Facility Requirements/Alternatives

An updated set of aviation demand forecasts for Newport Municipal Airport were established in the previous chapter. These activity forecasts include aircraft operations, based aircraft, fleet mix, and peaking characteristics. With this information, specific components of the airfield and landside system can be evaluated to determine their capability to accommodate future demand.

The objective of this effort is to identify, in general terms, the adequacy of the existing airport facilities, outline what new facilities may be needed, and when these may be needed to accommodate forecast demands. Having established these facility requirements, alternatives for providing these facilities will be evaluated in Chapter Four to determine the most cost-effective and efficient means for implementation.

As indicated earlier, airport facilities include both airfield and landside components. Airfield facilities include those facilities that are related to the arrival, departure, and ground movement of aircraft. These components include:

- Runways
- Taxiways
- Navigational Approach Aids
- Lighting, Marking, and Signage

Landside facilities are needed for the interface between air and ground transportation modes. This includes components for general aviation needs such as:

- General Aviation Terminal
- Aircraft Hangars
- Aircraft Parking Aprons
- Auto Parking and Access
- Airport Support Facilities

PLANNING HORIZONS

Cost-effective, safe, efficient, and orderly development of an airport should rely more upon actual demand at an airport than a time-based forecast figure. Thus, in order to develop an airport layout plan report that is demand-based rather than time-based, a series of planning horizon milestones have been established that take into consideration the reasonable range of aviation demand projections.

It is important to consider that the actual activity at the airport may be higher or lower than what the annualized forecast portrays. By planning according to activity milestones, the resultant plan can accommodate unexpected shifts, or changes, in the area's aviation demand. It is important for the plan to accommodate these changes so that airport officials can respond to unexpected changes in a timely fashion. These milestones provide flexibility, while potentially extending the plan's useful life if activity slows.

The most important reason for utilizing milestones is that they allow the airport to develop facilities according to need generated by actual demand levels. The demand-based schedule provides flexibility in development, as development schedules can be slowed or expedited according to actual demand at any given time over the planning period. The resultant plan provides airport officials with a financially responsible and need-based program.

Table 3A presents the planning horizon milestones for each aircraft activity category. The planning milestones essentially correlate to the five, ten, and twenty-year periods used in the previous chapter.

TABLE 3A
Aviation Demand Planning Horizons
Newport Municipal Airport

	2000	**Short Term**	**Intermediate Term**	**Long Term**
OPERATIONS				
Local	4,253	4,660	5,060	6,050
Itinerant	12,106	13,280	14,400	17,220
Total	16,359	17,940	19,460	23,270
Based Aircraft	24	26	28	33

In this chapter, existing components of the airport are evaluated so that the capacities of the overall system are identified. Once identified, the existing capacity is compared to the planning horizon milestones to determine where deficiencies currently exist or may be expected to materialize in the future. Once deficiencies in a component are identified, a more specific determination of the approximate sizing and timing of the new facilities can be made.

AIRFIELD REQUIREMENTS

Airfield requirements include the need for those facilities related to the arrival and departure of aircraft. These facilities are comprised of the following items:

- Runways (including safety areas)
- Taxiways
- Navigational Aids
- Airfield Lighting and Marking

The selection of appropriate Federal Aviation Administration (FAA) design standards for the development and location of airport facilities is based primarily upon the characteristics of the aircraft which are currently using, or are expected to use, the airport. Planning for future aircraft use is of particular importance since design standards are used to plan separation distances between facilities. These standards must be determined now since the relocation of these facilities will likely be extremely expensive at a later date.

The FAA has established a coding system to relate airport design criteria to the operational and physical characteristics of aircraft expected to use the airport. This code, the airport reference code (ARC), has two components: the first component, depicted by a letter, is the aircraft approach speed (operational characteristic); the second component, depicted by a Roman numeral, is the airplane design group and relates to aircraft wingspan (physical characteristic). Generally, aircraft approach speed applies to runways and runway-related facilities, while aircraft wingspan primarily relates to separation criteria involving taxiways, taxilanes, and landside facilities.

According to FAA Advisory Circular (AC) 150/5300-13, *Airport Design*, an aircraft's approach category is based upon 1.3 times its stall speed in landing configuration at that aircraft's maximum certificated weight. The five approach categories used in airport planning are as follows:

Category A: Speed less than 91 knots.

Category B: Speed 91 knots or more, but less than 121 knots.

Category C: Speed 121 knots or more, but less than 141 knots.

Category D: Speed 141 knots or more, but less than 166 knots.

Category E: Speed greater than 166 knots.

The airplane design group (ADG) is based upon the aircraft's wingspan. The six ADG's used in airport planning are as follows:

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 or greater.

In order to determine facility requirements, an ARC should first be determined, then appropriate airport design criteria can be applied. This begins with a review of the type of aircraft using and expected to use Newport Municipal Airport. **Exhibit 3A** summarizes representative aircraft by ARC.

The FAA recommends designing airport functional elements to meet the requirements of the most demanding ARC for that airport (minimum of 250 annual departures). Newport Municipal Airport currently accommodates a wide variety of civilian aircraft, including small single and multi-engine aircraft (which fall within approach categories A and B and airplane design group I) and business turboprop and jet aircraft (which fall within approach category B and airplane design groups I and II). The most demanding aircraft currently operating at Newport Municipal Airport is the Cessna 414 Chancellor, which is operated by Sky Taxi. This aircraft, which is classified as a B-I aircraft, seats six passengers and can be operated on short runways.

