraft maintenance, etc.) or specific facilities (instrument approach, weather data, etc.) available at Boardman Airport may have historically affected activity levels, but the availability of services at nearby airports, such as Lexington and Hermiston, within the immediate service area may have a greater impact.

TABLE 2-10
PUBLIC AIRPORTS IN VICINITY
(Within 45 nautical miles)

Airport	Location	Runway Dimension (feet)	Surface	Fuel
East. Oregon Regional at Pendleton	42 NM east-southeast	6,300 x 150 (primary rwy)	Asphalt	Yes
Lexington	22 NM south-southeast	3,650 x 75	Asphalt	Yes
Hermiston Municipal	23 NM east	4,500 x 75	Asphalt	Yes
Condon State	37 NM south-southwest	3,500 x 60	Concrete	No
Arlington	16 NM west-southwest	5,000 x 50	Gravel	No
Prosser Airport	24 NM north	3,440 x 60	Asphalt	Yes

AVIATION ACTIVITY AND FORECASTS

Historical Aviation Activity

The availability of historical activity data for Boardman Airport is very limited. The 1986 Airport Master Plan does not provide any historical data for the airport, citing its limited use as a public-use airport in the years prior to involvement by the Port of Morrow, which began in 1984.

The RENS Aircraft Activity Counter program, administered by Oregon Department of Aviation, estimated 861 aircraft operations (takeoffs and landings) at Boardman Airport in 1986. No activity counting has been conducted since that time. The 1997 Oregon Continuous Aviation System Plan (OCASP) estimated 350 aircraft operations for the airport and three based aircraft in 1994. Data contained in the OCASP indicates that based aircraft at the airport have ranged from one to three since 1988.

With the current mix of activity, the relationship between the number of based aircraft and operations levels does not appear to be highly significant, and may not be a significant indicator in predicting future activity at the airport. In 2000, activity at Boardman Airport was estimated at 5,000 operations.

Agricultural aircraft activity (estimated at 4,500 operations in 2000) accounts for the largest portion of current operations. One aerial applicator that operates at the airport estimated about 3,000 operations during the 2000 season (mid-March through September). A second aerial applicator also operates at the airport on a regular basis. These operations are conducted with primarily with turbine powered spray planes. The aerial applicators maintain ground support facilities at Boardman but base their aircraft at other nearby airports.

A number of business users of the airport (Bethlehem Steel, Potlatch, Oregon Potato, R.D. Offet and a California dairy) were identified during the joint planning conference for this project. The U.S. Navy also uses the airport on a regular basis. When combined, it appears that this segment of activity accounts for approximately 500 annual operations with a variety of single and twin-engine aircraft, including turboprops and business jets.

Boardman currently has two permanently based single engine aircraft stored in hangars. It appears that improvements made to the aircraft apron and AG aircraft facilities have helped to stimulate activity at the airport in recent years. Current activity represents nearly a six-fold increase since the last activity count was conducted in 1986.

Aviation Activity Forecast

The forecasts of aviation activity for Boardman Airport contained in the 1997 **Oregon Continuous Aviation System Plan** do not reflect the increase in airport activity that has occurred over the last few years. Consequently, the forecasts do not provide a reasonable activity projection for use in defining current or long-term facility requirements.

Updated aviation activity forecasts were prepared for the **Boardman Airport 50-year Aviation Demand Evaluation.**[1] This document was developed to define the most demanding level of aviation activity that could reasonably be expected at Boardman Airport over the next fifty years. The primary purpose of the 50-year document was to document and preserve the land area needed to accommodate the airport's long-term aviation needs. The Port of Morrow presented this study to the FAA for review as part of their ongoing efforts related to the development of motor speedway on airport property. To provide an optimistic activity profile, the 2050 forecasts for Boardman Airport combined three activity components/scenarios:

- Baseline Activity (Existing General Aviation)
- Speedway Related Activity
- Air Cargo

Baseline activity consists of existing use (agricultural, general aviation, business and military activity). Speedway activity is associated with the potential development of a major auto race facility on the northern side of Boardman Airport. The air cargo projections were based on the potential development of an air cargo facility, which has discussed in the previous airport master plan.

The level of uncertainty associated with the speedway and cargo-related activity makes it difficult to use those projections as the basis for the conventional FAA 20-year airport planning

[1] Century West Engineering, October, 2001.

process. For the purposes of this 20-year Airport Layout Plan report, the baseline forecasts represent a reasonable projection of activity to determine basic airport facility requirements. Development reserves will be established on the airport that are capable of accommodating the level of activity associated with speedway and cargo activity.

Historically, Boardman Airport activity has been heavily weighted toward itinerant rather than locally generated activity. The small population and the availability of other airports within the airport's service area (30 to 60 minute driving time) appear to contribute to the low number of based aircraft at Boardman.

The Port's commitment to the continued improvement of the airport is expected to stimulate activity. Development of aircraft hangar areas is expected to increase the number of locally based aircraft for the airport during the planning period. Existing and historical ratios, such as the number of based aircraft to local population or the number of aircraft operations per based aircraft, which have been historically low, are expected to respond positively as facility improvements are made to attract more aircraft activity. The addition of aviation fuel at the airport is also expected to stimulate activity for business and general aviation users. AG aircraft activity can vary considerably from year to year depending on a variety of local factors. For forecasting purposes, it is assumed that Boardman Airport will continue to accommodate aerial applicators by providing efficient operating conditions and facilities. Modest growth in AG aircraft activity at Boardman Airport will be assumed as the region's agricultural industry expands.

Updated Forecasts

Based Aircraft

There are two single-engine aircraft currently based at Boardman Airport and the number of based aircraft has fluctuated between zero and three since the 1986 Airport Master Plan was prepared. The ratio of based aircraft to local population is low compared to other similar general aviation airports and smaller communities. **Table 2-11** lists the based aircraft to population ratios for Boardman and Hermiston airports.

TABLE 2-11
LOCAL COMMUNITY POPULATION/BASED AIRCRAFT DATA

Airport	Local Population	Based Aircraft	Population Per Based Aircraft	Based Aircraft: Per 1,000 Pop.
Boardman	2,795[1]	2	1,398	0.7
Hermiston	11,050[1]	35	315	3.2

1. Population within incorporated areas.

As noted earlier, the addition of aircraft fuel, hangar space, and improvements in airfield facilities is expected to stimulate activity during the planning period. For forecasting purposes, the current ratio (0.72 based aircraft per 1,000 population) will be doubled initially (1.44 per 1,000 in 2005) to reflect the positive impact of anticipated near-term facility improvements. The ratio will be increased upward to through the planning period to a level that is roughly comparable to Hermiston's current ratio, which is typical of many smaller general aviation airports. The distribution of based aircraft is expected to continue to be predominantly single-engine aircraft, with the addition of multi-engine piston and turbine aircraft during the planning period.

Morrow County's population is expected to grow at an annual average of about 1.0 percent through 2040. Boardman's incorporated area currently accounts for approximately 25 percent of Morrow County's population. For forecasting purposes, the existing distribution is maintained through the planning period.

Aircraft Operations

Non-AG baseline operations averaged approximately 250 operations per based aircraft in 2000. Baseline aircraft operations are also expected to increase both as the result of an increase in the number of based aircraft and an increase in itinerant activity. For forecasting purposes, an increase to 350 operations per based aircraft is used to project future non-AG baseline operations.

The majority of current AG aircraft operations (estimated at 4,500) are generated by two aerial applicators. During the busy spraying periods, up to three AG aircraft may operate at the airport simultaneously. This activity does not appear to be constrained by existing airport facilities and seems to reflect market opportunities and the operational needs of the aerial applicators. AG activity can vary widely and is highly dependent on factors unrelated to the airport. Modest growth in AG operations is assumed as the agricultural economy of northern Morrow County expands. For forecasting purposes, AG aircraft activity will be projected to grow at an annual average rate of 1.5 percent, which is considerable higher than anticipated population growth.

Projections of peak activity periods for the baseline activity are also provided. Peak month operations are estimated to be 15 percent of annual activity. Design day operations represent the average number of operations during peak month. Busy day operations represent the peak day (20%) activity during an average week in the peak month. Peak hour operations are estimated to be 20% of busy day operations. The relatively high peaking levels projected for Boardman largely reflect the seasonal nature of aerial applicators. **Table 2-12** summarizes the forecast of activity for Boardman Airport.

TABLE 2-12
BASELINE ACTIVITY FORECASTS
BOARDMAN AIRPORT

	2000	2005	2010	2020
Boardman Population[1]	2,795	2,896	3,050	3,382
Existing/Forecast Population Ratio[2]	*0.72*	*1.44*	*2.0*	*2.5*
Based Aircraft				
Single Engine	2	4	5	7
Multi Engine	0	0	1	1
Turboprop/Jet	0	0	0	1
Total	**2**	**4**	**6**	**9**
Aircraft Operations				
GA Local	50	140	240	320
GA Itinerant	450	1,260	2,160	2,880
AG Operations	4,500	4,800	5,200	6,100
Total Operations	5,000	6,200	7,600	9,300
Peaking Factors				
Peak Month Ops. (15%)	750	930	1,140	1,395
Design Day Operations	24	30	37	45
Busy Day Operations	34	42	52	63
Peak Hour Operations	7	8	10	13

1. State of Oregon Office of Economic Analysis forecasts to 2040; interpolated by Century West for other forecast years. Boardman population is based on 25% of projected Morrow County population.
2. Number of based aircraft per 1,000 population (Boardman incorporated area)

CHAPTER THREE
AIRPORT FACILITY REQUIREMENTS

INTRODUCTION

To plan for the future needs of Boardman Airport, it is necessary to translate forecast aviation demand--including type and volume--into specified types and quantities of facilities that can adequately serve this identified demand. This chapter uses the results of the inventory, forecast, and demand-capacity analyses conducted in **Chapter Two**, as well as established planning criteria, to determine the airside and landside facility requirements. 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 objective of this effort is to identify the adequacy or inadequacy of the existing airport facilities and outline what new facilities may be needed to accommodate forecast demands. Having established facility requirements, alternatives for providing these facilities will be evaluated in **Chapter Four** to determine the most cost effective and efficient means for implementation.

LONG-TERM DEVELOPMENT OPTIONS

The 1986 Airport Master Plan (Devco) recommended ultimate dimensional standards based on transport category aircraft for the runway and taxiway facilities. This recommendation was based on the desire to preserve the potential to accommodate large aircraft at the airport at some future point. Runway 4/22 was originally designed to accommodate large aircraft. The 1986 Approach and Clear Zone Plan depicts airspace imaginary surfaces consistent with "runways larger than utility" with precision instrument approach capabilities.

Based on the large land area available at Boardman Airport combined with the minimal level of existing development beyond the runway, it appears to be reasonable to continue preserving the long-term potential of the airport through use of large transport category development reserves. However, for the purposes of planning new facilities during the current 20-year planning period,

design standards should be based on existing and forecast activity. As noted in the inventory and forecast chapter, the airport currently accommodates a variety of general aviation, business and agricultural aircraft, many of which are included in airplane design group II (ADG II). This activity is expected to increase during the planning period and should be the basis for planning facility improvements.

Based on the potential transport activity associated with air cargo operations, ADG III or IV setbacks (runway safety area, object free area, etc.) should be held as "no development zones" in reserve to protect the potential for accommodating large aircraft activity. Preserving the larger setbacks will provide the flexibility to accommodate potential changes in aircraft fleet. A summary of typical aircraft and their design categories is presented in **Table 3-1. Table 3-2** summarizes the dimensional standards associated with these aircraft.

TABLE 3-1
TYPICAL LARGE AIRCRAFT DESIGN CATEGORIES

Aircraft	Airplane Design Group	Aircraft Approach Category	Maximum Gross Takeoff Weight (Lbs)
Boeing 737-300	C	III	135,000
Boeing 727-200	C	III	209,500
Boeing 757	C	IV	255,000
Boeing 767-300	C	IV	350,000
McDonnell Douglas DC9-80	C	III	140,000
Fokker F27	B	III	45,000
Airbus A320	B	III	145,505
Airbus A300-600	C	IV	363,763
Douglas DC8-50	C	IV	315,000
Lockheed C130 Hercules	C	IV	155,000
Douglas DC7	B	IV	143,000

Source: AC 150/5300-13

TABLE 3-2
LARGE AIRCRAFT DESIGN STANDARDS SUMMARY
(DIMENSIONS IN FEET)

Standard	ADG III[1] C&D Aircraft	ADG IV[1] C&D Aircraft
Runway Length	7,000/5,150[2]	7,000/5,150[2]
Runway Width	100/150[3]	150
Runway Shoulder Width	20	35
Runway Safety Area Width	500	500
Runway Safety Area Length (Beyond Runway End)	1,000	1,000
Obstacle-Free Zone	400	400
Object Free Area Width	800	800
Object Free Area Length (Beyond Runway End)	1,000	1,000
Primary Surface Width	1,000[4]	1,000[4]
Primary Surface Length (Beyond Runway End)	200[4]	200[4]
Runway Protection Zone Length	1,000/1,700[1]	1,000/1,700[1]
Runway Protection Zone Inner Width	1,000[1]	1,000[1]
Runway Protection Zone Outer Width	700/1,010[1]	700/1,010[1]
Runway Centerline to:		
Parallel Taxiway Centerline	400	400
Aircraft Parking Area	500	500
Building Restriction Line	745[5]	745[5]
Taxiway Width	50/60	75
Taxiway Shoulder Width	20	25
Taxiway Safety Area Width	118	171
Taxiway Object Free Area Width	186	259
Taxiway Centerline to Fixed/Movable Object	93	129.5

Notes:

1. Larger than utility runways (Per FAR Part 77); all other dimensions reflect runway design standards for aircraft approach categories C & D. RPZ dimensions for lower than 3/4-statute mile (main approach runway) and not lower than ¾-mile (secondary approach end) approach visibility minimums (per AC 150/5300-13, Change 6).
2. Runway length required to accommodate 75 percent of large airplanes of 60,000 pounds or less at 90% useful load/Airplanes of more than 60,000 pounds. 91 degrees F, 9-foot change in runway centerline elevation.
3. 150 feet for aircraft with greater than 150,000 pound takeoff weight.
4. Precision instrument approach.
5. Distance to protect ADG IV parallel taxiway object free area and accommodate a 40-foot structure at the BRL below the transitional surface for precision instrument approach.

Airspace

As noted in the inventory chapter, Boardman Airport is located in an area of relatively complex airspace that includes two restricted areas and a military operations area (MOA). The U.S. Navy, which has operational authority over the Boardman MOA, has expressed a willingness to consider civilian instrument approach proposals using the airspace. However, the Navy indicates that the Boardman Bombing Range will continue to operate for the foreseeable future and that they need to retain control over the public's use of the airspace and any instrument approach.

Instrument Approach Capabilities

Boardman Airport currently has no published instrument approach procedures. The Port of Morrow has requested that the FAA develop a nonprecision global positioning system (GPS) approach for the airport. The FAA has recently indicated that no development of an instrument approach will be considered until the military airspace clearance issues are addressed.

The 1986 Airport Layout Plan identified an ultimate precision instrument approach for Runway 22 (localizer and glide slope) with a medium intensity approach light system (MALSR) for the 8,000-foot runway. It appears that a portion of the airspace surfaces depicted for this runway configuration would extend over the Boardman MOA.

For the 20-year ALP, it is appropriate to define the airspace surfaces consistent with straight-in nonprecision GPS approach capabilities for larger than utility runways. The long-term development reserves for airspace planning would be based on the ultimate runway with precision instrument approach capabilities.

AIRPORT DESIGN STANDARDS AND FAR PART 77 SURFACES

The selection of the appropriate design standards for the development of 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 critical design aircraft anticipated for the airport. 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

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, and some smaller business jet aircraft, which have 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. Historically, most aircraft operating at Boardman Airport have been included in Categories A and B, although the airport has also served Category C or D aircraft on a limited basis.

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. Historically, most aircraft utilizing Boardman Airport have been included in ADG I and II, although the airport has served ADG III and IV aircraft on a limited basis. A summary of typical aircraft and their respective design categories is presented in **Table 3-3.**

As noted in the inventory/forecasts chapter, Boardman currently accommodates more than 4,000 ADG II operations including agricultural and business aircraft. Based on existing conditions, and projected activity, the use of **Aircraft Approach Category B and Airplane Design Group (ADG) II standards is considered appropriate for use on Runway 4/22 at Boardman Airport** (*Airport Reference Code - ARC B-II*). **Table 3-4** summarizes the dimensional standards associated with these aircraft.

A typical twin-engine turboprop or business jet, commonly used in business aviation is appropriate for use in planning facilities at Boardman Airport. Several large turbine-powered agricultural aircraft operated at the airport account for the majority of airport operations, although since they are designed to operate on short unimproved airstrips, their runway length requirements are modest.

TABLE 3-3
TYPICAL BUSINESS & GA AIRCRAFT DESIGN CATEGORIES

Aircraft	Airplane Design Group	Aircraft Approach Category	Maximum Gross Takeoff Weight (Lbs)
Cessna 206	A	I	3,600
Beechcraft Bonanza A36	A	I	3,650
Beechcraft Baron 55	A	I	5,300
Aerospatial TBM 700	A	I	6,579
Piper Malibu	A	II	4,300
Cessna Caravan 1	A	II	8,000
Air Tractor 502B	A	II	9,700
Ayres 660 Turbo Thrush	A	II	12,500
Cessna 340	B	I	5,990
Piper Aerostar 602P	B	I	6,000
Cessna 402	B	I	6,300
Cessna 421	B	I	7,450
Pilatus PC-12	B	I	8,818
Cessna Citation CJI	B	II	12,300
Beech King Air B200	B	II	12,500
Cessna Citation S/II	B	II	15,100
Cessna Citation Excel	B	II	20,000
Cessna Citation III	B	II	22,000
Shorts 330	B	II	22,900
Dassault Falcon 20O	B	II	30,650
Learjet 60	C	I	23,100
Cessna Citation X	C	II	36,100
Canadair Challenger CL600	C	II	41,250
Gulfstream III	C	II	68,700
Gulfstream IV	D	II	71,780

Source: AC 150/5300-13

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

Standard	ADG II[1] A&B Aircraft
Runway Length	3,810[2]/7,000[3]
Runway Width	75
Runway Shoulder Width	10
Runway Safety Area Width	150
Runway Safety Area Length (Beyond Runway End)	300
Obstacle-Free Zone	400
Object Free Area Width	500
Object Free Area Length (Beyond Runway End)	300
Primary Surface Width	500[1]
Primary Surface Length (Beyond Runway End)	200[1]
Runway Protection Zone Length	1,000[1]
Runway Protection Zone Inner Width	500[1]
Runway Protection Zone Outer Width	700[1]
Runway Centerline to:	
Parallel Taxiway Centerline	240/300
Aircraft Parking Area	250
Building Restriction Line	404[4]
Taxiway Width	35
Taxiway Shoulder Width	10
Taxiway Safety Area Width	79
Taxiway Object Free Area Width	131
Taxiway Centerline to Fixed/Movable Object	65.5

Notes:

1. Larger than Utility runways (Per FAR Part 77); all other dimensions reflect visual or nonprecision runways with not lower than 3/4-statute mile approach visibility minimums (per AC 150/5300-13, Change 6). RPZ dimensions bases on visual and not lower than 1-mile approach visibility minimums.
2. Runway length required to accommodate 100 percent of General Aviation Fleet 12,500 pounds or less. 91 degrees F, 9-foot change in runway centerline elevation.
3. Runway length required for large aircraft 60,000 pounds or less (75 percent of these large aircraft at 90 percent useful load).
4. Distance to protect ADG II parallel taxiway object free area and accommodate a 22-foot structure at the BRL beneath the transitional surface.

A summary of Boardman Airport's current compliance with the ADG II design standards is presented in **Table 3-5**. As indicated in the table, the airport currently does not meet several of the standards associated with the recommended B-II design aircraft. However, the airport has the land available to correct all identified dimensional deficiencies.

According to the FAA computer model,[2] the existing runway can accommodate 100 percent of the small airplane general aviation fleet in most conditions. The runway length needed to accommodate large business aircraft weighing 60,000 pounds or less ranges from 5,400 to nearly 8,700 feet.

