Airport Layout Plan

FINAL REPORT

Robertson Airport
Town of Plainville

CHA

December 2010

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INTRODUCTION & BACKGROUND

Since 1950, nine airports have closed in the Connecticut; three within the last decade. Robertson Airport (4B8) is located in the Town of Plainville and was purchased by the Town in December of 2009. The facility is now the first new municipal airport in the State in many decades.

Robertson Airport is one of only five municipal airports in Connecticut, where the majority of the airports are either State or privately-owned airports. The privately-owned airports are at constant risk of closing as they are not obligated to remain available for public use and can be sold for redevelopment at any time.

Between 2007 and 2009, the Town of Plainville studied the feasibility of purchasing the Robertson Airport, and determined that it could be acquired, preserved for public use, and managed without subsidy by the Town. Following a public referendum, the Town acquired the Airport with over $7 million in Federal and State grants.

In order to receive future federal and state funding, an Airport Layout Plan (ALP) and Airport Capital Improvement Plan (ACIP) are necessary. An ALP is a set of drawings that display the existing and proposed property and facilities necessary for operation and development of the airport. The ALP is a blueprint for future airport development, in accordance with design standards and safety requirements and allows the Federal Aviation Administration (FAA) and Connecticut Department of Transportation (ConnDOT) to plan for the funding of the projects based on priorities. As such, future development projects must be consistent with the ALP in order to be eligible for State and Federal funding.

The ALP is expected to be implemented in phases over a 20-year planning period. The ACIP established development phases according to the existing and projected levels of aviation activity to support the short and long-range needs of Robertson Airport. The ALP should be updated every five to ten years, or as necessary.

This report provides the Narrative Report and ACIP to accompany the Airport's first formal ALP.

1.0 INVENTORY

This inventory summarizes the information collected for the Airport Layout Plan (ALP). An on-site tour of Robertson Airport (4B8), also known as Robertson Field, interviews with the airport owner, and review of secondary source materials were used as a basis for developing the inventory for the Airport.

The following topics covered include:

- Airport Location, Role, and History
- Existing Facilities and Services
- Based Aircraft and Aviation Activity
- Airspace and Procedures

1.1 Airport Location, Role, and History

Airport Location

Robertson Airport is located in the Town of Plainville, Hartford County, Connecticut. The runway is bordered to the south by the Pequaback River and Northwest Drive to the north. The Airport is open to the public, and is currently owned by the Town of Plainville. It is named for the original owner, Stamford (Stan) Robertson, and was purchased by a large construction firm, Tomasso Brothers, Inc. in 1990. In December 2009, the Town acquired the Airport with the assistance of federal and state funds. The airport is situated on approximately 77 acres of land, as shown on the Airport Property Map of the ALP drawing set (Drawing ALP-7).

Robertson Airport is located within a Restricted Industrial Zoning District (RI) in the Town of Plainville. Within an RI District, residential development is essentially prohibited. There is a single-family Residential District (R-20) located west of the runway. The zoning and land use surrounding the Airport is depicted on ALP-6.

Airport Role

As a “General Aviation” (GA) facility, Robertson Airport serves private, corporate, and charter aircraft (including business jets), but does not offer scheduled airline service. Visitors to the area traveling on airlines arrive primarily at Hartford’s Bradley International Airport (BDL) (approximately 30 miles to the north).

General aviation airports, such as Robertson Airport, are included in the National Plan of Integrated Airport Systems[1] (NPIAS) if they account for sufficient activity or based aircraft. Robertson Airport is currently listed as a “Reliever” airport to BDL in the NPIAS. Relievers provide pilots with attractive alternatives to the usually congested commercial airports, such as BDL. There are currently

[1] The NPIAS identifies more than 3,300 airports that are significant to national air transportation and thus eligible to receive Federal grants under the Airport Improvement Program (AIP). The NPIAS comprises commercial service airports, reliever airports, and selected GA airports. NPIAS eligibility criteria are detailed in FAA Order 5090.3C, *Field Formulation of the NPIAS.*

270 reliever airports listed in the NPIAS. It is anticipated in 2011; Robertson will be converted to a General Aviation (GA) designation. The NPIAS defines GA airports as those publically-owned airports with at least 10 based aircraft, at least 20 miles from the nearest NPIAS airport, and do not have schedule commercial service.

Airports included in the NPIAS are eligible to receive federal grants for airport improvements. Once a NPIAS airport accepts federal grants, it becomes obligated to remain open as an airport for at least 20 years.

In an effort to maintain Robertson Airport as a regional transportation/aviation resource, the Town of Plainville acquired the facility in December 2009 (in conjunction with the Connecticut Department of Transportation and Federal Aviation Administration). As the Airport was acquired using federal funds, it is obligated to remain open as an operational airport indefinitely.

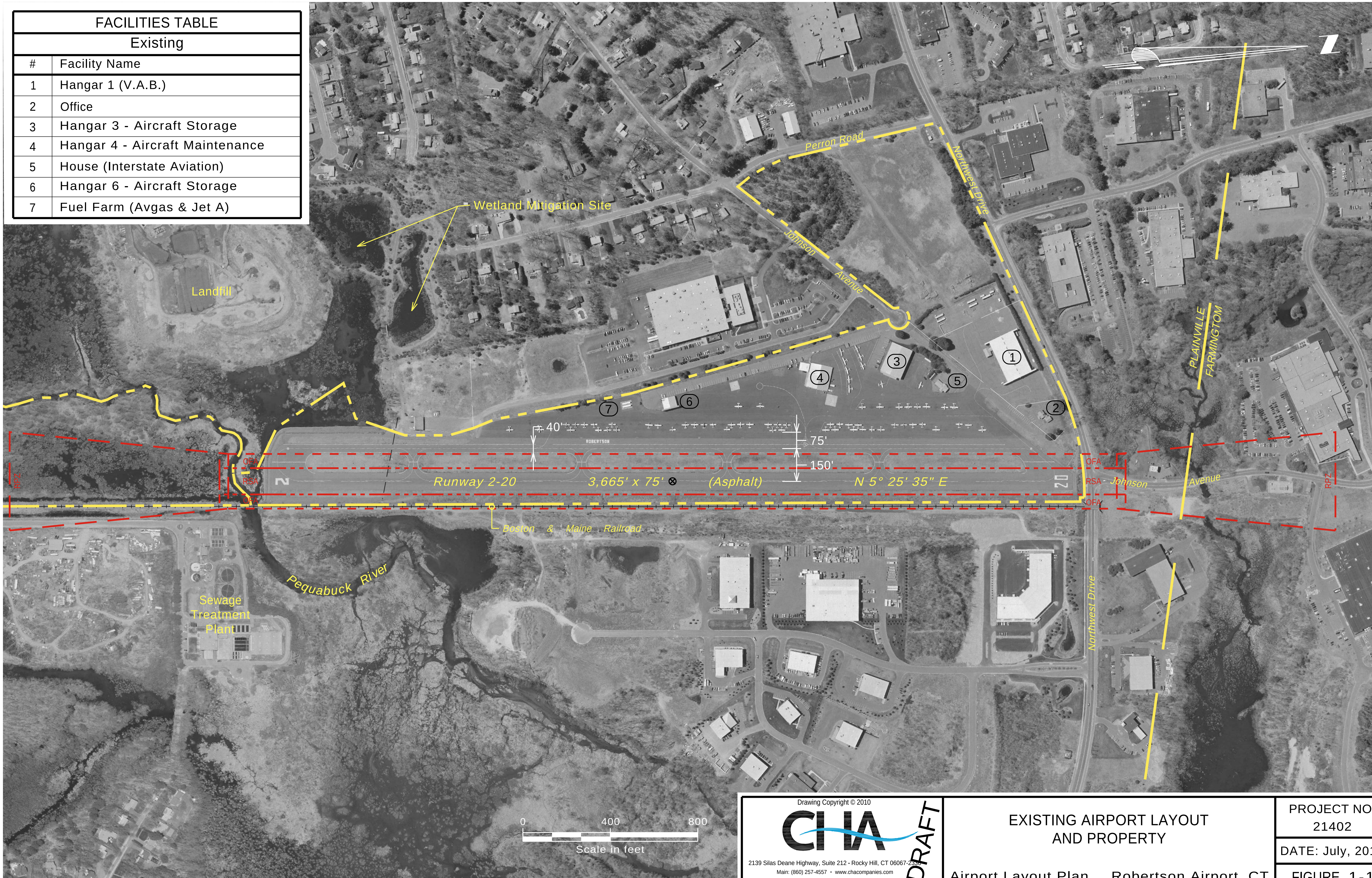
Airport History

Opening in 1911, Robertson is the oldest airport in Connecticut. It is named in honor of Stamford (Stan) Robertson, a World War II veteran who renovated the airport in 1947. The Tomasso Brothers, Inc purchased the Airport in 1990 and completed several renovations to the facilities and extended the runway to 3,665 feet. The Airport has been operated by Interstate Aviation, Inc. (Interstate) for the past 37 years. The Town of Plainville purchased Robertson on December 31, 2009. The Airport will continue to be managed by Interstate for day to day operations, through an operating agreement with the Town. A new Town Aviation Commission oversees the Airport and its development.