The existing ARC for the facility is B-II. The forecasts anticipate increasing utilization by corporate aircraft throughout the planning period. This potential mix of aircraft will continue to place the airport in the B-II category. However, the upgrading of Runway 16-34 to an ARC B-III should be considered if the airport begins offering scheduled air service. Newport Municipal Airport last had scheduled air service a year and a half ago, but has since maintained their Part 139 operating certificate.

AIRFIELD DESIGN STANDARDS

The FAA has established several imaginary surfaces to protect aircraft operational areas and keep them free from obstructions that could affect the safe operation of aircraft. These include the runway safety area (RSA), object free area (OFA), object free zone (OFZ), and runway protection zone (RPZ).

02MP14-3A-6/11/03

A-I

- Beech Baron 55
- **Beech Bonanza**
- Cessna 150
- Cessna 172
- Piper Archer
- Piper Seneca

C-I, D-I

- **Lear** 25, **35**, 55
- Israeli Westwind
- HS 125

B-I less than 12,500 lbs.

- Beech Baron 58
- Beech King Air 100
- Cessna 402
- **Cessna 421**
- Piper Navajo
- Piper Cheyenne
- Swearingen Metroliner
- Cessna Citation I

C-II, D-II

- **Gulfstream** II, III, **IV**
- Canadair 600
- Canadair Regional Jet
- Lockheed JetStar
- Super King Air 350

B-II less than 12,500 lbs.

- **Super King Air 200**
- Cessna 441
- DHC Twin Otter

C-III, D-III

- Boeing Business Jet
- B 727-200
- **B 737-300 Series**
- MD-80, DC-9
- Fokker 70, 100
- A319, A320
- Gulfstream V
- Global Express

B-I, II over 12,500 lbs.

- Super King Air 300
- Beech 1900
- Jetstream 31
- Falcon 10, 20, 50
- Falcon 200, 900
- **Citation** II, **III**, IV, V
- Saab 340
- Embraer 120

C-IV, D-IV

- **B-757**
- B-767
- DC-8-70
- DC-10
- MD-11
- L1011

A-III, B-III

- DHC Dash 7
- **DHC Dash 8**
- DC-3
- Convair 580
- Fairchild F-27
- ATR 72
- ATP

D-V

- **B-747** Series
- B-777

Note: Aircraft pictured is identified in bold type.

Exhibit 3A
AIRPORT REFERENCE CODES

The RSA is "a defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or an excursion from the runway." An object free area is an area on the ground centered on the runway, taxiway, or centerline provided to enhance the safety of aircraft operations, except for objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes. An obstacle free zone is a volume of airspace that is required to be clear of objects, except for frangible items required for navigation of aircraft. It is centered along the runway and extended runway centerline. The RPZ is defined as an area off the runway end to enhance the protection of people and property on the ground. The RPZ is trapezoidal in shape and centered about the extended runway centerline. The dimensions of an RPZ are a function of the runway ARC and approach visibility minimums.

Table 3B summarizes the design requirements of these safety areas by airport reference code for Newport Municipal Airport. A printout of these standards is presented in the appendix. The FAA expects these areas to be free from obstructions. As shown in the table, Runway 2-20 currently meets the required dimensions for ARC B-II standards with three-fourth mile visibility. Runway 16-34 currently meets the required dimensions for ARC B-II standards with half mile visibility. Upgrading Runway 16-34 to ARC B-III standards with a half mile visibility will require changes in runway safety area, which can be accommodated by displacing the runway threshold.

TABLE 3B
Airfield Safety Dimensional Standards (feet)
Newport Municipal Airport

	Existing Runway 2-20	ARC B-II Standards (3/4 mi vis)	Existing Runway 16-34	ARC B-II Standards (1/2 mi vis)	ARC B-III Standards (1/2 mi vis)
Runway Safety Area (RSA)					
Width	150	150	300	300	400
Length Beyond Runway End	300	300	600	600	800
Runway Object Free Area (OFA)					
Width	500	500	800	800	800
Length Beyond Runway End	300	300	600	600	800
Runway Obstacle Free Zone (OFZ)					
Width	400	400	400	400	400
Length Beyond Runway End	200	200	200	200	200
Runway Protection Zone (RPZ)					
Inner Width	500	500	1,000	1,000	1,000
Outer Width	700	700	1,750	1,750	1,750
Length	1,000	1,000	2,500	2,500	2,500

Source: FAA Airport Design Computer Program, Version 4.2D.

RUNWAYS

The adequacy of the existing runway system at Newport Municipal Airport was analyzed from a number of perspectives, including airfield capacity, runway orientation, runway length, runway width, and pavement strength. From this information, requirements for runway improvements were determined for the airport.

Airfield Capacity

A demand/capacity analysis measures the capacity of the airfield configuration in order to identify and plan for additional development needs. Annual capacity of a single runway configuration normally exceeds 150,000 operations with a suitable parallel taxiway available. Since the forecasts for Newport Municipal Airport remain well below 150,000 operations, the capacity of the existing runway and taxiway system will not be reached, and the airfield will be able to meet operational demands.

Runway Orientation

Newport Municipal Airport is equipped with two intersecting runways. The primary runway (Runway 16-34) is oriented in a north-south direction, while the crosswind runway (Runway 2-20) is oriented in a northeast-southwest manner. For the operational safety and efficiency of an airport, it is desirable for the principal runway of an airport's runway system to be oriented as close as possible to the direction of the prevailing wind. This reduces the impact of crosswind components during landing or takeoff.

