4 REQUIREMENTS ANALYSIS

The next step in the master plan update process is to translate the aviation forecasts into facility requirements. Facility requirements are determined by comparing future facility needs to the airport's existing inventory of facilities, reviewing FAA design criteria to ensure the airport meets safety and operational standards, and considering the need to maintain or improve customer service. Separate requirements analyses were prepared for key elements of the airport.

This chapter consists of:

- Demand-capacity analysis
- Design aircraft selection
- Facility requirements evaluation

4.1 Demand/Capacity Analysis

4.1.1 Introduction

The demand/capacity analysis 1) examines the capability of the airfield system at Nome Airport to address existing levels of activity and 2) determines the capability of the airfield to meet the projected future levels of demand without incurring adverse levels of aircraft delay stemming from an airfield deficiency.

The FAA's standard method for determining airport capacity and delay for long-range planning purposes can be found in AC 150/5060-5, *Airport Capacity and Delay*. This and the FAA's Airport Capacity Model software were used to analyze the airfield requirements by computing hourly capacity, annual service volume (ASV), and average aircraft delays. This approach utilizes the projections of annual operations by the specified fleet mix as projected in Chapter 3, *Forecasts of Aviation Demand*, while considering a variety of other factors that are described in the following sections.

In addition to the updated aviation activity forecasts, knowledge of a number of an airport's airfield characteristics and operational conditions is required in order to conduct the FAA capacity analyses. The elements that affect airfield capacity are:

- Runway configuration
- Aircraft mix index
- Taxiway configuration
- Meteorological conditions

When analyzed together, the above elements provide the basis for establishing the generalized operational capacity of an airport as expressed by Annual Service Volume. The following sections will evaluate each of these capacity characteristics with respect to OME.

Runway Configuration

The layout and spacing of runways are important factors in determining airfield capacity.

The airfield configuration at OME includes two intersecting paved runways. The primary runway (10/28), has an east-west orientation, while Runway 3/21 (crosswind) is aligned northeast to southwest. The intersection of the two runways occurs approximately 2,000 feet from the Runway 28 threshold and 1,700 feet from the Runway 3 threshold.

Aircraft Mix Index

Knowing the mix of the aircraft fleet operating into and out of Nome is essential to establish an aircraft fleet mix index as required in the FAA methodology. The aircraft mix index is calculated based on the number of operations for the gross weight of the specific aircraft:

- ***Class A:*** Single engine, less than 12,500 lbs.
- ***Class B:*** Multi-engine, less than 12,500 lbs.
- ***Class C:*** Multi-engine, 12,500 lbs. to 300,000 lbs.
- ***Class D:*** Multi-engine, over 300,000 lbs.

The mix index is the percent of Class C aircraft operations plus three times the percent of Class D aircraft operations [%(C+3D)]. The fleet mix at Nome includes only Classes A through C, with a mix index of 25% (see Appendix D for details).

Taxiway Configuration

Exit taxiways have a considerable impact on airfield capacity, since the number and location of exits directly determines the length of time an aircraft occupies the runway. The airfield capacity analysis gives credit to exits located within a prescribed range (3,000 to 5,500 feet) from a runway's threshold. This range is based upon the mix index of the aircraft that use the runway. The exits must be at least 750 feet apart to count as separate exits.

There are no parallel taxiways at OME. Thus, all aircraft landing on Runway 3 or Runway 28 must back-taxi on the runway to return to the terminal area. This reduces the capacity of the airfield when aircraft are landing from the south or east.

Runway 10/28 has two exit taxiways, each leading to different apron areas. Runway 3/21 has three exit taxiways: one to the main passenger terminal area, one to the GA tie-downs, and one to the Air Guard hangar.

Meteorological Conditions

Meteorological conditions such as wind, visibility, and cloud ceiling influence the pilot's decision as to which runway end to choose for an approach. Thus, these conditions can have an effect on the overall capacity for the airfield by dictating direction of takeoffs and landings. Likewise, weather conditions dictate whether aircraft operate under Visual Flight Rules (VFR) or Instrument Flight Rules (IFR).

Visual Meteorological Conditions (VMC) occur when visibility is at least three statute miles and the cloud ceiling is 1,000 feet or greater. During VMC, Visual Flight Rules apply. Instrument Meteorological Conditions (IMC) exist when restrictions to visibility are lower than VMC, thereby requiring instruments to provide guidance to aircraft. Thus, during IMC, Instrument Flight Rules apply. IMC limits at OME are discussed in Section 4.4.6.

Recent (past 10 years) meteorological conditions were analyzed as part of this master plan update. Section 6 of the Resource Documents binder contains the results of that analysis.

Runway Capacity

The FAA Capacity Model uses the following general assumptions for the purposes of computing hourly capacity and average delays:

Assumption	Valid at OME?
Arrivals equal departures	Yes
Touch-and-go operations less than 20%	Yes
Full-length parallel taxiway in place	No
Ample runway entrance/exit taxiways exist	No
Airspace is not constrained	Yes
Approximately 80% of the time the airport is operated with the runway-use configuration that produces the greatest hourly capacity	Yes
At least one runway is equipped with an ILS	Yes

Table 4-2 presents the results of six scenarios at OME. These scenarios were produced using either the FAA Capacity Model program or through adjusted calculations based on AC 150/5060-5 parameters to account for local conditions. The six scenarios include:

- Current conditions
- Current conditions adjusted for local conditions
- 20-year operations forecast
- 20-year operations forecast and closure of Nome City Field
- 20-year operations forecast adjusted for local conditions
- 20-year operations forecast adjusted for local conditions and closure of Nome City Field

All scenarios were analyzed with the assumption that general aviation dominates. To evaluate the sensitivity of the output to the input, all scenarios were also evaluated with air carrier operations dominant, and the results were the same as those presented below.

To account for local conditions, such as the lack of a parallel taxiway, multiple exit taxiways, and meteorological conditions, the input factors of the capacity analysis were adjusted using the following methodology.

First, the adjusted hourly capacity of both VFR and IFR operations was calculated using the charts and factors in AC 150/5060-5 on Figures 3-3 and 3-43, respectively, using the following formula for hourly capacity: C*×T×E, where C* is the hourly capacity base (in operations per hour), T is the percent touch-and-go, and E is the exit factor. Table 4- summarizes the calculation factors obtained from the AC (see Appendix D for further detail).

Table 4-1 – Hourly Capacity Calculation Factors

	25% Fleet Mix		20% Fleet Mix	
	VFR	IFR	VFR	IFR
C*	74	58	77	58
T	1.04	1.00	1.04	1.00
E	0.76	0.77	0.70	0.83

Based on these calculation factors, the capacity of OME with a 25% fleet mix is approximately 58 operations per hour in VFR conditions, dropping to 45 during IFR conditions (see Table 4-2). A 20% fleet mix changes these to 56 and 48 operations per hour, respectively.