1.2 Existing Facilities and Services

This section summarizes the existing facilities at Robertson Airport. Airport facilities are often described as either airside or landside. Airside (or airfield) facilities include those directly used by aircraft during takeoff and landing, such as runways, taxiways, lighting, and instrumentation. Landside facilities include support buildings and structures, such as aircraft hangars and parking (tiedown) aprons, automobile parking lots, and access roads. The existing airside and landside facilities at Robertson Airport are summarized below and illustrated on Figure 1.

FACILITIES TABLE	
Existing	
#	Facility Name
1	Hangar 1 (V.A.B.)
2	Office
3	Hangar 3 - Aircraft Storage
4	Hangar 4 - Aircraft Maintenance
5	House (Interstate Aviation)
6	Hangar 6 - Aircraft Storage
7	Fuel Farm (Avgas & Jet A)



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DRAFT

EXISTING AIRPORT LAYOUT
AND PROPERTY

Airport Layout Plan, Robertson Airport, CT

PROJECT NO.
21402

DATE: July, 2010

FIGURE 1-1

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Airside Facilities

Runway 2-20 is the main airside facility at Robertson Airport. The runway extends 3,665 feet in length and 75 feet in width on a north-south alignment. The runway is served by a parallel taxiway on the west side, as well as four exit taxiways. The runway and taxiway pavement is rated for a 25,000-pound weight bearing capacity, and was last rehabilitated in 1988.

Runway 2-20 is equipped with Medium Intensity Runway Lights (MIRL), with Runway End Identifier Lights (REIL) on both ends. Medium Intensity Taxiway Lights (MITL) are provided along the parallel taxiway and the four exit taxiways. The Airport is further equipped with a rotating beacon and two lighted windsocks.

The Airport also contains a registered helipad, "H1," which is located / marked on the parallel taxiway, adjacent to the main landside facilities. A helicopter taxilane and parking area is also provided. The helipad is 30 feet by 30 feet.

There is currently no instrument approach (IAP) to Runway 2-20; however, the FAA is currently conducting an aeronautical study, which may enable the development of IAP's for Robertson Airport. These approaches are expected to be Localizer Performance with Vertical Guidance (LPV) approaches; a non-precision instrument approach (NPI).

Landside Facilities

The landside facilities at Robertson Airport consist of four conventional (or open-bay) hangars, a house, an office, in addition to the paved apron areas and service/access roads. There are over 130 tiedown locations on the apron, including a location for a helicopter. Table 1 summarizes the Airport's existing landside facilities (see Figure 1-1). Hangar 1 is currently being leased by V.A.B., but will be available to the Town for aircraft storage in 2012. The office is set to be demolished due to its proximity to the runway and transitional surface.

TABLE 1 – EXISTING LANDSIDE FACITILIES

Label	Airside Facility	Current Use	Tenant	Size
1	Hangar 1		V.A.B	25,000 sf
2	Office	Airport Use	-	-
3	Hangar 3	Aircraft Storage	Interstate	14,300 sf
4	Hangar 4	Maintenance	Interstate	11,500 sf
5	House	FBO	Interstate	1,600 sf
6	Hangar 6	Aircraft Storage	Interstate	3,400 sf
7	Fuel Farm	Avgas & Jet-A	Interstate	-

Airport Services

Interstate Aviation Inc. is the Fixed Based Operator (FBO) and provides aircraft rental, FAR Part 141 flight school instruction, aircraft sales, full service aircraft maintenance, executive jet charter, and full fueling capability. Interstate also controls the main apron. Interstate Aviation's Air Fleet consists of 11 aircraft, two of which are Cessna Citation Jets. The Town has negotiated an operating agreement with the FBO to operate the airport and manage the day to day operations. The operating agreement does not include Hangar 1 or the property along Johnson Avenue.

Airport Fueling

Aircraft fueling is provided by Interstate using fuel tanks and trucks owned by Interstate. The two aboveground fuel tanks contain 10,000 gallons each of 100LL and Jet-A fuel. As a full service operation, the fuel trucks bring the fuel directly to the aircraft parked on the apron.

Airport Access, Parking, and Security

Airport access is provided from Johnson Avenue, from Perron Road, approximately two miles from Interstate 84. There are approximately 88 vehicle parking spaces along the main apron for both tenants and visitors.

Robertson Airport’s security features include:

- Perimeter fencing with gates located at various access points
- Protective lighting in aircraft parking areas and hangar areas, fuel storage areas, and airport access points
- Informal procedures for reporting unusual or suspicious activity
- A sign-in/out log for transient pilots
- Designated transient parking spaces
- Posted warning signs
- An informal contact list and security procedures
- The majority of aircraft are secured with door locks or in a hangar

1.3 Based Aircraft and Aviation Activity

A based aircraft is a general aviation aircraft that is regularly stationed at an airport. Airport management identified 63 based aircraft at the Airport in 2010.

Aircraft can be categorized by type (e.g., fixed wing or rotorcraft), weight, and number and type of engines. The different categories are referred to as an aircraft fleet mix. The current fleet mix based at Robertson Airport is shown in Table 2. The FAA Advisory Circular 150/5300-13 Airport Design provides a planning guideline of 538 annual operations per a based aircraft for public use airports, thus the Airport annual operations for the base year 2010 are estimated at 33,894.

TABLE 2 – 2010 BASED AIRCRAFT AND ACTIVITY					
	Single Engine	**Multi Engine**	**Turboprop / Jet**	**Rotor-craft**	**Total**
Based Aircraft	57	4	2	0	63
Operations					33,894

1.4 Airspace and Procedures

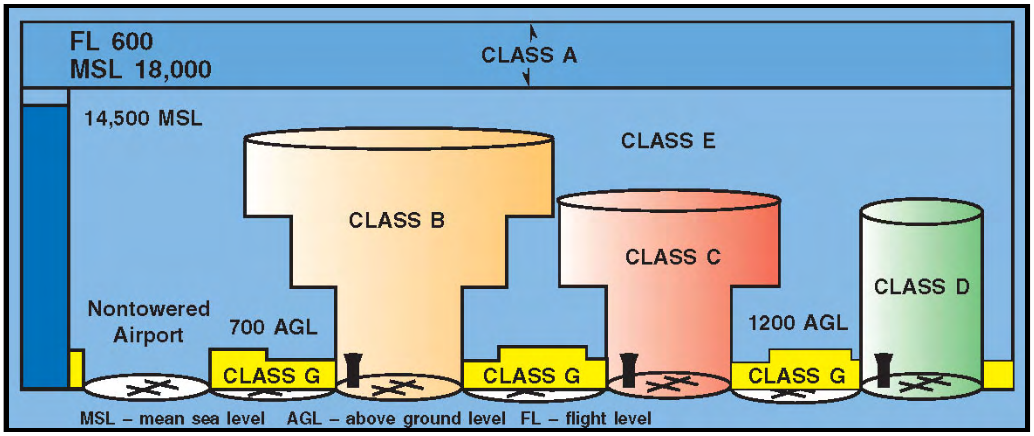
Aircraft approaching and departing Robertson Airport are subject to a system of controls designed to serve the safe separation of aircraft from one another. Aircraft are subject to varying degrees of control depending on the specific airspace and meteorological conditions in which they operate. This system of air traffic control is the responsibility of the FAA. The FAA has the statutory duty to establish, operate, and maintain air traffic control facilities and procedures. As Robertson Airport is not close to any busy commercial airports or congested airspace, there are few local restrictions. Nevertheless, all aircraft flying to or from Robertson Airport must operate in controlled airspace and adhere to specific flights rules. The airspace surrounding Robertson Airport is illustrated on Figure 2.