FAA design standards recommend additional runway configurations when the primary runway configuration provides less than 95 percent wind coverage at specific crosswind components. The 95 percent wind coverage is computed on the basis of crosswinds not exceeding 10.5 knots for small aircraft weighing less than 12,500 pounds and from 13 to 20 knots for aircraft weighing over 12,500 pounds. No wind data is currently available for Newport Municipal Airport. However, a review of wind coverage at the nearest weather station on the Oregon Coast located at North Bend Municipal Airport indicates that the 16-34 alignment provides 96.13 percent wind coverage in 10.5 knot conditions.

Runway Length

The runway length requirements for an airport are based on five primary factors: airport elevation; mean maximum temperature of the hottest month; runway gradient (difference in runway elevation of each runway end); critical aircraft type expected to use the airport; and stage length of the longest nonstop trip destination. Aircraft performance declines as each of these factors increase. Summertime temperatures and stage lengths are the primary factors in determining runway length requirements.

The local airport elevation has a North American Vertical Datum (NAVD88) of 160 feet and the mean maximum temperature of the hottest month is 65.1 degrees Fahrenheit (F). Runway end elevations vary by approximately two feet along Runway 16-34.

Using the site-specific described above, runway length requirements for the various classifications of aircraft that may operate at the airport were examined using the FAA Airport Design computer program, Version 4.2D. The program groups general aviation aircraft into several categories, reflecting the percentage of the fleet within each category and useful load (passengers and fuel) of the aircraft.

Table 3C summarizes FAA's generalized recommended runway lengths for Newport Municipal Airport. The appropriate FAA runway length planning category for Runway 16-34 (if stage lengths do not normally exceed 500 miles) is "75 percent of large aircraft at 60 percent useful load." As shown in the table, the FAA recommends a minimum runway length of 2,300 feet for small aircraft (less than 12,500 pounds) and 5,300 feet for larger aircraft using the facility. The current runway length of 5,398 feet accommodates most small business jets operating at Newport Municipal Airport.

Based upon this examination of runway length requirements for aircraft which currently operate, and those which can be expected to operate at the airport in the future, the existing runway length will be able to serve most aircraft on 500-mile stage lengths. However, these same aircraft will experience payload and/or fuel limitations during the warmest summer days, when attempting longer stage lengths. Therefore, the alternatives evaluation should consider additional runway length to serve the growing corporate fleet.

TABLE 3C
Runway Length Requirements
Newport Municipal Airport

AIRPORT AND RUNWAY DATA	
Airport elevation	160 feet
Mean daily maximum temperature of the hottest month	65.1 F
Maximum difference in runway centerline elevation	30 feet
Length of haul for airplanes of more than 60,000 pounds	1,000 miles
Wet and slippery runways	
RUNWAY LENGTHS RECOMMENDED FOR AIRPORT DESIGN	
Small airplanes with less than 10 passenger seats	
75 percent of these small airplanes	2,300 feet
95 percent of these small airplanes	2,900 feet
100 percent of these small airplanes	3,400 feet
Small airplanes with 10 or more passengers seats	3,900 feet
Large airplanes of 60,000 pounds or less	
75 percent of business jets at 60 percent useful load	5,300 feet
75 percent of business jets at 90 percent useful load	6,700 feet
100 percent of business jets at 60 percent useful load	5,500 feet
100 percent of business jets at 90 percent useful load	7,000 feet
Airplanes of more than 60,000 pounds	6,000 feet

Reference: FAA's airport design computer software utilizing Chapter Two of AC 150/5325-4A, *Runway Length Requirements for Airport Design*, no changes included.

As previously mentioned, an increasing number of business jets are expected to use the facility. Therefore, several jets falling in B-I, B-II, and C-I categories were examined for their takeoff and landing length requirements. This data is presented in **Table 3D**.

TABLE 3D
Runway Length Requirements – Individual Aircraft Performance

Aircraft Type	Maximum Take-off Weight (lbs.)	Required Take-off Length (feet)	Required Landing Length (feet)
Cessna 525 Citation (B-I)	10,400	3,080	2,750
Raytheon 390 Premier (B-I)	12,500	3,792	3,300
Cessna Citation Encore (B-II)	16,830	3,560	2,865
Cessna 560 Citation Excel (B-II)	20,000	3,590	3,180
Learjet 55 (C-I)	21,500	5,310	3,250
Sabreliner 75 (C-I)	23,300	5,500	3,750

Source: Business jet data – FAA and manufacturers takeoff and landing distances for standard conditions (sea level and 59* F).

RUNWAY WIDTH

The width of each of the existing runways was also examined to determine the need for facility improvements. Currently, Runway 16-34 has a width of 150 feet, while Runway 2-20 has a width of 75 feet. These widths are adequate for each runway's respective ADG.

RUNWAY PAVEMENT STRENGTH

The most important feature of airfield pavement is its ability to withstand repeated use by aircraft of significant weight. At Newport Municipal Airport, this includes a wide range of general aviation aircraft, including small single and multi-engine aircraft and business jets.

Runway 16-34 is currently strength rated at 75,000 pounds single wheel gear loading (SWL), 120,000 pounds dual wheel gear loading (DWL), and 170,000 pounds dual tandem wheel loading (DTWL). Runway 2-20 is currently strength rated at 33,000 pounds SWL, 50,000 pounds for DWL, and 84,000 pounds for DTWL. The current strength ratings on both runways are sufficient for the existing and future fleet.

TAXIWAYS

Taxiways are constructed primarily to facilitate aircraft movements to and from the runway system. Some taxiways are necessary simply to provide access between the aprons and the runways, whereas other taxiways become necessary as activity increases at an airport to provide safe and efficient use of the airfield.