TABLE 3-5
RUNWAY 4/22 COMPLIANCE
WITH FAA ADG II DESIGN STANDARDS

Item	Airplane Design Group II[1] (A & B Aircraft)
Runway Safety Area	No[2]
Runway Object Free Area	No[2,3]
Runway Obstacle Free Zone	No[2,3]
Taxiway Safety Area	N/A
Taxiway Object Free Area	N/A
Building Restriction Line	No[4]
Aircraft Parking Line	No
Runway Protection Zones	No[2]
Runway-Parallel Taxiway Separation	N/A
Runway Width	Yes
Runway Length	Yes
Taxiway Width	N/A

Notes:
1. Runway design standards for approach category A&B visual runways and runways with not lower than ¾ statute mile approach visibility minimums.
1. Existing airport access road at east end of the runway.
2. North section of aircraft apron located in OFA/OFZ.
3. Existing hangars will penetrate a nonprecision instrument approach transitional surface (also penetrates visual surfaces)

[2] Runway length requirements from FAA Airport Design computer program.

Airport Design Standards Note:

The following airport design standards are based on visual runways and runways with not lower than ¾ statute mile visibility minimums. For defining runway protection zones (RPZ), the visibility standard is "visual and not lower than 1-mile." All references to the "standards" are based on these approach visibility assumptions, unless otherwise noted. (Per FAA Advisory Circular 150/5300-13, change 6)

As noted earlier, B-II standards are associated with the recommended design aircraft type (twin-engine turboprop/turbine AG aircraft). The C-IV dimensional standards presented earlier will be identified as reserves on the ALP to protect potential large aircraft capabilities.

Runway Safety Area (RSA)

The standard RSA for B-II runways is 150 feet for width and 300 feet for length beyond the runway end. The B-II RSA (4,800 x 150) is penetrated on the east end by the airport access road that travels along the extended centerline of the runway. The road turns outside the RSA approximately 50 feet from the runway end. The 150-foot width of the runway coincides with the ADG II width standard; therefore all portions of the lateral RSA are free of obstructions.

The access road should be relocated away from the runway end as soon as possible to eliminate the deficiency. If the relocation cannot be accomplished immediately, the end of Runway 22 should be temporarily re-marked/reconfigured to provide a standard 300-foot extended RSA clearance (to the nearest point on the road). With this approach, the portion of the existing runway pavement located within 300 feet of the road would be converted to taxiway and the published length of the runway would be reduced until the standard RSA could be provided.

Runway Object Free Area (OFA)

The standard OFA for B-II runways is 500 feet for width and 300 feet for length beyond the runway end. The B-II runway OFA (4,800 x 500) is penetrated on the east end by the airport access road and on the south side of the runway by the northern half of the aircraft parking apron and both AG aircraft loading areas. Various sections of wire fencing also appear to be located within OFA. Aside from these close-in obstructions, the area is free of fixed obstructions or other dimensional constraints. Items penetrating the OFA should be relocated to eliminate the obstruction.

Obstacle Free Zone (OFZ)

The obstacle free zone (OFZ) for Runway 4/22 is 400 feet wide and extends 200 feet beyond each runway end. This dimension corresponds with runways used by large airplanes (above 12,500 pounds). The OFZ is a plane of clear airspace extending vertically to a height of 150 feet, which coincides with the FAR Part 77 horizontal surface elevation. The access road and a portion of the aircraft aprons are located within the 4,600 x 400 OFZ. Items penetrating the OFZ should be relocated to eliminate the obstruction.

Taxiway Safety Area

The standard taxiway safety area width for all airplane design group II (ADG II) aircraft is 79 feet, centered on the taxiway. Boardman Airport currently has no taxiways. Future taxiways should be designed with standard safety area clearances.

Taxiway Object Free Area

The standard taxiway object free area (OFA) for ADG-II is 131 feet wide, centered on the taxiway. As noted above, Boardman Airport currently has no taxiways. Future taxiways should be designed with standard object free area clearances.

Building Restriction Line (BRL)

The minimum building restriction line (BRL) setback based on an ADG II parallel taxiway separation combined with a nonprecision instrument approach primary surface/transitional surface would be 404 feet for a 22-foot high building. This distance would be increased to 654 feet to protect future precision instrument approach capabilities. Larger hangars and buildings with higher roof elevations would need to be located farther from the runway to avoid penetrating the 7:1 transitional surface slope.

The hangars located on the south side of the apron are located approximately 280 to 300 feet from the runway centerline, which penetrates the runway nonprecision instrument transitional surface. These buildings should be relocated as part of the overall apron relocation/redevelopment. If building relocation is not anticipated in the short term, the buildings should be marked with obstruction lights.

Runway Protection Zones (RPZ)

The RPZ standard on Runway 4/22 is based on visual and not lower than 1-mile approach visibility minimums. The standard RPZ dimensions are 500 feet at the inner width, 700 feet at the outer width, and 1,000 feet in length.

Aircraft Parking Line (APL)

The standard APL dimension for B-II is 250 feet from runway centerline. However, this standard is not compatible for runways with parallel taxiways (minimum 240-foot separation) or for larger than utility runways (primary surface penetration).

The APL should be located to provide transitional surface clearance for a tail height of 10 feet to 14 feet (typical single and multi-engine aircraft). For larger than utility runways with visual or nonprecision instrument approaches, the APL should be located at least 320 feet from runway centerline for small aircraft and 355 feet for parking areas designed to accommodate larger multi-engine aircraft. These distances are compatible with a 500-foot wide primary surface, which is recommended for Runway 4/22. These distances would be increased to 570 feet and 605 feet to protect future precision instrument approach capabilities.

Several existing aircraft parking positions are located within the primary surface and aircraft parked in the remaining positions penetrate the transitional surface (see FAR Part 77 Surfaces). The aircraft apron will need to be relocated to provide adequate separation from the runway.

Runway-Parallel Taxiway Separation

Runway 4/22 is not served with a parallel taxiway. The standard B-II runway-parallel taxiway separation is 240 feet for runways with "not lower than 3/4 –statute mile approach visibility minimums." However, based on the expansion potential of the runway, potential upgrades in instrument approach capabilities, and the current availability of undeveloped land area, it may be prudent to increase runway-parallel taxiway separations to accommodate "lower than 3/4 –statute mile approach visibility minimums" for ADG B-II.

Based on the expansive configuration of the airport, parallel taxiway reserves should be established on both sides of the runway to preserve long-term aviation development potential.

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 3-1** illustrates plan and isometric views of the Part 77 surfaces.

The existing dimensions of Runway 4/22 combined with its development potential indicates that use of standards for "larger than utility" runways is appropriate for the current 20-year planning period. Based on existing and forecast activity, airspace planning should be based on nonprecision instrument approach capabilities. **Table 3-6** summarizes FAR Part 77 standards with the runway type and approach capability. **For airspace planning purposes, the use of "larger than utility" runway standards with nonprecision instrument capabilities (per FAR Part 77) is appropriate.**

The 1986 Approach and Clear Zone Plan[3] depicts airspace surfaces based on the "ultimate" runway configuration with a precision instrument approach and an 8,000-foot runway length. As with airfield design components, previous airspace planning standards at Boardman were driven by the interest in preserving potential large aircraft activity capabilities at the airport. These capabilities will be reflected in the long-term development reserves for the airport and are depicted on the 50-Year Airport Layout Plan and Airspace drawings.

TABLE 3-6
FAR PART 77 AIRSPACE SURFACES

Item	Larger than Utility (Nonprecision)[1,2]
Width of Primary Surface	500 feet
Radius of Horizontal Surface	10,000 feet
Approach Surface Width at End	3,500 feet
Approach Surface Length	10,000 feet
Approach Slope	34:1

Notes:
1. Visibility minimums greater than ¾ mile.
2. Larger than utility runways are designed for aircraft weighing more than 12,500 pounds.

[3] Devco Engineering, 1986.

Figure 3-1: FAR Part 77 Diagram

Approach Surfaces

Runway approach surfaces extend outward and upward from each runway end, along the common arrival and departure path for aircraft. For larger than utility runways with nonprecision approaches, the inner width of the approach surface is 500 feet wide, the outer width is 3,500 feet, and the surface extends outward 10,000 feet at a 34:1 slope.

Vehicles traveling on the existing airport access road penetrate the existing Runway 22 approach surface. Although the road should be relocated entirely away from the runway end, the minimum distance required to provide clearance for a 15-foot high vehicle (per FAR Part 77) is 710 feet from the runway end for a nonprecision instrument 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 for larger than utility runways, with nonprecision approaches is 500 feet wide, centered on the runway. The end of the primary surface connects to the inner portion of the runway approach surface. The primary surface should be free of any penetrations, except items with locations fixed by function (i.e., PAPI, runway edge lights, etc.).

The nonprecision primary surface for Runway 4/22 (4,800 x 500) is penetrated on the east end by the airport access road and on the south side of the runway by the northern half of the aircraft parking apron and both AG aircraft loading areas. Various sections of wire fencing also appear to be located within primary surface. Items penetrating the primary surface should be relocated to eliminate the obstruction. The primary surface should be periodically graded, as needed, to maintain obstruction standards.

Transitional Surface

The transitional surface is located at the outer edge of the primary surface, represented by a plane of airspace, which 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.).

As noted earlier, several aircraft tiedown positions and the two hangars located south of the apron penetrate the transitional surface for Runway 4/22. The apron and hangars should be relocated to eliminate the penetration to the transitional surfaces.

Horizontal Surface

The horizontal surface is a flat plane of airspace located 150 feet above runway elevation. The outer boundary of the Runway 4/22 horizontal surface is defined by two 10,000-foot radii, which extend from the runway ends (the intersection point of the extended runway centerline, the outer edge of primary surface, and the inner edge of the approach surface). The outer points of the radii for each runway are connected to form an oval, which is defined as the horizontal surface.

Several BPA transmission line towers located on the north side of the airport were identified as obstructions to the horizontal surface on the 1986 Approach and Clear Zone Plan. The transmission line towers are not lighted. The horizontal surface obstructions ranged from less than 10 feet to nearly 40 feet, depending on the terrain elevation. There were no terrain penetrations identified within the horizontal surface identified on the plan. The identification of obstructions will be updated on the airspace plan to be prepared as part of this project. Many of the obstructions identified on the previous plan would also penetrate a horizontal surface associated with a nonprecision instrument approach.

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.

Several BPA transmission line towers located north of the airport were identified as obstructions to the conical surface on the 1986 Approach and Clear Zone Plan. There were no terrain penetrations identified within the conical surface. As noted above, the identification of obstructions will be updated on the airspace plan to be prepared as part of this project.

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 system at Boardman 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. The runway (4/22) at Boardman Airport is oriented in a northeast-southwest direction and is generally in line with prevailing winds.

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. For runway planning and design, a 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. 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.

The 1986 Airport Layout Plan included a note regarding runway wind coverage stating "Runway 4-22 is anticipated to have greater than 99 percent wind coverage considering both the 12 and 15 mile per hour crosswind component."

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. Most airports are unable to accommodate all aircraft during all conditions, particularly during high temperatures (i.e., density altitude). Runway 4/22 has a published length of 4,500 feet (U.S. Government Airport/Facility Directory).

Based on local conditions and the methodology outlined in **AC 150/5325-4A**, a runway length of 3,810 feet is required to accommodate 100 percent of small aircraft (12,500 pounds or less maximum gross takeoff weight) in the general aviation fleet and 4,350 for small aircraft with 10 or more seats.

The airport currently accommodates a limited amount of business aircraft above 12,500 pounds. Although currently below the FAA-required 500 annual itinerant operations needed for use as a design aircraft, the combination of existing facilities and an emerging local industrial economy

provides a reasonable opportunity for generating this type of activity during the current 20-year planning period. Therefore, for planning purposes, it appears reasonable to use a portion of the large airplane fleet (less than 60,000 pounds) to estimate the runway length requirements for Boardman Airport. As identified in the FAA computer model based on the local conditions, a runway length of 7,000 feet would accommodate approximately 75 percent of these airplanes with a 90 percent useful load. This runway length is comparable to the ultimate length identified on the 1986 Airport Layout Plan. A summary of FAA-recommended runway lengths for a variety of aircraft types and load configurations are described below.

FAA Runway Lengths Recommended For Airport Design (From FAA Computer Model):

Airport Elevation: 396 MSL
Mean Max Temperature in Hottest Month: 91.0F
Maximum Difference in runway centerline elevation: 9 Feet
Current Runway Length: 4,500 feet

Small Airplanes with less than 10 seats
75 percent of these airplanes 2,650 feet
95 percent of these airplanes 3,190 feet
100 percent of these airplanes 3,810 feet
Small airplanes with 10 or more seats 4,350 feet

Large Airplanes of 60,000 pounds or less
75 percent of these airplanes at 60 percent useful load 5,440 feet
75 percent of these airplanes at 90 percent useful load 7,000 feet
100 percent of these airplanes at 60 percent useful load 5,670 feet
100 percent of these airplanes at 90 percent useful load 8,690 feet
Airplanes of more than 60,000 pounds 5,150 feet

The existing width of Runway 4/22 is 150 feet, which exceeds the Airplane Design Group (ADG) II standard of 75 feet. It is recommended that the existing pavement section be maintained through the normal pavement management program until a major reconstruction or resurfacing is needed, at which time, a cost-benefit evaluation should be conducted to determine if maintaining the 150-foot width is justified.

Airfield Pavement

The most recent pavement evaluation at Boardman conducted in 2000 yielded ratings that were "poor" to "excellent" (see **Table 3-7**). The main apron and the two agricultural apron pavements

are all rated "very good" or "excellent." The runway pavement is currently rated "poor," having declined from a "fair" rating since the last inspection in 1998.

TABLE 3-7
SUMMARY OF AIRFIELD PAVEMENT CONDITION

Pavement	PCI Rating [1]	Condition
Runway 4/22	36	Poor
Aircraft Tiedown Apron[2]	82	Very Good
AG Apron (east)	100	Excellent
AG Apron (west)	100	Excellent

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* (1996) for Boardman Airport.

2. PCI data not available for 2001 apron expansion.

The 2000 PCI Report outlined a five-year pavement maintenance program, which included the following items:

- Runway (2" Overlay)
- Tiedown Apron (Slurry Seal)
- East and West Ag Aprons (Fog Seal)

The current Airport/Facility Directory, published by NOAA, lists the following pavement strength:

75,000 lbs. (single wheel land gear design)
100,000 lbs. (dual wheel landing gear design)
150,000 lbs. (dual tandem wheel landing gear design)

These pavement weight-bearing capacities will be maintained through normal asphalt overlays. The composition of the surface, base and subbase provide substantial pavement strength, which is adequate to accommodate all aircraft anticipated to use the runway during the current planning period. Future apron and taxiway pavements should be based on the design aircraft type with a minimum 30,000-pound single wheel design weight. Some hangar taxiway and tiedown apron pavements designed exclusively for small aircraft should be designed with 12,500-pound single wheel pavement strength.

Airfield Capacity

The hourly capacity of Runway 4/22 is approximately 30 to 60 operations during visual flight rules (VFR) conditions. The capacity of Runway 4/22 is primarily reduced by the absence of a partial- or full-length parallel taxiway. With a parallel taxiway added, hourly capacity could be increased to approximately 100 operations per hour in VFR conditions. Although existing capacity appears to be generally adequate to accommodate forecast activity, periodic periods of congestion may be expected as peak activity levels increase. The addition of parallel taxiway access to the runway will increase capacity and safety by reducing or eliminating aircraft back-taxiing on the active runway.

Taxiways

Taxiways are constructed primarily to facilitate aircraft movements to and from the runway system. Some taxiways are necessary simply to provide access between apron and runways, while other taxiways become necessary as activity increases and safer and more efficient use of the airfield is needed. The ADG II standard for taxiway width is 35 feet. Runway 4/22 is not served by access taxiways.

The 1986 Airport Layout Plan depicts a future parallel taxiway on the south side of the runway. Based on the long-term airport development potential, it is recommended that parallel taxiway reserves be established on both sides of the runway. Development of a parallel taxiway during the current twenty-year planning period will be determined by the preferred development alternative.

Access taxiways will be needed to connect new aircraft parking apron and hangar areas to the main runway-taxiway system. ADG II dimensions are appropriate for these hangars.

Airfield Instrumentation and Lighting

Runway 4/22 has medium-intensity runway edge lighting (MIRL), the standard for general aviation runways. The MIRL system is less than five years old and is in good condition. Runways 4 and 22 are not equipped with visual guidance indicators (VGI). The Port acquired a surplus rotating beacon in late 2001 and plans to install the beacon on the south side of the runway. The airport beacon assists pilots in locating the airport during nighttime or periods of reduced visibility.

Precision Approach Path Indicators (PAPI) are currently used as the primary visual guidance system for general aviation runways. Adding PAPI systems to Runway 4 and 22 is recommended as a basic safety improvement.

Runway end identifier lights (REILs) are recommended for instrument runways without approach lights. REILs consist of two sequenced strobes that provide rapid and positive identification of the approach end of the runway during nighttime and poor visibility conditions. The addition of REILs at both ends of Runway 4/22 will improve runway visibility during both instrument approaches and visual operations.

The aircraft apron and hangar areas have limited flood lighting. Flood lighting is recommended for all operations areas for improved utilization and security.

On-Field Weather Data

The airport has no on-site weather observation data available. The addition of an automated weather observation system (AWOS) may be appropriate as activity levels increase and once an instrument approach is developed for the airport. The AWOS satisfies the weather observation requirements for general aviation and commercial operations (i.e. charter flights, medevacs, etc.).

LANDSIDE FACILITIES

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

- **Hangars**
- **Aircraft Parking and Tiedown Apron**

Hangars

There are currently two hangars located at Boardman Airport. For planning purposes, it is assumed that the majority of new based aircraft at the airport will be stored in hangars during the current planning period. A planning standard of 1,500 square feet per based aircraft stored in hangars was used for estimating overall space needs.

The forecasts of based aircraft for Boardman presented in **Table 3-8** suggest that the airport will need to accommodate approximately seven new hangars during the current planning period. However, since aircraft hangars are frequently privately funded, the demand levels at any airport can vary widely over time. For this reason, ample areas should be identified as hangar development reserves to accommodate any unanticipated demand. Hangar development areas and reserves should be able to accommodate a combination of large and small conventional hangars and T-hangars. Development areas for business related hangars (i.e., fixed base

operators, commercial aircraft operations, aerial applicators and corporate aircraft, etc.) should also be reserved.

Aircraft Parking and Tiedown Apron

Aircraft parking apron should be provided for locally based aircraft that are not stored in hangars and for transient aircraft visiting the airport. The majority of locally based aircraft at Boardman are expected to be stored in hangars during the planning period.

There is one aircraft parking apron at Boardman Airport with tiedowns for local and itinerant aircraft (approximately 7,600 square yards and 8 light aircraft tiedown positions). As noted earlier, the existing tiedown and AG aprons will need to be replaced early in the planning period due to their close proximity to the runway. The apron requirements listed in **Table 3-8** represent future needs and do not include any of the existing apron capacity.

FAA **Advisory Circular 150/5300-13** suggests a methodology by which itinerant parking requirements can be determined from knowledge of busy-day operations. At Boardman Airport, the number of itinerant spaces was determined to be approximately 30 percent of busy day itinerant operations. The FAA planning criterion of 360 square yards per itinerant aircraft was applied to the number itinerant spaces to determine future itinerant ramp requirements. Locally based aircraft tiedowns are planned at 300 square yards per position. Additional space requirements for itinerant business aircraft and AG aircraft loading positions were also included in the overall space estimate.