There are two basic types of aircraft flight rules in the air traffic control system: those operating under (1) Visual Flight Rules (VFR) and (2) Instrument Flight Rules (IFR). VFR operations depend primarily on visual conditions. IFR operations depend primarily on radar detection for separation by Air Traffic Control (ATC). IFR operations are controlled from takeoff to touchdown, while VFR operations are actively controlled only within the vicinity of tower-controlled airports.

The United States airspace is structured into Controlled, Uncontrolled, and Special Use airspace, as defined below.

- **Controlled Airspace** – Airspace that is supported by ground to air communications, navigational aids, and air traffic services. Controlled airspace is further divided into five different Classes (A, B, C, D, and E). The classification of any airspace is determined by its special location.
- **Uncontrolled Airspace** – All airspace that has not been designated as Controlled or Special Use, and within which ATC has neither the authority nor the responsibility for control. All uncontrolled airspace is considered Class G.
- **Special Use** – Designated airspace where unique or hazardous situations (e.g., military activities) require special attention and restrictions.

These airspace classifications impose several requirements upon the operations of aircraft, including visibility minimums, cloud clearances, contact with Air Traffic Control (ATC), and special aircraft equipment. The classification system is summarized as follows:



- Class A: All airspace above 18,000 feet mean sea level (MSL). Class A airspace contains all high altitude airways (jet-routes).

- Class B and C: The airspace surrounding major commercial airports. To enter this airspace, communication and/or clearances must be received from ATC. The closest Class B airspace (begins at ground level to 7,000 feet Above Ground Level (AGL)) surrounds the New York City Metropolitan airports (LaGuardia, John F. Kennedy, and Newark-Liberty International), which is less than 55 nautical miles (NM) to the southwest. The closest Class C airspace (begins at ground level to 4,200 feet MSL) surrounds Hartford's Bradley International Airport (BDL) 17 NM to the northeast. Within Class B and C airspace, aircraft are required to communicate with ATC.

- Class D: The terminal area airspace surrounding towered and military airports with a radius of five nautical miles. The closest Class D airspace (begins at ground level to 3,200 feet MSL) surrounds Waterbury-Oxford Airport (OXC) 18 NM to the southwest. Within Class D airspace, aircraft are required to communicate with ATC.

- Class E: General controlled airspace that includes most of the remaining airspace (up to 18,000 feet MSL). This airspace begins at only 700 feet above ground level at Robertson Airport, which means that all flights to and from the Airport, as well as local operations remaining within the airport traffic pattern, will enter the Class E Airspace. Aircraft operating in Class E airspace must follow the Federal Aviation Regulations (FAR) for controlled airspace, including a 3-mile visibility requirement for basic VFR activity, separation requirements from clouds, and all applicable operating rules.

- Class G: Uncontrolled airspace; the airspace below Class E. Although Robertson Airport itself is located within Class G airspace, all operations include aircraft climbing into or descending from the overlying Class E controlled airspace (700 feet above ground level). As such, aircraft at Robertson Airport operate in a controlled environment.

- Special Use Airspace: An area of special concern or restriction due to unusual hazards (e.g., military activity). Special Use airspace includes designated Prohibited Areas, Restricted Areas, Warning Areas, Military Operation Areas, and Alert Areas. There is no special use airspace within the vicinity of Robertson Airport. The closest area is the Warning Area W-106A approximately 80 miles to the south in the Atlantic Ocean.

Overall, the airspace surrounding Robertson Airport is relatively uncongested and will not hinder or restrict any potential improvements to the Airport.

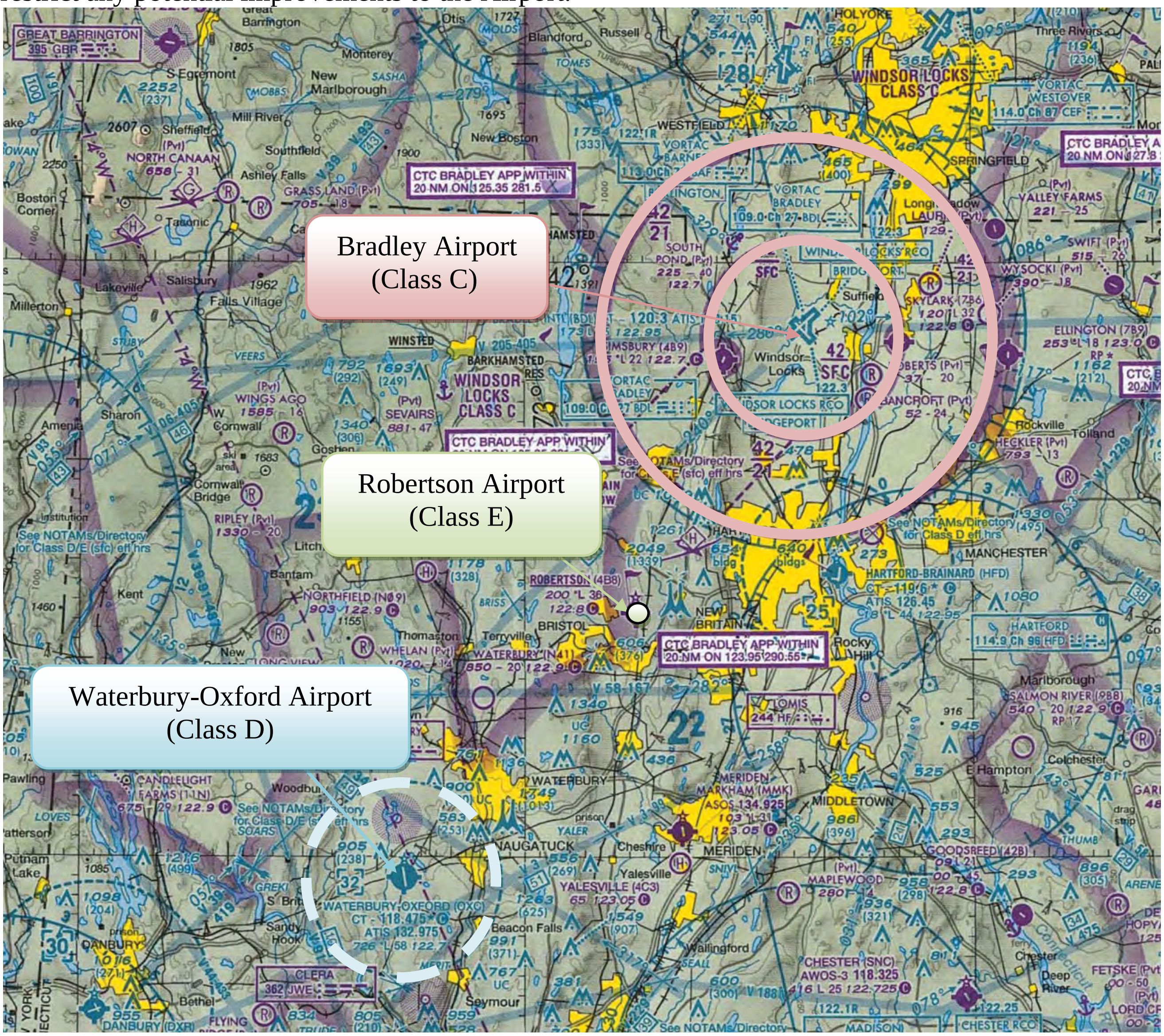


Figure 2 Robertson Airport Local Airspace

Procedures

As typical with all small GA airports, Robertson Airport does not have a local Air Traffic Control Tower (ATCT) or Radar Approach Control Facility. As such, local pilots follow pre-determined traffic patterns to ensure orderly flow and operation at the Airport, and communicate with each other on the Common Traffic Advisory Frequency (CTAF) of 122.8 MHz.

VFR Flight procedures at Robertson Airport follow standard traffic patterns established by the FAA. The patterns include flying straight-in to or straight-out from either runway end, or flying a standard rectangular traffic pattern with all left-hand turns. The full left-hand traffic pattern for aircraft staying in the pattern includes the departure leg, followed by left turns to the crosswind, downwind, base legs, and a final turn for landing.

