Arthur Dunn Airpark
Master Plan Update

Presented to:
The Titusville-Cocoa Airport Authority

Presented by:
AVCON, INC.

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CHAPTER 1
INTRODUCTION

1.1 INTRODUCTION

This Master Plan was prepared for the Titusville-Cocoa Airport Authority in order to provide a long-range airport improvement plan that establishes a direction for future aviation activities at Arthur Dunn Airpark. This project was funded by the Federal Aviation Administration (FAA), the Florida Department of Transportation (FDOT), and the Titusville-Cocoa Airport Authority. It was initiated in 2002 and finalized in 2006. This study considers future airport improvements for the approximate 20-year period from 2004 to 2024. This project provides an update to the Arthur Dunn Airpark Master Plan completed in 1990. The preceding airport master plan document was used as a resource in the preparation of this Master Plan report.

This planning study and the accompanying Airport Layout Plan (ALP) set were prepared in accordance with the current editions of FAA Advisory Circular (AC) 150/5070-6A Airport Master Plans, FAA AC 150/5300-13 Airport Design, as well as additional guidance provided by FAA and FDOT. The study has also been coordinated with local, state and federal agencies for their review and comment. This interagency coordination seeks to address transportation goals at the local, state, and federal levels.

1.2 MASTER PLAN GOALS

The goal of this Master Plan Update is to identify the current and projected aviation demand and to provide guidance for future development strategies that address this demand in a safe, efficient, and economical manner. The Master Plan Update also attempts to integrate the proposed development strategies of the airport with local and regional issues, including environmental concerns, transportation planning needs, and socioeconomic interests. As needed, these needs will be discussed throughout this report. The planning window considered in this study is a 20-year period broken into three distinct periods, defined as follows:

- Short-term Period: 2005-2009
- Mid-term Period: 2010-2014
- Long-term Period: 2015-2024

The products of this Master Plan Update are: 1) this narrative report, which provides the justification for future developments, and 2) the Airport Layout Plan (ALP) drawing set, which graphically depicts existing facilities and future developments. The ALP set is a requirement for public-use airports that receive federal Airport Improvement Program (AIP) funding and FDOT aviation development funds. This master plan report will describe and justify the proposed improvement concepts included in the updated ALP. The ALP set also includes airspace and runway approach drawings, a land-use map, and a property map showing the existing and proposed boundaries in order to assist airport management in the planning and maintenance of airport facilities.

The master planning process begins with a review of the airport's existing facilities, then projects future aviation activity levels, and compares of the airport's existing capacity with the projected demand. The process continues with an evaluation of possible strategies and feasible alternatives to meet the future demand. An overview of potential environmental impacts is conducted to identify future concerns related to noise impacts, impacts to protected habitats and species, and other environmental issues. After this preliminary review of environmental issues, final development strategies are identified and are then depicted on the ALP drawing set.

These development concepts are assessed and prioritized in order to meet anticipated facility requirements in a timely and financially feasible manner. This compilation of future projects is developed into the Airport Capital Improvement Program (CIP), which prioritizes projects into a development plan. Finally, the CIP, the ALP and the Master Plan Update narrative are coordinated with local, state, and federal agencies for review and comment.

Copies of the final plans are subsequently distributed to state and federal aviation agencies and to local planning entities in order to promote long-term compatibility between the properties surrounding the airport and the future airport improvements. Implementation of the CIP is generally initiated upon concurrence from appropriate governmental agencies.

1.3 VICINITY CHARACTERISTICS

The general attributes of the area surrounding an airport influence many characteristics of the aviation activity at the facility. Some key characteristics include the surrounding population levels, distance from other airports, and ease of vehicular accessibility. A brief overview of some of these factors is given below; however, socioeconomic indicators will be discussed in the Aviation Activity Forecasts chapter.

1.3.1 Location

Exhibit 1-1 shows the location of the Airpark relative to the State of Florida and the City of Titusville. Titusville covers approximately 26 square miles within Brevard County along the east coast of Florida. Arthur Dunn Airpark is an airfield located in downtown Titusville, two blocks northwest of the central business district. The airport property is bordered to the west by Singleton Avenue, to the east by Flake Road and N. Williams Avenue, and by neighborhoods to the north and south. The airport entrance is accessible from Garden Street (also designated S.R. 406) via Singleton Avenue, North Williams Avenue or North Dixie Avenue. Garden Street, located south of the airport, provides a direct link to both Interstate 95 and U.S. Highway 1.

1.3.2 Land Use and Zoning

Arthur Dunn Airpark is located within the city limits of Titusville and within Brevard County. As such, both the City of Titusville and Brevard County have various legal controls over land use and zoning for areas adjacent to Arthur Dunn. Both the City and County have existing airport-related zoning ordinances in place to address height restrictions set forth in Federal Aviation Regulations Part 77. Additionally, the City has zoning regarding aviation-related noise issues, pursuant to Florida Statute, Chapter 333. This noise ordinance is based upon FAA criteria. Variances can be granted with approvals from the local government and at times from FDOT.

1.3.3 Vicinity Airports

Various other public-use general aviation airports are located within approximately 30 nautical miles (NM) of Arthur Dunn. Space Coast Regional (TIX), is located 6.7 NM southeast of it within the Titusville community. TIX serves all sectors of the general aviation (GA) market, with a focus on corporate users since it has the facilities to support activity by more demanding jet aircraft. Additionally, the Merritt Island Airport (COI) is located approximately 19 nautical miles to the southeast of Arthur Dunn. The main users at COI are individual private aircraft owners. Merritt Island Airport has a full-service fixed-base operator, whereas Arthur Dunn does not. Orlando Executive Airport (ORL) is located 26.6 nautical miles west. The New Smyrna Beach Airport (EVB) and Massey Ranch Airport (X50) are located to the north in the New Smyrna Beach area. The estimated flight distance between Arthur Dunn and EVB is 26.7 nautical miles and 21.9 nautical miles to X50. In addition to Arthur Dunn, the Titusville-Cocoa Airport Authority also manages the Space Coast and Merritt Island airports.

People within the Titusville community have to travel approximately 30 to 46 miles to reach a commercial service airport. The Daytona Beach International Airport is approximately 46 miles to the north, whereas Melbourne International is about 30 miles south of the Titusville area. Each of these airports offers commercial service options. Additionally, two other airports are located within the Orlando community approximately 34 miles to the west: Orlando-Sanford International and Orlando International airports. Of all these airports, Orlando International offers the largest range of flights and airlines for those living in the Titusville area.

1.3.4 Meteorological Conditions

Aircraft operations are sensitive to climatological conditions, especially to prevailing winds. This is due to the fact that aircraft land and takeoff into the wind. The smaller an aircraft is the more important wind speeds and direction become. According to FAA requirements stated in AC 150/5300-13, the runway or runways at an airport should provide adequate wind coverage for the aircraft types regularly operating at that facility. The desirable minimum wind coverage for an airport is 95 percent, based on the recorded weather observations over a 10-year period.

No historical onsite weather data was available for Arthur Dunn Airpark at the time of the study, as the airport was not at that time equipped with any weather-recording devices. An AWOS was installed in 2006. However Station No. 72204 is located at Space Coast Regional Airport, which is located at 28.5°N and 80.8°W. Based on this proximity, the weather conditions are assumed to be similar to the weather conditions at X21. Therefore, it was recommended and accepted that the weather information observed at this site and collected by the National Climatic Data Center (NCDC) over the last ten years be utilized in this wind analysis for Arthur Dunn.

Location Maps

Exhibit 1-1

Historical wind data, covering a period from September 1994 through August 2004, was obtained from the NCDC for Station No. 72204.

This data was then used with the FAA's *Airport Design* software, Version 4.2, to determine the wind coverage provided by the runway system at Arthur Dunn. Several operational conditions were taken into account for this analysis–All-weather, Visual Flight Rules (VFR), and Instrument Flight Rules (IFR). The difference among these weather conditions relates to visibility limits and the cloud ceiling height for the approved approach procedures. All-weather conditions include all wind observations no matter what the visibility and cloud ceilings are at the time. VFR conditions correspond to a visibility of 3 miles or greater and a cloud ceiling of 1,000 feet or greater, whereas IFR conditions correspond to a visibility range of less than 3 miles and a cloud ceiling below 1,000 feet. For purposes of this wind coverage analysis, IFR conditions were selected based upon the published instrument approach procedures for Arthur Dunn. Therefore, IFR conditions were set with a visibility of one to three miles and a cloud ceiling between 630 and 1,000 feet. These specific IFR conditions were determined to occur in the Titusville area approximately three percent of the year.

The results of this wind coverage analysis are shown in **Table 1-1**. This analysis considers a crosswind component of 10.5 knots since the facility generally accommodates small aircraft only. Additionally, windroses for these two conditions were developed and are included as **Exhibit 1-2**.

TABLE 1-1
WIND COVERAGE ANALYSIS

Runway Orientation	Crosswind Component 10.5 knots
All-weather Conditions	
4-22	92.24%
15-33	91.77%
Both	97.89%
Visual Flight Rule Conditions (Ceiling above 1,000 feet; Visibility greater than 3 miles.)	
4-22	92.25%
15-33	91.73%
Both	97.92%
Instrument Flight Rule Conditions (Ceiling between 630 and 1,000 feet; Visibility from 1 to 3 miles)	
15-33	88.95%

Source: U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Climatic Data Center, Titusville Station #72204, September 1994-August 2004; FAA, *Airport Design* software, Version 4.2.

Other climatological factors, such as temperature and precipitation, can also impact operations at the Airport. Average weather conditions based upon data going back through the 1970s show that July and August have historically been the hottest months with average highs of 91 degrees. Average lows in the area generally are around 50 degrees during the winter months. In this temperate climate, temperatures do not often fall below freezing, however, a temperature of 19 degrees has been observed twice in the Titusville area, in 1985 and 1989. Historically, precipitation has been most prevalent from June through September, averaging 6.8 inches per month.

1.4 HISTORY

Aircraft operations have occurred at Arthur Dunn Airpark for over 80 years. The first operations at the facility occurred in the mid-1920s. At that time, an emergency landing strip and light station were developed on approximately 40 acres to support U.S. Airmail Service operations. Brevard County took over operation of the facility in 1927, by leasing a total of 85 acres from three families. In 1947, the County purchased this property. At a later time, an additional 40 acres was also acquired by the County, yielding the existing airport property.

As with many airfields, Arthur Dunn was leased to the U.S. military during World War II. The Navy utilized the airfield as an auxiliary training facility for units stationed at nearby Titusville-Cocoa Auxiliary Field (now Space Coast Regional Airport) and Sanford Airfield (now Orlando-Sanford International Airport). After the war, control reverted back to the County, which used the facility as a base for its mosquito control operations. Brevard County transferred control of the Airport to the Titusville-Cocoa Airport District (Airport District) in 1963.

A seven-member Board of Directors representing the Titusville and Cocoa areas governs this special purpose governmental district. The membership consists of the following: one member from Brevard County District 1, two members from Brevard County District 2, two members from Brevard County District 4, one from the City of Titusville, and one at-large member. Members are appointed to staggered 3-year terms by the Brevard County Commission. The Authority was empowered by state legislation to acquire, lease, construct, improve, maintain, and operate Arthur Dunn Airpark, Space Coast Regional Airport, and Merritt Island Airport.

The airfield has undergone several changes in the physical layout of the runways. A second grass strip was eventually added to the single airstrip facility of the 1920s. These runways were oriented in an east-west and northeast-southwest layout. Today, the two runways are oriented northwest to southeast (Runway 15-33) and northeast to southwest (Runway 4-22). The one paved runway, 15-33, was constructed in the late 1960s with a length of approximately 3,000 feet and width of 50 feet. At this same time, the taxiway system and an initial apron area were constructed. The apron was later expanded by 1,850 square yards of pavement in 1964 to establish the existing apron layout.

Hangars and other buildings have undergone multiple changes over the years. Some of the first hangars built at the facility were single-owner wood units built during the late 1960s and early 1970s by members of the Brevard County Flying Posse, Inc. Pilots and aircraft owners made up the membership of this non-profit organization. These wood hangar units existed until recently when they were replaced with new T-hangar units. The current fixed-base operator building was constructed in the 1960s.