Next, an adjusted Annual Service Volume (ASV) was calculated based on FAA guidance. ASV was determined using the following equation: $ASV = C_W \times D \times H$, where C_W is the weighted capacity, D is the daily demand ratio, and H is the hourly demand ratio. Typical demand ratios depicted in AC 150/5060-5 were used in the ASV formula above. The weighted hourly capacity was calculated based on methodology outlined in Chapter 3-6 of AC 150/5060-5 (see Appendix D).

Table 4-2 - Capacity Analysis Scenarios and Outputs Summary for OME

Parameter	Scenario 1 *Current*[1]	Scenario 2 *Current Adjusted*[2]	Scenario 3 *+20 Years CF[3] Open*[1]	Scenario 4 *+20 Years CF[3] Closed*[1]	Scenario 5 *+20 Years CF[3] Open Adjusted*[3]	Scenario 6 *+20 Years CF[3] Closed Adjusted*[3]
Inputs						
Fleet Mix	25%	25%	25%	20%	25%	20%
Annual Operations	40,000	45,000	45,000	50,000	45,000	50,000
Runway Configuration	Single	Single	Single	Single	Single	Single
Taxiway Configuration	Full	Exit only	Full	Full	Exit only	Exit only
Outputs						
VFR Ops/Hr	74	58	74	98	58	56
IFR Ops/Hr	57	45	57	59	45	48
ASV	195,000	166,000	195,000	230,000	166,000	142,000
Demand:ASV	0.21	0.24	0.23	0.22	0.27	0.35
Avg. Delay per Aircraft	<1 minute	<1 minute	<1 minute	<1 minute	<1 minute	<1 minute

[1]FAA Capacity Model results
[2]Adjusted calculations based on Chapter 3 of AC 150/5060-5, *Airport Capacity and Delay*
[3]CF = Nome City Field (closure adds 5,000 annual GA operations at OME)

4.1.2 Demand/Capacity Summary

In the most demanding future scenario, the forecast operations level represents 35% of the airfield's ASV. FAA Order 5090.3B, *Field Formulation of the National Plan of Integrated Airport Systems* (NPIAS), indicates that airfield capacity improvements should be considered when operations reach 60% of the ASV. Therefore, the demand/capacity analysis shows no need for major capacity-related airfield improvements at Nome Airport during the next 20 years. Likewise, local opinion about delays and capacity also indicates that OME's capacity will remain adequate until well beyond 2028.

4.2 Facility Requirements

The purpose of this section is to use the data collected during the inventory and aviation forecast chapters to determine

- The adequacy of the existing airport facilities
- Whether the existing facilities can accommodate existing and potential users
- Whether the existing facilities do meet, or can meet, FAA airport design criteria
- What new facilities may be needed
- When these new facilities may be needed to accommodate forecast demands

Specific determinations of location and timing of future facilities are discussed in the following chapter, *Alternatives Development and Evaluation*.

Requirements for new facilities are expressed for the short-term, intermediate, and long-term planning horizons. These translate to roughly 5-year, 10-year and 20-year timeframes.

Airport facilities include both airfield and landside components. Airfield facilities are those facilities related to the arrival, departure, and ground movement of aircraft. These include:

- Runways
- Taxiways
- Navigational aids
- Airfield lighting, markings, and signage

Airside facility needs at OME were determined by comparing existing facilities with those needed to meet applicable FAA standards and requirements for various airside components, as well as through discussions with DOT&PF, airport tenants, and the Nome aviation community.

Landside facilities, which provide the interface between air and ground transportation modes, include:

- Passenger terminal
- General aviation facilities
- Air cargo facilities
- Support facilities
- Ground access, circulation, and parking

Landside facility requirements were developed based on existing landside facilities, current and planned utilization of those facilities, and projected aviation demand.

4.3 Design Aircraft

Selection of appropriate 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 airfield dimensions and separation distances between facilities. These standards must be determined now, because relocating these facilities at a later date will likely be extremely expensive.

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, depicted by a letter, is the aircraft approach speed (operational characteristic, based on an aircraft's stall speed at its maximum certificated weight); the second, depicted by a Roman numeral, is the airplane design group wingspan (physical characteristic, determined by the aircraft's wingspan). Generally, aircraft approach speed applies to runways and runway-related facilities, while aircraft wingspan primarily relates to separation distances involving taxiways, taxi lanes, and landside facilities.

The five approach categories used in airport planning are based on the aircraft's approach speed:

- ***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 six airplane design groups used in airport planning are determined by the aircraft's wingspan:

- ***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

The FAA recommends designing runways and taxiways to meet the requirements of the most demanding ARC that meets FAA's substantial use threshold of at least 500 annual operations at that airport (AC 150/5325-4B). OME currently accommodates a wide variety of civilian aircraft, including small single and multi-engine aircraft (approach categories A and B and airplane design group I) and business turboprop and jet aircraft (approach categories B, C, and D and airplane design groups I, II, and III).

The current ARC assigned to OME is C-III, and this is projected to apply through 2015. Beyond 2015, however, the ARC should be D-III. This change in ARC reflects an expectation that Alaska Airlines will switch from the 737-400 to the 737-800 aircraft as the workhorse for Nome (see letter dated January 2010 in Appendix D), causing the 737-800 to pass FAA's threshold of 500 annual operations for defining the design aircraft.

Alaska Airlines is the primary air carrier into Nome, serving the passenger and freight needs with a fleet of 737 aircraft. The Alaska Airlines Web site (accessed 3/3/2010) shows the fleet consists of the following models and number of each: 737-400 (30), 737-400 Combi (5), 737-700 (19), 737-800 (51), and 737-900 (12).

Although all of these 737 models currently fly into Nome from time to time, the runway's length restricts the use of the most demanding aircraft to only those times when there is no chance of a contaminated (e.g. snow, slush, ice) runway (see Section 4.4.1 below). Currently, the 737-400 in the Combi configuration is the primary aircraft flown into Nome. The 737-400 Combi was designed and manufactured specifically for Alaska Airlines as the workhorse to provide passenger and freight service to remote airports in Alaska. Performance characteristics of the standard 737-400 are the same as those of the 737-400 Combi. These are out of production, and as the fleet ages, a replacement aircraft will be chosen. References to the 737-400 in this document include the 737-400 Combi. Alaska Airlines indicated the future workhorse is expected to be the 737-800. However, it takes years to obtain certification for these specially configured aircraft, and therefore, the 737-400 will remain as the design aircraft in the near term (0 to 5 years), with the 737-800 becoming the design aircraft for the intermediate (5 to 10 years) and long-term (10 to 20 years) planning periods.