Ideally, all takeoffs and landings are conducted into the wind in order to reduce aircraft ground speed and improve safety. Thus, the runway end in use is primarily determined by the current wind. The single north-south runway at Robertson Airport most frequently experiences winds from the northwest. Thus, it is estimated that 60 percent of takeoffs and landings occur on Runway 2 – landing from the south and departing to the north. The 40 percent remainder of takeoffs and landings therefore occur on the opposite Runway 20 – landing from the north and departing to the south.

During IFR conditions (visibility under 3-miles in Class E airspace), aircraft must file instrument flight plans and obtain "clearances" from ATC. These clearances are provided by ATC at the Bradley Approach Clearance Delivery on Frequency 134.5 MHz through a Remote Communications Outlet (RCO). The RCO provides pilots on the ground at Robertson with the ability to communicate with the air traffic control, which provides weather and NOTAM information, pilot reports, and other important services. Additionally, the RCO will allow pilots to file, open, and close flight plans within the aircraft.

IFR approaches or IAP's are written and published by the FAA. As discussed in section 1.3, there is currently no IAP for Robertson.

2. FORECASTS OF AVIATION DEMAND UPDATE

Aviation demand forecasts are essential to the overall planning process. Forecasts assist in identifying needed airside and landside facilities, currently and over the long-term planning period. Development of an Airport Layout Plan (ALP) Study for an airport requires a general understanding of recent and anticipated trends in the aviation industry as a whole. As part of the ALP Study, projections of aviation demand through 2030 were prepared for based aircraft and operations at Robertson Airport.

Aviation activity forecasts for the Airport were prepared for the near-term (2015), mid-term (2020), and long-term (2030). These projections are generally considered unconstrained, and assume that the Airport will provide the facilities necessary to accommodate future based aircraft and operational demand.

For the purpose of this Airport Layout Plan Update, the projections have a base year of 2010. The projections of aviation demand are documented in the following sections:

- Methodology and Baseline Forecast
- Robertson Airport Growth Forecast
- Design Aircraft

Although these forecasts provide a meaningful guide to the future development of the Airport, it must be recognized that there are always fluctuations in an airport's activity due to a variety of factors.

2.1 Methodology and Baseline Forecast

As Robertson Airport is a non-towered facility, no formal record of operations is maintained. Thus, existing operations levels are based on estimations of annual use. Numerous approaches may be investigated to forecast future airport based aircraft and activity levels. The most common approaches generally incorporate regional population or economic conditions, industry trends, and past airport activity levels. As existing operations levels are based on estimations, multiple approaches were investigated for Robertson Airport:

- **Population Forecasting Method –** Uses the population forecasts of the Town of Plainville and Hartford County to represent the growth rates of Robertson Airport Airport's based aircraft and operations.
- **CSASP Forecasting Method** – Uses the Connecticut Statewide Airport System Plan (CSASP) growth rate factors for based aircraft and operations at Robertson Airport.
- **Terminal Area Forecast Method –** Uses the FAA's Terminal Area Forecast (TAF), which is based on economic and historical trends at individual airports.
- **FAA Aerospace Forecasting Method –** Uses the Federal Aviation Administration's (FAA) nationwide growth rates for Active Fleet and Hours Flown.

Population Forecasting Method

Population is a key indicator of based aircraft and operations levels at GA airports. In general, as the population of an airport's service area increases or decreases, based aircraft and operations levels typically increase or decrease correspondingly. Table 3 shows the population forecast for the Town of Plainville, Hartford County, and the State of Connecticut based on the 2010 Connecticut Economic Resource Center (CERC). The CERC forecasts population through 2014, which were then extrapolated through 2030 for this study.

TABLE 3 - COMBINED POPULATION FORECAST			
Year	**Town of Plainville**	**Hartford County**	**Conn. State**
2010	17,314	876,392	3,493,901
2015	16,746	875,038	3,481,637
2020	16,168	875,105	3,464,263
2025	15,610	875,173	3,446,977
2030	15,071	875,240	3,429,776
Change	**-13%**	**0%**	**-2%**
AAGR	**-0.7%**	**0%**	**-0.1%**
Source: CERC Town Profile 2010			

As the Town is projected to lose population, but the County is not, a composite Average Annual Growth Rate (AAGR) of negative 0.3 percent was applied to existing based aircraft and operations levels at Robertson Airport and projected through 2030 to develop the forecasts summarized in Table 4 below.

TABLE 4 - POPULATION FORECASTING METHOD		
Year	**Based Aircraft**	**Annual Operations**
2010	63	33,894
2015	62	33,288
2020	61	32,792
2025	60	32,303
2030	59	31,822
Change	**-6%**	**-6%**
AAGR	**-0.30%**	**-0.30%**

As shown in Table 4, under the Population Forecasting Method, total based aircraft are forecast to decrease from 63 in 2010 to 59 by 2030, with total operations decreasing to approximately 31,822 by 2030.

CSASP Forecasting Method

The 2006 CSASP was developed by ConnDOT in an effort "*to provide a comprehensive review of the current state aviation system, to support the continued operation and maintenance of Connecticut's airports, and to recommend modifications to the airport system to meet existing and projected aviation needs.*"

The AAGR used in the CSASP are based on a statewide forecast of registered aircraft and population. For the CSASP a based year of 2004 was used, with forecasts of based aircraft and operations to the year 2025. For this study, the 2010 base year from the CSASP of 32,154 was updated to reflect the current operational activity at the airport. The CSASP's AAGR of 0.4 percent for based aircraft and 1 percent for operations were applied to the updated activity data.

TABLE 5 - CSASP FORECASTING METHOD		
Year	**Based Aircraft**	**Annual Operations**
2010	63	33,894
2015	64	35,623
2020	66	37,440
2025	67	39,350
2030	68	40,948
Change	**8%**	**21%**

As shown in Table 5 under the CSASP Forecasting Method, total based aircraft are forecast to increase from 63 in 2010 to 68 by 2030, with total operations increasing to approximately 40,948 by 2030.

Terminal Area Forecasting

The FAA publishes a TAF for individual airport operational activity and based aircraft. This method relies upon the historical national share of activity as well as national and regional economic and industry trends that affect the specific airport. The current TAF shows Robertson Airport as stable with no change throughout the forecast period. Table 6 shows the TAF forecast updated to reflect current conditions.

TABLE 6 - TAF FORECASTING METHOD		
Year	**Based Aircraft**	**Annual Operations**
2010	63	33,894
2015	63	33,894
2020	63	33,894
2025	63	33,894
2030	63	33,894
Change	**0%**	**0%**

FAA Aerospace Forecasting Method

The FAA publishes nationwide forecasts for GA activity. Their most recent publication is *Aerospace Forecasts Fiscal Years 2009-2025*. This publication provides AAGR by aircraft type. Those AAGR were applied to existing based aircraft and operations levels at Robertson Airport (by aircraft type), and applied through 2030 to determine the forecasts.

Based Aircraft – The based aircraft forecasts were developed using the *FAA General Aviation Active Fleet Forecasts*. The FAA forecasts the total GA aircraft fleet to increase at an AAGR of 0.9 percent nationwide (from 2009 to 2030), with the greatest growth forecast for rotorcraft, turbine, and light sport aircraft, and the lowest growth forecast for single- and multi-engine piston aircraft. Piston aircraft, the most common type based at Robertson, were forecast as negative growth of 0.2 percent from 2010 to 2020, but a slightly positive growth of 0.1 percent from 2020 to 2030.

TABLE 7 - FAA AEROSPACE BASED AIRCRAFT				
Year	**Single-Engine**	**Twin-Engine**	**Turboprop/Jet***	**Total**
2010	57	4	2	63
2015	57	4	2	63
2020	56	4	3	63
2025	57	4	3	64
2030	58	3	4	65
Change	**2%**	**-33%**	**50%**	**3%**

Operations – The operations forecasts were developed using the *FAA General Aviation Hours Flown Forecasts*. The FAA forecasts total GA hours flown to increase at an AAGR of 2.5 percent nationwide (from 2010 to 2030), with the greatest growth forecast for light sport aircraft, jets, and rotorcrafts and a negative growth forecast for multi-engine piston aircraft. Under this method (in Table 8), the Robertson Airport operations forecasts were developed using an AAGR -0.1 percent for 2010 to 2020 and 1.2 percent for 2020 to 2030 for Single-Engine Piston Aircraft, as consistent with the FAA hours flown forecasts.

TABLE 8 - FAA AEROSPACE OPERATIONS	
Year	**Operations**
2010	33,894
2015	36,135
2020	38,242
2025	40,852
2030	43,726
Change	**28%**

Summary of Forecasting Methods

Table 9 summarizes the four forecasting methods developed for Robertson Airport.