1.5 FAA CLASSIFICATIONS

The FAA classifies airports in a variety of ways. The two primary systems address the role an airport serves within the national airspace system and what aircraft types the airport is intended to serve. These classifications are utilized to determine project funding eligibility and various FAA design criteria.

1.5.1 Role

The U.S Secretary of Transportation is required to publish a national plan to Congress that presents data, forecasts and development plans of all public-use airports. This plan is referred to as the National Plan of Integrated Airport Systems (NPIAS). One of the main outcomes of the NPIAS is a listing of infrastructure that will be eligible for federal grants. Should an infrastructure project not be listed in the plan, the FAA may not participate in funding the development. According to the latest plan, the National Plan of Integrated Airports Systems 2005-2009 (NPIAS), Arthur Dunn Airpark is currently designated as a "General Aviation" airport and is anticipated to remain so until at least 2009.

A "General Aviation" airport is characterized in the NPIAS as an airport not receiving scheduled commercial passenger or cargo service. To be included in the NPIAS, these airports should have at least 10 based aircraft and be spaced a minimum of 20 miles from other NPIAS airports. Airports located closer than 20 miles from another NPIAS airport can also be included based upon several exception criteria. In the case of Arthur Dunn, the Airport is eligible because it has been included in previous NPIAS reports, and because the airport is subject to compliance obligations as it has received federal funds through the FAA Airport Improvement Program (or previous federal airport grant programs). Furthermore, the NPIAS notes, "these airports are the most convenient source of air transportation for about 19 percent of the population and are particularly important to rural areas."

Additionally, the Airport Board has defined the role that Arthur Dunn Airpark will serve within its airports system as a recreational GA airport. Results from a survey distributed to T-hangar tenants, FBO users, and transient pilots shows that most users fly for recreational reasons. Aircraft activity at Arthur Dunn includes single-engine, ultralights and skydiving operations, which highlight the leisure role of Arthur Dunn Airpark. Further details of this survey are included in a later section of this report.

1.5.2 Airport Reference Code

A second FAA classification system is very important in the master planning process because it determines the appropriate design criteria for future facilities. The Airport Reference Code (ARC) system is a classification system based upon the operating characteristics for the most critical aircraft currently utilizing or expected to use an airport or an individual airport facility. The ARC system is based upon two aircraft characteristics–approach speed and wingspan. The approach speed is designated by a capital letter and the wingspan by a Roman numeral, as shown in Table 1-2. For example, if the critical aircraft were a Cessna 421 Golden Eagle, which has an approach speed of 96 knots and a wingspan of 41.7 feet, then the ARC would be written as B-I.

The previous master plan identified the ARC for Arthur Dunn as B-I based upon the Beechcraft Queen Air. An ARC determination based upon the aviation activity forecasts is included in the Facility Requirements analysis to ascertain if a classification of B-I is still the appropriate classification for the airport.

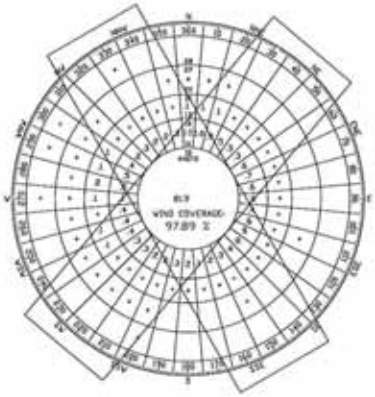
TABLE 1-2
AIRPORT REFERENCE CODE

Aircraft Approach Category	Approach Speed
A	Below 91 knots
B	91 knots up to 121 knots
C	121 knots up to 141 knots
D	141knots to less than 166 knots
E	166 knots or more
Airplane Design Group	**Wingspan**
I	Below 49 feet
II	49 feet up to but not including 79 feet
III	79 feet up to but not including 118 feet
IV	118 feet up to but not including 171 feet
V	171 feet up to but not including 214 feet

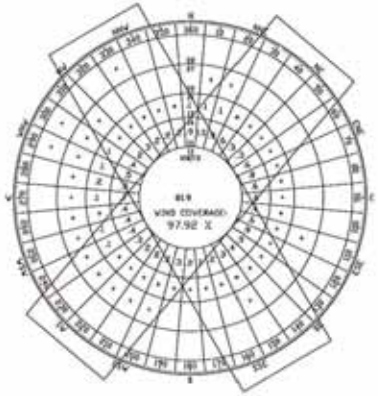
Source: FAA, AC 150/5300-13 (Change 10) Airport Design.

1.6 SUMMARY

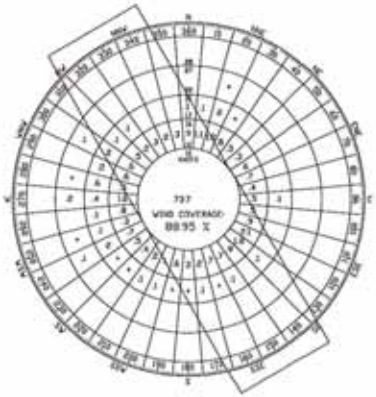
This chapter has focused on the general characteristics of Arthur Dunn Airpark and the surrounding area. The next chapter describes the existing condition of the physical facilities at the Airport. This existing conditions information served as the basis for the various analyses presented in subsequent report chapters.



ALL-WEATHER WINDROSE



VFR WINDROSE



IFR WINDROSE

NOTE: ALL WINDROSES FOR 10.5-KNOT CROSSWIND.
SOURCE: NATIONAL CLIMATIC DATA CENTER, STATION NO. 72204,SEPTEMBER 1984 TO AUGUST 2004.

TITUSVILLE-COCOA AIRPORT AUTHORITY

AVCON

AVCON, INC.
ENGINEERS & PLANNERS

ARTHUR DUNN AIRPARK

MASTER PLAN UPDATE

WINDROSES

SCALE: N.T.S.

REVISIONS:

NO.	DATE	BY	DESCRIPTION

DESIGNED BY: M.E.G.
DRAWN BY: M.E.G.
CHECKED BY: A.D.
APPROVED BY: J.A.K.
DATE: 06/2008

FAA PROJECT NO. 3-12-0101-016-2002
FDOT PROJECT NO. 247352-1-94-01
AVCON PROJECT NO. 2002.045.01

EXHIBIT

1-2

CHAPTER 2
INVENTORY

2.1 INTRODUCTION

An assessment of the existing facilities at Arthur Dunn Airpark was conducted as a part of this master plan. This assessment included the compilation of available information related to facilities and operational conditions at the Airport. Additionally, site visits were conducted during 2003 and 2004 to visually inspect various facilities. This visual inspection was necessary to assist in the identification of facilities that might require replacement during the 20-year planning period. For the purposes of discussion, facilities are categorized as either being airside or landside. Buildings, including all hangar types, are included in the landside discussion.

2.2 AIRSIDE FACILITIES

The airside of an airport can be characterized as the area in which aircraft conduct operations. This includes the runways, taxiways, and apron areas at an airport as well as the defined airspace around the facility. Since some runway criteria are dependent upon the approved type of aircraft operations in the area, an understanding of the airspace surrounding Arthur Dunn Airpark is necessary. This airspace discussion is presented in the following paragraphs, subsequently followed by discussion of the runways and taxiways.

2.2.1 Airspace

The Federal Aviation Administration (FAA) has regulatory control over how aircraft operate. This includes determining appropriate rules to safely operate aircraft in flight and on approach or departure from an airport. The following sections describe general characteristics of the airspace in proximity to Arthur Dunn and the approved published approaches for it.

2.2.1.1 Classification

As shown on **Exhibit 2-1**, Arthur Dunn Airpark is located in an area with a concentration of airports. The Airport is an untowered airfield, but users do encounter controlled airspace (i.e., non-Class G) when flying in almost any direction. When flying southbound from Arthur Dunn, pilots will enter the Space Coast Regional Airport Class D airspace, which requires that pilots establish contact with the air traffic control tower (ATCT) before entering the area.

Several other controlled airspace areas are located within 40 miles of the airport as listed below (miles given between airport and Arthur Dunn):

- Cape Canaveral AFS, 17 nautical miles southeast;
- Daytona Beach International Airpark, 35.4 nautical miles north;
- Massey Ranch Airport, 21.9 nautical miles, north;
- Melbourne International Airport, 32.8 nautical miles south;
- NASA Shuttle Landing Facility, 7.0 nautical miles east;
- New Smyrna Beach Airport, 26.7 nautical miles, north;
- Orlando Executive Airport, 26.6 nautical miles west;
- Orlando International Airport, 27.9 nautical miles west;
- Orlando-Sanford International Airport, 23.1 nautical miles northwest; and
- Patrick Air Force Base, 25.9 nautical miles southeast.

The FAA has developed various categories to address the necessity of controlling aircraft to varying degrees based upon the level and type of activity at airports within the controlled airspace. Arthur Dunn Airpark falls under several defined airspace classes. As shown in **Exhibit 2-1**, the following airspace classes either overlap or are within 5 nautical miles of Arthur Dunn:

Class G: This classification includes all airspace from the surface to the start of any controlled airspace class. No special equipment or pilot training is needed in this airspace class.

Class E: This airspace category starts at 700 feet above mean sea level (AMSL) and is considered controlled airspace. At Arthur Dunn, this classification is necessitated by the approved instrument approach procedure. The Class E area extends in a circular pattern with a radius of approximately 7 nautical miles. The Class E airspace of nearby airports overlaps some portions of Arthur Dunn's airspace. This area is shown by the magenta line that fades towards the airport.

Class D: Airports with an ATCT have Class D airspace surrounding the facility. The area of coverage differs based upon the area for which the ATCT is responsible. Arthur Dunn Airpark does not have an ATCT; thus, there is no Class D airspace defined.

- However, several Class D areas are located nearby, related to activity at Space Coast Regional Airport and the NASA Shuttle Launch Facility.

Class B: Arthur Dunn Airpark is also located beneath an outer portion (Mode C Veil) of the Class B defined airspace for Orlando International Airport. This controlled airspace starts at the surface extending to 10,000 feet AMSL and encompasses a circular area with a 30 nautical mile radius. In order to operate in this Mode C area, an aircraft must be equipped with an appropriate transponder, which will indicate the aircraft's altitude to the TRACON facility at Orlando International Airport. Some aircraft are not required by federal law to be equipped with Mode C transponder. These aircraft must remain below 10,000 feet and stay outside of the more restrictive Class B area located just 3 miles west of Arthur Dunn. This Class B area is defined with a lower vertical limit of 6,000 feet AMSL and a maximum limit of 10,000 feet AMSL.

Additionally, several restricted areas are located to the east of the airport. These areas are related to the NASA Shuttle Launch Facility (X68). As such, many of these restrictions occur only on an intermittent basis leading up to a shuttle launch and are arranged by use of a Notice to Airmen (NOTAM). The closest restricted areas are the following:

- R2935 encompasses the Airport and is in effect from the surface to an unlimited ceiling;
- R2934 is located approximately three nautical miles east of Arthur Dunn, is in effect from the surface up to but not including 5,000 feet AMSL, and is continuously active;
- R2933 is positioned approximately eight nautical miles east of Arthur Dunn and is in effect from 5,000 feet AMSL to an unlimited ceiling; and
- R2932 has the same boundaries as R2933, is continually active, and ranges from the surface to 5,000 feet AMSL.

The final airspace classification located close to Arthur Dunn Airport comprises low altitude airways, which are considered to be Class E airspace areas. These airways are corridors of controlled airspace, defined by radial headings to and from ground-based navigational aids (NAVAIDs). These airways generally have a floor elevation of 1,200 feet AMSL and can go as high as 18,000 feet AMSL. As shown on **Exhibit 2-1**, the Airport lies underneath Airway V3-V533, which is a preferred instrument route for air traffic traveling from Jacksonville and Daytona Beach to Miami. Most low-altitude instrument-based traffic traveling between these cities will be assigned to this airway.