4.4 Airside

4.4.1 Runways

The recommended runway lengths for Nome Airport are based on the length required by the most critical aircraft making "substantial use" (i.e., over 500 annual operations) of the airport's runways.

The critical aircraft for the existing runways is based on the Alaska Airlines current and projected fleet. Runway length requirements were evaluated for all Alaska Airlines passenger and cargo jets presently flying into Nome—the B737-200, B737-400, B737-700, B737-800, and B737-900—first to determine which aircraft would be the most demanding, and second to compare length requirements of other potential critical aircraft if their use increases to 500 annual operations. In the near term, the critical aircraft is the Boeing 737-400, whose recommended runway length is 6,600 feet, the length required for medium/poor braking action. When the 737-800 replaces the 737-400 and reaches the substantial use threshold, the recommended runway length will increase to 7,500 feet.

For the proposed GA runway, the aircraft were grouped into a family of small airplanes (per FAA AC 150/5325-4B) to determine the recommended runway length, which is 2,700 feet.

Methodology

For the main runways, the minimum runway length was determined using Boeing's Airport Planning Manuals (APM) for 737 aircraft in conjunction with FAA AC 150/5325-4B, *Runway Length Requirements for Airport Design*. According to the FAA advisory circular, the design inputs for determining the runway length are:

- Critical design airplanes under evaluation and their manufacturer's APM
- Maximum certificated takeoff weight or takeoff operating weight for short-haul routes
- Maximum certificated landing weight
- Airport elevation above mean sea level (11 MSL)
- Effective runway gradient
- The mean daily maximum temperature of the hottest month at the airport (59^{o}F)

Appendix D contains relevant portions of the Boeing 737 APMs, including landing length, payload-range, and takeoff length charts. Using these inputs, both the takeoff and landing length requirements can be determined for each aircraft.

A summary of the method for determining runway length outlined in AC 150/5325-4B follows.

Landing

The landing length requirement is calculated using the APM landing length chart for the highest landing flap setting on a dry runway. This landing length is then increased by 15 percent to account for runways in a wet condition, but it does not take into consideration the fair-to-poor braking conditions experienced at Nome or other Alaska airports.

Following the Chicago Midway Airport (MDW) accident, the FAA released a Safety Alert for Operators in August 2006, "*Landing Performance Assessments at Time of Arrival (Turbojets)*" (SAFO 06012), that required operators to assess runway braking action and runway contaminants (e.g., snow, slush, and ice) prior to landing to ensure that sufficient runway length was available for a "full stop landing, with at least a 15% safety margin beyond the actual landing distance." To enable operators to comply with this recommendation, airport planners now add the 15% safety margin to the runway length requirement calculated using AC 150/5325-4B.

While SAFO 06012 is only a recommendation at this time, FAA is in the process of developing it into a regulation. The ultimate regulation is likely to be more complex than simply adding 15% to the calculated length; runway length requirements may instead be based on a degraded braking action rating obtained by evaluating contaminant type, thickness, temperature and other variables.

Takeoff

The takeoff length is based on a takeoff weight corresponding to the length of haul that is flown by the airplanes on a substantial use basis. For OME, this is the distance from Anchorage to Nome, a distance of 540 statute miles, which was rounded to 500 nautical miles. Maximum operating takeoff weight is determined from the Payload-Range Chart and appropriate haul length. Takeoff length required is determined from the takeoff length chart and operating takeoff weight and then increased by 10 feet per foot of elevation difference in the runway profile.

The required runway length for an aircraft is the longer of the distances required for landing and takeoff. Using the Boeing APM charts, Table 4-3 shows the preliminary runway lengths calculated for each of the Boeing 737 jet aircraft in use at OME following the guidance in the AC, along with runway lengths after applying the 15% safety margin to the landing length.

Table 4-3 - Nome Airport Runway Length

Aircraft	Landing Length	1.15x Landing Length (rounded)	Takeoff Length	Required Runway Length
B737-200	5,300'	6,100'	6,600'	6,600'
B737-400[12]	5,800'	6,700'	6,000'	**6,700'**
B737-700	5,700'	6,600'	5,800'	6,600'
B737-800[13]	6,250'	7,200'	6,400'	**7,200'**
B737-900	6,400'	7,400'	6,800'	7,400'

The two operators of the Boeing 737s into Nome were also contacted for their assessment of the current runway length and the optimal runway length for their operations over the next 20 years.

[12] B737-400 is the design aircraft for 0-5 year planning period

[13] B737-800 is the design aircraft for the 6-20 year planning period

Northern Air Cargo is currently using the 737-200. For an aircraft with maximum load, they need a 6,300-foot runway for takeoff, and that length would be sufficient for landing as well.

Alaska Airlines' Manager of Air Traffic and Airfield Operations described operations and procedures for a "contaminated" runway[14]. Presently at Nome (2009-2010), braking action conditions less than "good" require them to fly light. Alaska Airlines would like to see a grooved runway (see correspondence in Appendix D), as the Boeing APM states that grooved runways per FAA specifications are not subject to some or all of the length penalties associated with smooth, non-grooved runways. In follow-up correspondence, Alaska Airlines' Director of Flight Operations Engineering provided landing length requirements (shown in Table 4-4) using degraded braking action data. Alaska Airlines is expecting that FAA will soon mandate the use of degraded braking action in response to the accident at MDW airport.

Table 4-4 - Runway Length for Degraded Braking Action*

Aircraft	Good/Medium	Medium	Medium/Poor	Poor
B737-400	5,200'	5,900'	**6,600'**	7,500'
B737-700	5,400'	6,200'	7,000'	8,100'
B737-800	5,700'	6,600'	**7,500'**	8,700'
B737-900	6,100'	7,000'	8,000'	9,200'

Source: Alaska Airlines

*Basis: Flaps 40, airport elevation 100' MSL, OAT 5°C, 0.5% downward slope, maximum landing weight

Since Nome Airport is not staffed or equipped to maintain conditions for "medium" braking action during storms, DOT&PF has requested the runway length be selected based on the medium/poor or poor braking action. Medium/poor braking action requirements call for slightly longer runways than those determined following the guidance of the AC with 15 percent added to the landing length for SAFO 06012 requirements, and are the basis of the runway length recommendations.

Using the poor braking action requirements adds significantly to the required runway length, and is not recommended unless it can be shown that it is more cost-effective than improving the braking action by application of heated sand, snow plowing, and other surface preparation methods or by limiting payloads to allow safe operations on a shorter runway.