TABLE 9 - SUMMARY OF FORECASTING METHODS								
	1. Population		**2. CSASP**		**3. FAA TAF**		**4. FAA Aerospace**	
Year	**Based**	**Operations**	**Based**	**Operations**	**Based**	**Operations**	**Based**	**Operations**
2010	63	33,894	63	33,894	63	33,894	63	33,894
2015	62	33,288	64	35,623	63	33,894	63	36,135
2020	61	32,792	66	37,440	63	33,894	63	38,242
2025	60	32,303	67	39,350	63	33,894	64	40,852
2030	59	31,822	68	40,948	63	33,894	65	43,726
Change	**-6%**	**-6%**	**8%**	**21%**	**0%**	**0%**	**3%**	**29%**

As shown in Table 9, of the four forecasting methods, the CSASP forecasting method shows the greatest growth in based aircraft and the FAA Aerospace shows the greatest growth in annual operations over the planning period.

Baseline Forecast

Each of the four forecasting methods in Table 9 has a reasonable justification for its use, but also has their limitations. As no one method can be identified as more accurate than the others, a combination of all four forecasting methods is considered as a baseline for Robertson Airport. An average of the projections of aviation demand trends have been adopted as the baseline projections for Robertson Airport.

TABLE 10 - BASELINE FORECAST		
Year	**Based Aircraft**	**Annual Operations**
2010	63	34,000
2015	63	35,800
2020	63	35,600
2025	64	36,600
2030	64	38,000
Change	**2%**	**12%**

2.2 Robertson Airport Growth Forecast

The Baseline forecast shows very modest growth and does not take into consideration the landside developments anticipated at the Airport within the coming years. There are several factors that are expected to influence the based aircraft, including:

- The Town/FBO have decided to lower the current aircraft tie-down fee to become more in-line with the State-operated airports.
- Hangar 1 will be able to be utilized for aircraft storage within three years for multiple tenants. This hangar is expected to provide storage for 20 aircraft by 2015.
- Hangar 6 is now being operated by the FBO for aviation use.
- In 2011, the Town expects to release a request for proposals for development of land for aviation use of approximately nine acres of property. This area could easily accommodate 50 T-hangar bays.
- Based on the history of private airport closures in the past 20 years in Connecticut, it is anticipated that one of more of the remaining facilities will close within the next 10 years, resulting in the some of the displaced based aircraft relocating to Robertson.

With increased aircraft storage, it is expected that additional aircraft will be based at Robertson beyond the Baseline forecast. The below projections demonstrate a growth forecast that are probable at the Airport based on the above assumptions. Table 11 shows the forecast based aircraft for Robertson. Based aircraft are anticipated to increase to 86 in 2030.

TABLE 11 - GROWTH FORECAST		
Year	**Based Aircraft**	**Annual Operations**
2010	66	35,500
2015	76	40,900
2020	79	42,500
2025	83	44,700
2030	86	46,300
Change	**30%**	**30%**

Based Aircraft Fleet Mix

The forecast mix of based aircraft at an airport typically reflects the airport's current fleet mix, the airport's future role, and anticipated general aviation trends as outlined by the FAA. Nationally, the FAA anticipates that the active general aviation aircraft fleet will increase at an average annual rate of 1.0 percent over the forecast period.

The forecast for this ALP Update was developed considering the type of based aircraft that have been historically located at Robertson, as well as the Airport's future role. Table 12 presents the mix of forecast based aircraft at the Airport throughout the planning period.

TABLE 12 – 2030 FORECAST FLEET MIX			
Single Engine	**Multi-Engine**	**Turboprop/ Jet**	**Total**
75	8	3	86

General Aviation Local / Itinerant Split

Local operations are performed by aircraft that:

- Operate in the local traffic pattern or within sight of an airport
- Are departing for or arriving from flight in a local practice area located within a 20-mile radius of the airport
- Are conducting simulated instrument approaches or low passes at an airport

Itinerant operations are all other operations. The CSASP projects that 70 percent of the operations at Robertson will be local and 30 percent itinerant throughout the planning period. Table 13 depicts the local / itinerant split expected to occur at the Airport.

TABLE 13 – LOCAL / ITINERANT SPLIT			
Year	**Local**	**Itinerant**	**Total**
2010	24,850	10,650	35,500
2015	28,630	12,270	40,900
2020	29,750	12,750	42,500
2025	31,290	13,410	44,700
2030	32,410	13,890	46,300

Growth Forecast Summary

Table 14 presents a summary of the growth forecasts for Robertson over the planning period. These forecasts are used throughout the remainder of this summary report in order to ensure that the planning activities include the potential for growth.

TABLE 14 – GROWTH FORECAST SUMMARY				
Forecast Element	**2010**	**2015**	**2020**	**2030**
General Aviation				
Based Aircraft	66	76	79	86
Operations	35,500	40,900	42,500	46,300
Based Aircraft by Fleet Mix				
Single-Engine Piston	58	67	69	75
Multi-Engine Piston	6	7	7	8
Turboprop / Jet	2	2	3	3
Operational Fleet Mix				
Single-Engine Piston	31,197	35,942	37,438	40,688
Multi-Engine Piston	3,227	3,718	3,864	4,209
Turboprop / Jet	1,076	1,239	1,288	1,403

As substantial uncertainty exists in the future levels of based aircraft, this approach include a simple and conservative assumption of the airport growing by just one based aircraft per year over 20 years.

2.3 Design Aircraft

A design or critical aircraft is defined as the most demanding aircraft currently conducting, or projected to conduct, at least 500 annual itinerant operations. The design aircraft is used to determine the Airport Reference Code (ARC), which provides standards and guidelines for facility layout. The ARC has two components that relate an airport's design to its critical aircraft. The first component is the aircraft approach category; which is depicted by a letter (e.g., "A"), and is determined by the approach speed of the critical aircraft (see Table 15). Generally, aircraft approach speed applies to the design and development of runways and runway-related facilities.

TABLE 15 – AIRCRAFT APPROACH CATEGORY CLASSIFICATION		
Approach Category	**Approach Speed (Knots)**	**Typical Aircraft**
A	Less than 91	Cessna 172
B	91 but less than 121	Cessna Citation
C **D** **E**	*Not applicable at Robertson Airport*	
Source: FAA AC 150/5300-13, *Airport Design*		

The second component, depicted by Roman numerals, is the airplane design group. This is determined by the design aircraft's wingspan (see Table 16). Airplane wingspan relates primarily to separation criteria involving runways, taxiways, and taxilanes.

TABLE 16 – AIRCRAFT WINGSPAN CLASSIFICATION		
Airplane Design Group	**Wingspan (feet)**	**Typical Aircraft**
I	Less than 49	Cessna 172, Beech Baron, King Air F90, LSA, VLJ
II	49 but less than 79	Beech King Air B200
III IV V VI	*Not applicable at Robertson Airport*	
Source: FAA AC 150/5300-13, *Airport Design* LSA = Light Sport Aircraft, VLJ = Very Light Jet		

As such, for planning purposes the design aircraft would be a small turbine-powered, twin-engine aircraft with an ARC of B-I, small, such as a Cessna Citation Jet or one of the Very Light Jets in production although the majority of activity will continue to be conducted by single-engine aircraft.

While in the past a jet would normally be considered a B-II aircraft automatically, in recent years, manufacturers have developed smaller, lighter jets for small business and personal use. The Citation Jets I and II both have wingspans under 49 feet, have approach speeds between 91 and 121 kts, and are under 12,500 lbs for takeoff weight. Thus, with the currently produced small jets that utilize the Airport, Robertson will remain a B-I, small airport.

Based upon the projected based and forecast fleet mix, the design aircraft will remain B-I, small over the course of the planning period. As such, an increase in the ARC is not recommended Robertson Airport. Nevertheless, several ARC B-II aircraft do use, and will continued to use the Airport (e.g., Citation Excel). However, these aircraft do not have enough operations to be the design aircraft.