2.2.1.2 Procedures

Table 2-1 provides a summary of the currently established approach procedures at Arthur Dunn Airpark. This summary includes the minimum values for the visibility and cloud ceiling as published by the FAA in the September 2, 2004, *Southeast Terminal Procedures*. All approved procedures for the Airport are considered nonprecision approaches. This type of approach procedure provides the pilot with horizontal guidance to the runway centerline. A more accurate type of approach has instrumentation to give pilots vertical guidance to the touchdown zone elevation. This type of approach is generally referred to as a precision approach. Currently, no precision approaches have been approved for Arthur Dunn.

TABLE 2-1
INSTRUMENT APPROACH PROCEDURES

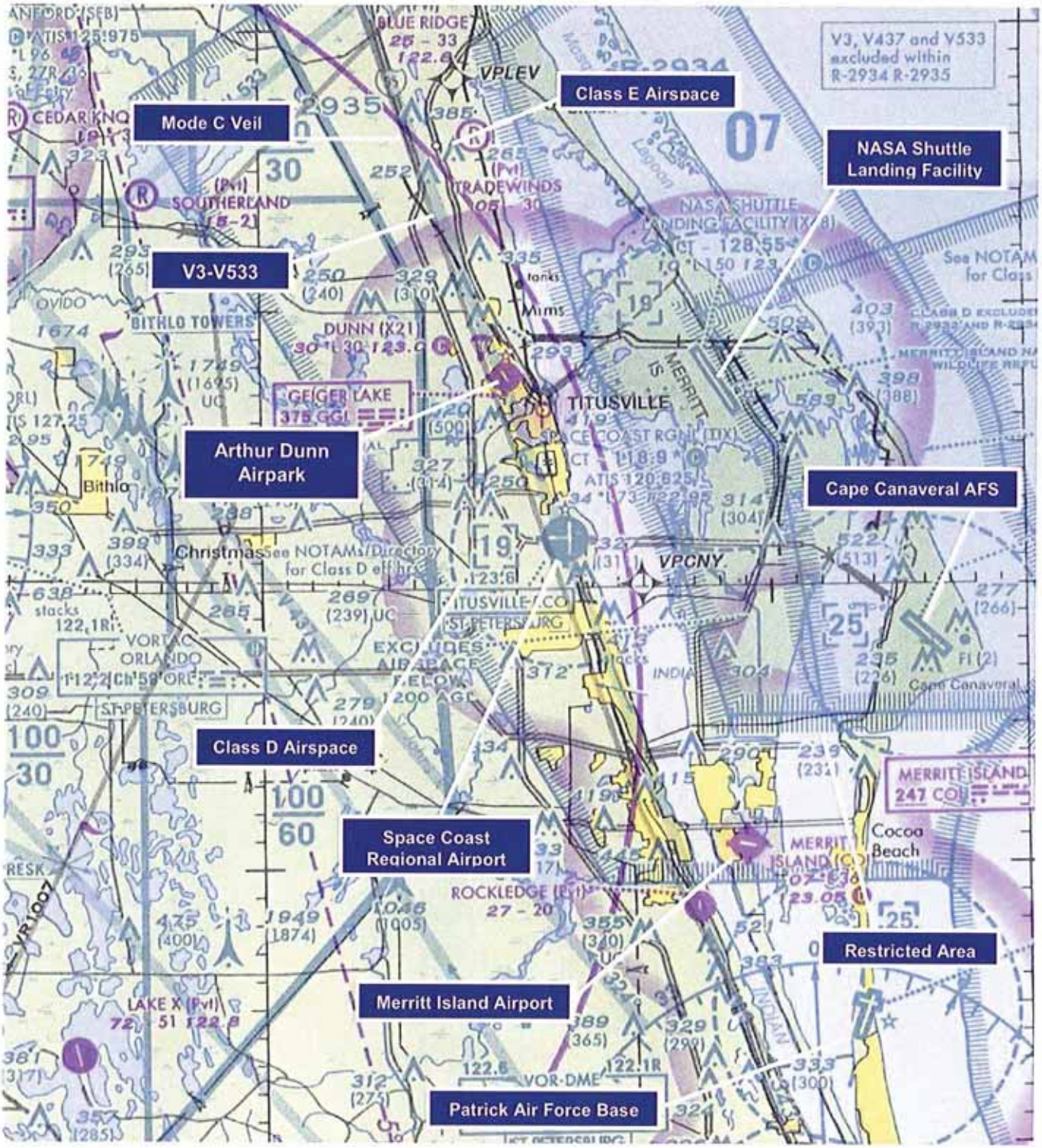
Procedure Name	Minimum Visibility	Minimum Descent Altitude
GPS RWY 15	1 mile	630 feet
GPS RWY 33	1 mile	710 feet

Notes: The minimum descent altitude is given in feet above the reported touchdown zone elevation. GPS=Global Positioning Satellites; RWY = Runway;
Source: FAA, *Southeast Terminal Procedures*, September 2, 2004.

The approach minimums presented in **Table 2-1** are for aircraft that would be classified in Approach Categories A or B based upon their approach speeds (refer to report **Section 4.2**). Minimums for Category C or D aircraft are generally higher because of the aircraft's faster approach speeds. However, runway length restrictions at Arthur Dunn limit aircraft operations for Category C and D aircraft.

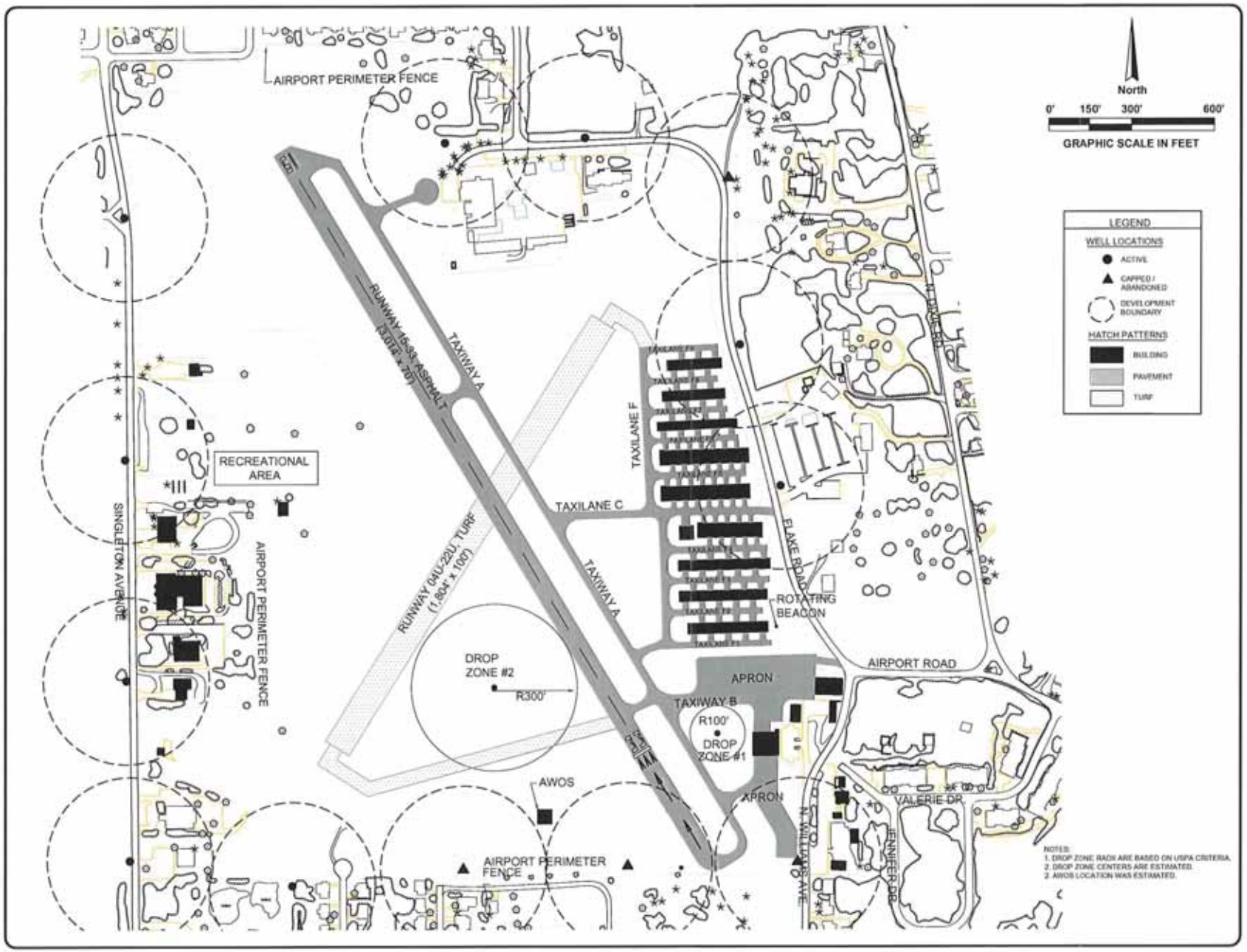
2.2.2 Runways

Arthur Dunn Airpark has two intersecting runways that accommodate a wide variety of general aviation operations. In addition to regular operations by single-engine piston aircraft, the airport also accommodates many ultralight, experimental, and single-engine aircraft as well as some light multi-engine piston and turbine aircraft. The runways are identified on **Exhibit 2-2**.



Airspace Chart

Exhibit 2-1



TITUSVILLE-COCOA AIRPORT AUTHORITY

AVCON

AVCON, INC.

ARTHUR DUNN AIRPARK

MASTER PLAN UPDATE

EXISTING AIRSIDE FACILITIES

SCALE: AS NOTED

REVISIONS: NO	DATE	BY	DESCRIPTION

DESIGNED BY:	N.V.
DRAWN BY:	N.V.
CHECKED BY:	A.D.
APPROVED BY:	J.A.K.
DATE:	05/02/07

FAA PROJECT NO.	3-12-0101-015-2002
FDOT PROJECT NO.	247352-1-94-01
AVCON PROJECT NO.	2002.045.01

EXHIBIT

2-2

Airside Facilities Photos

Exhibit 2-3

2.2.2.1 Runway 15-33

The primary runway at Arthur Dunn is Runway 15-33, which is a paved strip oriented in a northwest-southeast alignment. As the primary runway at the Airport, it serves the largest and fastest aircraft operating into and out of Arthur Dunn Airpark. According to its dimensions and the separations with the parallel taxiway, Runway 15-33 meets the design criteria for an Airport Reference Code (ARC) of "B-I–Small Aircraft Only," as defined by the FAA. Based on this classification, the runway can safely accommodate aircraft with a wingspan smaller than 49 feet, an approach speed between 91 and 121 knots, and a maximum takeoff weight less than 12,500 pounds. As detailed in **Section 1.1.2**, Runway 15-33 is also categorized as a non-precision approach runway with a visibility minimum of one statute mile for the established instrument approach with a minimum ceiling of 630 feet.

2.2.2.1.1 Dimensions and Coordinates

Runway 33 has two designated thresholds. The first one is the departure threshold for Runway 33, which is located approximately 53 feet from the pavement end. That portion of pavement that lies between the threshold and the physical end of the pavement is considered taxiway. The second threshold is a displaced arrival threshold that represents the beginning of runway available for landing on Runway 33 and is located 434 feet from the Runway 33 departure threshold or 487 feet northwest of the pavement end. This displacement is necessary to provide the appropriate vertical clearance over the existing perimeter fence.

A survey was conducted at Arthur Dunn in order to determine the exact coordinates of the runway ends. The surveyor was asked to compute the coordinates of the physical pavement end and that of the Runway 33 arrival threshold. From those coordinates, it was then possible to calculate the usable pavement length of Runway 15-33 from the Runway 33 arrival threshold to the Runway 15 threshold as well as the overall pavement length. The conclusions of the survey are as follows:

- Coordinates of Runway 15 threshold are: Latitude = 28°37'34.15111" N and Longitude = 80°50'15.66125" W. This point has an elevation of 24.45 feet AMSL.
- Coordinates of the Runway 33 arrival threshold were calculated to be: Latitude = 28°37'12.705" N and Longitude = 80°50'01.061" W. This point has an approximate elevation of 30.0 feet AMSL.
- Coordinates of the Runway 33 departure end were calculated to be: Latitude - 28°37'09.024" N and Longitude = 80°49'58.555" W. This point has an approximate elevation of 29.4 feet AMSL.
- The true bearing of the runway was calculated to be 149°00'21.215". The declination for the area is reported to be 5°42' west changing at a rate of 0°07' west per year.
- The length between the Runway 33 arrival threshold and the Runway 15 threshold is 2,527 feet. This distance is available for landing on Runway 33.
- The length between the Runway 33 departure threshold and Runway 15 is 2,961 feet.
- The overall pavement length available for takeoff is 3,014 feet.