TABLE 3-8
APRON AND HANGAR
BASELINE FACILITY REQUIREMENTS SUMMARY

Item	2000	2005	2010	2020
Baseline Activity	*Projected Need*	*Projected Need*	*Projected Need*	*Projected Need*
Based Aircraft	**2**	**4**	**6**	**9**
Hangar Spaces @ 1,500 sf each	2 spaces / 3,000 sf	3 spaces / 4,500 sf	5 spaces / 7,500 sf	7 spaces / 10,500 sf
Based AC Tiedowns @ 300 sy each	0 spaces / 0 sy	1 space / 300 sy	1 space / 300 sy	2 spaces / 600 sy
Itinerant AC Tiedowns @ 360 sy each	1 space / 360 sy	2 spaces / 720 sy	4 spaces / 1,440 sy	6 spaces / 2,160 sy
Business AC Parking @ 500 sy each	1 space / 500 sy	2 spaces / 1,000 sy	3 spaces / 1,500 sy	4 spaces / 2,000 sy
AG AC Loading Positions @ 1,000 sy each.	2 spaces / 2,000 sy	3 spaces / 3,000 sy	3 spaces / 3,000 sy	4 spaces / 4,000 sy
Total Apron Requirements (sy)	**2,860 sy**	**5,020 sy**	**6,240 sy**	**8,760 sy**
Baseline Land Requirements				
Apron Acreage w/ 100%Reserve	1.2 Acres	2.1 Acres	2.6 Acres	3.6 Acres
Hangar Acreage w/ 100% Reserve	.5 Acres	.7 Acres	1.2 Acres	1.7 Acres
Total Acreage Landside Development	*1.7 Acres*	*2.8 Acres*	*3.8 Acres*	*5.3 Acres*

Adequate areas also need to be reserved for aircraft fueling and passenger loading/unloading. Aircraft circulation also becomes increasingly important when itinerant corporate aircraft and locally based light aircraft tiedowns share the same area. The configuration of the apron should provide a smooth flow for all aircraft and ground operations.

Surface Access Requirements

The existing airport access road should be relocated away from the runway. The existing airport access via Tower Road is adequate to accommodate airport-generated traffic. A second airport access road will be required to serve any facilities that may develop on the north side of the runway. A limited amount of vehicle parking should be provided adjacent to the apron and hangar areas.

SUPPORT FACILITIES

Aviation Fuel Storage

Aviation gasoline (AVGAS) or jet fuel is not available at Boardman Airport. The aerial applicators that operate at Boardman provide their own fuel. Demand for AVGAS would be primarily generated by local and itinerant general aviation aircraft. Aside from aerial applicators, it is unknown what level of demand may exist if Jet Fuel was available at the airport, but the relatively low level of operations, potentially modest level of demand, and cost of providing and maintaining the fuel suggest that the overall benefits may be nominal.

A fuel storage area should be designated adjacent to the primary aircraft parking area to serve local and itinerant aircraft. The storage area should be able to accommodate two aboveground tanks (6,000 to 12,000 gallons each) with clear access for both aircraft and the large tanker trucks used to periodically restock the tanks.

Airport Utilities

The airport has water (well), sewer (septic), electrical, and telephone service. The existing utility service appears to be adequate for current activity. However, extension of utilities to a relocated main apron and hangar area would be required as part of future development. The existing septic system serving the caretaker residence would need to be replaced with a new system. If development of large-scale non-aviation facilities occurs on the north side of the airport, extensions of basic utility systems (water, electrical, sanitary sewer, and telephone) may be required. If upgraded utilities are developed, extensions to airport landside areas should be considered.

Security

The airport has wire fencing along portions of its boundary. Chain-link fencing and gates should be considered where the access road enters the terminal area to protect active airfield areas, aircraft tie-down, hangar and fueling areas. Upgrading fencing around the airport property line or to surround active areas of the airfield may be helpful in reducing potential animal incursions. The potential development of non-aviation land uses on the north section of the airport should be fully separated from aviation facilities by standard security fencing.

Flood lighting should be provided around aircraft parking apron, fueling, and hangar areas.

FACILITY REQUIREMENTS SUMMARY

The facility requirements for Boardman Airport are largely related to reconfiguring the access and landside facilities in order to safely accommodate future airport operations. The need and timing for development of aircraft hangars will be market driven. The airport has adequate areas to accommodate both the modest forecast demand and development reserves for hangar development.

Runway 4/22 will require an asphalt overlay early in the planning period. The standard ADG II runway width is 75 feet. The Port has expressed an interest in retaining a wider runway (100 or 150 feet) to preserve existing large aircraft capabilities. Options that involve reducing the runway width will also require the relocation of the runway edge lighting and threshold lights. A cost-benefit analysis will be required to compare the options associated with the runway width.

A future runway extension reserve (to 7,000 feet) is recommended to accommodate potential business-related aircraft activity during the planning period. As noted earlier, a minimum of 500 annual itinerant operations by the aircraft requiring a runway extension is needed to justify the extension to the FAA.

Improvements in airport lighting include the addition visual guidance indicators and runway end identifier lights (in conjunction with future instrument approach).

The projected twenty-year facility needs are summarized in **Table 3-9**. At many airports, the quality, price, and availability of hangar space, fuel, and services can often result in growth in activity, which exceeds otherwise nominal projections. Boardman Airport is well positioned to accommodate any number of aviation growth scenarios. The use of development reserves is recommended to protect the long-term aviation potential of the airport.

TABLE 3-9
FACILITY REQUIREMENTS SUMMARY

Item	Short Term	Long Term
Runway & Main Taxiways	2" Overlay Pavement Maintenance (Crackfill, vegetation control, sealcoat)	Pavement Maintenance Runway Extension
Taxiways	Access Taxiways to Aircraft Apron and Hangar Areas	Parallel Taxiway Reserves (N & S)
Main Apron	Relocation/Replacement	Pavement Maintenance Development Reserve
Fueling Area	Fuel Storage and Dispensing Area	Fuel Storage Reserve
AG Facilities	Relocation/Replacement of AG Aprons Development Reserve for Hangars Lease Areas for Equipment Storage	Pavement Maintenance Development Reserve
Hangars	Development Areas for T-hangar and conventional hangars	Development Reserve
Navigational Aids and Lighting	Airport Rotating Beacon REIL (Rwy 4 & 22) PAPI (Rwy 4 & 22) Taxiway Edge Reflectors Flood Lighting (main apron, tiedown apron, hangar, fueling areas)	None
Airport Buildings	FBO Development Reserves	Same
Utilities	Extend Utilities to New Hangars	Same
Roadways	Relocate Airport Access Road	Extend Access to New Development Areas
Security	Terminal Area Fencing; Flood Lighting	Same

CHAPTER FOUR
AIRPORT DEVELOPMENT ALTERNATIVES

OVERVIEW

As noted in the facility requirements analysis, the future development needs for Boardman Airport addressed in the 20-year airport layout plan are related to the forecasts of baseline activity. Baseline activity includes the business and general aviation, agricultural aviation, and military aviation users that currently operate at Boardman Airport.

Other aviation facility needs associated with the potential development of a major speedway or air cargo facilities were defined in very broad terms in the **Boardman 50-Year Aviation Demand Evaluation**.[4] The report was prepared separately for the Port of Morrow and reviewed by the Federal Aviation Administration (FAA) and included 50-year activity forecasts, facility requirements, and a development plans. The primary purpose of the study was to define and preserve the land area needed to accommodate a high demand scenario for aviation activity at Boardman Airport over the next 50 years. In addition to baseline activity, two other scenarios (motor speedway and air cargo) were developed and combined to provide a substantial development cushion for the airport. The facility needs associated with the speedway and air cargo scenarios will be addressed through development reserves since they do not yet have sufficient level of certainty to serve as the basis for developing the 20-year airport layout plan and capital improvement program.

The overall objective of the plan is to preserve the airport's long-term ability to accommodate large aircraft while also addressing the current and near-term facility needs for the airport's established aviation activity.

[4] Draft Report. Century West Engineering, August 2001.

Proposed Airfield Development

A development reserve was established for an 8,000-foot runway length based on the potential need to accommodate transport category aircraft. Development reserves are established for airfield facilities based on aircraft included in Approach Category C and Airplane Design Group IV (C-IV). The aviation-use areas and reserves that are defined to accommodate 50-year projections of aviation demand total approximately 880 acres and increase to approximately 970 acres with the property acquisition needed to accommodate the full-length runway extension and surface access improvements. Development setbacks along the runway are defined by dual parallel taxiways located 400 feet from runway centerline, a 1,000-foot wide primary surface and the runway protection zones required for a future precision instrument approach.

Based on the 20-year (baseline) forecasts of activity, the design aircraft for the airport is included in Airplane Design Group II and Aircraft Approach Category B. This would include typical business aircraft such a King Air turboprop or small business jet. It is estimated that approximately 60 percent of the airport's total operations in 2000 were conducted by turbine agricultural aircraft included in ADG II.

The use of development reserves to protect the long-term potential of accommodating transport category aircraft will increase the distances between the runway and hangar and apron areas. Since these separations will exceed ADG II standards, the additional cost associated with maintaining the greater setbacks may not be eligible for FAA funding. A similar situation exists for the 150-foot wide runway, which will require an overlay early in the current planning period. The Port would like to preserve the existing runway width for potential use by larger aircraft. The FAA standard ADG II runway width is 75 feet and the FAA will normally only fund a width that meets the needs of the design aircraft. A narrowing of the runway width would also require the runway edge lights to be relocated as part of the project. The Port and FAA will evaluate the options and cost-benefits involved when making a final decision on the project.

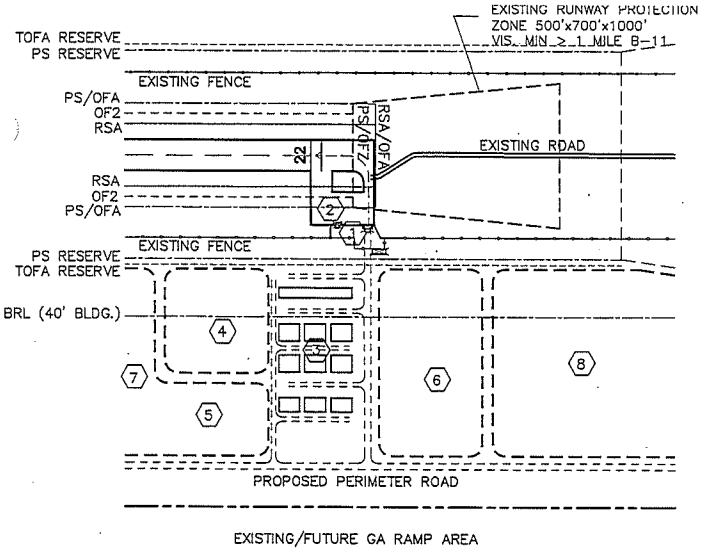
Baseline Facility Improvement Alternatives

The baseline facility needs include development of conventional hangars, T-hangars, general aviation aircraft parking apron, agricultural aircraft facilities, a new access road, aviation fuel storage and aviation-related commercial/industrial areas. The 20-year forecast level of baseline aviation facility needs can be accommodated in a relatively small area (30 acres +-), including development reserves capable of accommodating a three- or four-fold expansion of the projected facility demand.

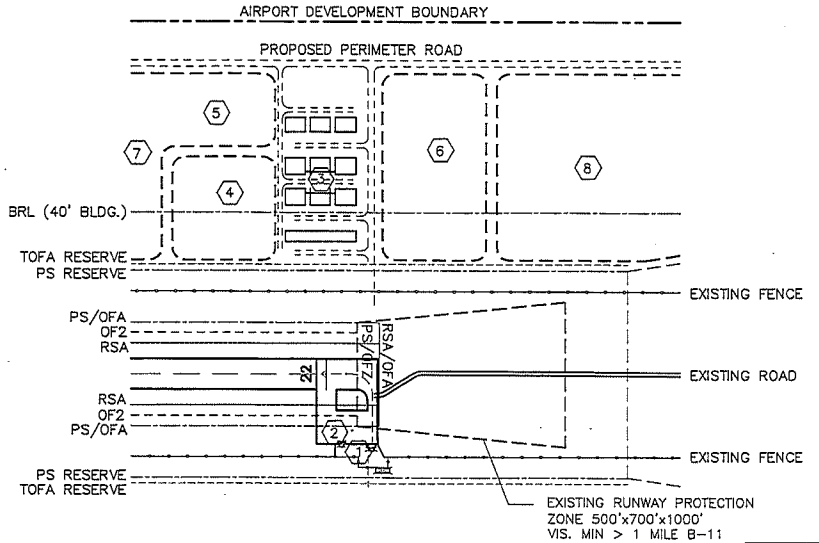
Alternative A locates the baseline facilities on the south side of the runway near the east end. The existing airport access road would be closed and a new access road would enter the development area approximately 1,500 feet south of the runway centerline. The existing aircraft apron located immediately adjacent to the runway would continue to be used until new facilities were developed. A new taxiway would connect the south side of the existing apron to the new hangar development area. The hangar area would accommodate both conventional hangars and T-hangars, including larger hangars associated with commercial or corporate use. As the new general aviation parking apron and agricultural apron areas are developed, the existing apron would be converted into taxiway or aircraft holding areas near the existing Runway 22 threshold. The new development areas would be constructed in stages, based on demand. A large development area for agricultural aircraft facilities is located on the east side of the hangar area. Aircraft parking apron development areas and reserve are located west of the new hangar area. This area would also accommodate aviation fuel storage. The advantage of this alternative is that the facilities needed to serve existing baseline activity, particularly AG operations, can be physically separated from other facilities that may eventually be located on the north side of the runway.

Alternative B locates the baseline facilities on the north side of the runway near the east end. The existing airport access road would be closed and a new access road would enter the development area approximately 1,500 feet north of the runway centerline. The existing aircraft apron located immediately adjacent to the runway would continue to be used until new facilities were developed but no additional facility improvements would be made on the south side of the runway. A new taxiway would connect the new north side development area to the runway. The configuration of facilities in Alternatives A and B are virtually identical.

The advantage of this alternative is that future baseline facility development could benefit from the development of speedway-related aviation facilities (aircraft parking, etc.) and services such as aircraft fueling that would likely be located on the north side of the runway. It is anticipated that in the long-term most of the facilities specifically designed to accommodate speedway-related activity will be located on the north side of the runway, regardless of where the baseline facilities are developed.



ALTERNATIVE A

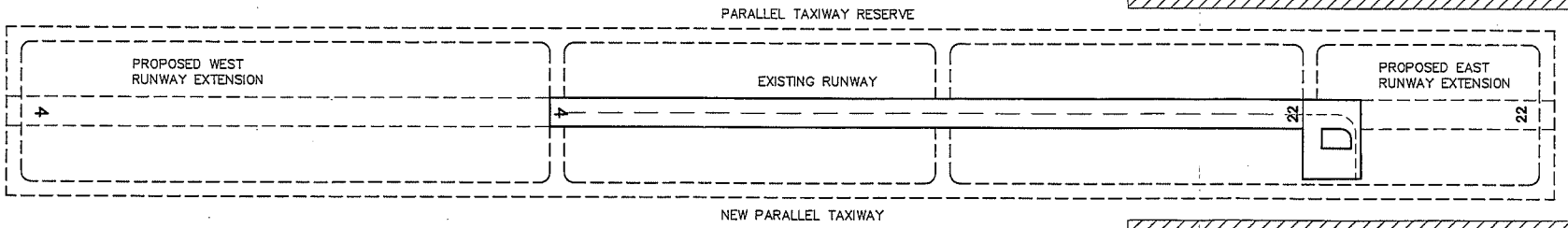


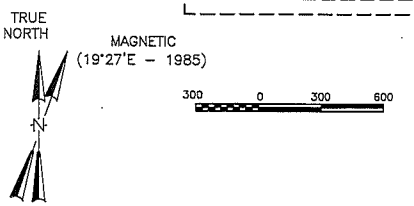
ALTERNATIVE B

LEGEND		
ITEM	EXISTING	FUTURE
AIRFIELD PAVEMENT		
PERIMETER FENCE		
AIRPORT PROPERTY LINE		
BUILDING RESTRICTION LINE	BRL	SAME
AIRCRAFT PARKING LIMIT	APL	SAME
BUILDINGS		
BUILDINGS TO BE REMOVED		-
TOPOGRAPHIC CONTOURS (5 FT)	3410	-
WIND CONE		
AIRPORT REFERENCE POINT		
THRESHOLD LIGHTS (FUTURE W/ REIL)		
ROTATING BEACON		
HOLD LINE		

BUILDINGS AND FACILITIES			
1	EXISTING HANGARS (TO BE REMOVED)	5	FUTURE AUTO PARKING
2	EXISTING APRON	6	FUTURE AGRICULTURAL AREA
3	FUTURE HANGARS	7	GENERAL AVIATION RESERVE
4	FUTURE APRON	8	AVIATION RELATED COMMERCE

ALTERNATIVE B





PROPOSED AIRFIELD DEVELOPMENT

ALTERNATIVE A

APPROVALS	VERIFY SCALES	NO.	DATE	BY	APPR.	REVISIONS
PORT OF MORROW, BOARDMAN, OR DATE	BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.					
FEDERAL AVIATION ADMINISTRATION DATE						

CENTURY WEST ENGINEERING & ARON FAEGRE & ASSOCIATES with GAZELEY ASSOCIATES

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SCALE:
AF	AF	DM	1"=300' or 600'

DATE: NOVEMBER 2, 2001

PROJECT: BOARDMAN-ALTERNATIVES

BOARDMAN AIRPORT DEVELOPMENT LAYOUT PLAN

ALTERNATIVES A & B

FIGURE 4-1

PREFERRED DEVELOPMENT ALTERNATIVE

The preliminary development alternatives were presented at a meeting of local airport users and Port staff on November 27, 2001. Based on the input provided at the meeting, there was a general consensus that Alternative A, with some modification, would be the most effective development scheme available for the airport. This alternative would focus most future apron and hangar developments south of the runway. A north-side aviation development reserve is identified along the entire length of the runway. This area could be developed in conjunction with future speedway or air cargo-related activity.

The refinement of Alternative A includes some changes in the configuration and location of future hangar areas and aircraft aprons. The development is divided into three primary sections to provide physically separated AG and general aviation (GA) parking aprons. Vehicle access to the south-side landside facilities would be provided by upgrading an existing dirt roadway located approximately 800 feet south of the runway.

The new AG apron is located immediately behind (south) of the existing apron and would be connected to the existing apron/runway with new north-south taxiway connections. The AG apron would provide two designated aircraft loading positions to replace the facilities located adjacent to the runway. Lease areas are provided east of the apron to accommodate equipment storage and hangar development. Additional AG development reserve areas are provided immediately to the south and east of the apron.

The general aviation hangar development area is located between the AG apron and GA parking apron. The area is configured with three rows of hangars, which can accommodate a combination of conventional and T-Hangars. Taxilane access is provided to each row of hangars with two connections to a south parallel taxiway. Additional demand for hangar space is accommodated in a development reserve located immediately south of the development area. The reserve would accommodate a two- or three-fold increase in hangar construction. Relocation of the south airport access road would be required to develop into the hangar reserve.

The GA parking apron is located at the west end of the terminal area and would be configured to accommodate light aircraft tiedowns, itinerant business aircraft parking, and an aircraft fuel storage/dispensing area. The area located west of the GA apron is reserved for long-term apron expansion. Vehicle parking is provided behind the apron at the end of the improved portion of the access road. This area would also accommodate commercial hangar development (i.e. fixed base operator, aircraft maintenance, etc.).

The preferred alternative is depicted on the airport layout plan drawing, presented at the end of this chapter.

AIRPORT LAYOUT PLANS

Options for the long-term development of Boardman Airport were evaluated in the Alternatives section. This evaluation resulted in the selection of a preferred alternative. The set of airport plans, which is referred to in aggregate as the "Airport Layout Plans," 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 Boardman ALP set includes five individual drawings, which are presented at the end of this chapter:

- *Drawing 1a – Airport Layout Plan*
- *Drawing 1b – Terminal Area Plan*
- *Drawing 2a – FAR Part 77 Airspace Plan*
- *Drawing 2b – Runway Approach Surface Plan and Profile*
- *Drawing 3 – Airport Land Use Plan with 2005 Noise Contours*

Airport Layout Plan and Terminal Area 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. Detailed airport and runway data tables, drawing legend, a list of existing/future buildings and a vicinity map are provided on Drawing 1b due to space constraints on the ALP.

The improvements depicted on the ALP reflect all major airfield developments recommended in the twenty-year planning period. Decisions made by the airport sponsor 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 airport boundary line depicted on the ALP reflects the recommendations of the 50-Year Development Plan for the airport. Airport acreage (listed on Drawing 1b) is reduced from 2,620 to 881 acres. The remaining property will support industrial/commercial development by the Port of Morrow.

Runway-Taxiway Improvements

The ALP depicts Runway 4/22 with length of 4,200 by 150 feet. The ALP depicts two runway extension reserves (1,000 feet at east end and 2,800 feet at the west end) to protect for potential demand to accommodate large transport category aircraft. A future parallel taxiway is depicted on the south side of the runway.