3. FACILITY REQUIREMENTS

This section identifies the airfield and landside facility requirements necessary to accommodate existing and forecast demand in accordance with FAA design criteria and safety standards. The facility requirements are based upon the updated aviation demand forecasts presented in Section 2 and the standards provided in FAA Advisory Circular (AC) 150/5300-13 - *Airport Design*. The following topics are covered:

- Airside Facilities
- Landside Facilities
- Facility Requirements Summary

3.1 <u>Airside Facilities</u>

Airside facilities include runways, taxiways, airfield instrumentation, and lighting. The largest aircraft types anticipated to regularly use Robertson Airport throughout the planning period are corporate and person jet aircraft under 12,500 pounds, such as the Citation CJ1. The future airfield facilities will be based upon accommodating this category of aircraft in accordance with the standards for Airport Reference Code (ARC) B-I, Small.

Runway Length

The FAA categorizes general aviation aircraft groups by weight (i.e., under or over 12,500 lbs. maximum gross takeoff weight), and number of passengers seats. The aircraft group for Robertson Airport includes all aircraft up to 12,500 lbs. For this group, the runway length requirements depend on a number of airport-specific physical and meteorological factors, as listed for Robertson Airport below.

- Airport Elevation: 202 feet
- Mean Maximum Temperature: 83°F (hottest month- July)
- Wind: Calm
- Runway Gradient: Less than one percent

Using FAA AC 150/5325-4B - *Runway Length Requirements for Airport Design*, the following runway length requirements were determined for Robertson Airport:

- For 75% of aircraft with under 10 passenger seats: 2,500 feet
- For 95% of aircraft with under 10 passenger seats: 3,040 feet
- For 100% of aircraft with under 10 passenger seats: 3,620 feet

To adequately accommodate all small aircraft currently in operation at Robertson Airport, a runway length of 3,620 feet is recommended per AC 150/5325-4B. Robertson Airport Runway 2-20 currently has a length of 3,665 feet. Any length less than 3,600 feet would be considered inadequate to accommodate the current and future airport users.

Runway 2-20 currently meets the minimum 60-foot width FAA design standard for an ARC B-I airport and is adequate throughout the planning period.

Taxiways

A taxiway system provides safe access to and from the runway(s) and landside areas. A full parallel taxiway improves safety by enabling aircraft to quickly exit the runway, and alleviates delays and possible runway incursions that could occur when aircraft must back-taxi on the runway. The minimum required taxiway width for B-I airports, such as Robertson is 25 feet. The taxiway system should have the same pavement strength as the runway, and should possess at least one exit taxiway, and connector taxiways to any aprons.

Robertson Airport currently has a full length, parallel taxiway with adequate exit taxiways. Thus, additional taxiways are not recommended at this time.

Airfield Lighting, Marking, and Instrumentation

Instrumentation and lighting at an airport is a prime concern of airport users. Proper instrumentation and lighting is a necessity for the safe operation of aircraft during nighttime hours and periods of poor visibility.

The airfield is adequately lighted at this time, as there is no IAP. During the short-term planning period, the airfield lighting will need to be rehabilitated due to normal wear and tear from age. Once an IAP is installed, the lighting and runway markings will need to be upgraded to NPI.

The addition of airfield signage will increase the safety of airport operations by increasing a pilot's situational awareness. Signs will allow pilots to know their location in relation to the runway and their intended route. These projects can be completed during a runway rehabilitation project or as separate projects.

The rotating beacon aids pilots in determining the location of the airport at night and the type of airport (i.e., military, land, water, hospital). The existing rotating beacon has ceased rotating and should be replaced.

It is recommended that the airport provide basic instrumentation facilities for small airports, including Precision Approach Path Indicators (PAPI). A PAPI system will enhance the safety and efficiency of the runway environment by providing a vertical guidance reference to the runway for pilots operating into Robertson Airport. While typically located on the left-hand side of the runway as the aircraft is approaching, the PAPI for Runway 20 will need to be located on the right-hand side due to the steep embankment on the left side. The exact distance of the PAPIs from the runway threshold will need to be evaluated during the design process.

Pavement Maintenance

The existing pavement is in fair condition, with substantial cracking throughout the taxiway and runway. Rehabilitation (mill and overlay) and repairs of the runway and taxiway will be necessary to in the short-term planning period.

Also, there is a moderate dip in the runway near the Runway 2 end, which may become a risk to aircraft operating at the Airport. The Town is currently investigating a temporary repair to this location.

The main apron was recently power-broomed to remove the loose asphalt debris caused by the raveling of the pavement surface. This should suffice for the short-term maintenance of the apron and will be necessary at least once a year. In the mid-term, rehabilitation (mill and overlay) of the apron will be necessary.

Airfield Design Standards

The airfield design standards and regulations considered herein include the Runway Safety Areas (RSA), Runway Object Free Areas (OFA), and Runway Protection Zones (RPZ). These areas are two dimensional ground surfaces, established to protect the safety of aircraft operations and people on the ground. The key design criteria for Robertson Airport are defined and illustrated below. The dimensions of each area are listed in Table 17.

- Runway Safety Area (RSA) – A defined surface surrounding a runway prepared for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway. This area must also support snow removal, aircraft rescue, and firefighting equipment. The RSA should be free of objects, except for objects that must be located in the area because of their function.

- Runway Protection Zone (RPZ) – Areas off the runway ends used to enhance the protection of people and property on the ground. The RPZ is ideally achieved through airport owner control, and the clearing of objects and undesired activities.

- Runway Object Free Area (ROFA) – A ground area surrounding runways that should be clear of objects (e.g., roads & buildings), except for objects that need to be within the area due to their function. If objects such as fences and roads are within the ROFA, but at an elevation below the runway, they are typically considered acceptable.

- Runway-Taxiway Offset – The separation between the runway centerline and parallel taxiway centerline.

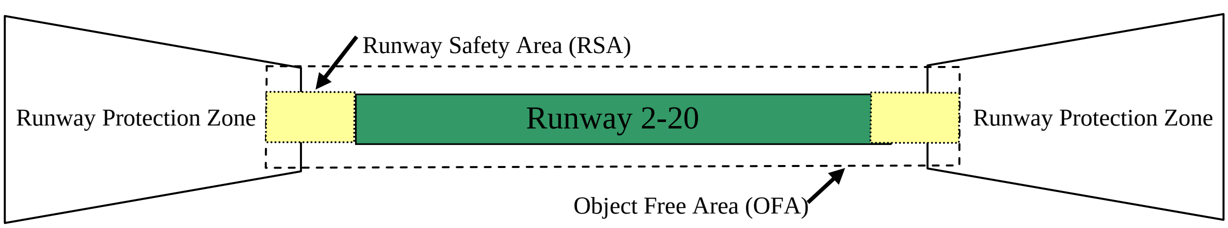
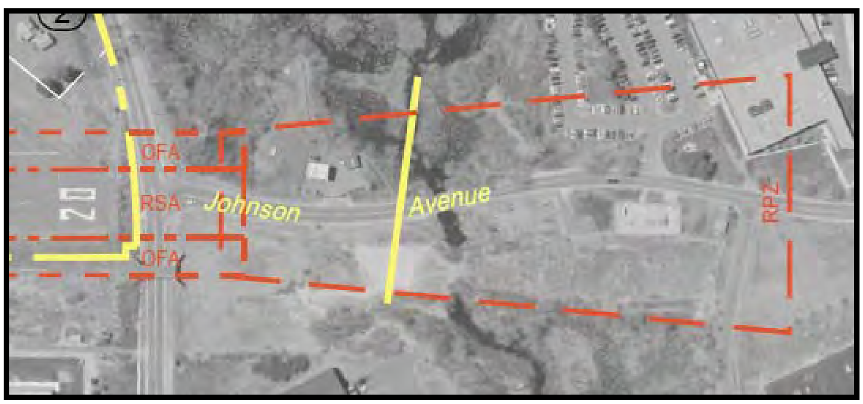


Table 17 compares the existing conditions at Robertson Airport against the design standard requirements for ARC B-I facilities. Design standard deficiencies are highlighted in the table.