Until 1993, the runway was 50 feet wide, which was narrower than the 60-foot width required for this category of runway, according to the criteria provided in FAA Advisory Circular (AC) 150/5300-13, *Airport Design*. Furthermore, until 1960, the separation between the runway centerline and its parallel taxiway centerline was 140 feet, or 10 feet less than that required by the FAA. In order to meet that centerline-to-centerline separation standard, the width of the runway was increased to its current width of 70 feet. The centerline-to-centerline separation was increased to the present 150 feet, consistent with "B-I–Small Aircraft Only" separation standards. Runway 15-33 does not have shoulders.

2.2.2.1.2 Pavement Construction

The original 50 feet of pavement was constructed during the late 1960s. This portion of pavement was overlaid with 2 inches of asphalt (FAA Spec P-401) when the runway was widened by 20 feet in 1993. The newer pavement is composed of 6 inches of compacted subgrade, 6 inches of limerock base (FAA Spec P-211), and 2 inches of bituminous asphalt surface course (FAA Spec P-401).

It is estimated that both the original pavement of Runway 15-33 along with the overlay and the subsequent pavement widening are able to safely accommodate aircraft with a maximum takeoff weight of 12,500 pounds. Overall, the pavement is considered to be in good condition. In addition, according to airport staff, the grading of the runway provides adequate drainage during precipitation events.

2.2.2.1.3 Marking and Lighting

The pavement markings on Runway 15-33 consist of centerline striping, runway designation, and threshold bar markings. These are white in color. In addition, white arrows and arrowheads are painted on the pavement in order to depict the location of the displaced arrival threshold at the Runway 33 end. Although a non-precision approach is published for Runway 15-33, it currently displays visual markings only.

A yellow demarcation bar and yellow arrowheads are also painted on the pavement to identify the effective beginning of Runway 33 at its departure threshold. Although the painting of the runway identification markings is quite visible, the overall condition of the pavement markings is considered to range from fair to poor.

The original lighting system at the airport consisted of medium intensity edge lights for Runway 15-33 and Taxiway A. All of these lights were installed in the 1970s. However, the Airport Board has gradually been replacing the lights over the last several years. The cables between the lights and the mounts have also been replaced. New cables now run underground in conduits between each light. The rehabilitation of the lighting system was completed in the spring of 2003. Runway 15-33 is now equipped with modern medium intensity runway edge lights (MIRLS) in very good condition.

2.2.2.2 Runway 4-22

The airport's crosswind runway is aligned in a northeast-southwest orientation. This turf runway is restricted to aircraft with an approach speed less than 50 knots. This includes short-takeoff and landing (STOL) aircraft. Only visual operations are authorized on this runway.

2.2.2.2.1 Dimensions and Coordinates

Runway 4-22 is 1,804 feet long and 100 feet wide. Each landing threshold has been displaced from the respective runway end to accommodate the appropriate approach surfaces over existing trees. For Runway 4, the displacement is 100 feet, whereas for Runway 22 it is 300 feet.

Like Runway 15-33, the coordinates and elevations of the runway thresholds were surveyed as part of this master plan study. The result of the survey is as follows:

- Coordinates of Runway 4 end are: Latitude = 28°37'12.97638" N and Longitude = 80°50'13.47698" W. This point has a surveyed elevation of 27.75 feet AMSL.
- Coordinates of the Runway 22 end are: Latitude = 28°37'28.08725" N and Longitude = 80°50'02.67625" W. This point has a surveyed elevation of 25.58 feet AMSL.
- The true bearing of Runway 4-22 was calculated to be 32°23'84" east.

A visual inspection of the airfield indicated that the runway is well maintained and in good condition. However, according to interviews with the Airport staff, portions of the runway become flooded during the summer when strong and frequent storms occur at the Airpark.

2.2.2.2.2 Marking and Lighting

PVC pipe markers, approximately 12 inches in height wrapped in reflective tape, delineate the edges of the runway as well as the location of the displaced thresholds. The runway edge markers have white reflective tape and are located on the edge of the runway. The runway end markers are bi-directionally red. Green markers are located on the sides of the runway, indicating the location of the displaced thresholds.

2.2.2.3 FAA Safety Criteria

The FAA has developed various safety standards to provide an adequate safety margin for aircraft operators and for others in the general vicinity of a runway. For runways, these standards vary based upon the aircraft wingspan and approach speed as well as the approved approach procedures to each runway end. The following provides a brief description of the runway safety criteria set by the FAA:

- **Runway Safety Area (RSA):** These areas are centered upon the runway centerline and run along the sides and ends of each runway. The RSA must be able to support maintenance and emergency response vehicles as well as the occasional passage of an aircraft. These areas must be smoothly graded and be free of any objects (except those needed to support aircraft operations) including aircraft and vehicles while an operation is occurring on the active runway. The RSA is intended to minimize damage to aircraft and injuries to passengers in the event an aircraft leaves the runway. The RSA dimensions depend on the aircraft approach category and on the physical characteristics of the critical aircraft identified for the runway.
- **Runway Object Free Area (OFA):** This safety criterion provides a defined area, which runs along the sides of and beyond the runway end, which must be free of any permanent objects. It is permissible to taxi and hold aircraft in an OFA, but not to park them in this area.
- **Runway Object Free Zone (OFZ):** Very similar to the OFA, the OFZ is centered on the runway centerline and extends beyond each runway end by 200 feet. The OFZ width is dependent on the runway utilization and approved approaches. This area must remain free of all objects during any aircraft operation.
- **Runway Protection Zones (RPZ):** Airport operators should have legal control over the defined RPZ at each runway end. The RPZ is designed to protect property and people on the ground off the end of a runway. This area is statistically where most aircraft accidents are likely to occur. The shape of the area is a trapezoid with the shorter end located 200 feet beyond the runway end. The RPZs at opposite runway ends may have different dimensions determined by the approved approach procedure to that runway end.

Table 2-2 provides a listing of the FAA standards for these criteria based upon the classification for Runway 15-33 as a B-I–Small Aircraft Only runway with a visibility minimum not lower than 1 statute mile and for Runway 4-22 as a utility runway which supports only visual approaches.

TABLE 2-2
RUNWAY SAFETY CRITERIA

Safety Criteria	Runway	
	15-33	4-22
RSA Width	120'	120'
RSA Length prior to Arrival Threshold	240'	240'
RSA Length beyond RW end	240'	240'
OFA Width	250'	250'
OFA Length beyond RW end	240'	240'
OFZ Width	250'	120'
OFZ Length beyond RW end	200'	200'
RPZ	1,000'x250'x450'	1,000'x250'x450'

Note: RPZ dimensions given as length x inner width x outer width.
Source: FAA AC 150/5300-13, *Airport Design*, Change 10.

A fence, drainage ditch and trees are located approximately six feet from the edge of pavement at the Runway 33 approach end. These items infringe upon the defined safety criteria boundaries. These obstructions are the reason why the Runway 33 arrival threshold is displaced. In order to gain back the displaced runway length, the fence, drainage issues, and trees will need to be addressed.

At the Runway 15 approach end, grading does not visually appear to be adequate across the entire width of the RSA. A drainage pipe crosses under the approach end of Runway 15 connecting two open drainage ditches. These open ditches require mowers and other vehicles to transverse the RSA to reach the remaining airport property. However, upon checking data, this RSA does indeed meet FAA criteria.

2.2.2.4 Declared Distances

There are no declared distances published for Arthur Dunn Airpark although three out of four thresholds are displaced because of known obstacles within the defined approach surfaces or other safety-related criteria. The reason for not publishing declared distances is found in FAA's note F-4-e) of the *Airport Layout Plan (ALP) Review and Proposal, A Guide for ADO Managers* published by the FAA Southern Region in December 2001, which reads,

"Application of declared distance criteria may not be appropriate at some GA airports, depending on the "design" aircraft (ARC). Pilots of small GA aircraft do not have a requirement to use declared distances to calculate allowable operating weights; therefore, use of declared distances would not be appropriate at airports serving these aircraft only."

2.2.2.5 Runways Summary

For ease of reference, the primary characteristics for each runway at Arthur Dunn Airpark have been compiled in **Table 2-3** (as shown below). This information relies heavily upon the aerial photogrammetry and limited survey that was completed as a part of this master plan study

2.2.3 Taxiway and Taxilane System

Taxiways and taxilanes are links between the independent airport elements such as runways, parking aprons and hangars. Currently, aircraft can reach any point of Arthur Dunn Airpark by taxiing on any of the named taxiways or on the several unnamed taxiways and taxilanes. These are identified on **Exhibit 2-2**.

2.2.3.1 Taxiway A

Taxiway A is a 25-foot wide paved taxiway that runs parallel to Runway 15-33. The centerline is offset 150 feet east of the Runway 15-33 centerline. This taxiway was originally built in the 1960s and was then overlaid with two inches of bituminous asphalt surface course in 1993. It is estimated that the design of Taxiway A will support aircraft operations with a maximum weight of 12,500 pounds. Although some small defects (as shown in **Exhibit 2-3**) are noticeable in the pavement, the overall condition of the taxiway pavement is considered to be good.

It is important to note that before the last overlay, the grading of the taxiway was poor with many variations of transverse and longitudinal slopes. The overlay project did not address these grading issues; thus, the existing pavement still contains some transverse and longitudinal grading irregularities.

The markings on Taxiway A consist of a yellow centerline stripe (6-inch) and yellow runway holding bars for Runway 15-33 and Runway 4-22. According to a visual inspection conducted at the Airport, none of these markings are outlined with black paint.

The lighting system on Taxiway A was upgraded at the same time as the lighting system on Runway 15-33, in the spring of 2003. The final phase of this lighting system improvement project was being completed at the time of this inventory; therefore, it is considered to be in very good condition. Taxiway A is also equipped with signage, including those needed to identify its intersection with runways and other taxiways.

2.2.3.2 Taxiway B

Taxiway B connects Taxiway A to the Skydive Space Center/FBO ramp. It is a 25-foot wide taxiway that was first built in the 1960s. In 2002, it was reconstructed during the apron expansion and rehabilitation project and is still in excellent condition. During that project, the taxiway was redesigned to accommodate 12,500 pound aircraft and fuel trucks.

TABLE 2-3
RUNWAYS SUMMARY

	Runway 15	Runway 33	Runway 4	Runway 22
Length	3,014'	3,014'	1,804'	1,804'
Width	70'	70'	100'	100'
Pavement Construction	Asphalt	Asphalt	Turf	Turf
Pavement Load Capacity	SW 12,500 lbs.	SW 12,500 lbs.	Not Applicable	Not Applicable
Runway Category	B-I	B-I	Ultralight and STOL aircraft	Ultralight and STOL aircraft
Approach Category	Non-Precision	Non-Precision	Visual	Visual
Displaced Threshold	No	Yes – 424'	Yes – 100'	Yes – 300'
Markings	Visual	Visual	PVC Markers (not standard)	PVC Markers (not standard)
Lighting	MIRL	MIRL	None	None

Notes: SW=single-wheel gear aircraft; STOL=Short takeoff and landing; MIRL=medium intensity runway edge lights.
Source: Compiled by AVCON, INC. 2004.

The composition of the pavement is as follows:

- Subgrade: 6 inches soil work platform (FAA Spec P-152);
- Base: 8 inches limerock base (FAA Spec P-211);
- Surface: Bituminous asphalt (Depth unknown) (FAA Spec P-401).

The taxiway markings were also painted during that project. New edge lights were installed on the south side of Taxiway B between Taxiway A and the Skydive Space Center hangar.