Taxiway width is determined by the ADG of the most demanding aircraft to use the taxiway. As previously mentioned, the most demanding aircraft to use the airfield fall within ADG III. According to FAA design standards, the minimum taxiway width for ADG III is 50 feet. Based upon a review of the current airport layout drawing, there is one taxiway at Newport Municipal Airport which is only 35 feet wide. This taxiway should be widened to comply with the 50-foot standard. The other taxiways are each 50 feet wide and will be sufficient throughout the planning period.

The runway-taxiway separation distance was also examined. This distance is such to satisfy the requirement that no part of an aircraft (tail tip, wing tip) on the taxiway/taxilane centerline is within the runway safety area or penetrates the obstacle free zone (OFZ). According to the Airport Layout Plan, there are no OFZ object penetrations on the airport at this time. The current distances between the Runway 16-34 centerline and the partial parallel taxiway centerline is 285 feet. The required distance for ARC B-III is 300 feet. The following chapter will examine possible alternatives to comply with this standard.

NAVIGATIONAL AND APPROACH AIDS

Electronic and visual guidance to arriving aircraft enhance the safety and capacity of the airfield. Such facilities are vital to the success of the airport, and provide additional safety to passengers using the air transportation system.

Instrument approaches are categorized as either precision or nonprecision. Precision instrument approach aids provide an exact alignment and descent path for an aircraft on final approach to a runway, while nonprecision instrument approach aids provide only runway alignment information. Most existing precision instrument approaches in the United States are instrument landing systems (ILS).

Presently, Newport Municipal Airport is served with seven instrument approaches: ILS Runway 16, GPS Runway 16, GPS Runway 34, GPS Runway 34, VOR/DME Runway 16, VOR/DME Runway 34, and NDB Runway 16. A VOR provides azimuth readings to pilots of properly equipped aircraft by transmitting a signal at every degree to provide 360 individual navigational courses. Frequently, distance measuring equipment (DME) is combined with a VOR facility to provide distance as well as direction information to the pilot.

The ILS approach to Runway 16 provides the airport with the lowest minimums, allowing aircraft to land in instrument flight rules (IFR) weather with ceilings as low as 200 feet and visibility reduced to three-fourths mile for aircraft in all categories. Details of all the published instrument approaches are provided in **Table 3D**.

TABLE 3D **Instrument Approach Data – Newport Municipal Airport**						
	WEATHER MINIMUMS BY AIRCRAFT TYPE					
	Category A/B		**Category C**		**Category D**	
	CH	**VIS**	**CH**	**VIS**	**CH**	**VIS**
ILS Runway 16 Approach						
Straight-In (ILS)	200	0.75	200	0.75	200	0.75
Straight-In (Localizer)	600	0.75	600	1.50	600	1.75
Circling	800	1	800	2	800	2.50
RNAV (GPS) Runway 16						
LNAV/VNAV DA	500	1.50	500	1.50	500	1.50
LNAV MDA	600	0.75	600	1.50	600	1.75
Circling	800	1.50	800	2	800	2.50
RNAV (GPS) Runway 34						
LNAV MDA	800	1	800	2.25	800	2.50
Circling	800	1	800	2.25	800	2.50
VOR/DME Runway 16						
Straight-In	500	1	500	1.25	-	-
Circling	800	1	800	2	800	2.50
VOR/DME Runway 34						
Straight-In	800	1	800	2.25	800	2.50
Circling	800	1	800	2.25	800	2.50
VOR-A						
Circling	1,000	1.25	1,000	3	1,000	3
NDB Runway 16						
Straight-In	600	1	600	1.50	600	1.75
Circling	800	1	800	2	800	2.50

Aircraft categories are based on 1.3 times the stall speed in landing configuration as follows:

- Category A/B (0-120 knots)
- Category C (121-140 knots)
- Category D (141-165 knots)

CH – Cloud Height (in feet above ground level)
VIS – Visibility (in miles)

Source: FAA *Terminal Procedures, Northwest U.S.,* July 10, 2003 Edition.

The advent of technology has been one of the most important contributing factors in the growth of the aviation industry. Much of civil aviation and aerospace technology has been derived and enhanced from the initial development of technological improvements for military purposes. The use of orbiting satellites to confirm an aircraft's location is the latest military development to be made available to the civil aviation community.

The FAA has already approved the publication of thousands of "overlay" GPS instrument approach procedures. Stand-alone GPS approaches using the Wide-Area Augmentation System (WAAS) will gradually be phased in to provide precision instrument approaches.

AIRFIELD LIGHTING, SIGNAGE, AND MARKING

Airports commonly include a variety of lighting and pavement markings to assist pilots utilizing the airport. These lighting systems and marking aids are used to assist pilots in locating the airport during the day, at night, during poor weather conditions, and assisting in the ground movement of aircraft.

Identification Lighting

Newport Municipal Airport is equipped with a rotating beacon to assist pilots in location the airport at night. The existing rotating beacon, located on the west side of the airfield near the end of Runway 16, is sufficient and should be maintained in the future.

Runway and Taxiway Lighting

Airport lighting systems provide critical guidance to pilots during nighttime and low visibility operations. Both runways are equipped with medium intensity runway lighting (MIRL), which will be adequate throughout the planning period.

Effective ground movement of aircraft at night is enhanced by the availability of taxiway lighting. Currently, blue reflectors are installed on all taxiways and taxilanes. Taxiways should be planned for medium intensity edge lighting.

Visual Approach Lighting

In most instances, the landing phase of any flight must be conducted in visual conditions. To provide pilots with visual guidance information during landings to the runway, visual glideslope indicators are commonly provided at airports. Presently, a four-light precision approach path indicator (PAPI-4) is available at the Runway 34 end. This lighting aid is sufficient and should be maintained in the future.