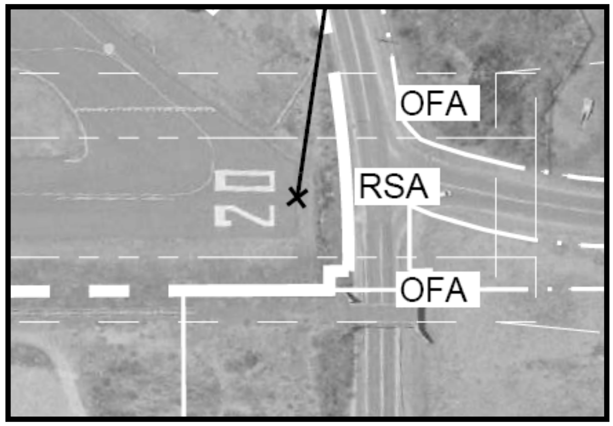
TABLE 17 – FAA DESIGN STANDARDS		
Design Standard	**Existing Condition**	**Design Requirement B-I**
Runway width	75’	60’
Runway shoulder width	10’	10’
Runway Safety Area (RSA) width	120’	120’
RSA length beyond runway end	225’	240’
Runway Object Free Area (ROFA) width	250’	250’
ROFA length beyond runway end	10’	240’
Runway centerline (CL) to parallel taxiway CL separation	150’	150’
Runway Protection Zone (RPZ) length	1,000’	1,000’
RPZ inner width	250’	250’
RPZ outer width	450’	450’
Aircraft parking offset	225’	125’
Taxiway width	35’	25’
Taxiway CL to parallel taxilane CL	150’	69’
Taxiway Safety Area (TSA) width	49’	49’
Taxiway Object Free Area (TOFA) width	150’	89’
Taxilane Object Free Area width	63’	79’
Radius of taxiway turn	60’	75’
Taxiway fillet radius	45’	60’

As indicated in Table 17, several existing features of the Airport do not satisfy the design standards for ARC B-I facilities, including the RSA length beyond the runway end. This is the most noteworthy design standard deficiency, and is a high FAA priority. If FAA funding is pursued for improvements to the Airport’s runway, the RSA deficiency will need to be addressed.



Airport ownership and control of RPZs, either through easement or acquisition, is desirable to prevent future development, clear tree obstructions, and ensure compatible land use. The Town does not wholly own the property within the RPZ beyond Runway 20 and Runway 2. Approximately eight acres at the end of Runway 20 is owned by the State or controlled by the Town through road right of ways or town utilities. The Town may transfer the applicable portions of these properties to Airport property or establish avigation easements to ensure compatible usage of these sites. The remaining land, six acres, is located in the Town of Farmington. If the Town does not wish to acquire the remaining RPZ property for Runway 20 or 2, avigation easements may be purchased.

The RPZ is made up of two components, the Central Portion and the Controlled Activity Area. The central portion is the width of the ROFA, 250 feet, and the length of the entire RPZ, 1,000 feet. The controlled activity area is the remaining portions of the RPZ. There is currently an industrial building located within the controlled activity area of the Runway 20 RPZ; the portion of the building used for office space is entirely outside of the RPZ. This building existed prior to Town involvement in the Airport and it is highly infeasible to acquire or relocate the building.



The existing OFA extends beyond the property line to the east over the Boston & Maine Railroad. Airport ownership and control, either through easement or acquisition, is desirable to ensure no obstructions are placed within the OFA.

In addition, the primary surface (described in Section 6.1.1) will extend from a width of 250 feet to 500 feet with the installation of an IAP. No obstructions are allowed to penetration the surface's altitude, which in this class would be the ground level of 202 feet (MSL). The Boston & Maine Railroad parcel boundary is approximately 250 feet from the runway centerline. If this property were acquired, it would ensure Town control of the primary surface.

The Airport currently does not meet the Taxilane OFA standards between the first and second row of tiedowns. This may be resolved by shifting the first row of tiedowns 20 feet closer to the runway. In this location the aircraft will have adequate distance from the runway and parallel taxiway. This shift would only be done during an apron rehabilitation project.

3.2 <u>Landside Facilities</u>

This section describes the guidelines used to develop landside facility requirements for Robertson Airport. As previously stated, the facility recommendations are based on industry standard planning ratios and FAA guidelines. The following facilities were examined as part of this ALP:

- Residential Buildings
- Aircraft Storage
- Aircraft Aprons (Parking and Tiedown)
- Fueling Facilities
- Other Facilities

Residential Buildings

An existing residential building is located on the Robertson Airport property, listed as 5 on Figure 1-1. The "white house" is a pre-existing home near the airport entrance that has only been used for residential purposes and has segregated access and parking that do not interfere with any airport facilities or operations. This house was occupied by Stan Robertson for the past several decades until his recent passing.

The FAA Order 5190.6B - *Airport Compliance Manual* places restrictions against airport residences (Section 20.5 – Residential Development on Federally Obligated Airports). The Order essentially prohibits new housing development on airports and as well, limits residential uses even for airport personnel, crews, etc. However, the emphasis in the Order is against new residential development on airport property rather than existing structures.

In order to generate revenue for future airport projects, it is recommended to continue using this structure as a residence under highly restrictive conditions, including:

- Short term lease only (Town maintains 100% ownership of structure)
- Only Airport or Town employees may lease the house
- Full disclosure clause (in lease) regarding airport operations and associates noise
- No subleases
- No expansion or additions to the structures will be permitted

A discussion with the FAA has resulted in the recommendation to designate this building as "non-aeronautical use" and ensure compliance of any future tenants to the above conditions. The FAA requires the Sponsor to receive fair market value (FMV) for the rental of the home to airport employees.

Aircraft Storage

Hangar requirements for a general aviation facility are a function of the number of based aircraft, the type and relative value of aircraft to be accommodated, owner preferences, hangar rental costs, and area climate. Requirements for hangar space were estimated from industry planning standards, and through discussions with the airport owner and users. Hangar space requirements for Robertson were calculated using the following assumptions:

Aircraft Type	Desired Type of Storage	Requirement
Turboprop / Jet	100% Conventional Hangar	1,600 sf
Multi-Engine Aircraft	50% Conventional Hangar	1,600 sf
	50% T-Hangar	1 Bay
Single-Engine Aircraft	50% T-Hangar	1 Bay
	50% Apron Tiedown	1 Tiedown

These assumptions were applied to the based aircraft forecasts in Table 14 to determine the storage requirements for each storage type. Table 18 shows the current surplus and deficit of the hangar storage requirements for 2010. There is currently an existing demand for T-hangars (i.e., deficit); many of these aircraft are currently using tiedowns.

TABLE 18 – 2010 BASED AIRCRAFT STORAGE REQUIREMENTS				
Aircraft Type	**Based Aircraft**	**Conventional Hangar**	**T-Hangar**	**Tiedown**
Turboprop / Jet	2	2	-	-
Multi-engine	6	3	3	-
Single-engine	58	-	29	29
Total	66	5	32	29
Demand		8,000*	32	29
Available		16,600	0	133
Surplus (Deficit)		**8,600**	**(32)**	**104**
*Each aircraft requires 1,600 SF of storage.				

Table 19 shows the forecast surplus and deficit of the hangar storage requirements for 2030. It is anticipated that there will be a strong demand for T-hangars (42 bays) in the future as well. The additional conventional hangar space (27,400 sf) in 2030 is due to pending availability of to Hangar 1 for aircraft storage by 2012. It is anticipated that some of Hangar 3 will be used for transient aircraft rather than based aircraft, thus modestly reducing the surplus. However, the surplus of conventional hangar space at the Airport is being used for the storage of single-engine aircraft. Although, T-hangars may be the preference storage type, conventional hangars are an adequate alternative. Thus, approximately half the existing conventional hangar storage space is used by single-engine aircraft.

TABLE 19 – 2030 BASED AIRCRAFT STORAGE REQUIREMENTS				
Aircraft Type	**Based Aircraft**	**Conventional Hangar**	**T-Hangar**	**Tiedown**
Turboprop / Jet	3	3	-	-
Multi-engine	8	4	4	-
Single-engine	76	-	38	38
Total	87	7	42	38
Demand		11,200*	42	38
Available		38,600	0	133
Surplus (Deficit)		**27,400**	**(42)**	**95**
*Each aircraft requires 1,600 SF of storage.				

Aircraft Aprons (Parking and Tiedown)

Aircraft aprons provide parking positions and tiedown spaces for based and transient aircraft, as well as staging areas for aircraft stored in conventional hangars. As shown in Table 18, apron space for 19 based aircraft is needed to accommodate existing and future demand. Currently, there are approximately 100 tiedowns available, which will be sufficient to accommodate future based aircraft needs.

Transient aircraft include visiting private and business general aviation aircraft. Transient aircraft parking is needed on a short-term basis, typically from a few hours to several nights. The size of the apron required to meet future transient aircraft demands was estimated from the forecast number of itinerant operations using the following procedure:

- From the demand forecasts (Table 13), calculate the average number of daily itinerant landings.
- Assume a busy day is 10 percent busier than the average day.
- Assume that 50 percent of the itinerant landings are by transient aircraft needing apron parking (the remaining percent are returning based aircraft).