2.2.3.3 Taxilane C

Taxilane C runs east to west from Taxiway A to Flake Road. The original pavement was constructed in the 1970s. It was partially reconstructed in 1998 along with the T-Hangar taxilane construction project. The bituminous asphalt surface course, which was composed of 5/8" of asphalt, was removed; the existing limerock was scarified; crushed limerock was added and compacted; and finally a two-inch asphalt layer was added. This 25-foot wide taxiway is still in very good condition. Taxilane C has edge lights and the centerline striping is in fair condition.

2.2.3.4 Taxilane F

Taxilane F is a 25-foot wide portion of pavement that runs north to south, and connects Taxilane C to the T-Hangar taxilanes. Its alignment is offset 40 feet at the intersection with Taxilane C. This taxiway was constructed as part of the T-Hangar taxilane project in 1998.

The Engineer's Report that was completed prior to construction states that the new pavement was designed to withhold aircraft with a weight not to exceed 30,000 pounds. The original California Bearing Ratio (CBR) along the taxilane was 15. It was increased to a CBR of 26 by strengthening the subbase. The final design of the taxilane is as follows:

- Subgrade: 6 inches of compacted soil under the work platform;
- Work platform: intermix of 3 inches of crushed limerock into the top 6 inches of subgrade materials;
- Base: 6 inches of Limerock (FAA Spec P-211); and
- Surface: 2 inches of bituminous asphalt (FAA Spec P-401).

The Taxilane F pavement and markings are in very good condition.

2.2.3.5 Taxilanes F1 through F9

A series of nine 20-foot wide taxilanes lead from Taxilane F to the different T-Hangars. All of them were constructed during the same project in 1998.

They were all constructed according to the following pavement design:

- Subgrade: 6" of compacted soil under the work platform;
- Work platform: intermix of 3 inches of crushed limerock into the top 6 inches of subgrade materials;
- Base: 6 inches of limerock (FAA Spec P-211); and
- Surface: 1 1/4 inches of bituminous asphalt (FAA Spec P-401).

2.2.3.6 Unnamed Taxiways

There are several other paved and grass taxiways/taxilanes on the airfield that are currently not named. Runway 15-33 has four paved exit taxiways, two of which are considered to be the south and north ends of Taxiway A. The other two exits are 25-foot wide right-angle exit taxiways located approximately 580 and 1,880 feet from Runway 33 departure threshold. Both are constructed of bituminous asphalt and have a 6-inch yellow centerline stripe. However, none of them have a runway hold bar.

Additionally, as shown on **Exhibit 2-2**, an unnamed grass taxiway connects the Runway 4 approach end to the first exit taxiway of Runway 33. Its width is 50 feet. This taxiway is used by pilots departing on Runway 4 and landing on Runway 22. According to the airport staff, pilots of STOL and ultralight aircraft prefer to use the following operational pattern: 1) land on Runway 22; 2) come to a complete stop prior to the intersection with Runway 15-33; 3) turn around, 4) taxi back to the Runway 22 threshold and 5) exit to the grass taxiway that leads to the T-Hangars. This operation greatly reduces pilot's taxiing times and distances. Therefore, the grass taxiway connecting Runway 4 threshold to Runway 33 exit taxiway is only rarely used.

The second grass taxiway is also 50 feet wide. It connects the end of the paved taxilane that runs next to the northern most T-Hangars to the approach end of Runway 22. Unlike the other grass taxiway, this taxiway is heavily used as it handles both taxiing for takeoffs and landings on Runway 4-22. **Exhibit 2-3** shows that the junction of the grass and paved taxiways has worn thin due to the heavy traffic. The rest of the taxiway is in good condition. Both grass taxiways are delineated by PVC pipe markers with yellow reflector tape. Neither of them is equipped with a lighting system.

2.2.4 Aircraft Storage Aprons

There are two aircraft parking aprons at Arthur Dunn Airpark. The main one, located north of the Skydive Space Center hangar, is an integral part of the FBO/Skydive Space Center's operation. The second apron is south of that hangar.

2.2.4.1 North Apron

Until recently, this apron area was 56,000 square feet, which included a taxiway and some aircraft tiedown areas along the north side of the ramp. However, the number of tiedowns was not sufficient. In 2001, the Airport Board undertook a project to add tiedowns and a new taxilane parallel to Taxiway B. The apron was expanded to a total area of 82,120 square feet.

The ramp is currently configured with one row of nine tiedowns along the north edge of the apron, a second row of five tiedowns in the center of the apron, a 25 foot-wide taxilane and a 25-foot wide taxiway, on either side of the center tiedowns. As shown on **Exhibit 2-4**, Taxiway B provides 32.5 feet of clearance to the center aircraft parking apron. Such a clearance allows aircraft with a maximum 32-foot wingspan to taxi on Taxiway B while other aircraft are parked in the center tiedown locations.

The apron taxilane provides a 35.5-foot clearance on the south side of the taxilane from the center parking apron, and 32.5 feet on the north side with the north aircraft parking apron. Since this is a taxilane, the clearance requirements associated with the taxilane object free area are not as stringent as for a taxiway. The clearances cited above allow aircraft with a wingspan of 37.5 feet to taxi on the taxilane if some aircraft are parked in the center row of tiedowns. If no aircraft are parked there, aircraft with a wingspan up to 42.5 feet are allowed to taxi on the taxilane.

During the apron expansion and rehabilitation project in 2001, not only was new pavement constructed, but the existing pavement was also rehabilitated, which had not been done since its original construction in the 1960s. According to the Engineer's Report published prior to construction, the new full-strength pavement was designed for aircraft with a maximum weight of 12,500 pounds. The typical section of the new pavement is as follows:

- Subbase: 6 inches of soil work platform (FAA Spec P-152);
- Base: 6 inches of limerock (FAA Spec P-211); and
- 2 inches of bituminous asphalt (FAA spec P-401).

The rehabilitation of the existing pavement consisted of the removal of the bituminous asphalt surface course, the addition of limerock and an application of two inches of new asphalt. In aircraft parking areas, a protective micro-surfacing layer was added on top of the asphalt surface.

At the end of the construction, the apron markings were repainted. They included the following items:

- New 6" yellow stripe for Taxiway B centerline;
- New 6" yellow stripe for the taxilane; and
- New 6" red stripe delineating the aircraft parking area.

Three high-mast lights were installed on the north part of the apron in 2001 to provide adequate lighting on the apron.

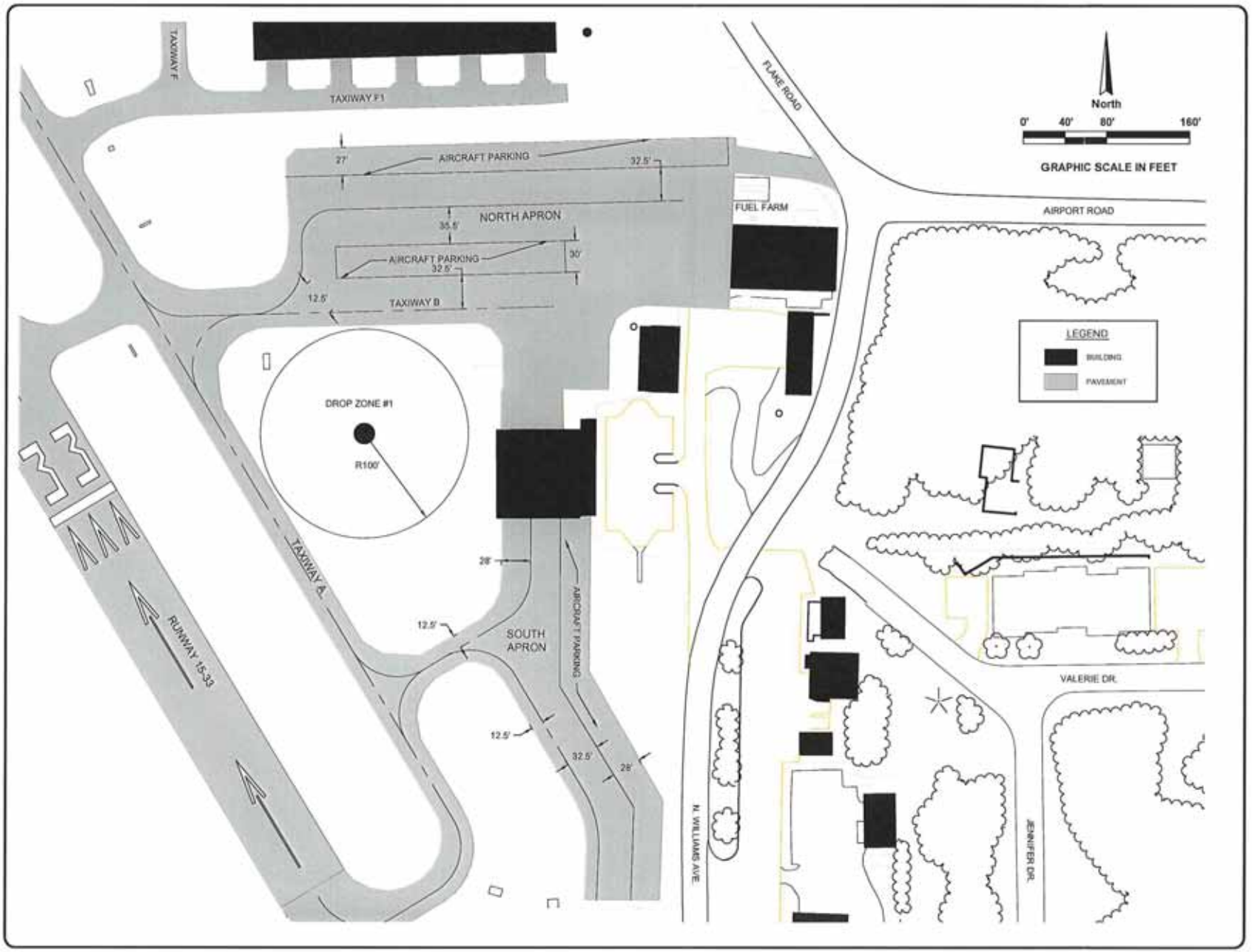
2.2.4.2 South Apron

This apron was built in 2001 as part of the apron expansion and rehabilitation project in order to add eight tiedowns to the Airpark. The typical section of this pavement is the same as the typical section of the other apron. Protective micro-surfacing material was applied on the pavement to protect the tiedown areas. Lighting is provided by two high-mast lights located on the east edge of the apron.

2.2.5 Navigational Aids

Navigational aids (NAVAIDs) are electronic or visual aids that inform pilots about their current position in the airspace and provide them information in order to reach their desired destination on the airport. These NAVAIDs can be lights, weather instrumentation, or radio-based signaling equipment. Arthur Dunn Airpark is equipped with the following NAVAIDs:

- **Precision Approach Path Indicator (PAPI):** This system provides visual descent guidance to pilots during landing. The two-box PAPIs at Arthur Dunn were installed in 1990, at both ends of Runway 15-33.
- **Rotating Beacon:** The airport rotating beacon indicates the location of an airport at night or during poor weather conditions by projecting beams of light, spaced 180 degrees apart. Alternating white and green beams identify a lighted civil airport. The beacon at X21 is located 30 feet east of Hangar 27. This equipment was relocated in conjunction with a T-Hangar construction project in 2003. It is considered to be in excellent condition.



TITUSVILLE-COCOA AIRPORT AUTHORITY

AVCON

AVCON, INC.
ENGINEERS & PLANNERS

ARTHUR DUNN AIRPARK

MASTER PLAN UPDATE

GEOMETRY OF THE AIRCRFT PARKING APRONS

SCALE: AS NOTED

REVISIONS: NO.	DATE	BY	DESCRIPTION

DESIGNED BY:	M.M.G.
DRAWN BY:	M.M.G.
CHECKED BY:	A.D.
APPROVED BY:	J.A.K.
DATE:	06/02/08

FAA PROJECT NO. 3-12-0101-053-2002
FDOT PROJECT NO. 247352-1-94-01
AVCON PROJECT NO. 2002.045.01

EXHIBIT

2-4

- **Segmented Circle with a Lighted Wind Cone:** A segmented circle has two functions. First, it helps pilots to locate a fixed reference on the airport that may not be easy to see otherwise. Secondly, it provides a centralized location for landing indicators, lighted windcone or other devices sometimes used at the airport. The segmented circle is located in the south corner of the intersection of Taxiway A and Taxiway C. A lighted wind cone, measuring 26.1 feet, stands in the middle of the 40-foot radius circle.