Aircraft Apron and Hangar Areas

The ALP depicts new landside facilities, including a general aviation parking apron, AG aircraft apron and hangar areas near the southeast corner of Runway 4/22. The existing general aviation apron will be closed and the paved areas incorporated into the south parallel taxiway or aircraft holding areas. A more detailed view of the new south aviation facilities is provided in the Terminal Area Plan (Drawing 2b). The GA apron will accommodate both light aircraft tiedowns and business aircraft parking and a designated aircraft fueling area. Development areas are provided to accommodate fixed base operator or aircraft maintenance hangars behind the apron. The existing unimproved vehicle access road extending west from Tower Road would be improved to serve the south aviation development area.

Agricultural Aircraft Facilities

The new AG apron is located near the end of Runway 22 in order to provide the most direct aircraft taxiway access to the runway. The new AG apron will be located south of the existing aprons with enough separation to accommodate a parallel taxiway and all runway clearance requirements. Two designated aircraft loading positions would be provided on the apron. The loading pads will be designed to incorporate spill containment. Lease areas are provided east of the apron to accommodate equipment storage and hangar development. Additional AG development reserve areas are provided immediately to the south and east of the apron.

Access Roads

The existing gravel-surfaced access road serving the apron and hangar area will be closed due to its proximity to the east end of the runway. An existing dirt road located approximately 800 feet south of the runway will be upgraded to provide access to the south aviation area. An airport perimeter road (reserve) is depicted on the ALP to provide access to all long-term aviation development reserves.

Other Items

The addition of precision approach path indicators (PAPI) is recommended for both runway ends. Adding lighted wind cones near both ends of the runway is also recommended.

Airport fencing is identified for the airport perimeter with double-width swing gates provided at key access points. Overhead flood lighting is recommended for aircraft parking, hangar and fueling areas.

Other 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 Five.

FAR PART 77 AIRSPACE PLAN AND APPROACH SURFACE PLAN & PROFILE

The FAR Part 77 Airspace Plan for Boardman 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 and a list of obstructions to the runway's airspace surfaces. The profile views of the runway approach surfaces and a detailed plan view of the runway approach surfaces are provided on Drawing 2b.

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 Boardman Airport reflect a runway length of 4,200 feet and nonprecision instrument approach capabilities. The runway is designed for use by larger than utility aircraft (weighing more than 12,500 pounds) under FAR Part 77.

The airspace surfaces for Boardman do not have any terrain penetrations. Eleven BPA transmission towers located north of the runway are identified as obstructions to the runway's horizontal and conical surfaces. The penetrations range from less than 10 feet to 75 feet. Most of the towers on the airport are not lighted. Relocation of the towers is not considered highly feasible, therefore the obstructions should be surveyed, marked and lighted.

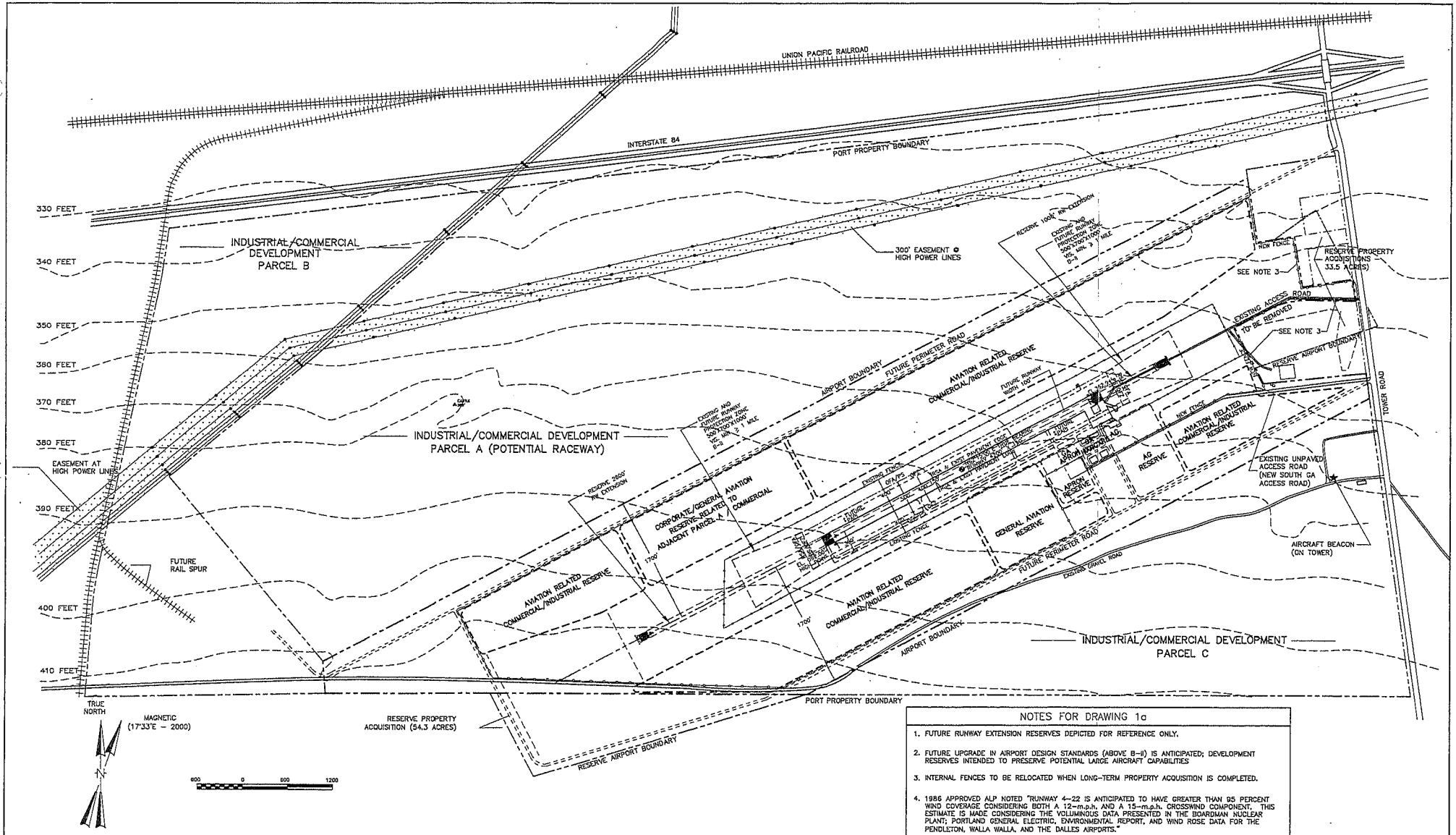
LAND USE PLAN

The Airport Land Use Plan for Boardman Airport depicts existing zoning in the immediate vicinity of the airport. The land areas surrounding the airport are under the jurisdiction of Morrow County.

The airport is zoned Airport Industrial (AI) by Morrow County. The AI Zone is intended to protect airport facilities and imaginary surfaces by encouraging industrial and agricultural land uses. An Airport Overlay Zone is described in the Morrow County Zoning Ordinance and Comprehensive Plan; however, it should be ensured that the Overlay Zoning appears on the County Zone Map, consistent with ORS Chapter 836.600-630.

Noise exposure contours based on the 2005 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.

Based on forecast activity, the 55, 60 and 65 DNL noise contours extend outward along the sides and beyond the ends of the runway, but are contained entirely on airport property. No noise sensitive land uses (e.g., residences) are located within the noise contours projected for the year 2005. A detailed description of airport noise and land use compatibility is presented in Chapter Six.



NOTES FOR DRAWING 1a

1. FUTURE RUNWAY EXTENSION RESERVES DEPICTED FOR REFERENCE ONLY.
2. FUTURE UPGRADE IN AIRPORT DESIGN STANDARDS (ABOVE B-II) IS ANTICIPATED; DEVELOPMENT RESERVES INTENDED TO PRESERVE POTENTIAL LARGE AIRCRAFT CAPABILITIES
3. INTERNAL FENCES TO BE RELOCATED WHEN LONG-TERM PROPERTY ACQUISITION IS COMPLETED.
4. 1986 APPROVED ALP NOTED "RUNWAY 4-22 IS ANTICIPATED TO HAVE GREATER THAN 95 PERCENT WIND COVERAGE CONSIDERING BOTH A 12-m.p.h. AND A 15-m.p.h. CROSSWIND COMPONENT. THIS ESTIMATE IS MADE CONSIDERING THE VOLUMINOUS DATA PRESENTED IN THE BOARDMAN NUCLEAR PLANT; PORTLAND GENERAL ELECTRIC, ENVIRONMENTAL REPORT, AND WIND ROSE DATA FOR THE PENDLETON, WALLA WALLA, AND THE DALLES AIRPORTS."

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: _____

SIGNATURE

OREGON DEPT. OF AVIATION APPROVAL

APPROVAL DATE: _____

SIGNATURE

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IN ASSOCIATION WITH:
ARON FAEGRE and ASSOCIATES
Portland, Oregon

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SCALE:
AF	MB	DM	AS SHOWN

DATE: JUNE 24, 2002

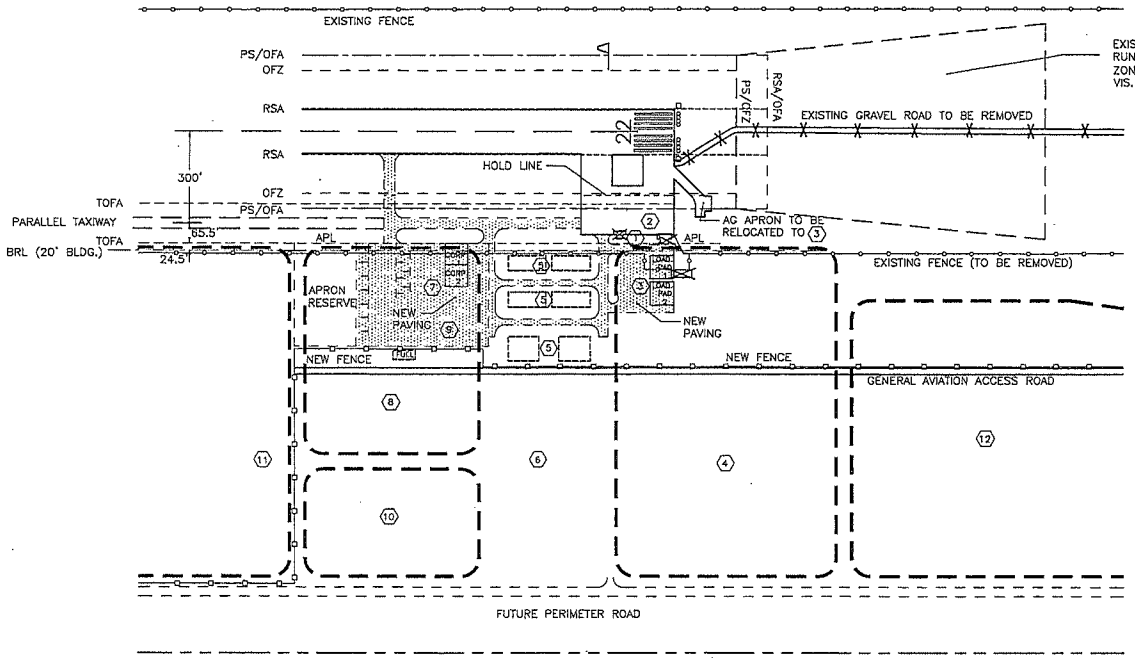
PROJECT: BOARD-1a-final

BOARDMAN AIRPORT
AIRPORT LAYOUT PLAN UPDATE

AIRPORT LAYOUT PLAN

DRAWING NO. 1a

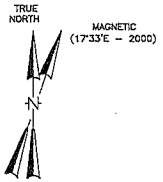
SHEET NO. 1 OF 5



TERMINAL AREA PLAN

SCALE: 1" = 200'-0"

200 0 200 400



RUNWAY DATA

ITEM			RUNWAY 04–22 EXISTING	FUTURE	RESERVE
LENGTH AND WIDTH			4200' X 150'	4200 X 100'	8000' X 100'
EFFECTIVE GRADIENT			0.7%	SAME	SAME
PAVEMENT STRENGTH (WHEEL-POUNDS)			SW75K;DW100K;DT150K	SAME	SAME
PAVEMENT SURFACE			ASPHALT	SAME	SAME
RUNWAY SAFETY AREA (RSA)			4800' X 150'	SAME	10000'X500' RESERVE
OBJECT FREE AREA (OFA)			4800' X 500'	SAME	10000'X800' RESERVE
OBSTACLE FREE ZONE (OFZ)			4600' X 400'	SAME	8400'X400' RESERVE
CRITICAL AIRCRAFT			B-200/AT802	SAME	BOEING 707 / DC8
APPROACH TYPE		04	VISUAL	NP	SAME
		22	VISUAL	NP	SAME
APPROACH SLOPE: REQUIRED/CLEAR		04	20:1/50:1	34:1	SAME
		22	20:1/50:1	34:1	SAME
APPROACH AND LANDING AIDS		04	NONE	GPS, PAPI, REIL	SAME
		22	NONE	GPS, PAPI, REIL	SAME
RUNWAY END COORDINATES	04	Latitude	45°48'43.720"N	SAME	45°48'30.862"N
		Longitude	119°49'40.040"W	SAME	119°50'15.033"W
	22	Latitude	45°49'03.020"N	SAME	45°49'07.608"N
		Longitude	119°48'47.560"W	SAME	119°48'35.062"W
TDZE		04	392.00'	SAME	N/A
		22	383.60'	SAME	N/A
RUNWAY LIGHTING			MEDIUM INTENSITY	SAME	SAME
TAXIWAY LIGHTING			NONE	REFLECTORS, MITL	SAME
RUNWAY MARKING 04 / 22			VISUAL/VISUAL	NP	NP
WIND COVERAGE (%) - 12/15 MPH			SEE NOTE #4 SHEET 1o	–	–

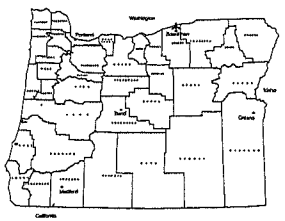
DECLARED DISTANCES

	EXISTING 4	EXISTING 22	FUTURE 4	FUTURE 22	RESERVE 4	RESERVE 22
DISPLACED THRESHOLD (Approach end)	0'	0'	0'	0'	0'	0'
TAKEOFF RUN AVAILABLE (TORA)	4200'	4200'	4200'	4200'	8000'	8000'
TAKEOFF DISTANCE AVAILABLE (TODA)	4200'	4200'	4200'	4200'	8000'	8000'
ACCELERATE - STOP DISTANCE AVAILABLE (ASDA)	4200'	4200'	4200'	4200'	8000'	8000'
LANDING DISTANCE AVAILABLE (LDA)	4200'	4200'	4200'	4200'	8000'	8000'

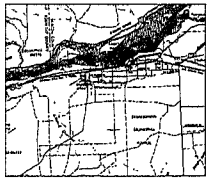
AIRPORT DATA

ITEM	EXISTING	FUTURE	RESERVE
DATUM FOR ALL ITEMS	NAD83 / NGVD29	SAME	SAME
AIRPORT ELEVATION (MSL)	392.0'	SAME	SAME
AIRPORT REFERENCE POINT	LAT:45°48'53.370"N LONG:119°49'13.800"W	SAME SAME	LAT:45°48'49.235"N LONG:119°49'25.047"W
MEAN MAXIMUM DAILY TEMPERATURE	91°	SAME	SAME
AIRPORT REFERENCE CODE	B-II	B-II	C-IV
NPIAS ROLE	GENERAL AVIATION	SAME	TRANSPORT
LAND OWNED IN FEE (ACRES)	2620.63 ACRES	881.1 ACRES	968.9 ACRES
AIRPORT CODE	M50	SAME	SAME

LOCATION MAP



VICINITY MAP



BUILDINGS AND FACILITIES

(1)	EXISTING HANGARS (TO BE REMOVED)	(7)	FUTURE APRON
(2)	EXISTING APRON & AG AREA	(8)	RESERVE APRON
(3)	FUTURE AGRICULTURAL AREA	(9)	FUTURE AUTO PARKING
(4)	RESERVE AGRICULTURAL AREA	(10)	RESERVE AUTO PARKING
(5)	FUTURE HANGARS	(11)	GENERAL AVIATION RESERVE
(6)	RESERVE HANGARS	(12)	AVIATION RELATED COMMERCE

ABBREVIATIONS

PS	PRIMARY SURFACE
RSA	RUNWAY SAFETY AREA
OFZ	RUNWAY OBSTACLE FREE ZONE
OFA	RUNWAY OBJECT FREE AREA
TOFA	TAXIWAY OBJECT FREE AREA
BRL	BUILDING RESTRICTION AREA

LEGEND

ITEM	EXISTING	FUTURE
AIRFIELD PAVEMENT		
PERIMETER FENCE		
AIRPORT PROPERTY LINE		
BUILDING RESTRICTION LINE	BRL	SAME
AIRCRAFT PARKING LIMIT	APL	SAME
BUILDINGS		
BUILDINGS TO BE REMOVED		–
TOPOGRAPHIC CONTOURS (5 FT)	5410	–
WIND CONE		
AIRPORT REFERENCE POINT		
THRESHOLD LIGHTS (FUTURE W/ REIL)		
ROTATING BEACON		
HOLD LINE		

NOTES FOR DRAWING 1B

1. AIRPORT COORDINATE DATA FROM FAA FLIGHT INSPECTION TECHNICAL SUPPORT BRANCH, AVN-210, OKLAHOMA, OK. AIRPORT ELEVATION DATA BY PORT OF MORROW TECHNICAL DIVISION SURVEYOR ON DRAWING DATED 3-6-01.
2. RUNWAY-TAXIWAY SEPARATION 300ft. IN LIEU OF 240 ft. BASED OF DRAFT REVISIONS TO PART 77 TO ALLOW FUTURE NON-PRECISION APPROACHES WITH < ¾ MILE VISIBILITY.
3. AIRPORT SPONSOR AND FAA WILL CONDUCT A COST-BENEFIT EVALUATION TO DETERMINE FUTURE RUNWAY WIDTH AS PART OF NEXT MAJOR PROJECT. CURRENT WIDTH EXCEEDS ADGII STANDARD.