To meet the FAA's recommended crosswind component for C-III and smaller aircraft in use at Nome, a crosswind runway is required. The length requirements for the crosswind runway are the same as the primary runway.

The runway length required for Medium/Poor degraded braking action is the basis of the recommended runway lengths for the Nome Airport and are summarized in Table 4-5 below.

[14] Per SAFO 06012, a runway surface is considered contaminated if any substance such as snow, slush, ice, sand, or standing water is present on the runway.

Table 4-5 – Nome Airport Recommended Runway Lengths

Phasing	Primary & Crosswind Runways	
	Design Aircraft	Runway Length
0-5 Years	B737-400	6,600'
6-10 Years	B737-800	7,500'
11-20 Years	B737-800	7,500'

Runway Standards and Deficiencies

The appropriate design standards by ARC are specified in FAA AC 150/5300-13, Change 15, Airport Design. Table 4-6 outlines the key dimensional standards for OME. Airside facility needs are based upon comparing the FAA standards with the existing conditions at OME; Table 4-7 summarizes this comparison and documents the runway deficiencies (or needs).

Table 4-6 – Runway Standards

Runway Element	Primary & Crosswind (C/D-III)	General Aviation (A-I)
Width	150'	60'
Shoulder Width	25'	10'
Blast Pad Width	200'	80'
Blast Pad Length	200'	100'
Safety Area Width	500'	120'
Safety Area Length Prior to Landing Threshold	600'	240'
Safety Area Length Beyond Runway End	1,000'	240'
Object Free Area Width	800'	400'
Object Free Area Length Beyond Runway End	1,000'	240'

Table 4-7 – Runway Characteristics

Runway Element	Existing	Standard	Deficiency
Primary Runway (10/28)			
Width	150'	150'	—
Length	6,009'	7,500'	1,491'
Safety Area Width	500’	500'	—
Safety Area Length Beyond Runway End	0'/0'	1,000'	1,000'/1,000'
Object Free Area Width	800'	800'	—
Object Free Area Length Beyond Runway End	1,000'	1,000'	—
Crosswind Runway (3/21)			
Width	150'	150'	—
Length	5,575'	6,600'	1,025'
Safety Area Width	300'	500'	200'
Safety Area Length Beyond Runway End	0'/0'	1,000'	1,000'/1,000'
Object Free Area Width	800'	800'	—
Object Free Area Length Beyond Runway End	1,000'	1,000'	—

General Aviation Runway

A dedicated GA runway at OME is not required for capacity; however, for functional operation a separate gravel runway may be warranted to support tundra-tire- and ski-equipped aircraft. Local pilots have expressed a desire for such a runway at OME, particularly when Nome City Field is closed.

Closing Nome City Field and constructing a GA runway at OME would remove the flight path intersection 5,000 feet east of Runway 28 and 1,500 feet south of City Field.

4.4.2 Taxiways

Taxiways provide for safe and efficient aircraft movement between runways and aprons. As air traffic increases, the taxiway system can become the limiting operational factor. Efficient location of exit taxiways can also reduce runway occupancy time, thereby increasing runway capacity.

Nome Airport currently lacks a parallel taxiway system. There are, however, five paved exit taxiways connecting aircraft aprons with the runways.

Additional capacity could be added to the existing runways if parallel taxiways were constructed. Per FAA guidance, the taxiway system should have the same pavement strength as the runway and possess at least one exit taxiway. The minimum required taxiway width for ARC D-III facilities is 50 feet with a separation of 400 feet between taxiway and runway centerlines (see Table 4-8).

A full-length parallel taxiway system is recommended to bring OME into compliance with FAA requirements for precision and non-precision approach procedures. According to AC 150/5300-13, Appendix 16, Runway 10/28 needs a full-length parallel taxiway to support the Precision approach procedures currently in place. For Runway 3/21, which is not anticipated to have NPI approach minimum lower than 1 mile (see Section 4.4.6) within the planning period, a full-length parallel taxiway is not required but is still recommended.

Transverse taxiways would connect the runway and the parallel taxiway.

Parallel taxiway construction at OME is constrained by the existing airport boundary and the Snake River.

Taxilanes provide access from taxiways to airplane parking positions and other terminal areas. FAA AC 150/5300-13 sets the standard single taxilane width at 1.2 times the wingspan of the most demanding aircraft plus 20 feet. Table 4-8 summarizes applicable taxilane standards.

Air taxi operators at OME have voiced a need for a dedicated taxilane adjacent to the air carrier/ air taxi apron (Figure 2-2).

Table 4-8 – Taxiway and Taxilane Dimension Standards

	Design Group I	Design Group II	Design Group III	Design Group IV
Taxiway Element				
Width	25'	35'	50'	75'
Safety Area Width	49'	79'	118'	171'
Taxilane Element				
Object Free Area Width	79'	115'	162'	225'

Reference: FAA AC 150/5300-13, *Airport Design*, Chapter 4

4.4.3 Pavement

DOT&PF conducted a pavement inspection for OME in the summer of 2009. Results of the inspection indicate a need to perform corrective maintenance on the cargo apron, the Alaska Army National Guard apron, and the east end of Runway 10/28. The main air carrier/air taxi apron in front of the Alaska Airlines passenger terminal was identified as needing reconstruction.

4.4.4 Helicopter Operations

There are currently six helicopters based at OME; this could increase to seven by the end of the planning period. Rotorcraft operations use the existing aircraft aprons for landings and departures. These operations parallel the runway and follow visual flight rules. Because of the low volume of use at this time, this practice is functional and has not caused airspace conflicts.

Construction of a dedicated heliport during the planning period is not anticipated.

4.4.5 Airspace

An obstruction survey and analysis is in progress. Obstructions to the primary and transitional surfaces are known to exist due to terrain and built facilities adjacent to the runway and within the approaches. The airspace analysis will determine the current and future obstructions to airspace that should be removed to provide lower minimums. The practicability of removing the obstructions to gain lower minimums is the key outcome of the obstruction analysis.