2.2.6 Airfield Signage

Although the FAA does not require airfield signage at airports similar to X21, the Airport is equipped with a rudimentary sign system serving the primary facilities on the airfield. The signs are irregularly spaced; vary in size, and condition; and the condition of the system is considered poor.

2.2.7 Drop Zone Areas

Currently, two drop zones are located at Arthur Dunn Airpark to support the activity at the Skydive Space Center. The official drop zone lies east of Taxiway A, south of Taxiway B, and west of the Skydive Space Center building. A flag notifies skydivers of this location. This first location is reserved for experienced jumpers. This drop zone is located close to the hangar as many experienced jumpers (especially the cameramen) want to minimize ground time between jumps. Another flag has recently been installed west of Runway 15-33 to indicate Drop Zone 2. This zone is for less-experienced skydivers and provides a larger open area. These general areas are indicated on **Exhibit 2-2**. According to the Basic Safety Requirements as developed by the United States Parachute Association, Drop Zone 1 does not have to meet a certain radius, whereas Drop Zone 2 has a cleared area, with a radius of 300 feet, centered on the designator flag.

2.2.8 Miscellaneous Facilities

Several other types of infrastructure exist within the general airfield area, including security fencing, wind indicators, and the electrical vault. Brief descriptions of those existing at Arthur Dunn are provided in the following sections. Additionally, in several instances, a facility is not currently located at Arthur Dunn, but an alternative method of meeting these needs has been identified.

2.2.8.1 Security Fence and Gates

A 6-foot security fence, topped by barbed wire encloses the airport property. This area includes the airfield, a golf driving range and a recreational area, located on Singleton Avenue. A fence currently separates the airfield from the recreational fields, but not from the driving range.

2.2.8.2 Electrical Vault

The airfield electrical vault is located in the southeast corner of the airfield, south of the Skydive apron. Although the vault was installed in the 1980s, it still is in very good condition. It houses three regulators for airfield lighting circuits; the first one is a 10-kilowatt (kW) regulator dedicated to the runway lighting system. The second is also 10 kW, and powers the taxiway system. This regulator was installed in 2001 as part of the apron expansion and rehabilitation project, as an upgrade to a former 7.5 kW regulator. The former 7.5 KW regulator remains available as spare equipment.

2.2.8.3 Wind Indicators

As previously discussed, the airfield is equipped with a segmented circle and lighted wind cone to give pilots an indication of the wind speed and direction. The Airport Board currently has recently installed an Automated Weather Observation System (AWOS) in the southern portion of the airfield.

2.2.8.4 Interior Perimeter Road

There is currently no interior perimeter/security road at Arthur Dunn Airpark. However, due to the non-controlled nature of the airfield and relative low number of operations, as well as the gentle gradients of the property, emergency vehicles can cross the existing airfield facilities when necessary.

2.2.8.5 Airport Rescue and Firefighting

The airport does not have its own ARFF station. However, a City of Titusville Fire Station is located nearby on Singleton Avenue and provides emergency service coverage. The response time from the station is less than 5 minutes.

2.3 LANDSIDE FACILITIES

This section describes the landside and support facilities at Arthur Dunn Airpark, including tenant buildings, the fuel farm, and nearby roads. **Exhibit 2-5** identifies the location of these facilities and **Exhibit 2-6** includes photos of facilities.

2.3.1 Fixed-Base Operator

The ownership and management of the Skydive Space Center and FBO changed in 2001. They still occupy the office and hangar that were built in the 1960's. The office building, which has an enclosed area of 1,440 square feet, is in very poor condition and needs maintenance work. The 6,000 square foot hangar, although old, appears to be structurally sound.

Although Skydive Space Center is a named facility, and provides the services listed below, the FBO activity is somewhat limited at the Airport. According to the owner, transient pilots generally operate touch-and-go operations (especially students from the neighboring airports), but do not make fuel stops at the facility. Skydive Space Center does provide the following services to based and transient pilots:

- Aviation fuel (AvGas and Jet A)
- Aircraft parking (ramp or tiedown)
- Aircraft maintenance
- Aircraft modifications
- Aircraft parts
- Pilot supplies
- Public telephone
- Restrooms

2.3.2 Skydive Space Center

The Skydive Space Center facility is a 7,600-square foot building situated at the southeast corner of the north ramp. It comprises a 2,600-square foot two-story office and a 5,000-square foot hangar. This hangar has both a north and a south door, which enables access to and from both aprons. The facility provides parachuting instruction to experienced and inexperienced jumpers. Skydivers jump from one of the two aircraft currently owned by the Center: a King Air B-90 and a Cessna Caravan.

2.3.3 Bulk and T-Hangars

All the bulk hangars and T-Hangars at Arthur Dunn Airpark are located on the east side of the airfield. Most of the old hangars that were built by the Flying Posse members during the 1960s have been torn down and replaced by new T-Hangars. However, some of the original hangars are still on the airfield, such as the hangars along the east portion of Taxiway C. At the time of the initial inventory, the Airport Board was in the process of having these old facilities replaced, as they are in poor condition. This project was completed in 2004. During the visual inspection conducted for this inventory, it was noted that many of the concrete pads located in front of the T-Hangars are cracked, as shown on **Exhibit 2.6**. The T-Hangar area is fully built out with 89 T-Hangar units and one box hangar. Currently, there appears to be no further space to construct additional units in this general area.

2.3.4 Fuel Farm

The fuel farm sits on the east edge of the Skydive Space Center's apron. This fuel storage area contains a 10,000-gallon AvGas tank, a 5,000-gallon Jet A tank, and a spare 5,000-gallon tank. AvGas is available 24 hours a day through a self-service system. Jet A fuel can be purchased during business hours only when FBO staff is present.

2.3.5 Access Roads

Different access roads to the hangars, FBO and Skydive Space Center are available depending on people's preferences. Flake Road provides access from the north, while access from the south is possible via Williams Avenue. Airport Road provides access from the east. At its south end, Williams Avenue connects to the east-west S.R. 406, also called Garden Street, which is a high-density traffic road. Airport Road connects to Old Dixie Highway, another highly utilized road. Flake Road jogs around the northeast corner of the X21 and ends in the adjacent neighborhood. The facilities located on the west side of the airport, such as the recreational area and the golf driving range are accessible via Singleton Avenue, which is a busy north-south artery in the Titusville area. Singleton Avenue connects to S.R. 406 about 0.3 miles south of the airport.

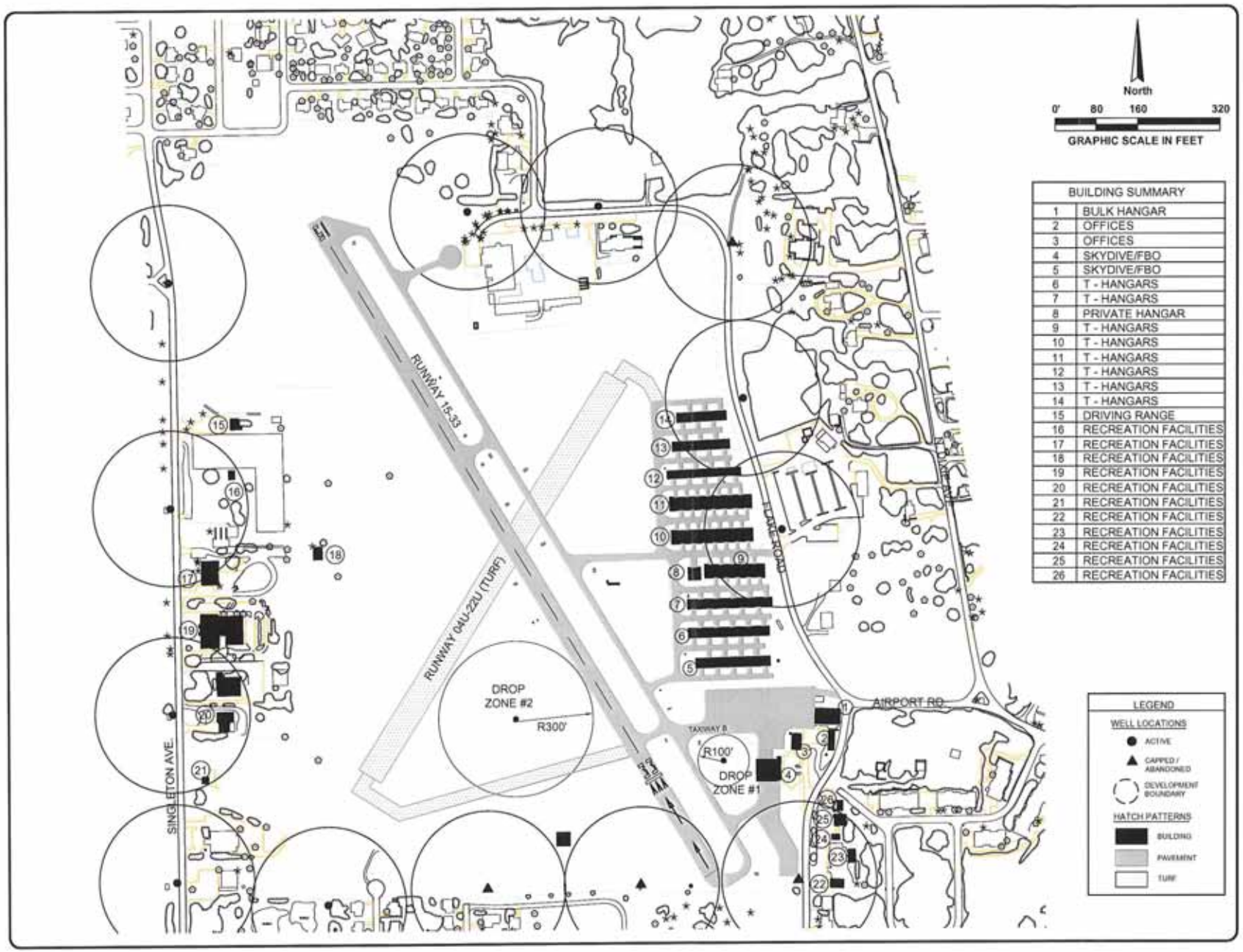
2.3.6 Vehicle Parking

A 7,880-square foot paved area is marked with 18 parking stalls for all vehicles. On weekends, when the skydiving activity is usually at its peak, the vacant lot on the east side of Flake Road is used as an overflow parking lot. A separate parking lot is also available south of the old maintenance hangar. This 1,230-square foot parking lot provides approximately six parking stalls for the FBO personnel.

Access to the T-Hangars is provided through a vehicular gate located at the east end of Taxiway C. Tenants have a magnetic card that enables them to open the gate. Users then drive to their hangar and park either on the concrete pad in front of their hangar or on the grass next to the concrete pad depending on whether or not they want to take their airplane out.

2.4 SUMMARY

This Inventory discussion has focused on the existing facilities located at the Arthur Dunn Airpark. As noted above, many of the facilities are in good to excellent condition, whereas others are in need of repair. This information will serve as the basis of comparison in the Facility Requirements Analysis.



BUILDING SUMMARY	
1	BULK HANGAR
2	OFFICES
3	OFFICES
4	SKYDIVE/FBO
5	SKYDIVE/FBO
6	T - HANGARS
7	T - HANGARS
8	PRIVATE HANGAR
9	T - HANGARS
10	T - HANGARS
11	T - HANGARS
12	T - HANGARS
13	T - HANGARS
14	T - HANGARS
15	DRIVING RANGE
16	RECREATION FACILITIES
17	RECREATION FACILITIES
18	RECREATION FACILITIES
19	RECREATION FACILITIES
20	RECREATION FACILITIES
21	RECREATION FACILITIES
22	RECREATION FACILITIES
23	RECREATION FACILITIES
24	RECREATION FACILITIES
25	RECREATION FACILITIES
26	RECREATION FACILITIES

TITUSVILLE-COCOA AIRPORT AUTHORITY

AVCON

AVCON, INC.