A visual approach slope indicator (VASI-4) is available at the Runway 16 end. As most airports are replacing older VASIs with the PAPI system, consideration should be given to replacing the existing VASI-4 on Runway 16 with a PAPI-4, which is less costly to maintain and operate.

Approach lighting systems provide the basic means to transition from instrument flight to visual flight for landing. Runway 16 is equipped with medium intensity approach lighting system with sequenced flashers (MALSF). The MALSF is required for the existing ILS approach minimums to Runway 16 and is sufficient for the precision GPS approach to this runway.

Runway identification lighting provides the pilot with a rapid and positive identification of the runway end. The most basic system involves runway end identifier lights (REILs). REILs are presently installed at the end of Runway 34 and the airport will be adding REILS to the end of Runway 16 later this year. This should be sufficient through the planning period.

Pilot-Controlled Lighting

Newport Municipal Airport is equipped with pilot-controlled lighting (PCL). PCL allows pilots to control the intensity of runway lighting using the radio transmitter in the aircraft. This system should be maintained through the planning period.

Airfield Signage

Lighted directional and hold signs are installed at Newport Municipal Airport. This signage identifies runways, taxiways, and apron areas. These aid pilots in determining their position on the airport and provide directions to their position on the airport and provide directions to their desired location on the airport. These lighting aids are sufficient and should be maintained through the planning period.

Pavement Markings

Runway markings are designed according to the type of instrument approach available on the runway. FAA Advisory Circular 150/5340-1H, *Marking of Paved Areas on Airports*, provides the guidance necessary to design airport markings. Precision instrument markings are in place on Runway 16-34. However, the runway threshold markings on this runway are not compliant with standards. For runways with a width of 150 feet, 12 stripes are required to mark the threshold. Runway 16-34 currently has only eight stripes marking the threshold. Additional stripes will need to be added to comply with the standard. The basic markings on Runway 2-20 will suffice throughout the planning period.

Taxiway and apron areas also require marking. Yellow centerline stripes are currently painted on all taxiway surfaces at the airport to provide this guidance to pilots. The paved aircraft parking aprons also have centerline markings to indicate the alignment of taxilanes within these areas. Besides routine maintenance of the taxiway striping, these markings will be sufficient through the planning period.

WEATHER REPORTING

Newport Municipal Airport is equipped with an automated weather observation system (AWOS-3). This automated system reports the altimeter setting, visibility, and cloud/ceiling data. The AWOS can be obtained by radio on the frequency 133.90 Mhz, or by phone at (541) 867-4175.

The airport is also equipped with a lighted wind cone and a segmented circle, which provides pilots with information about wind conditions and local traffic patterns. These facilities are required when an airport is not served by a 24-hour ATCT. These facilities are sufficient and should be maintained in the future.

LANDSIDE REQUIREMENTS

Landside facilities are those necessary for handling of aircraft and passengers while on the ground. These facilities provide the essential interface between the air and ground transportation modes. The capacities of the various components of each area were examined in relation to projected demand to identify future landside facility needs.

GENERAL AVITATION TERMINAL BUILDING

General aviation terminal facilities have several functions. Space is required for passenger waiting, pilot's lounge and flight planning, airport management, storage, and various other needs. The existing terminal building provides approximately 1,000 square feet and was formerly used for scheduled air service.

Table 3E outlines the space requirements for the general aviation terminal building at Newport Municipal Airport. A planning average of 2.5 passengers per flight throughout the planning period was multiplied by the number of design hour itinerant operations. Space requirements were then based upon providing a planning criterion of 90 square feet per design hour itinerant passenger. As shown in the table, additional area will be required in the short term.

TABLE 3E
General Aviation Terminal Building
Newport Municipal Airport

	Available	Short Term	Intermediate Term	Long Term
General Aviation Design Hour Itinerant Passengers	N/A	25	30	37
General Aviation Building Space (s.f.)	1,000	2,200	2,700	3,300

HANGARS

Utilization of hangar space varies as a function of local climate, security, and owner preferences. The trend in general aviation aircraft, whether single or multi-engine, is towards more sophisticated (and, consequently, more expensive) aircraft. Therefore, many aircraft owners prefer enclosed hangar space to outside tie-downs.

The demand for aircraft storage hangars is dependent upon the number and type of aircraft expected to be based at the airport in the future. For planning purposes, it is necessary to estimate hangar requirements based upon forecast operational activity. However, hangar development should be based upon actual demand trends and financial investment conditions. While a majority of aircraft owners prefer enclosed aircraft storage, a number of based aircraft will still tie-down outside (due to the lack of hangar availability, hangar rental rates, and/or operational needs). Therefore, enclosed hangar facilities should not be planned for each based aircraft. At Newport Municipal Airport, approximately 90 percent of the based aircraft are currently stored in enclosed hangar facilities. In the future, it is estimated that the percentage of based aircraft stored in hangars will remain near this percent.

Currently, there are no T-hangars at Newport Municipal Airport. While current hangar needs are satisfied by executive and conventional hangars, there will be a demand for T-hangars in the future. A planning standard of 1,200 square feet per based aircraft stored in T-hangars has been used to determine future T-hangar requirements. T-hangars are used for small single and multi-engine storage and can be fully enclosed or open, simply providing a roof over pavement (shade hangars).

The majority of hangared aircraft (19) at Newport Municipal Airport are currently stored in executive hangars, while only a few aircraft are stored in the one conventional hangar (FBO hangar) at the airport. Each of these types of hangars is designed for multiple aircraft storage. Executive hangars are generally less than 10,000 square feet, while conventional hangars are generally greater than 10,000 square feet.