4.4.6 Navigational Aids

Nome Airport has an instrument landing system (ILS) for the primary runway that supports Category I precision instrument approaches with 4,000-foot RVR (¾-mile) visibility minimums for Runway 28 and 1-mile visibility minimums for Runway 10. For a regional hub like Nome, ½-mile visibility minimums would be more appropriate to keep the airport available in inclement weather, and these are expected to be achievable for the primary runway. Improvements to the approach minimums for Runways 10 and 28 would require the following:

- Remove terrain obstructions of the Terminal Instrument Procedures (TERPS) surfaces for ½-mile visibility minimum (34:1 per Table A2-1, Row 9, in AC 150-5300-13)
- Site runway ends (RW28 and RW3) to eliminate obstructions from vehicles travelling on roadways, or relocate roadways
- Conduct Vertically Guided Airport Airspace Analysis Survey, and remove any obstructions identified in that survey
- Construct parallel taxiway
- Install or relocate ILS equipment and approach lighting as needed for precision instrument approaches

To achieve even lower minimums (less than ½ mile) would require a Category II or III instrument landing system. A Category II approach is not recommended for the planning period, as air traffic will not likely warrant the increased cost of such a system, which would require:

- Removal of surrounding terrain
- Installation and maintenance of runway centerline and touchdown zone lighting
- Construction and operation of an air traffic control tower

These capital costs and added maintenance costs for system reliability would have to be weighed against the potential benefits of fewer missed approaches or cancelled flights due to operating a Category I as opposed to a Category II ILS. In any case, the trend in the airline industry is toward GPS satellite navigational systems and away from ground-based instrument landing systems.

The FAA is developing LPV (Localizer Performance with Vertical Guidance) approaches for Runways 10 and 28.

Alaska Airlines is developing new RNP (Required Navigation Performance) approaches for Nome. Specially equipped aircraft can use these privately developed and unpublished GPS approaches with on-board navigational performance monitoring and alerting. When completed, Alaska Airlines is hopeful they might achieve minimums of ¼- to ½-mile visibility and 200 to 300 feet minimum HAT.

The lowest visibility minimum for the crosswind runway is 1-mile visibility for Runway 3, with a minimum descent altitude of 340 feet. The terrain that lies beyond the missed approach controls the minimum descent altitude, which in turn requires a higher visibility minimum. The mountains to the north (see Photo 4–1) also restrict any reasonable instrument approach to Runway 21. It is not practical to remove the mountains, so the current minimums for Runway 3/21 are appropriate.

Photo 4–1 – Major terrain features affecting Runway 3/21 minimums

4.4.7 Airfield Lighting, Marking and Signage

Lighting

A runway edge lighting system is a configuration of lights which define the lateral and longitudinal limits of the usable landing area during periods of darkness and low visibility. There are three types of runway edge lighting:

- Low intensity runway lights (LIRL) for small airport visual runways
- Medium intensity runway lights (MIRL) for visual or non-precision runways
- High intensity runway lights (HIRL) for precision instrument runways

Given the short winter daylight hours at Nome, the lighting is crucial. The primary runway (10/28) has a HIRL system, which is appropriate for precision instrument runways. The crosswind runway (3/21) has a MIRL system, appropriate for non-precision instrument runways.

Runway and taxiway lighting will have to be extended along with any lengthening or taxiway construction project following the guidance of AC 150-5340-30D.

OME's taxiways have medium intensity taxiway lighting (MITL), which is appropriate for airports with runway lighting systems.

Photo 4–2 – Runway 28 approach lights

Markings

Airport surfaces are conspicuously marked to visually convey information to the pilot. Safety is enhanced using uniform markings throughout the airport system. Guidance on the standard makings is provided in AC 150-5340-1J.

There are three types of runway markings:

- ***Visual***—for runways with no straight-in approach procedure
- ***Non-Precision***—for runways with instrument approach procedures with only horizontal guidance
- ***Precision Instrument***—for runways with approach procedures that use both horizontal and vertical guidance

The Nome airport system has runways in each category:

- The proposed GA runway would be a visual runway, with no markings because it is unpaved.
- Runway 3/21 is a non-precision instrument runway. Markings for this runway include designation, centerline, threshold marking, aiming point, and side stripes.
- Runway 10/28 is a precision instrument runway with the recommended precision instrument markings, including the runway designation, centerline, threshold marking, aiming point, touchdown zone, and side stripes.

For RNP approaches, the FAA guidance in Appendix 16 of AC 150/5300-13 recommends precision instrument markings for RNP approaches with visibility minimums less than 1 mile, although they are not required unless the minimums are less than ¾ mile. When the Alaska Airlines RNP approaches are completed and the visibility minimums are known, the markings should be reviewed to see if Runway 3/21's markings should be upgraded to precision instrument.

Nome Airport's paved taxiways and aprons are marked with taxiway striping, hold positions, and apron markings, per FAA guidance as applicable to OME.

Signage

Signs are used on runways and taxiways to convey information to the pilot. Signage is standardized on all airports, although the number and location of signs may vary. Guidance on airport signage is found in AC 150/5340-18E.

Some of the signs that are applicable to Nome Airport include:

- Taxiway designation signs
- Hold position signs
- Destination signs
- Distance remaining signs

The 2007 runway rehabilitation project updated the signs for the existing runways and taxiways. Additional signage will be needed when runways are lengthened, a new GA runway is constructed, and/or new taxiways are constructed.

4.5 Landside

Since the previous airport master plan update in 1996, changes have occurred in the aviation industry and at Nome Airport. The terrorist attacks on September 11, 2001, changed the security requirements and procedures for terminal facilities, including passenger screening, baggage handling, and airport access controls. Likewise, several landside facilities have been developed at OME since the 1996 update. These include a new Airport Rescue and Firefighting (ARFF) building and new passenger/cargo facilities for Alaska Airlines and Hageland. Water and sewer lines were also extended to the airport.

4.5.1 Commercial Passenger Terminal

Components of the terminal area complex include the terminal apron, vehicle parking area, and the various functional elements within the terminal building. This section identifies the terminal area facilities required to meet the airport's needs through the planning period.

The requirements for the terminal complex functional areas were determined with the guidance of FAA AC 150/5360-9, *Planning and Design of Airport Terminal Building Facilities at Non-hub Locations*, and input from airport tenants and DOT&PF personnel. (Note that while Nome is a regional hub, it does not meet the FAA's definition of a hub airport.)

The Nome Airport passenger terminal area is decentralized, with each carrier operating out of a separate facility. FAA guidelines are based on a centralized terminal. Facility requirements presented in this chapter are the collective area of all operators unless otherwise noted.

Gates and Apron Frontage

Air carrier and air taxi (Bering Air and Era/Frontier/Hageland) gates and apron space requirements were assessed based on FAA AC 150/5360-9 and discussions with airport tenants.

Alaska Airlines is the only Part 121 operator at OME. FAA guidance recommends two aircraft parking positions for air carriers. Currently, Alaska Airlines has a single hard stand on their apron. This should be sufficient throughout the planning period, as it is unlikely that Alaska

Airlines will fly more than one jet to OME at a time. However, Alaska Airlines has indicated a desire to replace this hard stand with one that will accommodate the 737-800 (see Appendix E).

Determining necessary apron space for Alaska Airlines is difficult, as flights to/from Nome also stop at Kotzebue to load/unload cargo and passengers. Discussions with Alaska Airlines personnel in Nome indicate that the current apron area will remain adequate for their needs throughout the planning period, however.