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IN ASSOCIATION WITH:
ARON FAEGRE and ASSOCIATES
Portland, Oregon

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SCALE:
AF	MB	DM	1" = 200'

DATE: AUGUST 29, 2002

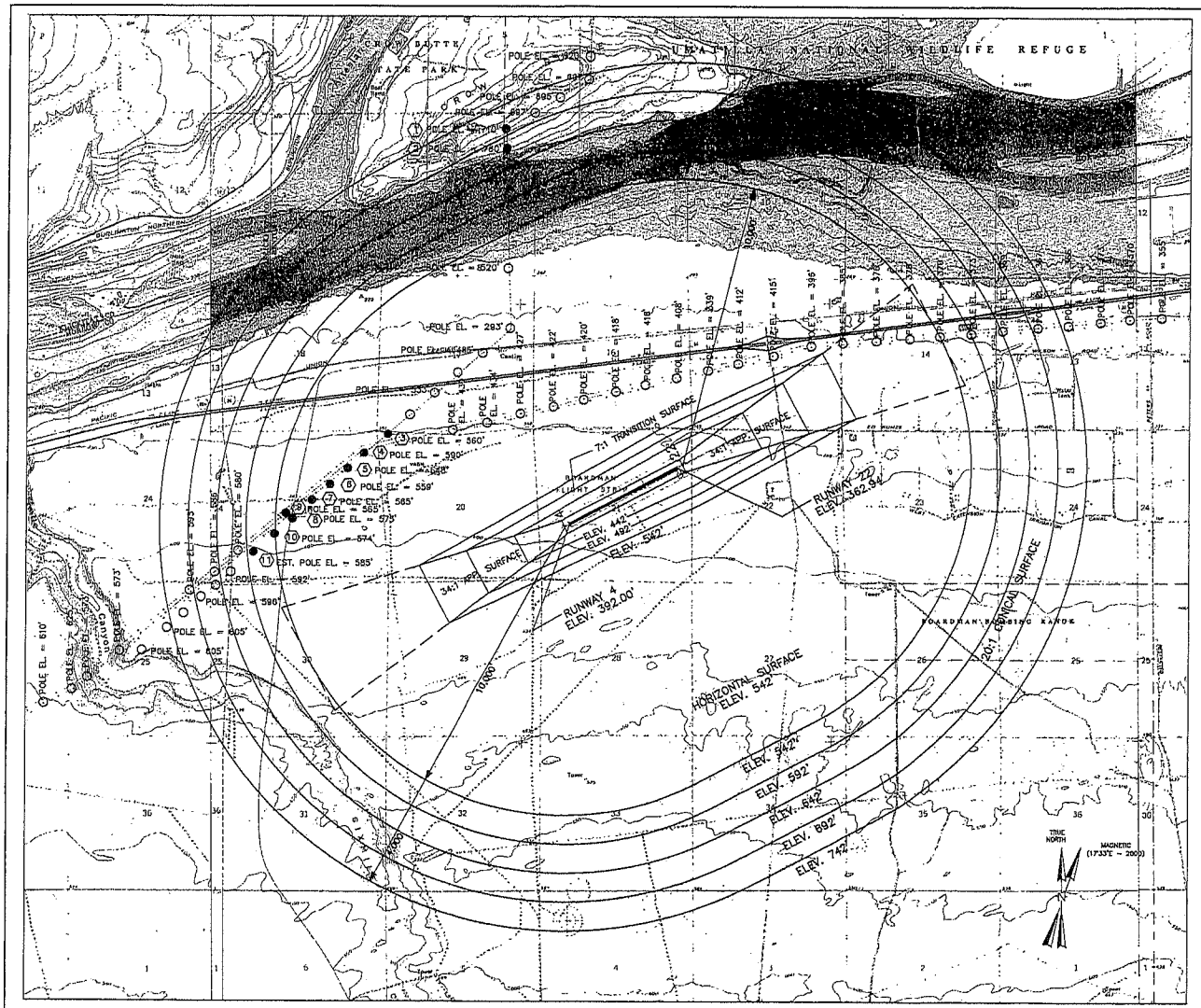
PROJECT: BOARD-1b-final

BOARDMAN AIRPORT
AIRPORT LAYOUT PLAN UPDATE

TERMINAL AREA PLAN

DRAWING NO. 1b

SHEET NO. 2 OF 5



LEGEND:

● POLE IS AN OBSTRUCTION (PENETRATES SURFACE)

○ POLE IS NOT AN OBSTRUCTION (INFORMATION ONLY)

2000' 0 2000' 4000'

OBSTRUCTION TABLE DETAILS

RUNWAY	OBSTRUCT. NUMBER	DESCRIPTION / DIST FR RW END	SURFACE PENETRATION TYPE / DIST	OBSTRUCTION ELEVATION	DIST. FROM RUNWAY	PROPOSED DISPOSITION
22 (EXIST. 4200' LENGTH)	(1)	POLE @ -200'	C/9' EST.	710' EST	13,400' RIGHT	ADD OBSTR LIGHT
	(2)	POLE @ 150'	C/29' EST.	760' EST	12,700' RIGHT	ADD OBSTR LIGHT
	(3)	POLE @ 8,350'	H/19' EST.	580' EST	10,150' RT./FWD.	ADD OBSTR LIGHT
	(4)	POLE @ 9,350'	H/45' EST.	590' EST	11,600' RT./FWD.	ADD OBSTR LIGHT
	(5)	POLE @ 10,200'	H/5' EST.	548' EST	11,500' RT./FWD.	ADD OBSTR LIGHT
	(6)	POLE @ 11,000'	H/14' EST.	559' EST	12,050' RT./FWD.	ADD OBSTR LIGHT
	(7)	POLE @ 11,750'	H/20' EST.	565' EST	12,750' RT./FWD.	ADD OBSTR LIGHT
	(8)	POLE @ 12,600'	H/28' EST.	573' EST	13,500' RT./FWD.	ADD OBSTR LIGHT
	(9)	POLE @ 12,709'	H/20' EST.	565' EST	13,050' RT./FWD.	ADD OBSTR LIGHT
	(10)	POLE @ 13,400'	C/29' EST.	574' EST	14,150' RT./FWD.	ADD OBSTR LIGHT
	(11)	POLE @ 14,350'	C/9' EST.	585' EST	14,950' RT./FWD.	ADD OBSTR LIGHT

NOTES:

1. GROUND PROFILE IS A COMPOSITE OF THE HIGHEST ELEVATIONS ACROSS THE WIDTH OF THE APPROACH.
2. TR = TRANSITIONAL
   AP = APPROACH
   C = CONICAL
   H = HORIZONTAL
   DIST = DISTANCE FROM RUNWAY END
3. UPON ALP APPROVAL IT IS THE PORT'S RESPONSIBILITY TO ACCOMPLISH THE OBSTRUCTION DISPOSITION.
4. ELEVATIONS OF OBSTRUCTIONS (POWER POLES) OBTAINED FROM BOARDMAN ALP (3/88) PREPARED BY DEVCO AVIATION CONSULTANTS

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ARON FAEGRE and ASSOCIATES
Portland, Oregon

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SCALE:
AF	MB	DM	1" = 2000'

DATE: (R) JUNE 24, 2002

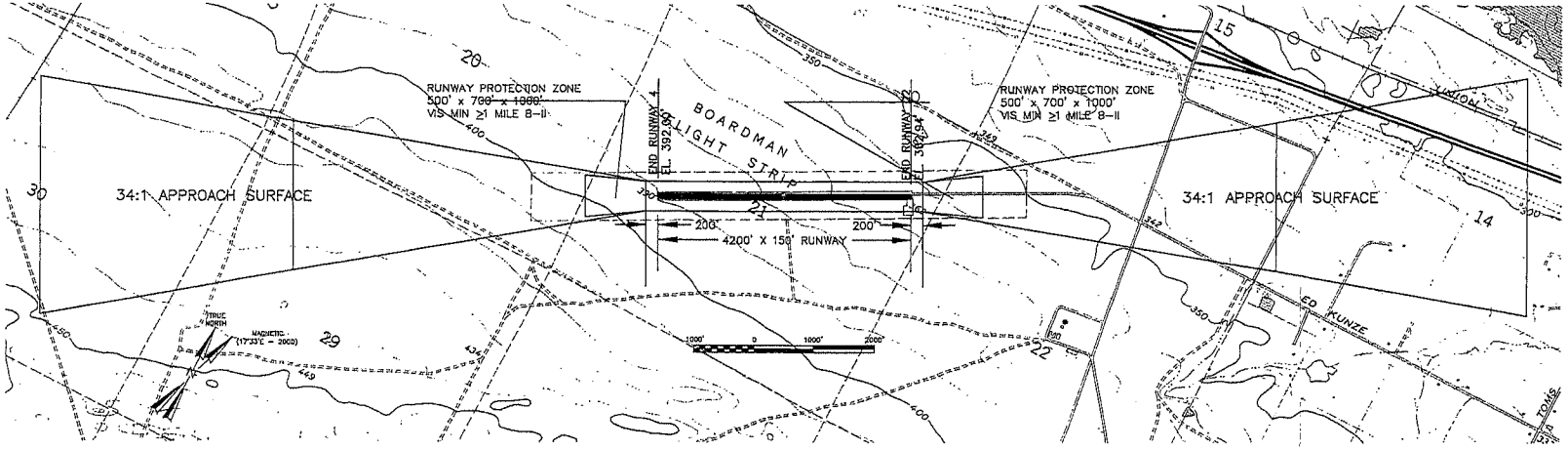
PROJECT: BOARD-2a-final

BOARDMAN AIRPORT
AIRPORT LAYOUT PLAN UPDATE

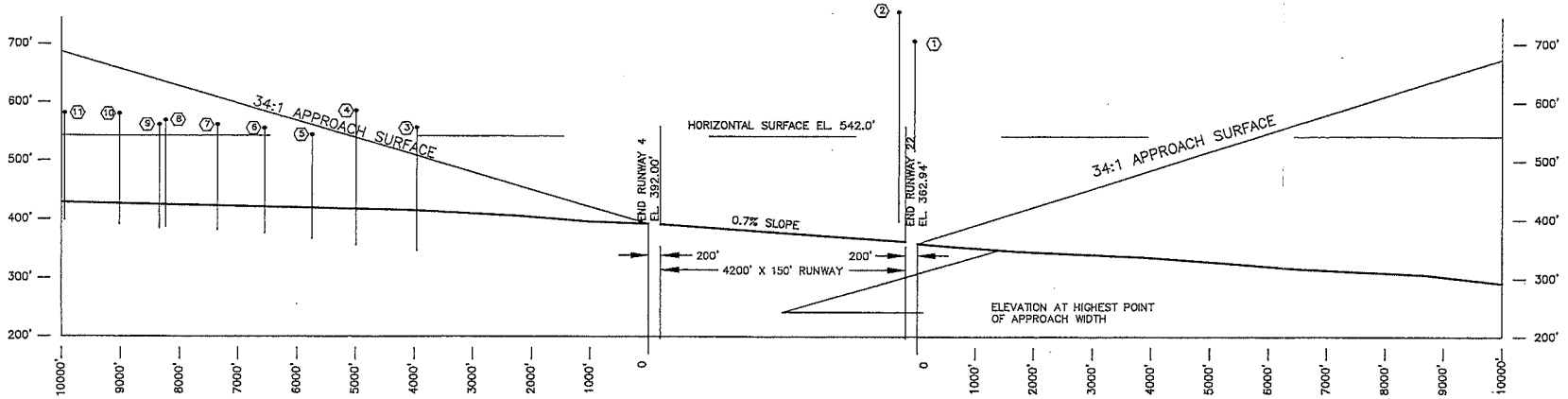
FAR PART 77 AIRSPACE PLAN

DRAWING NO. 2a

SHEET NO. 3 OF 5



PLAN VIEW



PROFILE VIEW

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

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

LEGEND:

↑ POLE IS AN OBSTRUCTION (PENETRATES HORIZONTAL OR CONICAL SURFACE BUT DOES NOT PENETRATE APPROACH SURFACE)

NOTES:

1. ELEVATIONS OF OBSTRUCTIONS (POWER POLES) OBTAINED FROM BOARDMAN ALP (3/86) PREPARED BY DEVCO AVIATION CONSULTANTS

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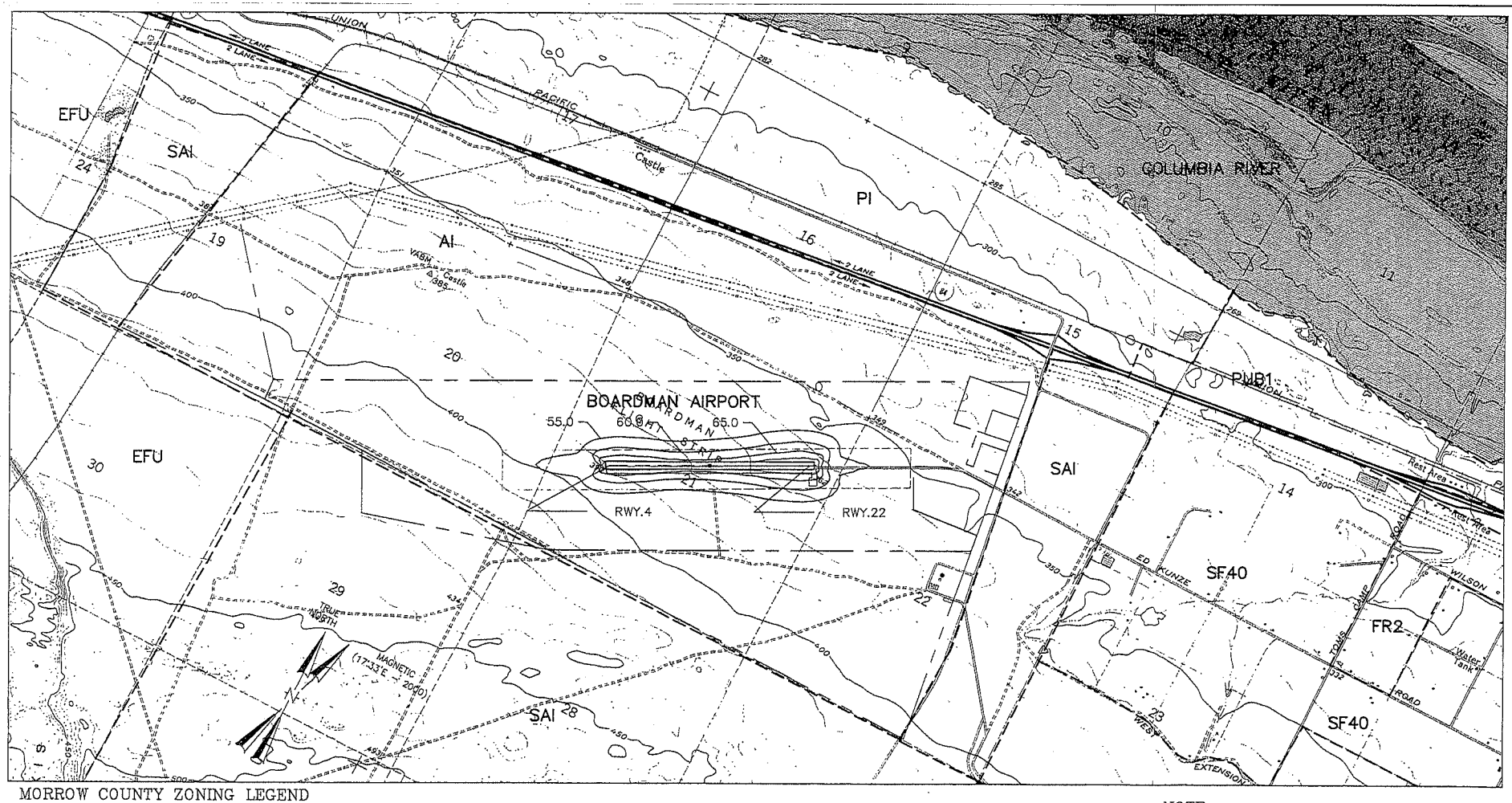
DATE: JUNE 24, 2002
PROJECT: BOARD-2b-final

BOARDMAN AIRPORT
AIRPORT LAYOUT PLAN UPDATE

RUNWAY SURFACE APPROACH PLAN & PROFILE

DRAWING NO. 2b
SHEET NO. 4 OF 5



MORROW COUNTY ZONING LEGEND

AI	Airport Industrial
EFU	Exclusive Farm Use
FR2	Farm/Residential (2 Acre Min.)
PI	Port Industrial
PUB1	Army Corps of Engineers
PUB2	Boardman Bombing Range
SAI	Space Age Industrial
SF40	Small Farm (40 Acre Min.)

DNL NOISE CONTOURS FOR YEAR 2005 WITH 6200 OPERATIONS PER YEAR

1000' 0 1000' 2000'

NOTE:

Airport Overlay Zone to be adopted by Morrow County based on FAR PART 77 Airspace Surface Dimensions and Elevations Depicted on Drawing 2a.

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AF	MB	DM	1" = 1000'

DATE: JUNE 24, 2002
PROJECT: BOARD-3-final

BOARDMAN AIRPORT
AIRPORT LAYOUT PLAN UPDATE

AIRPORT LAND USE PLAN WITH 2005 NOISE CONTOURS

DRAWING NO. 3
SHEET NO. 5 OF 5

CHAPTER FIVE
FINANCIAL MANAGEMENT AND DEVELOPMENT PROGRAM

The analyses conducted in the previous chapters have evaluated airport development need based on forecast changes in aircraft activity, environmental factors, and operational efficiency. 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.

Historically, funding of major capital projects at the airport has been through Federal Aviation Trust Fund monies, state funding, and private investment. The primary source for airport development funds has historically been through aviation user fees. In cases where federal grant monies and local funds are not sufficient to conduct a particular project or group of projects, other funding sources may need to be pursued, or the project deferred until adequate funding may be obtained. Hangar development on the airport has historically been privately funded. This trend is expected to continue during the current planning period.

The maintenance of airfield pavements ranges from minor items such as crack filling to fog seals or patching. Some of these items are not currently eligible for FAA funding. The pavement maintenance items are not included in the capital improvement program, but will need to be undertaken by the Port on a regularly scheduled basis. The Pavement Management Program (PMP) managed by the Oregon Department of Aviation (ODA) provides state funding 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.

AIRPORT DEVELOPMENT SCHEDULE AND COST ESTIMATES

The analyses presented in Chapter Four described the airport's overall development needs for the next twenty years. However, for subsequent feasibility analyses, details need to be included for these capital expenditures. This has been accomplished by applying estimates of cost for projects

within the development program. Cost estimates for each project are based on Year 2002 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 2002-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
177.8
(1982-1984 = 100)
February 2002

Multiplying the change ratio (Y) times any 2002-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 detailed funding distribution assumptions. The scheduling has been prepared according to the facility requirements determined earlier and overall economic feasibility. The staging of development projects is based upon projected airport activity levels. 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 5-1**. The twenty-year CIP is divided between short-term and long-term projects. The

distribution of project types within the CIP is summarized in **Table 5-2**. The tables provide 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 typically participate in vehicle parking, hangar development, utilities, or costs associated with non-aviation developments.

The short-term phase of the capital improvement program includes the highest priority projects to be conducted during the first five years. Long-term projects are expected to occur beyond the next five years, 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 Boardman during the current planning period:

• *Preserve/Resurface Existing Airfield Pavement*	*38%*
• *New or Reconstructed Airfield Pavement*	*27%*
• *NAVAIDS, Lighting, Marking*	*6%*
• *Other Items (Property Acq.,Fencing, Access Roads, etc.)*	*29%*
Total	**100%**

Short Term Projects

Short-term projects at Boardman include pavement maintenance on the runway and relocation of the airport access road, aprons, and hangar areas that are located too close to the runway. The development of the south aviation facilities includes new GA and AG aprons with taxiway access, and the hangar development area. Other short-term terminal area improvements include aviation fuel storage tanks, fencing, lighting and surface access and parking.

Based on the funding considerations and the overall needs of the airport, it is anticipated that the runway will have a slurry seal applied in 2002 or 2003 to preserve the pavement for one or two additional years. However, adding an asphalt overlay to the runway is a very high priority based on the poor condition of the pavement. If funding becomes available within the next year, it may be possible to eliminate the sealcoating and add the overlay.

Several airfield lighting improvements are recommended as short-term projects, including installation of Precision Approach Path Indicators (PAPI) on both runway ends and lighted wind cones near both ends of the runway.

The addition of aircraft fueling facilities will be based on the Port's assessment of market demand. Although the airport has a large percentage of turbine aircraft activity, including aerial applicators, demand for Jet Fuel may be relatively low based on typical operational demands. Because the airport is largely unattended, the Port should consider a card-lock system, which would allow self-fueling.

The development of new aviation use areas also includes overhead flood lighting and fencing to provide a minimal level of security.

Long Term Projects

The development of a south side parallel taxiway is identified early in the long-term improvement period. Edge reflectors are recommended for the parallel taxiway and all access taxiways.

Regular pavement maintenance will be required on all existing and new pavements periodically through the end of the planning period. Slurry seals are recommended on five to seven-year intervals in order to maximize the useful life of airfield pavements.

Property acquisition is identified early in the long-term period for the east runway extension reserve. Portions of this property include industrial buildings, which will need to be added to the estimated cost of raw land listed in the table. For planning purposes, the eastern property acquisition was estimated at $5,000 per acre based on existing utility and roadway service. The FAA has indicated that since this property was previously part of the airport, and subsequently sold, its purchase will not be eligible for FAA funding.

A second property acquisition project is identified later in the planning period to accommodate a west runway extension reserve. This property is undeveloped rangeland, which was estimated at $2,500 per acre. All property being acquired with the use of federal funds is subject to the Federal Uniform Relocation Assistance and Real Property Acquisition Act.

Additional fencing for the remainder of the airport perimeter is identified as a long-term project.

Other long-term projects include the installation of runway end identifier lights (REILS) and an automated weather observation system (AWOS) in conjunction with the development of an instrument approach at the airport.