As the trend towards more sophisticated aircraft continues throughout the planning period, it is important to determine the need for more conventional and executive hangars. For conventional and executive hangars, a planning standard of 1,200 square feet was used for single-engine aircraft, whilc a planning standard of 3,000 square feet was used for multi-engines, jets, and helicopters. These planning standards recognize that some of the larger business jets require a greater amount of space. Since portions of conventional hangars are also used for aircraft maintenance and servicing, requirements for maintenance/service hangar area were estimated using a planning standard of approximately 15 percent of the total hangar space needs.

Future hangar requirements for the airport are summarized in **Table 3F**. As indicated in the table, current executive and conventional hangar area will be sufficient through the planning period. However, T-hangars will be needed in the intermediate term. The alternatives analysis will examine the options available for hangar development at the airport and determine the best location for each type of hangar facility.

TABLE 3F
Aircraft Storage Requirements
Newport Municipal Airport

		Future Requirements		
	Currently Available	**Short Term**	**Intermediate Term**	**Long Term**
Aircraft to be Hangared	23	23	25	30
T-Hangar Positions	0	0	6	15
Executive Hangar Positions	19	19	15	11
Conventional Hangar Positions	4	4	4	4
T-Hangar Area	0	0	7,200	18,000
Executive Hangar Area	37,700	22,800	19,800	20,400
Conventional Hangar Area	12,000	12,000	12,000	12,000
Total Maintenance Area	4,000	5,200	5,900	7,600
Total Hangar Area (s.f.)	**53,800**	**40,000**	**44,900**	**58,000**

AIRCRAFT PARKING APRON

A parking apron should provide for the number of locally-based aircraft that are not stored in hangars, and for those aircraft used for air taxi and training activity. Parking should be provided for itinerant aircraft as well. As mentioned in the previous section, 90 percent of based aircraft at Newport Municipal Airport are currently stored in hangars, and that percentage is expected to continue throughout the planning period.

For planning purposes, 15 percent of the based aircraft total will be used to determine the parking apron requirements of local aircraft, due to some aircraft requiring both hangar storage and parking apron. Since the majority of locally-based aircraft are stored in hangars, the area requirement for parking of locally-based aircraft is smaller than for transient aircraft. Therefore, a planning criterion of 650 square yards per aircraft was used to determine the apron requirements for local aircraft.

Along with based aircraft parking needs, transient aircraft parking needs must also be considered when determining apron requirements. A planning criterion of 800 square yards was used for single and multi-engine itinerant aircraft, and 1,600 square yards for itinerant jets. Current apron area at Newport Municipal Airport includes two paved aprons totaling approximately 22,700 square yards. A total of 18 tie-downs are available on these two aprons, as well as additional parking for large aircraft. These aprons are used by both based and transient aircraft. A third apron, made of concrete, is also available at the airport. This apron is privately owned by the Coast Guard and totals approximately 2,700 square yards. Total aircraft parking apron requirements are presented in **Table 3G**. According to the table, the current apron area will be sufficient through the planning period. However, additional tiedowns will be needed in the long term.

TABLE 3G
Aircraft Parking Apron Requirements
Newport Municipal Airport

	Currently Available	Short Term	Intermediate Term	Long Term
Single, Multi-Engine Transient Aircraft Positions		10	11	13
Apron Area (s.y.)		8,300	9,000	10,700
Transient Jet Positions		2	2	2
Apron Area (s.y.)		2,900	3,200	3,800
Locally-Based Aircraft Positions		4	4	5
Apron Area (s.y.)		2,500	2,700	3,200
Total Positions	18	16	17	20
Total Apron Area (s.y.)	25,400	13,700	14,900	17,700

VEHICLE PARKING

The airport currently maintains one parking lot, which provides approximately 7,200 square feet of space and accommodates approximately 20 vehicles. Vehicular parking demands have been determined based on an evaluation of the existing airport use, as well as industry standards, which consider one-half of based aircraft at the airport will require a parking space. As shown in **Table 3H**, additional parking area will be required at the airport in the short term.

TABLE 3H **Vehicle Parking Requirements** **Newport Municipal Airport**				
		Future Requirements		
	Available	**Short Term**	**Intermediate Term**	**Long Term**
Design Hour Passengers		9	11	12
Terminal Vehicle Spaces		12	14	16
Parking Area (s.f.)		4,800	5,500	6,200
General Aviation Spaces		13	14	17
Parking Area (s.f.)		5,200	5,600	6,600
Total Parking Spaces	20	25	28	33
Total Parking Area (s.f.)	7,200	10,000	11,100	12,800

SUPPORT REQUIREMENTS

Various facilities that do not logically fall within classifications of airfield, terminal building, or general aviation areas have also been identified. These other areas provide certain functions related to the overall operation of the airport, and include: aircraft rescue and firefighting, fuel storage, and airport maintenance facilities.

AIRCRAFT RESCUE AND FIREFIGHTING

Aircraft rescue and firefighting (ARFF) is provided to the airport by the City of Newport. Their facilities are located in a 3,600 square foot building on the northwest end of the airfield.

AIRPORT MAINTENANCE/ STORAGE FACILITIES

Current storage facilities at Newport Municipal Airport include a 4,000 square foot building located west of the rotating beacon. Additional storage is provided by the executive and conventional hangars. Adequate area needs to be reserved for expansion of these facilities.

AVIATION FUEL STORAGE

Fueling facilities are operated by Central Oregon Coast Air Services. Both 100 LL fuel and Jet A fuel are available. Fuel storage requirements are typically based upon maintaining a two-week supply of fuel during an average month; however, more frequent deliveries can reduce the fuel storage capacity requirements. Storage to meet a two-week supply for both Avgas and Jet A fuel is currently available.