The forecast requirements for air taxi apron space are illustrated in Table 4-9 below. Apron space is adequate throughout the planning period, although there is a need for a dedicated taxilane adjacent to the air taxi apron or parallel taxiway.

Table 4-9 – Air Taxi Apron Space Requirements

Based Air Taxi Aircraft	Current (2009)	Forecast Requirement (2028)
Single & Multi-Engine Airplanes	54	73
Requirements @ 300 SY each	16,200	21,900
Helicopters	6	7
Requirements @ 360 SY each	2,160	2,520
Total SY Required	18,360	24,420
Total SY Available (2009)	33,000	33,000
Surplus (Deficit) SY	14,640	8,580

Passenger Terminal Building

Passenger terminal facility requirements were based on FAA AC 150/5360-9 and AC 150/5360-13. In some instances, however, facility requirement forecasts were adjusted to better reflect conditions in Nome. These adjustments were based on discussions with airport tenants, the public, and DOT&PF staff.

Comparison of existing terminal building facilities with FAA guidance is difficult due to the nature of the facilities at OME. Each fixed base operator (FBO) at Nome maintains separate terminal facilities, while FAA guidance is based on a single consolidated facility. Table 4-10 summarizes the aggregate area for all passenger facilities and compares those against FAA guidance.

Alaska Airlines' Manager of Airport Affairs indicated that their terminal facility in Nome is adequate for current and future operations. They intend to "wear out" the existing facility over the length of the lease before investing any more into infrastructure at OME (see correspondence log). Their lease extends beyond the planning period.

Table 4-10 - Passenger Terminal Building Requirements

	Existing Area[1] 2009	Forecast[2] Requirement 2013	2018	2028
Ticket Counters	30 LF	20 LF	25 LF	30 LF
Security[3]	400 SF	120 SF	120 SF	120 SF
Lobby	2,700 SF	750 SF	900 SF	1,100 SF
Concessions	200 SF	750 SF	900 SF	1,100 SF
Airline Operations	34,780 SF[4]	2,000 SF	2,500 SF	3,000 SF
Baggage Claim	20 SF	700 SF	825 SF	875 SF

[1]Existing areas are an aggregate of the total area for all FBOs; existing area was determined based on data provided by airport tenants, City of Nome property database, and scaled 2009 orthophotography
[2]Forecast space requirements based on FAA AC 150/5360-9
[3]Security based on FAA AC 150/5360-13 and TSA publication *Recommended Security Guidelines for Airport Planning, Design and Construction*
[4]Likely high due to overlap in duplicate facilities vs. combined and OME facilities including office and cargo handling space

Curb Fronts

The passenger terminal curb provides for passenger and baggage drop-off and pickup.

There is 150 feet of building frontage at the Alaska Airlines passenger terminal. There is no developed curb, and parking stalls are located adjacent to the building. Two lanes provide access from Seppala Drive.

Bering Air, Evergreen, and Era/Hageland/Frontier each have a single passenger entryway.

FAA guidance recommends a minimum of 8 feet of curb depth, a canopy at least 11 feet high extending over the curb, and a minimum of three lanes at the curb. The Nome Airport does not provide any of these standardized recommended facilities. However, the existing facilities are adequate to meet the needs of passengers.

4.5.2 General Aviation

General aviation facilities are those necessary for handling GA aircraft and passengers while on the ground. This section is devoted to identifying future facility needs during the planning period for the following types of facilities normally associated with general aviation terminal areas, as outlined in AC 150/5070-6B:

- Aircraft storage facilities
- Transient aircraft parking aprons
- General aviation pilot facilities
- Airport access
- General aviation automobile parking

Aircraft Storage Facilities

Aprons and Tie-Downs

Based aircraft not stored in hangars require parking positions on the apron. Aircraft tie-down requirements are calculated by examining the needs of both based aircraft and transient aircraft. There are 28 tie-down spaces at OME on an unpaved apron adjacent to Runway 3/21. Demand for tie-down space at OME is seasonal. During the summer, all tie-downs are in use and there is often a wait list. In winter, demand is reduced and often leaves open tie-down spaces. This seasonal shortfall of capacity will be exacerbated with closure of Nome City Field.

In addition, half of the GA tie-down spaces at OME are located within 500 feet of the Runway 3/21 centerline. These need to be moved in order to comply with FAA AC 150/5300-13.

Local aircraft owners would like to see electricity available at the tie-downs at OME.

Hangars

The demand for hangar facilities typically depends on the number and type of aircraft expected to be based at the airport as well as the regional climate. Hangar facilities are generally classified as T-hangars or conventional hangars; conventional hangars can include individual hangars or multi-aircraft hangars. These different types of hangars offer varying levels of privacy, security, and protection from the elements.

Forecasted aviation activity indicates that OME could see 111 based aircraft (65 GA with the closure of Nome City Field) by the end of the planning period. As the number of based aircraft at OME increases, so will the need for hangars. All hangars should be located to provide adequate access to auto parking in addition to fuel and airside facilities.

Presently, there are no hangar facilities for general aviation at OME, although local pilots have expressed the need for them, particularly if Nome City Field is closed. There are three conventional hangars at City Field.

The requirements for hangar and tie-down space at OME were estimated based on FAA AC 150/5300-13, discussions with airport staff, and a survey of airport users. The requirements were calculated using the following assumptions.

Table 4-11 – General Aviation Aircraft Storage Assumptions

Aircraft Type	Desired Storage Type	Requirement
Single Engine	10% T-Hangar	1,200 sf
	90% Tie-down	300 sy

Table 4-12 – General Aviation Based Aircraft Storage Requirements

Facility/Aircraft Type	Base (2008) Aircraft	Base (2008) Area	2028 Forecast[1] Aircraft	2028 Forecast[1] Area
Hangar				
Demand	3	3,600 sf	9	10,800 sf
Existing	1	8,500 sf	1	8,500 sf
Surplus (Deficit)	(2)	4,900 sf	(8)	(2,300 sf)
Tie-Down				
Demand	31	9,300 sy	65	19,500 sy
Existing	31	16,000 sy	31	16,000 sy
Surplus (Deficit)	0	6,700 sy	(34)	(3,200 sy)

[1]Assumes closure of Nome City Field

Transient Aircraft Parking Aprons

Transient aircraft flown to the airport for business, recreation, or maintenance also require short-term parking positions on the apron.

The number of transient operations occurring at an airport impacts storage requirements for transient aircraft. As the number of operations increase, the demand for itinerant apron space will also increase.