TABLE 5-1
20-YEAR CAPITAL IMPROVEMENT PROGRAM

Project	Qty.	Unit	Unit $	Total Cost*	FAA Eligible	Local / State
Short Term Projects (Years 1 - 5)						
Slurry Seal Runway (4,200 x 150')	70,000	SY	$2.50	$175,000	$157,500	$17,500
Close Existing Access Rd/ Upgrade South Access Rd.	3,800	LF	$28	$106,400	$95,760	$10,640
South Hangar Taxilanes (1,200 x 25')	3,300	SY	$24	$79,200	$71,280	$7,920
Overlay Runway 4-22 (4,200 x 150') (2" AC)	70,000	SY	$6	$420,000	$378,000	$42,000
Construct New AG Apron & Taxiway Connectors (2"AC)	2,140	SY	$24	$51,360	$46,224	$5,136
2 AG Loading Pads w/ containment (6" PCC)	556	SY	$75	$41,700	$37,530	$4,170
Construct New GA Tiedown/Fueling/Corporate Apron	16,200	SY	$24	$388,800	$349,920	$38,880
GA Apron Taxiway Connectors (800 x35')	3,100	SY	$24	$74,400	$66,960	$7,440
Apron Flood Lighting	6	ea	$6,000	$36,000	$32,400	$3,600
Perimeter Fencing (S. Hangar Area & East Airport)/4 Gates	10,000	LF	$15	$160,000	$144,000	$16,000
Aircraft Fuel Storage (2 -12,000 gal ea. AVGAS/Jet)	2	ea	$75,000	$150,000	$0	$150,000
Precision Approach Path Indicators (PAPI)	2	ea	$35,000	$70,000	$63,000	$7,000
Lighted Wind Socks	2	ea	$7,500	$15,000	$13,500	$1,500
Total Short Term Projects				**$1,767,860**	**$1,456,074**	**$311,786**
Long Term Projects (Years 6 - 20)						
Parallel Taxiway w/ Connect. Txy & Hldg. Area (Rwy 4)	16,000	SY	$24	$384,000	$345,600	$38,400
Taxiway Reflectors (Parallel Txy & Access Txy)	5,600	LF	$3	$16,800	$15,120	$1,680
Slurry Seal GA & AG Aprons & Access Taxiways (Yr. 8)	15,870	SY	$2.50	$39,675	$35,708	$3,968
Slurry Seal Runway (4200 x 150') (Yr. 8)	70,000	SY	$2.50	$175,000	$157,500	$17,500
Property Acquisiton (East Airport - Rwy 22 RPZ Reserve)	34	Acres	$5,000	$167,500	$0	$167,500
Perimeter Fencing (North & West Airport Perimeter)	21,000	LF	$15	$315,000	$283,500	$31,500
Automated Weather Observation System (AWOS)	1	ea	$75,000	$75,000	$67,500	$7,500
REIL (in conjunction w/GPS approach)	2	ea	$25,000	$50,000	$45,000	$5,000
Slurry Seal Parallel Taxiway & AC Holding Area (Yr. 11)	20,300	SY	$2.50	$50,750	$45,675	$5,075
Slurry Seal Runway (4200 x 150') (Yr. 13)	70,000	SY	$2.50	$175,000	$157,500	$17,500
Slurry Seal GA & AG Aprons & Access Taxiways (Yr. 13)	15,870	SY	$2.50	$39,675	$35,708	$3,968
Property Acquisiton (West Airport Area)	54	Acres	$2,500	$135,750	$122,175	$13,575
Parallel Taxiway Reconstruct (West End - Original Apron)	2,850	SY	$24	$68,400	$61,560	$6,840
Slurry Seal Parallel Taxiway & AC Holding Areas (Yr. 16)	20,300	SY	$2.50	$50,750	$45,675	$5,075
Slurry Seal Runway (4200 x 150') (Yr. 18)	70,000	SY	$2.50	$175,000	$157,500	$17,500
Slurry Seal GA & AG Aprons & Access Taxiways (Yr. 18)	15,870	SY	$2.50	$39,675	$35,708	$3,968
Total Long Term Projects				**$1,957,975**	**$1,611,428**	**$346,548**
TOTAL SHORT & LONG TERM PROJECTS				**$3,725,835**	**$3,067,502**	**$658,334**

* Project costs include 30% engineering and contingency.

TABLE 5-2
CIP PROJECTS BY CATEGORY

Project	Qty.	Unit	Unit $	Total Cost*	FAA Eligible	Local / State
Short Term Projects						
Preserve/Resurface Existing Pavement						
Slurry Seal Runway (4,200 x 150')	70,000	SY	$2.50	$175,000	$157,500	$17,500
Overlay Runway 4-22 (4,200 x 150') (2" AC)	70,000	SY	$6	$420,000	$378,000	$42,000
Subtotal				*$595,000*	*$535,500*	*$59,500*
New or Reconstructed Pavement						
South Hangar Taxilanes (1,200 x 25')	3,300	SY	$24	$79,200	$71,280	$7,920
Construct New AG Apron & Taxiway Connectors (2"AC)	2,140	SY	$24	$51,360	$46,224	$5,136
2 AG Loading Pads w/ containment (6" PCC)	556	SY	$75	$41,700	$37,530	$4,170
Construct New GA Tiedown/Fueling/Corporate Apron	16,200	SY	$24	$388,800	$349,920	$38,880
GA Apron Taxiway Connectors (800 x35')	3,100	SY	$24	$74,400	$66,960	$7,440
Subtotal				*$635,460*	*$571,914*	*$63,546*
NAVAIDS, Lighting, Marking						
Precision Approach Path Indicators (PAPI)	2	ea	$35,000	$70,000	$63,000	$7,000
Lighted Wind Socks	2	ea	$7,500	$15,000	$13,500	$1,500
Subtotal				*$85,000*	*$76,500*	*$8,500*
OTHER ITEMS						
Close Existing Access Rd/ Upgrade South Access Rd.	3,800	LF	$28	$106,400	$95,760	$10,640
Apron Flood Lighting	6	ea	$6,000	$36,000	$32,400	$3,600
Perimeter Fencing (S. Hangar Area & East Airport)/4 Gates	10,000	LF	$15	$160,000	$144,000	$16,000
Aircraft Fuel Storage (2 -12,000 gal ea. AVGAS/Jet)	2	ea	$75,000	$150,000	$0	$150,000
Subtotal				*$452,400*	*$272,160*	*$180,240*
Total Short Term Projects				**$1,767,860**	**$1,456,074**	**$311,786**
Long Term Projects						
Preserve/Resurface Existing Pavement						
Slurry Seal GA & AG Aprons & Access Taxiways (Yr. 8)	15,870	SY	$2.50	$39,675	$35,708	$3,968
Slurry Seal Runway (4200 x 150') (Yr. 8)	70,000	SY	$2.50	$175,000	$157,500	$17,500
Slurry Seal Parallel Taxiway & AC Holding Area (Yr. 11)	20,300	SY	$2.50	$50,750	$45,675	$5,075
Slurry Seal Runway (4200 x 150') (Yr. 13)	70,000	SY	$2.50	$175,000	$157,500	$17,500
Slurry Seal GA & AG Aprons & Access Taxiways (Yr. 13)	15,870	SY	$2.50	$39,675	$35,708	$3,968
Parallel Taxiway Reconstruct (West End - Original Apron)	2,850	SY	$24	$68,400	$61,560	$6,840
Slurry Seal Parallel Taxiway & AC Holding Areas (Yr. 16)	20,300	SY	$2.50	$50,750	$45,675	$5,075
Slurry Seal Runway (4200 x 150') (Yr. 18)	70,000	SY	$2.50	$175,000	$157,500	$17,500
Slurry Seal GA & AG Aprons & Access Taxiways (Yr. 18)	15,870	SY	$2.50	$39,675	$35,708	$3,968
Subtotal				*$813,925*	*$732,533*	*$81,393*
New or Reconstructed Pavement						
Parallel Taxiway w/ Connect. Txy & Hldg. Area (Rwy 4)	16,000	SY	$24	$384,000	$345,600	$38,400
Subtotal				*$384,000*	*$345,600*	*$38,400*
NAVAIDS, Lighting, Marking						
Taxiway Reflectors (Parallel Txy & Access Txy)	5,600	LF	$3	$16,800	$15,120	$1,680
Automated Weather Observation System (AWOS)	1	ea	$75,000	$75,000	$67,500	$7,500
REIL (in conjunction w/GPS approach)	2	ea	$25,000	$50,000	$45,000	$5,000
Subtotal				*$141,800*	*$127,620*	*$14,180*
OTHER ITEMS						
Property Acquisiton (East Airport - Rwy 22 RPZ Reserve)	34	Acres	$5,000	$167,500	$0	$167,500
Perimeter Fencing (North & West Airport Perimeter)	21,000	LF	$15	$315,000	$283,500	$31,500
Property Acquisiton (West Airport Area)	54	Acres	$2,500	$135,750	$122,175	$13,575
Subtotal				*$618,250*	*$405,675*	*$212,575*
Total Long Term Projects				**$1,957,975**	**$1,611,428**	**$346,548**
TOTAL SHORT & LONG TERM PROJECTS				**$3,725,835**	**$3,067,502**	**$658,334**

* Project costs include 30% engineering and contingency.

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 90 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 guidelines, the airport sponsor receives 90 percent participation on eligible projects. According to FAA guidelines, Boardman Airport is eligible under the Airport Improvement Program (AIP) to receive discretionary grants and general aviation entitlement grants. Under the current authorization, airports like Boardman receive up to $150,000 per year in the GA entitlement grants, depending on the needs identified in the airport capital improvement program. The future availability of the GA entitlement funding is unknown and dependent on congressional reauthorization. However, based on current legislation, these grants have become a very significant source of FAA funding for general aviation airports.

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. However, federal grants are expected to continue playing a significant role in the financing of the airport's projected capital expenditures.

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.

ODA has also provided project funding to Boardman Airport through its Financial Aid to Municipalities (FAM) grant program. The level of program funding is depends on available revenues, but the FAM grant program generally distributes approximately $100,000 to eligible

airports each year. The grants are currently limited to $10,000 per airport and may be used for planning and small construction or improvement projects. The Port of Morrow received a $10,000 FAM grant in 2001 for the apron expansion project.

Financing The Local Share Of Capital Improvements

Several airport improvement projects identified in the master plan are not eligible for federal funding. Private development on the airport is expected to consist of hangar construction, agricultural aircraft support facilities, fixed base operator facilities or other airport-related business, and other tenant-sponsored projects.

Glossary of Aviation Terms

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The following glossary of aviation terms was compiled from entries provided by David Miller, Century West Engineering; Chris Corich, W&H Pacific; and Gary Viehdorfer, Oregon Department of Aviation for use in aviation planning projects.

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 - All regularly scheduled airline activity performed by airlines certificated in accordance with Federal Aviation Regulations (FAR Part 121 or 127).

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

Aircraft Approach Category - A grouping of aircraft based how fast they come in for landing. As a rule of thumb, slower approach speeds mean smaller airport dimensions 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.

Airline - A scheduled air carrier certificated under Part 121 of the Federal Aviation Regulations.

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 Categories – The following categories are used to describe public use airports in Oregon. For additional information, see the **Oregon Aviation Plan.**

Category 1 – Commercial Airports
Category 2 – Business Aviation or High Activity General Aviation Airports
Category 3 – Regional General Aviation Airports
Category 4 – Community General Aviation Airports
Category 5 – Low Activity General Aviation Airports

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 provides 90% of funding for eligible airport improvement projects. The local sponsor of the project (i.e., airport owner) has to come up with the remaining 10% 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).

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.

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 fire station.

Automated Weather Observation System (AWOS) – An automated weather observation system providing on-site weather data to support instrument approaches.

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.

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

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.

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.

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.

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 engine repair, or radio repair).

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

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.

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.

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.

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.

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).

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.

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

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

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

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

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.

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

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.

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

OAD – Oregon Aeronautics Division.

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

Passenger Facility Charge (PFC) - Public agencies controlling a commercial service airport can charge enplaning passengers using the airport a $1, $2, or $3 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.

Rotorcraft - A helicopter.

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

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 bigger for airports serving large airplanes. The RPZ used to be known as a clear zone – which was a good descriptive term because you wanted to keep it clear.

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

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

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

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.

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.

Visual Flight Rules (VFR) - Rules that govern the procedures to conducting flight under visual conditions. The term is also used in the US to indicate weather conditions that are equal to or greater than minimum VFR requirements. In addition, it is used by pilots and controllers to indicate type of flight plan.

Visual Guidance Indicator (VGI) – Equipment designed to provide visual guidance for pilots for landing through the use of different color light beams. Visual Approach Slope Indicators (VASI) and Precision Approach Path Indicators (PAPI) defined above are examples.

Wind Rose - A diagram indicating the prevalence of winds from various directions in relation to existing or proposed runway alignments.

AIRPORT AND RUNWAY DATA

Airport elevation	396 feet
Mean daily maximum temperature of the hottest month	91.00 F.
Maximum difference in runway centerline elevation	9 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	310 feet
Small airplanes with approach speeds of less than 50 knots	830 feet
Small airplanes with less than 10 passenger seats	
75 percent of these small airplanes	2650 feet
95 percent of these small airplanes	3190 feet
100 percent of these small airplanes	3810 feet
Small airplanes with 10 or more passenger seats	4350 feet
Large airplanes of 60,000 pounds or less	
75 percent of these large airplanes at 60 percent useful load	5440 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	5670 feet
100 percent of these large airplanes at 90 percent useful load	8690 feet
Airplanes of more than 60,000 pounds	Approximately 5150 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 . . . . . 60.00 feet
Primary runway end approach visibility minimums are not lower than 1 mile
Other runway end approach visibility minimums are not lower than 1 mile
Airplane undercarriage width (1.15 x main gear track) . . . 11.80 feet
Airport elevation . . . . . 396 feet

RUNWAY AND TAXIWAY 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	230.0	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:		
Width 200 feet from runway end		500 feet
Width 1200 feet from runway end		700 feet
Length		1000 feet

Runway protection zone at other runway end:

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

Departure runway protection zone:

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

Threshold surface at primary runway end:

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

Threshold surface at other runway end:

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

Taxiway centerline to parallel taxiway/taxilane centerline	82.0	105 feet
Taxiway centerline to fixed or movable object	52.0	65.5 feet
Taxilane centerline to parallel taxilane centerline	76.0	97 feet
Taxilane centerline to fixed or movable object	46.0	57.5 feet
Taxiway width	26.9	35 feet
Taxiway shoulder width		10 feet
Taxiway safety area width	60.0	79 feet
Taxiway object free area width	104.0	131 feet
Taxilane object free area width	92.0	115 feet
Taxiway edge safety margin		7.5 feet
Taxiway wingtip clearance	22.0	26 feet
Taxilane wingtip clearance	16.0	18 feet

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

AIRPORT DESIGN AIRPLANE AND AIRPORT DATA

Aircraft Approach Category B
Airplane Design Group II
Airplane wingspan . . . . . 60.00 feet
Primary runway end approach visibility minimums are not lower than CAT I
Other runway end approach visibility minimums are not lower than 1 mile
Airplane undercarriage width (1.15 x main gear track) . . . 11.80 feet
Airport elevation . . . . . 396 feet
Airplane tail height . . . . . 15.00 feet

RUNWAY AND TAXIWAY 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		705	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	230.0	300	feet
Runway centerline to edge of aircraft parking	400.0	400	feet
Runway width		100	feet
Runway shoulder width		10	feet
Runway blast pad width		120	feet
Runway blast pad length		150	feet
Runway safety area width		300	feet
Runway safety area length beyond each runway end or stopway end, whichever is greater		600	feet
Runway object free area width		800	feet
Runway object free area length beyond each runway end or stopway end, whichever is greater		600	feet
Clearway width		500	feet
Stopway width		100	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 height H	54.2	52.4	feet
Inner-transitional OFZ slope		6:1	
Runway protection zone at the primary runway end:			
Width 200 feet from runway end		1000	feet

Width 2700 feet from runway end		1750 feet
Length		2500 feet

Runway protection zone at other runway end:

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

Departure runway protection zone:

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

Threshold surface at primary runway end:

Distance out from threshold to start of surface		200 feet
Width of surface at start of trapezoidal section		1000 feet
Width of surface at end of trapezoidal section		4000 feet
Length of trapezoidal section		10000 feet
Length of rectangular section		0 feet
Slope of surface		34:1

Threshold surface at other runway end:

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

Taxiway centerline to parallel taxiway/taxilane centerline	82.0	105 feet
Taxiway centerline to fixed or movable object	52.0	65.5 feet
Taxilane centerline to parallel taxilane centerline	76.0	97 feet
Taxilane centerline to fixed or movable object	46.0	57.5 feet
Taxiway width	26.9	35 feet
Taxiway shoulder width		10 feet
Taxiway safety area width	60.0	79 feet
Taxiway object free area width	104.0	131 feet
Taxilane object free area width	92.0	115 feet
Taxiway edge safety margin		7.5 feet
Taxiway wingtip clearance	22.0	26 feet
Taxilane wingtip clearance	16.0	18 feet

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

CENTURY WEST
ENGINEERING CORPORATION

* SAMPLE LETTER DISTRIBUTED TO ALL INTERESTED CITIZENS ON CONTACT LIST

LEADING THROUGH EFFECTIVE SOLUTIONS

October 31, 2000

Mr. Gordon Lienou
68679 Wilson Lane
Boardman, OR 97818

RE: BOARDMAN AIRPORT; CONDON STATE AIRPORT; WASCO STATE AIRPORT (OREGON) JOINT PLANNING CONFERENCES -- NOVEMBER 16 & 17, 2000

Dear Mr. Lienou:

The State of Oregon Department of Aviation has awarded our firm a contract to conduct Airport Layout Plan Updates for the airports in Boardman, Condon, and Wasco, Oregon. You have been identified as a person or business that may have interest in one or more of these airports and therefore, our project.

We will update the long-term plan for each airport, identifying current, short-term and long-term facility needs. In addition, our project will evaluate funding needs, land use, environmental and other issues related to maintaining a safe and functional airport for each community.

The project is just beginning now, and our first step has been to schedule Joint Planning Conferences (JPC) in each community (see dates, times below). These meetings will provide an opportunity for all interested parties to meet and discuss the issues and concerns that will be most important for us to consider during the planning process. You are invited to attend.

If you are unable to attend but have questions or comments, please let us know in writing with as much detail as possible, so that we may present your concerns at the Joint Planning Conference in your absence. To assist with your review/comment, we have attached conceptual sketches for each airport that provide a general layout of existing facilities. We have also enclosed a questionnaire for pilots and interested parties. We would appreciate any input you can provide.

Meeting Schedule:

Wasco: Thursday, November 16, 2000 (10:30 a.m. to 12:00 noon). City Hall, City Council Chambers - 1017 Clark Street, Wasco (Telephone: 541/442-5515)

Condon: Thursday, November 16, 2000 (3:00 p.m. to 5:00 p.m.). County Courthouse, Circuit Courtroom, 2nd Floor - 221 South Oregon Street, Condon (Telephone: 541/384-2311)

Boardman: Friday, November 17, 2000 (8:00 a.m. to 10:00 a.m.). Port of Morrow Offices, Riverfront Center, 2nd Floor - 2 Maine Drive, Boardman (Telephone: 541/481-7678)

825 NE Multnomah, Suite 425, Portland, Oregon 97232
(503) 231-6078 phone (503) 231-6482 fax

Shortly following the JPC, we will prepare and distribute a written summary of the discussion items and all comments received. We will also provide periodic updates on the status of project to all interested parties. Finally, if you have any changes to the information provided on the project contact list (attached), please forward them to me (mail, fax or email). We look forward to working with you to improve your airport!

Sincerely,

David M. Miller, AICP
Aviation Project Manager

Attachments

Century West Engineering ◆ Aron Faegre & Associates ◆ Gazeley & Associates
Oregon Department of Aviation ◆ Port of Morrow

Boardman Airport
Condon State Airport
Wasco State Airport

Airport Layout Plan Update
Joint Planning Conference

November 16 & 17, 2000
Boardman, Condon, and Wasco, Oregon

_____ I will attend the Boardman JPC

_____ I will attend the Condon JPC

_____ I will attend the Wasco JPC

_____ I will not attend the JPC
(written comments, concerns, or issues attached)

Comments:

_____

_____

_____

_____

_____

_____

_____

_____

_____

Name: _____
Representing: _____
Phone: _____

Please fax this response sheet to:
Robin Hillier, Project Coordinator
Century West Engineering
(503) 231-6482

1. What facilities/improvements are most needed? When?
runway, taxiway, apron, pavement markings, lighting, windcones, new hangars, repaired hangars, fuel tanks, utility services, service roads, FBO facility, security devices, fences, auto parking areas, other...