SUMMARY

The intent of this chapter has been to outline the facilities required to meet potential aviation demands projected for Newport Municipal Airport through the long term planning horizon. The next step is to develop a direction for development to best meet these projected needs. The remainder of the master plan will be devoted to outlining this direction, its schedule, and costs.

Chapter Three-Subpart One
DEVELOPMENT ALTERNATIVES

Three development alternatives were presented to the advisory committee on September 3, 2002 and to the general public later the same day. Each of the alternatives were designed to provide expansion capability for smaller executive style hangar development and the potential for a larger terminal facility for scheduled or non-scheduled passengers using the airport.

Alternative A provided for expansion of small hangars on the southwest side, where three hangars have recently been constructed. Parallel taxiways were extended full length along both sides of Runway 16-34. However, it was recognized that extension of the parallel taxiway along the west side may require the relocation of the VORTAC, which will be located only 215 feet from the centerline of the extended taxiway. An alternate location for the VORTAC was noted on the east side of the airfield. A new passenger terminal was depicted on the east side, south of Runway 2-20; however, the access road as depicted around the south end of Runway 16-34 will be difficult to construct because of the steep terrain.

Alternative B assumed the relocation of the VORTAC to the east side of the airfield, allowing for the extension of the parallel taxiway along the west side of Runway 16-34, expansion of small hangars, FBO facilities, and a new passenger terminal on the west side of the airfield. However, if the VORTAC cannot be relocated, most development presented in this alternative will not be feasible.

Mike Meigs with the FAA had the following information about the possibilities of relocating the VOR: "The VOR is not going away anytime soon. Relocation would have to be coordinated with DOD as well, because it provides TACAN service, which does not go away soon either. Newport is on the first draft of the list for the Minimum Operational Network – which means the VOR would never go away.

If the airport wants to look at this seriously, they should consider investing in paying ANI to do a siting study, which would run about $30,000 roughly. This would give them a firm answer of whether it's feasible for one, and nail down costs to about a 10% confidence factor. It could cost much less than a million, or much more, depending upon the available sites."

Alternative C assumed that the VORTAC will need to remain in its existing location. Future hangars were noted on the southwest side, and in two new areas on the northwest side where the terrain is relatively level. An area on the east side of the runway was noted for a parcelized subdivision, allowing for the construction of individual executive hangars.

Following a review of the alternatives with the advisory committee and the public, a recommended master plan concept was prepared. This concept is the basis for what is shown in the ALP and CIP. While the concept continues to show a potential relocation of the VORTAC to the east side of the airfield, the plan is not dependent on the relocation of the navaid facility. However, the full extension of the parallel taxiway on the west side may not be possible without VORTAC relocation. The construction of a full-length parallel taxiway on the east side is dependent on the need to construct new passenger terminal facilities on the east side of the airfield. Based upon rugged terrain on the south end of the runway, the roadway access into this area is recommended from 98th Street, which connects with Highway 101. Continuing development of small hangars is recommended in the southwest area, and a new area for hangar development is recommended north of current facilities on the west side. This area will be accessed with a stub taxiway to be aligned with the existing connecting taxiway. The hangars will be offset from the runway approximately 650 feet, although the setback will depend on final building height elevations (to clear F.A.R. Part 77 surfaces). Roadway access will need to be developed from Highway 101, as noted on the drawing.