ARTHUR DUNN AIRPARK

MASTER PLAN UPDATE

FACILITIES ON AIRPORT PROPERTY

SCALE: AS NOTED

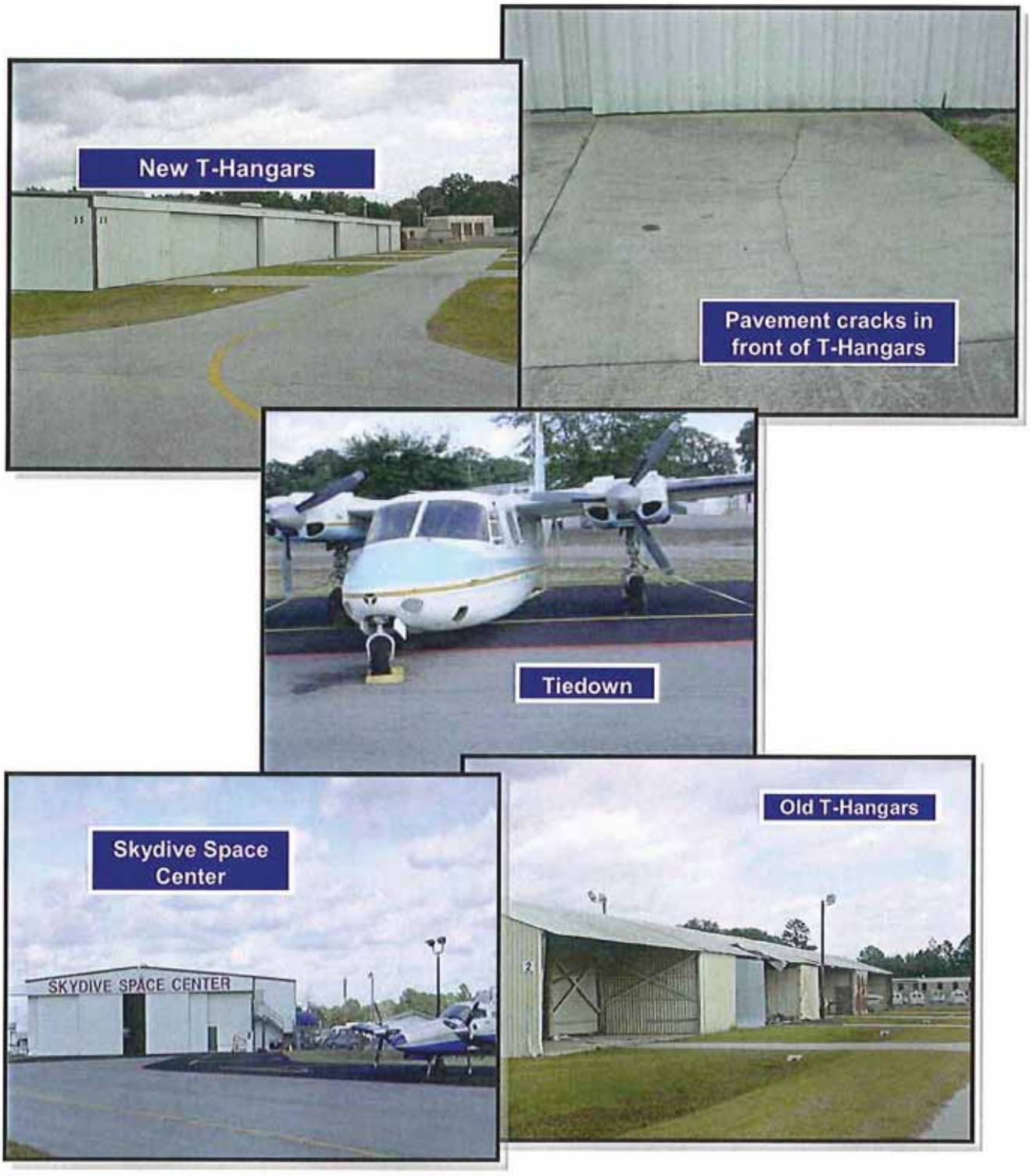
REVISIONS			
NO.	DATE	BY	DESCRIPTION

DESIGNED BY: N.V.
DRAWN BY: N.V.
CHECKED BY: A.D.
APPROVED BY: J.A.K.
DATE: 05/02/07

FAA PROJECT NO. 3-12-0101-010-2002
FDOT PROJECT NO. 247352-1-94-01
AVCON PROJECT NO. 2002.048.01

EXHIBIT

2-5



Landside Facilities Photos

Exhibit 2-6

CHAPTER 3
AVIATION ACTIVITY FORECASTS

3.1 INTRODUCTION

The development of aviation activity projections is one of the most important steps in the master planning process because these projections will serve as the basis for identifying future facility needs. Generally, aviation forecasts assume an unconstrained demand for aviation services; thus, projections are made based upon the expected need and not upon whether or not the airport owner can actually provide the necessary facilities to support the projected demand. This is done to clearly identify the potential aviation demand at a particular airport. Later phases in a master plan assess how well an airport can provide facilities to meet this projected demand.

The Federal Aviation Administration (FAA) has provided guidance on preparing aviation activity forecasts in Advisory Circular (AC) 150/ 5070-6A, *Airport Master Plans*. This guidance lists the required forecasts that should be developed and suggests various methods and data sources to utilize in those efforts. Additionally, it reflects the need to consider local, regional, state, and national conditions in each projection. To aid in forecast development for this study, socioeconomic and national aviation trends were reviewed to identify those that were relevant to the air service market at Arthur Dunn Airpark (X21). Additionally, activity forecasts developed in past planning studies and by state and federal aviation agencies were collected for comparison.

The last Master Plan Update, prepared in 1990, provided the latest historic data regarding the number of based aircraft and annual operations at X21. Forecasts of the number of based aircraft and annual operations for the 1990-2010 period were presented utilizing 1990 as the base year.

Although forecast developers try to identify the trends that will occur at an airport, it is impossible to quantify and identify all the factors that will contribute to the growth (or decline) in aviation activities. The impacts of factors affecting aviation are better understood in the short-term period. Thus, the forecasts for the five-year study period, and sometimes the forecasts for the 5-10 year period, are considered to be more reliable than those in the long-term. It is generally accepted that the short-term forecasts provide a more reliable representation of the events that will actually occur over these early periods than the forecasts over the 10-20 year period.

For instance, the 1990 forecasts did not and could not have anticipated the terrorist events of September 11, 2001, or their subsequent consequences. The 1990 forecasts also could not have foreseen the crisis of the general aviation (GA) industry between 1990 and 1994, when liability costs were so high that many aircraft manufacturers greatly decreased their aircraft production rates. Finally, the 1990 Master Plan Update could not have projected the efforts by the federal government and private companies to make general aviation activity more attractive to users in the mid-1990s.

3.1.1 Objectives of Forecasts

The purpose of these updated forecasts is to reflect the changes, both locally and nationally, that have occurred since the 1990 forecasts. This should provide aviation activity projections that reflect current and anticipated future conditions surrounding the Airport. As such, this chapter discusses various factors that influence aviation demand both nationally and locally. This information is then used to update previous forecasts as presented in the airport's 1990 Master Plan, the forecasts prepared by the Florida Department of Transportation (FDOT) in the 2002 Florida Aviation System Plan (FASP) forecasts, and the forecasts as identified in the FAA's Terminal Area Forecasts (TAF).

An additional goal of this forecast analysis is to identify activity levels at key time periods to assist in identifying when future developments should occur. In this study, forecasts have been developed over a 20-year planning period, ranging from 2005 through 2024. This assumes that available data for 2004 will be utilized as the base year. Forecasts will be presented for key horizon years, which were assumed to be every fifth year. These horizon years split the data into the following three study periods: 1) the short-term from 2005 to 2009, 2) the mid-term ranging from 2010

through 2014, and 3) the long-term extending from 2015 to 2024.

Since different airport facilities have different functions, they often serve differing user groups, such as based or transient pilots, but not necessarily both groups. Therefore, a final objective of these activity projections is to identify the anticipated growth for various types of activity at X21. The aviation activity forecasts developed as a part of this master plan include projections of the following:

- Based Aircraft
- Aircraft Operations
  - Local Operations
  - Itinerant Operations
- Fleet Mix
- Peak-Hour Activity

These projections will be used in subsequent study phases to estimate future airfield, hangar, and related facility requirements. Furthermore, these forecasts will also provide a basis for determining the airport's role in local, regional, state, and national air transportation systems.

It is important to note that the intent of the forecasts developed in this study is not to specifically predict the levels of aviation activity at X21 for any specific year, but to provide a general and reasonable projection of growth in the future levels of aviation activities. This projected growth will in turn provide the tools necessary for airport management to identify, plan, and prepare the required improvements to accommodate future aviation activities and services in a safe, efficient, and compatible manner.

3.1.2 General Methodologies

Forecasting is a common practice in many fields of study. A wide variety of forecasting techniques have been developed to address specific forecasting scenarios. In the aviation industry, three techniques are used most often. These are briefly described below:

- **Regression Techniques:** These methods involve linking the value being forecast to several influencing factors that can be quantified. One drawback of this technique is the need to have a large number of data points to ensure that a good correlation can be made. In the aviation field, these techniques are generally utilized to link aviation activity to socioeconomic factors, such as population and income levels.
- **Trend Techniques:** These methods utilize past growth rates to project future demand levels. For example, the historic growth rate for based aircraft could be used to predict future based aircraft levels.
- **Share Techniques:** In aviation forecasts, these techniques utilize a comparison of local aviation activity to that at the regional, state, or national level. One example of this technique is to use the historic based aircraft as a percentage of the national aircraft fleet to project the future number of based aircraft utilizing FAA projections of the national aircraft fleet.

The forecasts presented later in this discussion rely on some of these general techniques as well as a more subjective application of other factors that may affect future aviation activity at the airport.

3.2 FACTORS AFFECTING FORECASTS

Aviation use is influenced by many factors, including socioeconomic trends and national aviation market conditions. For general aviation (GA) activity, such as that experienced at the X21, growth is very dependent upon these factors due to the recreational and leisure nature of this activity.

3.2.1 National General Aviation Trends

Several national events over the last several years have influenced GA market conditions. The most dramatic impacts relate to the terrorist events of September 11, 2001 (9/11). Security procedures and regulations have increased substantially in an effort to prevent the use of aircraft by terrorists in the future. These have had both positive and negative effects on the GA market. For example, increased security screening requirements have increased the travel time and frustration factor for commercial passengers, prompting more business and high-end leisure travelers to utilize GA services, including charter, timeshare or fractional ownership programs. On the negative side, the FAA has enacted further security-screening measures for student pilots, especially

growth than other areas related to more businesses relocating to the region. The national labor force is expected to increase 1.1% annually with individual wages increasing due to the growth in more technical jobs. The Gross Domestic Product (GDP), which serves as an indicator of overall economic health, was projected to increase for the short-term around 3.5% with long-term growth estimated at 3.2%.

3.2.3 Local Socioeconomic Trends

Two key socioeconomic indicators (population and per capita income) have traditionally been closely tied to the demand for aviation services. The connection between these factors and GA activity relate to an individual's ability to cover the relatively high-cost of owning and operating an aircraft. The 2002 Florida Long-term Economic Forecasts (FLEF) was utilized in the following sections to provide a brief overview of these two factors in Brevard County and Florida. The FLEF shows a conservative approach in the development of these socioeconomic projections with future growth rates almost always being lower than historic ones. It should be noted that the 2002 FLEF used a base year of 2001 with the first forecast year being 2002. The University of Florida, which published the 2002 FLEF, no longer produces these socioeconomic forecasts annually; therefore, updated data for 2004 was not available.

3.2.3.1 Population

Table 3-1 shows that population growth from 1994 through 2001 in Brevard County (1.60%) was lower than the average growth experienced throughout the state (2.16%) for the same period. This is reflective of the relatively rural nature of the county. In the future, Brevard County's average annual growth rate of 1.50% is projected to be almost equal to the state's growth of 1.57%.

This population data shows that approximately 40% more persons should be living in the Brevard County area by the end the planning period. This strong growth reflects the attractiveness of the area, which includes the temperate climate, multiple recreational activities, and high quality of life. The projected population growth in the county reflects the overall growth projected statewide in the 2002 FLEF.