Answer to Question: _____

2. What nav-aids are most needed? When? PAPI (VASI), REIL, approach lighting, GPS approach, AWOS?

Answer to Question: _____

3. What is the practical service area for the airport (where do people come from to base their aircraft here)?

Answer to Question: _____

4. What are the critical (biggest or fastest) aircraft that regularly use the airport? What are the most common aircraft?

Answer to Question: _____

5. Are pilots aware of any airspace problems or conflicts relating to ATC or other airports or ...?

Answer to Question: _____

6. Are pilots aware of any safety problems at the airport?

Answer to Question: _____

7. Are pilots aware of any wind information differing from the existing wind rose?

Answer to Question: _____

8. Are pilots aware of any special activities that the airport needs to accommodate -- like extensive helicopter usage or ...?

Answer to Question: _____

_____
_____
_____
_____
_____
_____
_____
_____

9. Are there any other issues that you would like to mention?

Answer to Question: _____

_____
_____
_____
_____
_____
_____
_____

fold in thirds, staple, and send

Provide name and address of pilot answering this questionnaire:

- -

Name _____
Address _____
_____
Telephone _____

(33 cents)

TO: Century West Engineering
825 NE Multnomah, Suite 425
Portland, Oregon 97232

BOARDMAN AIRPORT LAYOUT PLAN UPDATE
QUESTIONNAIRE FOR PILOTS & INTERESTED PARTIES

An update of your airport's "Airport Layout Plan" will be accomplished during the next year. Our firm will be leading the planning effort for this work, and we want to solicit pilot (and other interested parties) to fill out this questionnaire and return it to us. The Airport Layout Plan will show the long term development plans for the airport. So, it is important for us to learn of your desires and needs, as the pilots regularly using the airport.

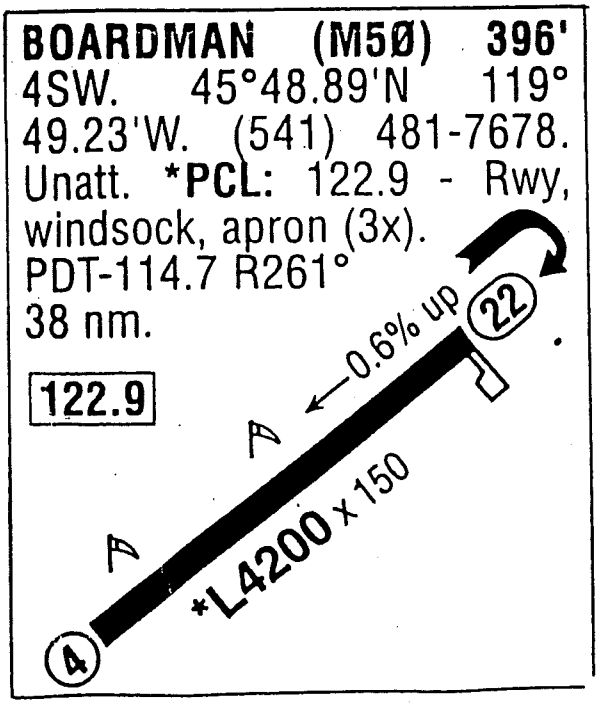
Thank you for taking the time to respond, and we look forward to meeting with you in person at the several meetings that we will have in your community over the next few months.

Pilots interested in having their comments taken into account should return this questionnaire to:

Robin Hillier
Project Coordinator
Century West Engineering
825 NE Multnomah, Suite 425
Portland, Oregon 97232
(503) 231-6078
FAX/231-6482

A reduced copy of the most recent "Flight Guide" data and drawing is attached if you wish to identify the location of any item of discussion.

Thank you for your assistance.



Airport Name Boardman

1. What facilities/improvements are most needed? When?
runway, taxiway, apron, pavement markings, lighting, windcones, new hangars, repaired hangars, fuel tanks, utility services, service roads, FBO facility, security devices, fences, auto parking areas, other...

Answer to Question: Taxiway, pavement markings service road, along sod runway. Upgrade parking area 2001 - 2006

2. What nav-aids are most needed? When? PAPI (VASI), REIL, approach lighting, GPS approach, AWOS?

Answer to Question: VASI, GPS, AWOS 2001 - 2004

3. What is the practical service area for the airport (where do people come from to base their aircraft here)?

Answer to Question: The two aircraft based here are one from Irrigon the other lives in Portland.

4. What are the critical (biggest or fastest) aircraft that regularly use the airport? What are the most common aircraft?

Answer to Question: King Air. Most common are ag. aircraft.

5. Are pilots aware of any airspace problems or conflicts relating to ATC or other airports or ...?

Answer to Question: The Navy bombing range can conflict with Boardman airspace. Right now there is very little activity at the range and has been this way since the Gulf War. It would be nice to convince the Navy to give us a little more space so we can have instrument landing capabilities.

6. Are pilots aware of any safety problems at the airport?

Answer to Question: No safety problems

7. Are pilots aware of any wind information differing from the existing wind rose?

Answer to Question: No other wind info.

Airport Name_____

8. Are pilots aware of any special activities that the airport needs to accommodate -- like extensive helicopter usage or ...?

Answer to Question: No special activities other than spring and summer ag activity

9. Are there any other issues that you would like to mention?

Answer to Question: We need to abandon the paved access road and finish the new road entering from the south.

fold in thirds, staple, and send

Provide name and address of pilot answering this questionnaire:

- -

Name Neal Christopherson
Address P.O. Box 200
Boardman Oregon 97818
Telephone 541-481-7467

(33 cents)

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NOV 10 2009

TO: Century West Engineering
825 NE Multnomah, Suite 425
Portland, Oregon 97232

97232/9999

Airport Name Boardman

1. What facilities/improvements are most needed? When?
runway, taxiway, apron, pavement markings, lighting, windcones, new hangars, repaired hangars, fuel tanks, utility services, service roads, FBO facility, security devices, fences, auto parking areas, other...

Answer to Question: New Hangars
Auto Parking
Radio controled lighting

2. What nav-aids are most needed? When? PAPI (VASI), REIL, approach lighting, GPS approach, AWOS?

Answer to Question: GPS approach
AWOS
(nearest weather Hermiston 18 mi or Pendleton 40 mi)

3. What is the practical service area for the airport (where do people come from to base their aircraft here)?

Answer to Question: I leave a car there & fly from Tillamook. Use car to visit plant & farms.

4. What are the critical (biggest or fastest) aircraft that regularly use the airport? What are the most common aircraft?

Answer to Question:

5. Are pilots aware of any airspace problems or conflicts relating to ATC or other airports or ...?

Answer to Question: Restricted area overhead and to South. Could hamper IFR use. Radar contact w/ATC lost at 2000 feet AGL

6. Are pilots aware of any safety problems at the airport?

Answer to Question: Good open approaches

7. Are pilots aware of any wind information differing from the existing wind rose?

Answer to Question: None

Airport Name Boardman

8. Are pilots aware of any special activities that the airport needs to accommodate -- like extensive helicopter usage or ...?

Answer to Question: None

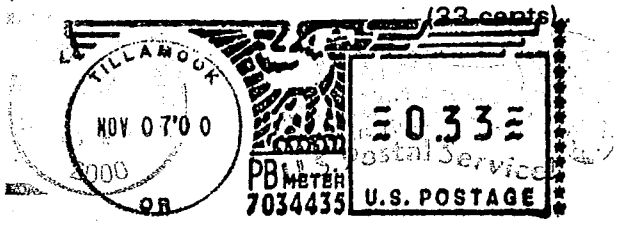
9. Are there any other issues that you would like to mention?

Answer to Question: _____

fold in thirds, staple, and send

Provide name and address of pilot answering this questionnaire:

Name Harold Schild
Address P.O. 313
Tillamook, Oregon 97141
Telephone (503) 842-4481



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NOV - 9 2000
EC-PORTLAND, OR

TO: Century West Engineering
825 NE Multnomah, Suite 425
Portland, Oregon 97232

97232+2165

Century West Engineering ◆ Aron Faegre & Associates ◆ Gazeley & Associates
Oregon Department of Aviation ◆ Port of Morrow

Boardman Airport
Condon State Airport
Wasco State Airport

Airport Layout Plan Update
Joint Planning Conference

November 16 & 17, 2000
Boardman, Condon, and Wasco, Oregon

✓ I will attend the Boardman JPC

____ I will attend the Condon JPC

____ I will attend the Wasco JPC

____ I will not attend the JPC
(written comments, concerns, or issues attached)

Comments:

Name: Tamra Mabbott
Representing: Morrow Co. Planning
Phone: (541) 922-6486

Please fax this response sheet to:
Robin Hillier, Project Coordinator
Century West Engineering
(503) 231-6482

Century West Engineering ◆ Aron Faegre & Associates ◆ Gazeley & Associates
Oregon Department of Aviation ◆ Port of Morrow

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____ I will attend the Wasco JPC

____ I will not attend the JPC
(written comments, concerns, or issues attached)

Comments:

Name: Tony Justus
Representing: Watermaster - District 5
Phone: 541-278-5456

Please fax this response sheet to:
Robin Hillier, Project Coordinator
Century West Engineering
(503) 231-6482

Century West Engineering ◆ Aron Faegre & Associates ◆ Gazeley & Associates
Oregon Department of Aviation ◆ Port of Morrow

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____ I will not attend the JPC
(written comments, concerns, or issues attached)

Comments:

Name: Tom Kuhlman
Representing: O.D.O.T - Region 5 Traffic
Phone: 541-889-8558

Please fax this response sheet to:
Robin Hillier, Project Coordinator
Century West Engineering
(503) 231-6482

Century West Engineering ♦ Aron Faegre & Associates ♦ Gazeley & Associates
Oregon Department of Aviation ♦ Port of Morrow

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X I will not attend the JPC
(written comments, concerns, or issues attached)

Comments: Howard Harris has retired and I have assumed his position. I will not be getting involved in airport planning projects of this relatively small size.

Name: Dave Nordberg
Representing: Oregon DEQ
Phone: (503) 229-5519

Please fax this response sheet to:
Robin Hillier, Project Coordinator
Century West Engineering
(503) 231-6482

Century West Engineering ◆ Aron Faegre & Associates ◆ Gazeley & Associates
Oregon Department of Aviation ◆ Port of Morrow

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____ I will attend the Wasco JPC

X I will not attend the JPC
(written comments, concerns, or issues attached)

Comments:

none at this time

Name: Thomas Bennett
Representing: USDA NRCS Condon office
Phone: 384 2671

Please fax this response sheet to:
Robin Hillier, Project Coordinator
Century West Engineering
(503) 231-6482

Century West Engineering ◆ Aron Faegre & Associates ◆ Gazley & Associates
Oregon Department of Aviation ◆ Port of Morrow

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____ I will attend the Wasco JPC

✓ I will not attend the JPC
(written comments, concerns, or issues attached)

Comments: I have forwarded your notice and information to the SHERMAN COUNTY Soil and Water Conservation District for their action.

SHERMAN CO. SWCD
P.O. Box 405 MORO, OR 97039
TEL: (541-565-3216)

Name: [signature]
Representing: Wasco Co SWCD
Phone: 541 296 6178 x3

Please fax this response sheet to:
Robin Hillier, Project Coordinator
Century West Engineering
(503) 231-6482

Century West Engineering ◆ Aron Faegre & Associates ◆ Gazeley & Associates
Oregon Department of Aviation ◆ Port of Morrow

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(written comments, concerns, or issues attached)

Comments:
None of the Plans submitted identified Ag Pesticide Spray operations. Should any of the improvements include Ag Pesticide collection, treatment and or storage devices, the DEQ Haz. Waste program for the Eastern Region would be interested that they meet the Requirements of OAR 340-109-xx requirements.

Name: Brett McKnight
Representing: Dept. of Env. Qual.
Phone: 1-541-388-6146 x 236

Please fax this response sheet to:
Robin Hillier, Project Coordinator
Century West Engineering
(503) 231-6482

URGENT

State of Oregon

Department of Environmental Quality

FAX Cover Sheet

Date: 11/16/00

Time: 4pm

Number Of Pages Including Cover Sheet 2

To:	Robin Hillier	**From:**	Amy Verley State of Oregon Department of Environmental Quality 700 SE Emigrant, Suite 330 Pendleton, OR 97801
Phone:		**Phone:**	(541) 276-4063
FAX:	(503) 731-4082	**FAX:**	(541) 278-0168

Message:

Comments from DEQ-Water Quality Division

Amy Verley

Century West Engineering ◆ Aron Faegre & Associates ◆ Gazeley & Associates
Oregon Department of Aviation ◆ Port of Morrow

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__X__ I will not attend the JPC
(written comments, concerns, or issues attached)

Comments:
For the Boardman + Condon Airport Layout Plan conference, the Eastern Region Water Quality Division has two concerns. We would like to see storm water run off addressed and what the ultimate disposition/location is of domestic wastewater (sewage) from the airports facilities. We appreciate the opportunity to comment on this planning process.

Name: Amy Verley for Barbara D. Sellars
Representing: Eastern Region - Water Quality
Phone: (541) 278-4617

Please fax this response sheet to:
Robin Hillier, Project Coordinator
Century West Engineering
(503) 231-6482

Century West Engineering ◆ Aron Faegre & Associates ◆ Gazeley & Associates
Oregon Department of Aviation ◆ Port of Morrow

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____ I will attend the Wasco JPC

__✓__ I will not attend the JPC
(written comments, concerns, or issues attached)

Comments:

Robin,
Sorry not to be able to attend any of the JPC meetings last week. Our agency would be interested in the layout Plan Updates primarily if future construction may involve impacts to species listed under the Endangered Species Act. The first step in assessing the potential for any species listed under the act to be present in the vicinity of the above listed airports is to contact Cindy Bright in our office 503.231.6179 to request a federal species list. If I can be of further assistance, please call me at the same # listed above for Cindy.

Name: Chris Allen - Biologist
Representing: U.S. Fish & Wildlife Service, Portland OR
Phone: 503.231.6179

Chris Allen
11/20/00

Please fax this response sheet to:
Robin Hillier, Project Coordinator
Century West Engineering
(503) 231-6482

Century West Engineering ◆ Aron Faegre & Associates ◆ Gazeley & Associates
Oregon Department of Aviation ◆ Port of Morrow

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_____ I will attend the Wasco JPC

_____ I will not attend the JPC
(written comments, concerns, or issues attached)

Comments:

EVRYTHING THAT COMES IN GOES INTO A FIRST IN - FIRST OUT IN-BOX, DID NOT GET TO THIS UNTIL TODAY NOV 28 2000 SO... MISSED YOUR MEETINGS - HAD CONFLICTS ANYWAY. OUR DATA IS ON USGS QUADS & ORGANIZED BY TOWNSHIP / RANGE / SECTIONS.
BOARDMAN = POSSIBLE HISTORIC ARCHEOLOGICAL SITE *
CONDON = NEVER BEEN SURVEYED
WASCO = DO NOT KNOW WHERE IT IS AID

NOTED
Historic Preservation
Oregon State Parks & Recreation
111 Commercial St. NE Ste 12
Salem, Oregon 97301-1012

Name:
Representing:
Phone:

* OLD COPPS OF ENGINEERS SURVEY

Please fax this response sheet to:
Robin Hillier, Project Coordinator
Century West Engineering
(503) 231-6482

Boardman Airport 11-17-00

Aron Faeye AF Assoc 520 SW Yamhill Portland, OR 97204 503-222-2546
David Miller Century West Eng.
Wendy Kirkpatrick Morrow Co. Planning Dept PO Box 40 Irrigon, OR 97844 541-922-46 24
BARBARA VAN ARSDALE POBx 748 Heppner OR 989-8549
VAN ARSDALE Air Service
Guy Van Arsdale Same as Barbara Above
Tony Justus OWRD 116 SE Dorian Ave. Pendleton, OR 97801 541-278-5456
TED Pesicka Ag Northwest PO Box 599 Hermiston, Or 97838
Gene Maahs AG. Northwest Inc PO 599 Hermiston OR 97838
Dave Gassler ASAP Flying Service · PO-349 Hermiston 97838
TOM KUHLMAN ODOT 1508 E. Ichabod, Ontario 97914
Neal Christopherson Port of Morrow PO Box 200 Boardman
Ron McKinnis Port of Morrow P.O. Box 200 Boardman
Gary Vieh dorfer OR Dept. of Aviation
David Miller Century West
Verw Frederickson Ore Hay P.O. Box 109 Boardman

Aron Faegre & Associates 520 SW Yamhill Portland Oregon 97204 (503) 222-2546 FAX/222-6529

PROJECT MEMORANDUM
BOARDMAN AIRPORT PLANNING PROJECT
Joint Planning Conference November 17, 2000

This memo summarizes a meeting held in Boardman, Oregon at 8 AM on November 17, 2000 in the Port of Morrow offices to initiate the FAA-funded airport planning project for the Boardman Airport. The purpose of the meeting was to gain input from any involved or interested agencies, citizens, users, businesses, or others who wish to provide input for the airport planning project. Attending the meeting were: Wendy Kirkpatrick (Morrow Co. Planning Dept.); Neal Christopherson, Ron McKinnis (Port of Morrow); Gary Viehdorfer (Oregon Aeronautics); Tom Kuhlman (ODOT); Barbara & Guy Van Arsdale (Van Arsdale Air Service); Tony Justus (OWRD); Ted Pesicka, Gene Mlaahs (Ag NW); Dave Gessler (ASAP Flying Service); Vern Frederickson (Oregon Hay); David Miller (Century West Engineering); and Aron Faegre (AFA). The following items were discussed:

1. Summary of Planning Process: The airport planning work is funded by a 90% grant from the FAA and is specifically to update the airport layout plan drawings and provide a report about the airport. It will include inventorying the existing airport facilities, forecasting future needs of the airport and the local and regional communities, creating development alternatives for airport improvements, identifying the preferred alternative, and finally developing the final airport layout plan drawing set for Boardman Airport.

   The project will take approximately one year and on its completion will be signed by the airport owner (in this case, the Port of Morrow and the FAA) and will constitute an agreement as to what the airport is intended to become in the future. The document also should be adopted by the local land use jurisdictions so that any proposed improvements are contained with the local agencies' comprehensive plan. This will promote the ability to accomplish the planned improvements without the need for special land use processes such as exceptions, conditional uses, or other permits. The hope is that the airport's development plan can constitute the permitted improvements under the region's comprehensive plan.

2. Add Airport Imaginary Surfaces to County Zoning: The Morrow County planner noted that the zoning map needs to add the airport overlay zone for height restrictions. Once that plan is available from the consultants, the County would appreciate getting a copy that they can put into their GIS system.

3. 50 Year Airport Plan Requested by FAA: Although normally the FAA planning process requires a 20 year outlook, because the Port of Morrow County is interested in removing some lands from the airport for use as a race facility, the FAA has asked the consultants to plan for a 50 year period in terms of reserving sufficient land for future airport uses. The goal of the FAA is to ensure that no land is taken from the airport that would be needed within that time period. The current airport has 2,700 acres, which was believed by all present to be more than would be necessary for pure airport needs.

4. Need to Avoid Creating Residential Zones Near Airport: One pilot noted that it is common at airports, as they develop, to have residential areas also expand and increase in development intensity nearby. She noted that it is important to avoid densifying the existing farm residential 40 acre zoning since as the airport develops this would potentially become a problem.

5. Agricultural Operations at Airport: Currently Gene Moss has been using the airport for agricultural operations for the past two years. They constructed a secondary containment area for mixing and loading of product. It is 80′ x 80′ in size and can contain 2" of water -- thus it has a total capacity of 8,000 gallons. In addition it has a 3" raised curb around the perimeter to further provide protection to the area. Moss noted that the industry has changed a lot in the past ten years. Ag operators no longer hose-off their planes or allow product to go anywhere but onto the fields. Thus after spraying, they add water to chemicals in their tanks and then spend the extra money on aircraft time and fuel to fly the rinse product out to the field and leave it there where it should be. Thus they never store rinse water or any other material in tanks. Moss has never seen a catastrophic failure of a loader or aerial operation. However the kind of problem that does occur is a pin-hole leak in a hose which is relatively easily cleaned up and the material put back into the spray tank to be deposited on the fields where it is intended to be placed.