Based on conversations with the airport manager, there is demand for about four transient spaces during peak periods (hunting season, Iron Dog, Iditarod) and one space during the rest of the year. Transient aircraft range from single-engine aircraft to commuter or business jet aircraft en route to Asia. Based on the AC 150/5300-13 guidance of 360 square yards per transient plane, OME should have 1,440 square yards of transient aircraft parking apron, which four small GA aircraft or a single jet could use.

Transient jets currently park on the ramp near the ARFF/SREB. Smaller transient aircraft often park on the apron adjacent to Bering Air. This creates problems because the pilots and passengers must then exit the secured airfield through one of the air taxi operators' buildings. Ideally, a paved transient aircraft parking apron would be located adjacent to the general aviation tie-downs.

General Aviation Pilot Facilities

General aviation pilot facilities at an airport provide space for miscellaneous functions, such as:

- Pilots' lounge and flight planning
- Concessions
- Storage
- Phone and restrooms
- Fuel services

These can be accommodated in a single facility or spread throughout several fixed base operators.

At OME, individual operators provide limited general aviation pilot facilities. Local pilots have expressed a desire for centralized GA pilot facilities. Ideally, GA pilot facilities would be located near the GA tie-downs and the transient aircraft parking.

Airport Access

The airport has two primary access points. On the south side, access is from Seppala Drive, where it ends at the air carrier/air taxi terminal area. On the northeast side, it is from North Airport Road via Center Creek Road.

Seppala Drive is a two-lane, asphalt, State-maintained road providing access between the airport, downtown Nome, and the port of Nome. Annual average daily traffic for Seppala Drive west of Center Creek Road was 2,976 in 2008. Seppala Drive is slated for minor reconstruction in 2011 with the replacement of the Snake River Bridge.

North Airport Road is a two-lane, gravel-surfaced road providing access to the cargo apron, ARFF building, and general aviation tie-downs. AADT data are not available for this road.

Both access roads as currently configured are adequate to meet demand during the planning period. Paving North Airport Road should be considered as a means to minimize dust, however. Also, expansion of the General Aviation apron or construction of a GA runway could lead to increased traffic on North Airport Road.

General Aviation Automobile Parking

Vehicle parking requirements for general aviation were examined. Space determinations were based on an evaluation of the existing airport use.

Private pilots accessing their tie-downs on the general aviation apron generally park next to their aircraft. Expansion of general aviation tie-downs in the future warrants the addition of dedicated automobile parking for tie-down tenants.

4.5.3 Military

Military facilities at OME include a 14,000 sf hangar with offices and 7,300 square yards of apron space. The Alaska Army National Guard (AANG) operates light aircraft/rotorcraft and C-130 transport aircraft at OME.

The existing facilities are adequate for AANG activity throughout the planning period. However, the USCG’s interest in utilizing Nome as a strategic base of operations could require expansion of apron space to accommodate additional military aircraft. Facility size similar to and located adjacent to the AANG should be considered.

Expansion of the military apron is limited by the current airport property boundary.

Photo 4–3 – Alaska Army National Guard hangar and apron

4.5.4 Air Cargo

The two primary cargo-related facilities analyzed include 1) the cargo apron and 2) building space for sorting and transfer. Currently there are several buildings dedicated to air cargo dispersed throughout Nome Airport. The large cargo-only carriers maintain facilities in the northeast portion of the airport, adjacent to the ARFF building. Local carriers that transfer cargo to the outlying villages maintain cargo facilities in the main air taxi/air carrier terminal area.

Preliminary sizing of OME cargo facilities was calculated using the *Total Area Ratio* (TAR) method developed by the International Air Transport Association (IATA). The TAR method is a rule-of-thumb based on industry standards utilizing a ratio factor (square feet per ton per year). The spatial requirements for estimating the size of cargo facilities based on the TAR are:

- 1 square foot per ton per year for outbound cargo
- 1.1 square feet per ton per year for inbound cargo

For preliminary sizing of cargo apron space, we used an industry planning standard of 3.5 sf of apron per square foot of building. Apron space also needs to meet the security space requirements discussed in Section 4.5.6.

Table 4-13 - Space Requirements for Cargo Processing

	Existing	Need		
		Short-Term	Intermediate	Long-Term
Building Space[1] (sf)	19,000	21,000	21,700	23,000
Apron Area[2] (sy)	10,700	8,200	8,400	9,000

[1]Building space is an aggregate of the total square footage of cargo-only carriers' facilities (ATS, Lynden)
[2]Available apron area includes only the available space on the cargo apron

Based on the above calculations, the available air cargo apron space is adequate throughout the planning period. The facility space may appear to be insufficient, but this number does not take into account spaces available for cargo handling by the air taxi operators or Alaska Airlines, which contain an additional 35,000 sf of building space (see Table 4-10). Therefore, building space available for cargo operations is likely adequate for the planning period.

4.5.5 Support Facilities

Various facilities that do not logically fall within classifications of airfield, terminal building, or general aviation requirements are identified below.

ARFF

The requirements for airport rescue and firefighting (ARFF) equipment at an airport are determined by whether it is certified as a FAR Part 139 airport by the FAA. An index is assigned to each FAA Part 139 certificate holder based on a combination of the carrier's aircraft length and the average number of daily departures. If the longest air carrier aircraft at the airport has five or more average daily departures, its index is used. If the longest aircraft has less than five average daily departures, the next lower index is used.

Nome is a certificated Part 139 airport with an Index B ARFF operated by the State of Alaska Department of Transportation & Public Facilities. The ARFF equipment is adequate for the near term. However, as Alaska Airlines moves to the 737-800 as the primary aircraft for serving Nome, a need for an Index C ARFF may arise. This would require that the 737-800 complete five or more average daily operations at Nome, however, which is unlikely during the planning period.

DOT&PF would need an additional vehicle capable of carrying 500 pounds of sodium-based dry chemical, Halon 1211, or cleaning agent in order to meet Index C requirements.

Airport Maintenance

The State of Alaska Department of Transportation & Public Facilities maintains Nome Airport. There are seven employees trained in aircraft firefighting on duty or on call at all times.

Table 2-4 in Section 2.1.7 lists the current M&O equipment fleet. Older equipment will require replacement during the planning period. Adding equipment and manpower to keep the runway condition above "poor" may also prove more cost-effective than lengthening the runway (see discussion in Section 4.4.1).

Fuel Storage

Fuel storage at OME is dispersed throughout the airport and operated by several entities (see Section 2.1.7). The bulk of the fuel available to airport tenants is stored off-site by Crowley and delivered on an as-needed basis.