TABLE 20 – 2030 TRANSIENT AIRCRAFT APRON REQUIREMENTS	
Annual Itinerant Operations	13,890
Busy Day Itinerant Landings	21
Transient Tiedowns Required	11
Note: Busy Day Itinerant Landings = [(Annual Itinerant Operations / 365) / 2]*1.1	

Applying this approach to the general aviation itinerant operation forecast yields the apron demand shown in Table 20. Eleven transient tiedowns are needed to accommodate future demand. It is anticipated that some of the transient aircraft will be stored in Hangar 3. As such, at least eight tiedown locations should be designated for transient aircraft near the FBO hangar.

Fueling Facilities

The existing fueling facilities are considered adequate for the planning period.

Other Facilities

The installation of a weather reporting system is recommended to provide a local barometric pressure reading, as well as wind speed and direction, temperature and other data useful to pilots. The pressure reading is needed to obtain the lowest possible minimums for a future instrument approaches, and is required by charter-for-hire operators conducting instrument approaches under FAR Part 135.

Several such systems are available; the most common system is an Automated Weather Observation System (AWOS). An AWOS broadcasts weather data on a dedicated frequency, which requires the Airport to obtain a FCC broadcast license. An AWOS is also relatively expensive, requires substantial land area, and costly to maintain.

Based upon these shortcomings, newer, lower-cost systems have been developed, and are gaining popularity. These newer systems include SuperUnicom and DigiWx, which can be maintained by the FBO, and broadcast on the existing Common Traffic Advisory Frequency (CTAF). Thus, a separate FCC license is not needed. For Robertson, installation of one of these lower-cost systems may be considered. In order to meet the design standards set forth in the FAA Order 6560.20B – *Siting Criteria for AWOS*, the AWOS will need to be located on the main apron at a height of 33 feet. As discussed above, there are surplus tiedown spaces that can be used for the location of the AWOS.

Additionally, the windsocks for both runway ends should be replaced and a segmented circle with a windsock installed near the middle of the runway on the main apron for additional visibility. As discussed above, there are surplus tiedown spaces that can be used for the location of the segmented circle. Per AC 150/5340-5C – *Segmented Circle Airport Marker System*, the segmented circle will have a diameter of 100 feet. The windsock would be placed on a 30-foot tall pole in the center of the circle.
The existing perimeter fence will need to be rehabilitated or replaced within the next ten years.

The existing vehicle parking is considered adequate for the planning period.

3.3 Facility Requirements Summary

The following identifies deficits that are anticipated during the planning period:

- Standard RSA's for both runway ends
- Control of the RPZ for both runway ends
- Pavement Rehabilitation
- Airfield Lighting and Marking Upgrade for IAP
- Airfield Signage
- Replace Rotating Beacon
- PAPI's for both runway ends
- T-Hangar Bays: up to 42
- Designated Transient Tiedowns: 8
- Automated Weather Observation Station
- Segmented Circle and Windsocks
- Perimeter Fence Rehabilitation

4. DEVELOPMENT RECOMMENDATIONS

This section reviews airport development alternatives for Robertson Airport based on the facility requirements identified above and is used to compose the recommended development plan.

4.1 Runway Development Alternatives

- **Runway Alternative 1 – Status Quo** – This alternative would maintain the airfield in its current configuration throughout the foreseeable future (see Figure A1). The Airport would continue to provide a runway length of 3,665 feet, with a full-parallel taxiway, but would lack standard RSA beyond the runway ends. However, in the near-term, it is anticipated that an FAA-funded runway rehabilitation project would be pursued. At that time, the FAA would require that the non-standard RSA be addressed in order to improve operational safety. Thus, this is alternative cannot be recommended.

- **Runway Alternative 2 – Relocated Runway Thresholds –** This alternative would address the RSA shortfall by reducing the runway length. Specifically, both runway thresholds would be relocated inbound by 225 to 240 feet, resulting in a 3,200-foot runway length. The former runway pavement would be retained and used for aircraft taxiing to and from the new runway ends (see Figure A2). Option 2 would satisfy FAA design standards, without the construction of new RSA's, and thus avoids environmental and property impacts, and potentially costly expansions. However, the available runway length would be permanently reduced. This reduction would appreciably impact the operation of existing jet aircraft currently based at the Airport, as a runway length of 3,200 feet is below that required for jet takeoffs and landings under many circumstances. Impacts would also occur to charter services (operating under Part 139), which require additional runway length to provide for safety margins. As such, current charter and jet users may be required to relocate or curtail their activities under this option.

- **Runway Alternative 3 – Declared Distances** – This alternative would reconfigure the airfield to satisfy FAA design standards, addressing the RSA shortfall through the application of "declared distances." Declared distances avoid the need to shorten the runway by declaring portions of the existing runway as RSA, and thus not available for certain takeoff and/or landing operations (see Figure A3).

  The key benefit of declared distances is that the RSA requirements can be satisfied without physically expanding the RSA, and thus avoids environmental and property impacts. However, the disadvantage for Robertson Airport is that the available runway length would be reduced to 3,435 feet for some takeoff calculations (230-foot reduction) and reduced to 3,200 feet for landing (435-foot reduction)[2]; the specific declared distances are listed on Figure A3. Similar to Alternative 2, this option may impact existing charter and jet aircraft users at the Airport, as these reduced lengths would be below that required for some operations. As such, current jet users and charter operators may be required to relocate or curtail their activities at Robertson Airport under this option.

  While it is not common for Airports restricted to only GA and charter operations to publish declared distances, there are select GA airports in the U.S. that have implemented this method as an alternative to reducing the runway length. There are no FAA or State regulations that prohibit the use of declared distances at an airport such as Robertson.

  Note that most of the aircraft based at the Airport do not have declared distances published or certified by the manufacturer. Declared distances are essentially only used by twin-engine and turbine-powered aircraft, such as Citation Jets and turboprop aircraft. It is not anticipated that the declared distances will impact the majority of the aircraft operating at Robertson as they do not have the insurance requirements for runway length as charter operations do.

[2] Charter aircraft, including most jet operations, must satisfy stringent FAA requirements for takeoff, including the ability to accelerate to takeoff speed, and then come to a complete stop within the available runway distances. This is referred the Accelerate-to-Stop Distance Available (ASDA). Adequate RSA must be provided beyond the ASDA. Charter aircraft must also be able to land on the runway within 60% of the available runway length (per FAR Part 135).

- **Runway Alternative 4 – Deck or Tunnel –** This alternative provides for standard RSA's by expanding the RSA's with one of two methods (see Figure A4), thus avoiding the need to shorten the runway, or publish declared distances.

  The first method includes filling in the existing RSA area to the elevation of the runway. For the Runway 2 end, a 150-foot long box culvert would be necessary for the Pequabuck River. For the Runway 20 end, a 150-foot tunnel would have to be constructed for Northwest Drive and Johnson Avenue relocated. Property may need to be acquired for the area the tunnel would impact. As wetlands would be impacted at both ends in this alternative, two potential wetland mitigation sites are labeled on the figure.

  The second method includes constructing elevated decks that would be above much of the wetlands and Northwest Drive. As the Runway 20 is higher in elevation than Northwest Drive, there is sufficient clearance for vehicles, including trucks, to travel under the deck. The wetlands would be minimally impacted with this method.

  The costs for these RSA extensions would be considerable for each runway end.

- **Runway Alternative 5 – Runway Shift –** This alternative would shift the runway to the south 240 feet to provide a standard RSA for the Runway 20 end using the existing property (see Figure A5), thus avoiding the need to shorten the runway. The Runway 2 end would be extended to the south 240 feet to maintain the runway length at 3,665 feet. The Runway 2 end RSA would also be filled and a box culvert would need to be installed for the river to continue to flow along its existing course. As this alternative would have a considerable wetland impact, two potential mitigation sites are shown on the figure. The parallel taxiway could also be extended to the new Runway 2 end. Similar to Alternative 4, this concept would have substantial costs and environmental impacts.

For each of these alternatives, property within the RPZ's are beyond the airport boundary and should be controlled by the Town, as discussed in Section 3.1. If the Town does not wish to acquire and own this property outright, which is up to 16 acres, avigation easements may be obtained.