   In the Boardman area, agricultural aerial operations occur from mid-March to the end of September. Gene Moss estimated that he flew 3,000 agricultural operations during this past season. Flights are accomplished using two PZL-M18 turbine aircraft which have a 60′ wingspan and a maximum load of 660 gallons. The aircraft fully loaded can weigh up to 14,000 lbs. However Gene operates it always at or less than 12,500 lbs. The

airport is also used by West Flying Service for agricultural spray operations, although no one present knew the number of flights for them in the last year.

Moss's existing tanks out at the airport are water storage only. The chemical product is delivered by truck to the airport for loading onto the aircraft, but it is not stored there. Likewise, fuel is brought to the airport by truck and is not stored there.

Moss pointed out that aerial spray operators have become extremely careful that their product does not go anywhere except onto the fields where it is intended. The costs of not doing it this way are too high. For example, the value of a field of onions is typically $10,000 per acre. Thus all it takes is an error that involves ten acres of onions to reach a $100,000 problem. Match this with the fact that aerial spray operators can normally only get $100,000 of insurance maximum, and one can understand that the operators have to be very careful in order to protect their own business investment. They recognize that there is no room for error. They have to be careful and not let their product be accidentally washed into the soil or some other unintended place.

The ag operators no longer use the term "rinseate facility" because they no longer rinse aircraft or tanks out except as part of the actual spray operation. The term they use now is that they need a "mix-load pad".

The state of Washington has a law that requires a mix-load pad area to have secondary containment. However it does not specify precisely how to accomplish this so it leaves open the ability of the operator to determine what the best methodology is for a specific airport, rainfall conditions, and so forth. In a dry area like Boardman, rain does not fill up a 2" deep mix-load pad such as Moss built at the airport, since it quickly evaporates away. In the Willamette Valley obviously that same design couldn't work as easily.

In addition Moss noted that his operation has decided that they will not spray certain chemicals because the liability is too high.

Moss uses some bacteria called "super bugs" which eats chemicals such as 2-4-D, jet fuel, etc. He has seen evidence that these bacteria are able to clean up places where the wrong chemical was sprayed on a field.

All present believe that there need only be one mix-load pad at the airport, and that all the various ag operators can use the same one. There would need to be standards for how it is safely used however.

In the long term, water should be provided at the airport for the ag operations. Water rights for a well at the airport have been applied for but are not yet in place. The Port applied for water rights at the airport in 1996 for 2,225 gallons per minute of "municipal use", which is a broad use water right that could be used by businesses and airport alike. The Port is going through the "proof" now with what that use will go to, since the only use out at the airport is ag right now.

One consideration in placing agricultural operations is to have them located downwind of other uses. Strong odors are formulated into agricultural chemicals on purpose so that people nearby are aware of their use. Thus if all other things are equal, it is good to put the agricultural operations downwind of typical wind conditions. Of course, most ag operations occur when there is no wind or extremely light wind, so this may not be a major factor for consideration.

The Port is committed that ag uses can stay at the airport in some location, no matter how much other kinds of development occur.

6. Cell Towers Are a Problem for Ag Operators: It was noted that because cell towers are not very tall, they do not fall under the FAA reporting and lighting requirements. However, they are a problem for aerial operators who fly around low to the ground. The ag operators recommend that the County establish an ordinance that requires these cell towers to be lighted with flashing white at day and flashing red at night, to improve safety.

7. Orange Balls Needed for Power Lines: It is recommended that orange balls be added to the BPA power lines near the airport to improve the likelihood that itinerant pilots are aware of the lines being close to the airport. In addition there are new Umatilla electric lines off of the 22 approach end of the runway near Tower Road that might need orange balls.

8. Military Operations Airspace: The MOA airspace and military restricted airspace around the airport may in the long term become detrimental to the use of the

airport. The Port may at some time ask to meet with the military to see what options there are.

9. GPS Approach Application: The Port is about to file a GPS approach application with Vic Zembruski of the FAA in Seattle. Copies of that survey data and profile will be provided to the consultants for the airport layout plans.

10. Pilots Want AWOS & PAPI: Many pilots -- especially corporate pilots -- have asked that the airport get an AWOS weather reporting system and PAPI light to assist in approaches to the airport.

11. Existing Runway Lights Excellent: The existing runway lights are 3 years old and are in excellent condition. They are located at the outside edge of the 150′ wide runway pavement.

12. Runway Width: It is recognized that under a Design Group II aircraft, the FAA would normally want only a 75′ wide runway. However because there are plans underway to develop a race car facility adjacent to the airport there may be reason to leave the runway at the 150′ width. In particular, some of the NASCAR race teams use large transport category aircraft to move their teams, cars, and equipment between race car venues. Thus there is some anticipation that the runway will be used by large transport category aircraft. One person in attendance noted that *AOPA Pilot Magazine* during the past year had an article on an airport was used by NASCAR racers. This might provide information for the planning team.

13. Current Business Use of Airport: The following businesses regularly use the airport:

    - Tillamook has a CEO who is a pilot and flies a six-passenger airplane in approximately one time per week to the airport.
    - Bethlehem Steel uses a King Air at the airport approximately two times per week.
    - The Navy uses the airport quite a lot with various aircraft.
    - Potlatch uses the airport approximately two times per month.

- Ore Potato has a small single-engine plane that uses the airport on occasion.

- Dairy, out of California, flies into the airport every second week or so and has requested an instrument approach to the airport to assist in ensuring access to the area for their agricultural operations.

14. Boardman Airports Entitlement Funds: Boardman Airport's entitlement funds for this year are being banked for use in a future year.

15. Fuel Requested at Airport by Businesses Wanting Access: Fuel availability is needed at the airport. The Port is planning to put in a card-lock system. In addition, the Port plans to have a 12,000 gallon tank for av gas and a 12,000 gallon tank for jet fuel. If fuel were available, the RDO Company (the biggest potato producer in the world, based in North Dakota) says they would use the airport. The 76 gas station owner has an airplane based in Hermiston. He would like to move it to Boardman if a hangar and fuel were available.

16. Security at Airport: As part of its expansion plans for the airport, The Port intends to develop maintaining an employee based out at the airport to ensure security of aircraft and operations there.

17. Floatplane Facility Being Developed near the Port Offices: A new hotel is being developed on the Port property next to the Port offices on the Columbia River at Boardman. The Port intends to have a dock nearby that can serve floatplanes and boats at this location. The Port is in the beginning, planning stage for its creation.

18. Race Track Development: The Port is working with a private developer who is interested in creating a major race facility on some of the industrial land next to the airport. This would involve a facility that has major events of 100,000 to 150,000 visitors, along with mid-size events of 50,000 to 100,000 visitors, and small events of 10,000 to 50,000 visitors. It is expected that there would be events at the race facility 50 weeks of the year.

    It is anticipated that most of the airport development will access the airport from Tower Road. However it is also expected that a new freeway interchange will be developed to the west which will allow a new access road

to get to the race facility and airport, and perhaps loop around the south of the airport to Tower Road.

It is expected that aircraft passenger type users will be located on the north side of the runway, while industrial type airport users will be located on the south side.

The race track development has been in the works for approximately 3 months. It is expected that it could take up to 6 more months to determine whether it is a sure thing or not.

A major reason that the race track company is developing the property, is because the airport is there and has the capability of being extended to 8,000' so that it can accommodate large transport aircraft. It is recognized that the FAA may not fund extensions of that extent without transport aircraft already committed to using the airport. Thus the Port to some extent recognizes it may have to find other funding sources for the runway extension if the FAA will not participate. The Port is initially envisioning that 1,000' would be extended on the east end of the runway while the remainder would be on the west end of the runway.

It is recognized that if the airport changes from a GA airport to a transport category airport, an environmental assessment will become an important part of the airport planning work. It is anticipated that the race car facility will have an environmental review of its own.

It is anticipated that if a race facility is constructed, there will be significant numbers of people accessing the race using private aircraft. Thus the tie-down areas will ultimately need to be designed to accommodate this need. Some of those tie-down areas will be corporate types, while others will be small aircraft that might also include the need for camping adjacent to the airplane. It is anticipated that the race car facility will include 1,100 RV spaces for people who come with their own RV camping vehicle.

The Port currently has specialty consultants performing market analysis on the raceway facility proposal, along with developing transportation plans for a new interstate off-ramp, as well as examining the other transportation needs that will be required for such a major visitor facility. The Port's highway transportation consultant attended the meeting and

requested information on the size of runway protection zones and other clear areas that will be required for an 8,000' runway so that he can analyze the infrastructure needed for road uses, while protecting those aviation needs.

One person present noted that Hampton, Georgia has a NASCAR race track and an airport and there might be some design information to gain from their facility for this one.

END OF MEMORANDUM
by Aron Faegre

AF:mp
Attachs: Meeting sign-in sheet
"The NASCAR Air Force", AOPA, 2/99
cc: Meeting attendees
Agencies contacted prior to meeting

Additions or corrections to these minutes are welcomed. Please send them to Aron Faegre within 10 days, and a revised version will be reissued as the documented minutes for the meeting.

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CENTURY WEST
ENGINEERING CORPORATION

LEADING THROUGH EFFECTIVE SOLUTIONS

MEETING NOTICE

BOARDMAN AIRPORT
CONDON STATE AIRPORT
WASCO STATE AIRPORT

Airport Layout Plan Report Update

NOVEMBER 26 & 27, 2001

Interested parties are invited to attend meetings for updates on the Airport Layout Plan Reports for Boardman Airport, Condon State Airport, and Wasco State Airport. We will discuss facility inventory, forecasts, facility requirements, and development alternatives for each airport.

See meeting dates and times below.

If you have any questions or comments, please forward them to David M. Miller, Aviation Project Manager.

Meeting Schedule:

Wasco: Monday, November 26, 2001 (12:00 noon to 2:00 p.m.)
City Hall, City Council Chambers - 1017 Clark Street, Wasco

Condon: Monday, November 26, 2001 (5:00 p.m. to 7:00 p.m.)
County Courthouse, Circuit Courtroom, 1st Floor - 221 South Oregon Street, Condon

Boardman: Tuesday, November 27, 2001 (8:30 a.m. to 10:30 a.m.)
Port of Morrow Offices, Wells Spring Room, Lobby - 2 Maine Drive, Boardman

6650 SW Redwood Lane, Suite 300, Portland, Oregon 97224
(503) 419-2130 phone (503) 639-2710 fax

Aron Faegre & Associates 520 SW Yamhill Portland Oregon 97204 (503) 222-2546 FAX/222-6529
(In association with Century West Engineering)

PROJECT MEMORANDUM
BOARDMAN AIRPORT ALP PROJECT
Public Meeting to Review Design Alternatives Nov. 27, 2001

This memo summarizes a public meeting held in the Port of Morrow offices, from 8:30 AM to 12:30 PM, on Tuesday, November 27, 2001. The purpose of the meeting was to continue discussions with the community about goals and needs for the Boardman Airport. Attending the meeting were: Don Russell (citizen of Boardman); Ted Pesicka (Ag NW); Ron McKinnis, Neal Christoferson (Port of Morrow); Tamra Mabbott (Morrow County Planning); Gary Viehdorfer (Ore. Dept. of Aviation); David Miller (Century West Engineering); and Aron Faegre (Aron Faegre & Associates). The following items were discussed:

1. Planning Process: Faegre summarized the Airport Layout Plan process and reminded those present of the meeting that was held in the community on November 17, 2000. Following reception of that information, an inventory has been made of the airport facilities, forecasts have been created describing expected activity at the airport over the next 20 years, facility needs have been determined based on those forecasts, and design alternatives for the airport to accomplish those needs have been prepared. The primary purpose of this meeting is to review the design alternatives and to determine which is the preferred alternative or whether there is a combination of ideas that should be developed as the preferred alternative.

2. Detailed Discussion Items: Miller then led a detailed discussion to review the facility inventory, forecasts and facility needs that were determined. The details of those findings are given in draft Chapters 1 through 4, which provide that discussion in detail.

3. Fifty Year Plan: A 50 year plan was developed for the Port of Morrow as a special requirement of the FAA to verify that land could be removed from the airport for use by the raceway project without affecting the long term needs of the airport. A copy of the 50 year plan has been reviewed by the Port, and has been verbally accepted by the FAA according to Port staff. It will be included as documentation for the land use for the raceway project.

4. Key Issues: The key issue for Boardman Airport is that the Port desires long-term setbacks to utilize Group IV separations (large wingspans), while current airport uses only justify Group II separations (less than 79 ft. wingspan). Part of this issue will also involve the width of the runway, which is currently 150 ft., but which can only be justified in the 75 to 100 ft. width range. It is not just the cost of pavement which is the issue, but lights which would also have to be relocated into the edge of the new runway width.

5. Racetrack Use of Transport Category Aircraft: Port staff say that their contacts note that the racetrack will be used in some cases for race-car testing and research. It is believed that in some cases these cars are

transported by large aircraft to the racetrack. McKinnis will provide contact information regarding this potential activity.

6. Maintain Ag Operations at Airport for Long Term: There was discussion of options for ensuring that ag operations can continue at the airport in the long term, even if some of these major transport aircraft become part of the operations. It is believed that since ag operations are normally in the early morning there will not be much conflict. If aircraft operations at Boardman Airport became too great, a separate small runway sized approximately 30 ft. wide by 2,200 ft. long, would be all that is needed. FAA rules would require only a 700 ft. separation for VFR operations. Such an ag runway could be accommodated in the south ag area currently shown on the 50 year plan.

7. Preferred Alternative: Alternate A was the preferred alternative by pilots and Port staff present, since it develops initial GA facilities on the south side of the airport. It was agreed that facilities in that area will be built to Category II standards since these represent near term uses. Development on the north side of the runway will be held to Category IV separations since by the time development on that side occurs, uses at the airport will likely be tending towards the larger aircraft. Development on the south side would be relocated, if necessary, at that time.

8. Relocate Road as Highest Priority: Port is intending to relocate the airport access road from its current location to that of the gravel road to the south, which will be paved and otherwise improved.

9. Airport Beacon Location: Port staff have an airport beacon that they need to put up. They requested clarification as to whether the existing 40' tower, which has power at it, located on Tower Road near the airport, would be acceptable. Faegre to check FAA advisory circulars and respond ASAP. [Result was that per AC150/5300, Section 608, the airport beacon should be within 5,000 ft. of the runway, which seems to conform to the Port proposal.]

10. Precision Approaches vs. Non-precision Approaches: Precision approaches would require a 1,000 ft. wide primary surface, whereas non-precision approaches would require only a 500 ft. wide primary surface. It was agreed that the initial site development on the south side of the runway will be made on the basis of non-precision primary surface requirements. Development on the north side of the runway would be accomplished based on separations for precision instrument approaches since those facilities would occur later, be more costly, and would occur only as the airport becomes larger and closer to initiating transport category use.

11. Twenty Year ALP Plan: The 20 year ALP plan will identify air space for a non-precision approach. It will show reserves for up to a 7,000 ft. runway, since the original construction of the airport included base for up to a 7,000 ft. runway. Thus the airport is currently partially constructed to that length. And it is prudent to preserve that value.

12. T-Hangar Location: A local citizen is interested in building five T-hangar spaces as a standard 48' x 123' x 12' (eve height), R&M Steel "T-56" hangar. It would be located parallel to the runway and as close as possible to the runway.

13. Land Use Process: The land use process for the raceway, which will utilize the 50 year plan, was reviewed with Tamra Mabbott. A public hearing will be held in approximately two months. She would like to get a disk copy of the air space diagram from the 20 year plan when it is available so that they can insert it into their GIS system for future coordination with state rules for airport airspace protection.

14. Next Steps in Planning Process: The next steps in the planning process will be to generate the noise contours, do a brief environmental review analysis of the preferred alternative, and then to finalize the drawings for submission to the FAA. This will hopefully be accomplished during the next month.

NOTE: Please fax back any proposed corrections, revisions, or additions.

END OF MEMORANDUM
by Aron Faegre

AF:mp
cc: Meeting Attendees
Teddie Baker/Daren Griffin/Gary Viehdorfer, Oregon Aeronautics
David Miller, Century West Engineering

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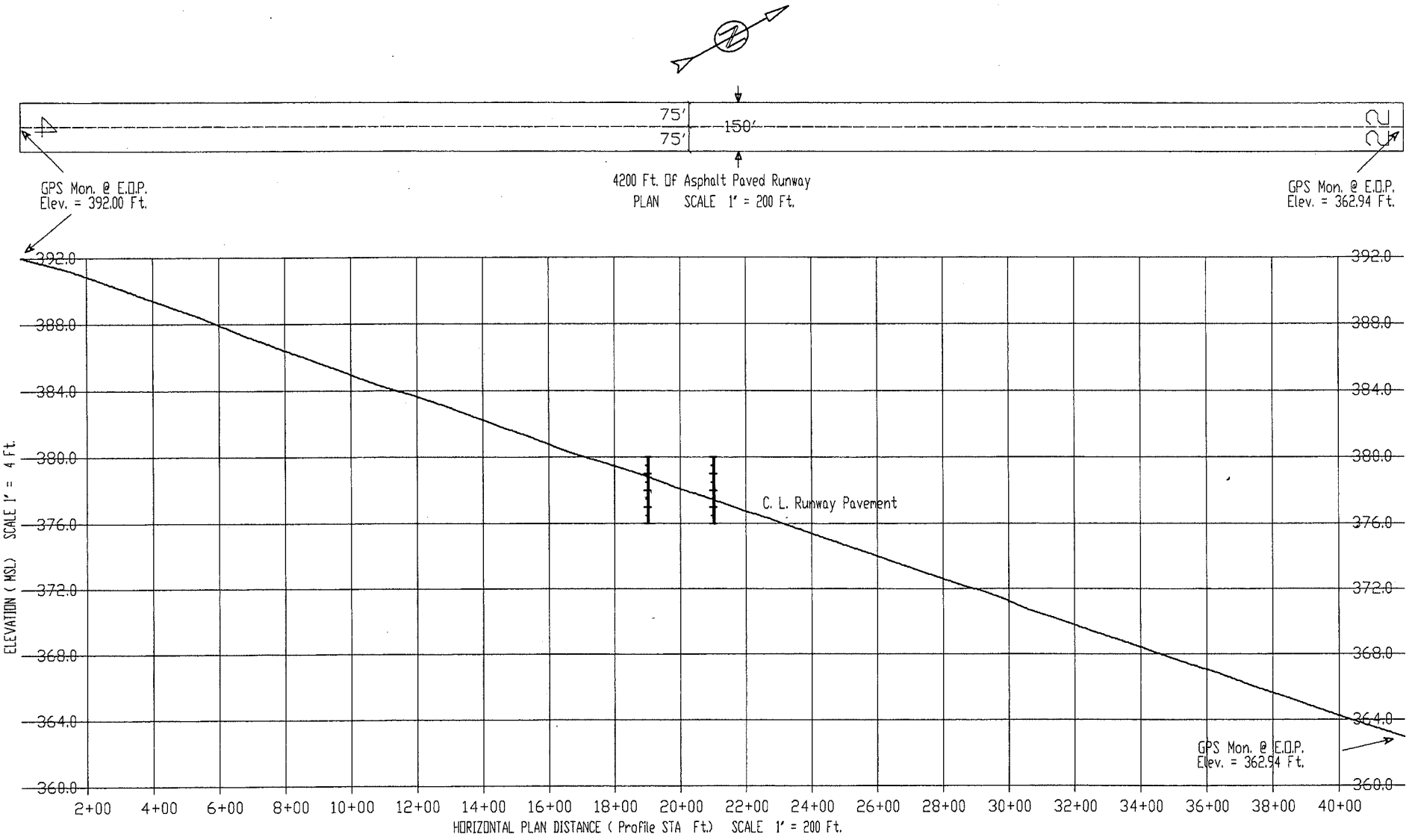

Port of Morrow
Boardman Airport
Morrow County, Oregon

SCALE 1" = 200 Ft.
or As Shown
March 06, 2001

Engineering - Surveying - Water Rights
PORT OF MORROW TECHNICAL DIVISION
P. O. Box 200 - Two Marine Drive
Boardman, Oregon 97818