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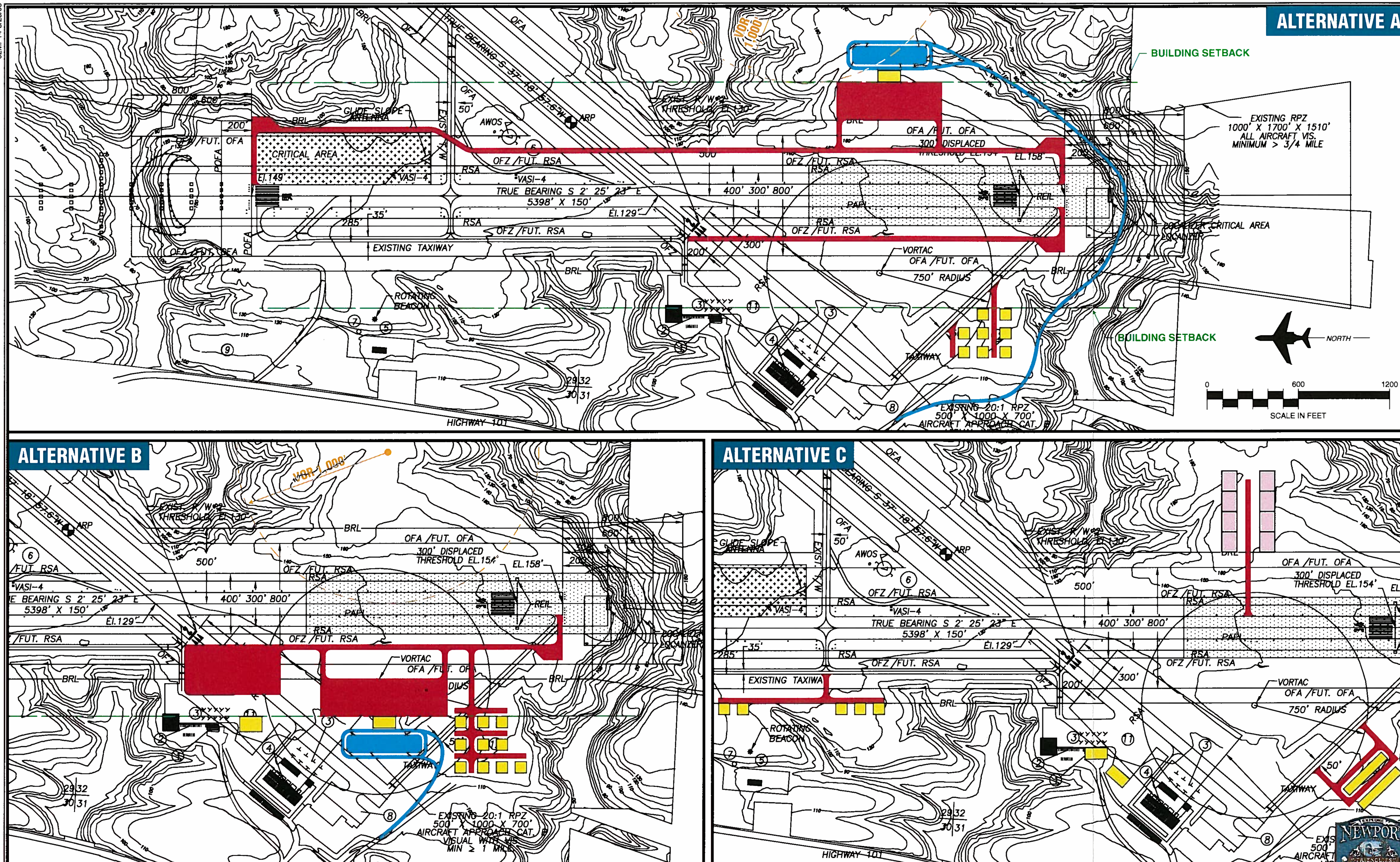
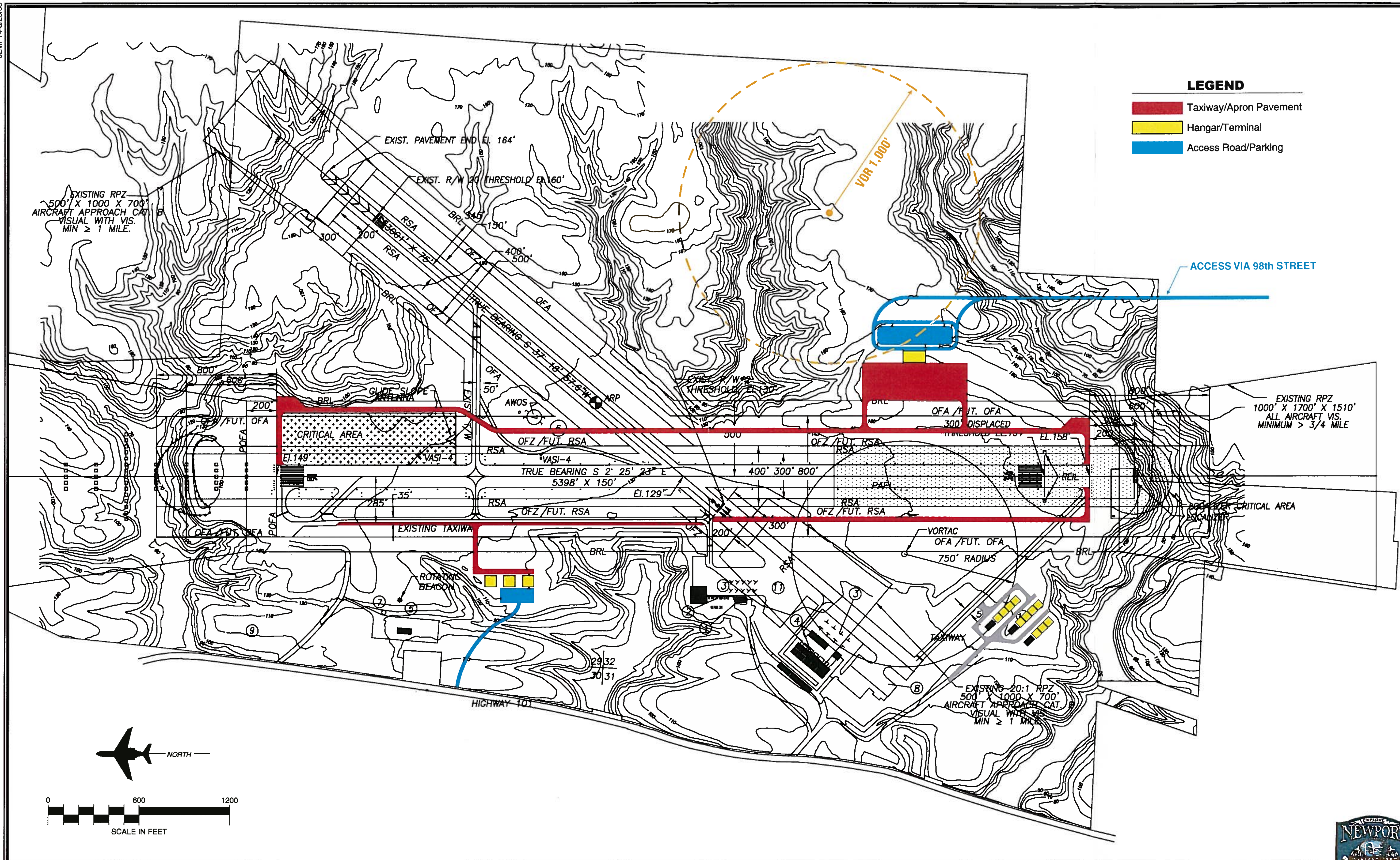


AIRSIDE AND LANDSIDE ALTERNATIVES



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MASTER PLAN CONCEPT