A centralized fuel storage facility on-airport could improve fuel spill containment and reduce wait times for fuel delivery. Airport users and tenants have indicated a desire for a card-lock pump or similar fueling station on airport property. However, installation of a centralized fuel facility would require additional land acquisition, as there is not currently enough lease space for such a facility.

Aircraft Maintenance

Nome Airport currently has several maintenance hangars that are maintained by existing airport tenants. Demand for maintenance is handled through local mechanics. No need for specialized facilities or accommodations within this planning period has been identified.

Utilities

Sewer and water lines were extended to the airport after the previous master plan update, and these are adequate for the planning period.

General aviation pilots have expressed a desire to have electricity available at aircraft tie-down positions at OME.

Deicing

The U.S. Environmental Protection Agency (EPA) is proposing technology-based effluent standards for discharges from airport deicing operations. The requirements generally would apply to wastewater associated with the deicing of aircraft and airfield pavement at primary commercial airports. Airports that conduct aircraft deicing operations, have 1,000 or more annual jet departures, and have 10,000 or more total annual departures would be required to collect spent aircraft deicing fluid and treat the wastewater. OME meets these criteria. They could either treat the wastewater on-site or send it to an off-site treatment contractor or publicly owned treatment works. Some airports would be required to reduce the amount of ammonia discharged from urea-based airfield pavement deicers or use more environmentally friendly airfield deicers that do not contain urea.

Aircraft deicing fluid (ADF) is not currently treated at OME. As part of OME's Storm Water Pollution Prevention Plan (SWPPP), airport maintenance and operations personnel move ADF-laden snow away from the Snake River in order to prevent discharges to the river. M&O staff have expressed interest in consolidating aircraft deicing locations.

4.5.6 Airport Security and Fencing

For Part 139 certificated airports, the operator (DOT&PF) must have an Airport Security Program. For the Nome Airport, the security program and updates are authored by the DOT&PF Airport Security Manager and submitted to the TSA for approval.

There are three required levels of security at the Nome Airport:

- ***Air Operations Areas:*** Require basic access controls meeting the 49 CFR 1542.
- ***Security Identification and Display Areas (SIDA):*** Require the display of badges above the waist. If anyone enters the SIDA without the badge, the persons working within the SIDA must immediately challenge them.
- ***Secure Areas:*** Include all the requirements of the SIDA, plus access controls.

Air Operations Areas should be separated from the unsecured areas with security fencing. While remote airports have been allowed to operate without the fencing typical of more urban airports, FAA and TSA would prefer complete perimeter fencing of the air operation areas. Not only does a perimeter fence enhance security, it may be used to keep wild animals off the runways. Nome Airport has approximately 8,000 feet of fencing separating the air operations areas near the cargo and passenger aprons from the unsecured areas. Approximately 4 miles of additional fencing would be needed to enclose the existing Air Operations Areas. Adding this fencing could be coordinated with other airport improvements such as runway lengthening and phased into multiple projects. Property will have to be acquired in order to install fencing outside of the runway object-free areas and below the primary and transitional Part 77 airspace surfaces.

At Nome, fences must be tall to be effective in the areas with deep snow drifts. Some of the existing fencing is 12 feet tall. The fence also needs to be inspected and maintained, so a minimal single-lane access road for maintenance vehicles is needed to observe and repair the fence.

Gates provide access points in the fencing used by airport maintenance workers and leaseholders. Electronic gates are needed to ensure access is restricted to authorized users. This eliminates the need to issue multiple keys and improves security by reducing the chance of unauthorized entry.

TSA's intent with SIDA requirements is to deny unauthorized individuals access to the cargo and air carrier operations areas in order to prevent tampering with aircraft and cargo and to eliminate a potential access point for stowaways. The airport security program specifies the actual limits of the air carrier and cargo operations area to be included in a SIDA, subject to review and approval by TSA. The Federal Security Director has authority to work with airport operators to design the SIDA based on local airport characteristics and security requirements.

SIDAs marked out on the aprons take space away from others that might be using the apron for taxilanes, parking, and loading and unloading of smaller aircraft. Ideally, the airport users with SIDAs should be contiguous, without airport users that do not require SIDAs mixed in among those that do. To avoid space conflicts and to improve security, effort should be made to consolidate like operations so as to separate the users that need SIDAs from the users that do not.

The only "secure area" for Nome Airport passengers is the departure lounge in the Alaska Airlines terminal, which has the only TSA screening facility in Nome. The Alaska Airlines terminal was constructed to meet the TSA facility requirements and sized to provide departure lounges suitable for the flights they operate. Alaska Airlines would determine any changes to these facilities. Other air carriers contract with Alaska Airlines to use their terminal and screening facilities. Joint-use terminals are not anticipated in the 20-year planning period.

In summary, the anticipated security needs for Nome Airport include:

- Perimeter fencing
- New gates and electronic access devices
- Maintenance roads for fence patrol and repair
- Consolidation or planning efforts to consolidate SIDA areas

4.5.7 Ground Access, Circulation & Parking

Vehicle Parking

The airport currently has 139,000 square feet of parking space and over 200 parking stalls in the public parking lot at the main passenger terminal complex (see Section 2.1.8 and Figure 1-4). Conversations with air carriers, the public, and airport maintenance personnel indicate that parking is adequate for Nome Airport.

FAA guidance suggests 140 parking spaces for the projected 67,000 passenger enplanements, indicating that additional parking will not likely be needed until after the 2028 planning horizon.

4.5.8 Land Requirements

In order to meet the facility requirements identified throughout this chapter, the Nome Airport needs to acquire additional land. The current airport property boundary encompasses 368 acres. To address all of the deficiencies and needs identified in this master plan update, the airport requires 600 to 1,000 acres of land. Exact acreage requirements are outlined in Chapter 5.

4.6 Summary

Nome Airport does not need a major airfield-related capacity improvement project during the 20-year planning period. However, several airside and landside facilities will need attention during that time. These include:

- Longer primary and crosswind runways (4.4.1)
- Safety area expansion (4.4.1)
- Parallel taxiway (4.4.2)
- Apron area taxilane (4.4.2)
- Obstruction removal (4.4.5)
- Closure of Nome City Field and relocation of GA operations (4.5.2)
- Construction of a GA strip at OME
- More general aviation tie-downs and hangars (4.5.2)
- Relocation of GA tie-downs to meet FAA separation distances (4.5.2)
- Electricity to GA tie-downs (4.5.2 and 4.5.5)
- Parking for transient aircraft (4.5.2)
- Consolidated deicing location (4.5.5)
- Additional security fencing (4.5.6)
- Land acquisition (4.5.8)

The next step is to provide direction for development to best meet the projected needs. Chapters 5 and 6 include alternatives evaluation and an implementation plan which outline the direction, cost and schedule of development.