TABLE 3-1
POPULATION DATA

Year	Florida	Brevard County
1994	14,116,816	435,804
2001	16,399,714	486,885
Historic CAGR[1]	**2.16%**	**1.60%**
2004	**17,292,851**	**509,266**
2009	18,794,355	554,551
2014	20,136,018	591,864
2019[2]	21,697,137	636,147
2024[2]	23,451,509	685,199
Future CAGR[1]	1.53%	1.49%

Notes:
1: CAGR = Compounded Average Annual Growth Rate
2: Data for these years was extrapolated by AVCON, Inc., at the respective constant growth rate utilized in the FLEF.
Source: University of Florida, Florida Long-term Economic Forecasts, 2002.

3.2.3.2 Per Capita Income

Per capita income is reflective of an individual's disposable income, which can generally be correlated with aviation demand. **Table 3-2** presents both the historic and forecast per capita income for Florida Brevard County. Historically, state per capita levels have been slightly higher than the level reported for Brevard County residents. These levels are slightly lower than the national average of 4%, as reported by the U.S. Census Bureau.

TABLE 3-2
PER CAPITA INCOME DATA

Year	Florida	Brevard County
1994	22,095	20,594
2001	28,488	26,287
Historic CAGR[1]	**3.70%**	**3.55%**
2004	32,179	29,308
2009	39,351	35,248
2014	50,235	44,376
2019[2]	63,047	54,812
2024[2]	78,613	67,224
Future CAGR[1]	**4.57%**	**4.24%**

Notes:
1: CAGR = Compounded Average Annual Growth Rate
2: Data for these years was extrapolated by AVCON, Inc., at the respective constant growth rate utilized in the FLEF.
Source: University of Florida, Florida Long-term Economic Forecasts, 2002.

According to the future growth rates from the 2002 FLEF, annual per capita income levels in Florida and Brevard County should increase at a faster rate than has been seen historically. This was attributed to anticipated inflation rates as well as the expected per capita growth at the national level. In the future, the FLEF forecasts that per capita income levels in the Titusville area should grow at a rate comparable to that projected for Florida.

3.2.4 Local Factors

Several existing characteristics of aviation activity in the vicinity of X21 are important to consider during development of these forecasts. The first factor is the effect of competing airports, which is somewhat difficult to quantify. This is especially true with three active GA airports in the area of Titusville and Cocoa Beach. This is important because airport users are consumers; therefore, they tend to consider various factors in deciding where to operate their aircraft. Primary considerations are operating costs, the airport's convenience, and available aviation services. These are factors generally applicable for both transient and based users. For example, during data collection for this study, it was noted that transient users conduct touch-and-go operations, but generally do not refuel at X21.

A second factor is the existing tenant demand for T-Hangars in the Titusville and Cocoa Beach areas. As noted in Chapter 1, the Titusville-Cocoa Airport Authority operates three airports in these areas. The Airport Authority maintains separate waiting lists for each of these airports. These waiting lists were reviewed and showed that Arthur Dunn Airpark (X21) had 56 potential users whereas Space Coast Regional Airport (TIX) had 52 and Merritt Island Airport (COI) had 80 for a total of 186. These numbers reflect the T-Hangar waiting lists as of August 1, 2004.

Since these three airports are within approximately 20 nautical miles of each other, a comparison of names and addresses on the three waiting lists was conducted. This review showed that 43 people had signed up for more than one list. Twelve aircraft owners showed up on all three lists and 31 were on two of the three lists. This comparison revealed that actually 133 not 186 aircraft owners were seeking a T-Hangar within the general vicinity of X21. However, this still illustrates the current high demand for these facilities in the local area.

From experience at other Florida airports, it has been seen that between 40% and 50% of potential users on a waiting list actually move into T-Hangars once an airport constructs new facilities. There could be many reasons for this occupancy percentage not being 100%, such as the rental rate not being acceptable to the user or that a user might have sold their aircraft and yet not removed their name from the list. Thus, if all those on the three lists were accommodated, this could provide 53 to 67 additional aircraft at a minimum at the three airports operated by the Airport Authority. If the list for X21, which had 56 names on it, is considered by itself, this shows an immediate need for between 22 and 28 T-Hangars. Therefore, it is reasonable to expect that if the Airport Authority undertook development of appropriate storage facilities, since there are no existing vacancies, that at least 22 new aircraft could reasonably be added to the airport's existing based aircraft fleet.

Additionally, the lack of any other public-use, recreational GA airport in the eastern portions of both Orange and Seminole Counties increases the potential service market for X21. These two counties, located on Brevard County's western border, experienced higher population growth (as reported in the 2002 FLEF) than the state average of 2.16% from 1994 through 2002. Orange County had a historic annual population growth of 3.16%, whereas Seminole experienced 2.43% annually during this period. Furthermore, vehicular access from these areas to the airport is very good. In fact, drive times to X21 is likely to be comparable to, or even less than, the drive times to the GA facilities in these city centers given the rise in traffic congestion around Orlando and Sanford. Moreover, the existing airports within these counties are not geared towards the use of ultralight or light sport aircraft. Thus, recreational aviation users, from both Orange and Seminole Counties could be expected to increase their utilization of X21.

3.3 AVIATION ACTIVITY FORECASTS

With consideration of the national and local trends, the following sections present a review of historic activity, existing projections, and several independent forecast scenarios for based aircraft and annual operations.

3.3.1 Historic Activity

At GA airports, two key activity projections are completed–based aircraft and annual operations.

Table 3-3 presents the historic activity for these two items, as reported in the 2005 FAA Terminal Area Forecast (TAF) and the 2002 Florida Aviation System Plan (FASP). Reported historic values from these two sources vary slightly for the historic based aircraft levels, but directly correspond for the reported annual operations levels.

The slight differences for based aircraft can be attributed to the data determination methods used by the FAA and FDOT. For based aircraft, the FAA TAF values come from Airport Master Records (FAA Form 5010), which are generally updated annually; however, at smaller GA airports this is not always the case. The FASP reports historic data collected during annual onsite airport inspections conducted by FDOT staff. Both of these data sets really represent a snapshot of based aircraft on one given day in that year. This number can potentially fluctuate slightly throughout a year due to tenants coming and going or can vary significantly if new aircraft storage facilities open. Based on airport staff input, the 2004 value of 100 based aircraft as reported in the FASP will be used as the base year value for the forecasts developed in this master plan study.

TABLE 3-3
HISTORIC ACTIVITY

Year	Based Aircraft		Annual Operations	
	FASP	TAF	FASP	TAF
1995	77	77	28,270	28,270
1996	82	77	28,270	28,270
1997	85	85	28,270	28,270
1998	85	85	28,270	28,270
1999	100	90	40,450	40,450
2000	100	80	40,450	40,450
2001	100	100	40,450	40,450
2002	100	100	40,450	40,450
2003	100	103	40,450	40,450
2004	100	106	40,450	40,450
CAGR	3.25%	2.65%	3.65%	3.65%

Note: CAGR = Compounded Average Annual Growth Rate
Sources: FDOT, Florida Aviation System Plan, 2002; FAA, Terminal Area Forecasts, 2005; AVCON, Inc., Analysis, 2005.

The annual operations presented in **Table 3-3** represent an estimation of the annual flight activity at X21 because there is no onsite air traffic control tower to log actual activity levels. The two reported values from the TAF over this historic period differ by almost 12,200 operations. Estimates of these two annual operations values-28,270 and 40,450-correspond to approximately six and nine operations per hour, respectively. This assumes that operations occur twelve hours a day, everyday of the year.

To determine a value more accurately reflecting actual operations at X21, discussions were held with Airport Operations staff members who have an opportunity to frequently observe operations while they are onsite at the airport. Additionally, several trips to the facility were made in which observations were made of operations levels. Generally, operations at the airport are relatively light during the week with no activity being observed over multiple hours. On weekends, the activity increases, but would still be considered light when compared to the other GA facilities in the area.

The most active user is the jump school, Skydive Space Center, which has two aircraft. These aircraft take between 15 to 25 minutes to complete a single jump cycle not including the time to reload jumpers. This would allow either Skydive aircraft to complete approximately eight operations in one hour. At times, they have only aircraft operating at X21.

Taking these various factors into consideration, the annual operations for 2004, the base year, were estimated using an operations per based aircraft (OPBA) methodology. It is suggested in FAA Order 5090.3C, *Field Formulation of the National Plan of Integrated Airport Systems (NPIAS)*, that for GA airports with limited itinerant activity an appropriate ratio is 250 operations per based aircraft. This equates to 25,000 operations in 2004, which seems appropriate based upon observations of activity levels at X21.

3.3.2 Based Aircraft Projections

The determination of future based aircraft is generally presented as straight-line growth; however, in reality, based aircraft numbers generally grow in steps related to the addition of either T-Hangars or additional tiedown spaces. A review of several existing forecasts of based aircraft is presented below, followed by several new, independent based aircraft forecasts.

3.3.2.1 Existing Projections

Three existing forecasts were identified for X21, as presented in **Table 3-4**. These include the 1990 Master Plan, the 2005 FAA TAF, and the 2002 FASP. Data not originally included in these three forecasts was determined by the preparer through either interpolation or extrapolation. As shown in **Table 3-4**,

the three forecasts vary significantly, especially by the end of the 20-year planning period. The existing number of based aircraft, 100, exceeds the 85 projected by the 1990 Master Plan forecasts. The 2005 FAA TAF projections, while considered fairly reflective of the existing condition, do not show any growth over the 20-year period. Given the existing pent-up demand for T-Hangars in the area, it is not reasonable that no growth would occur over the next 20 years. The FASP forecasts appear to be the most reasonable of the existing forecasts; although, the 2004 base year value is high compared to data received from airport staff.

TABLE 3-4
PREVIOUS BASED AIRCRAFT FORECASTS

Year	1990 Master Plan	FAA TAF	FASP
2004	85	100	106
2009	94	100	121
2014	104	100	139
2019[1]	115	100	160
2024[1]	128	100	184
20-year CAGR[2]	2.04%	0.00%	2.80%

Notes:
1: Extrapolated by AVCON, Inc., for the 1990 MPU and the 2005 FAA TAF at the respective constant growth rate utilized in the respective forecast.
2: CAGR = Compounded Average Annual Growth Rate
Sources: Greiner, Inc., Master Plan Update, 1990; FAA, Terminal Area Forecasts, 2005; FDOT, Florida Aviation System Plan, 2002; AVCON, Inc., Analysis, 2005.

3.3.2.2 *Independent Projections*

Four independent methods were utilized to evaluate future based aircraft levels at X21 through 2024. Where applicable, the 2004 based aircraft value of 100 was used. The following provides a brief description of each method, with the outcomes summarized in **Table 3-5**.

1. **Historic Growth:** This method utilized the TAF historic data for the 1995 to 2004 period and the identified value of 100 for 2004. The compounded average annual growth rate (CAGR) for the period of 1995 through 2004 was determined to be 2.95%. Future values through 2024 were determined by applying this growth rate to the base year value of 100. This yields 179 based aircraft by the end of the planning period.
2. **National Growth:** This technique involves the application of the expected annual growth rate (1.10%) of the national GA fleet from the 2005 FAA Aerospace Forecasts starting with the 2004 base year value of 100. By 2024, this method projects 124 based aircraft.
3. **National Market Share:** This forecast methodology determined a 10-year average market share (0.046%) of the overall active GA fleet attributable to X21. This 10-year average percentage was then multiplied by the annual projected national GA fleet, as presented in the 2005 FAA Aerospace Forecasts. This method forecasts 121 based aircraft at the end of the 20-year planning period.
4. **Adjusted FASP**: This method applies the projected average annual growth of 2.79% from the 2002 FASP to the adjusted base year value of 100. This method projects based aircraft to increase to 174 by 2024.

TABLE 3-5
BASED AIRCRAFT PROJECTIONS

Method	*Base Year*	Forecasts				
	2004	2009	2014	2019	2024	CAGR
1. Historic Growth	*100*	116	134	155	179	2.95%
2. National Growth	*100*	106	112	118	124	1.10%
3. National Market Share	*100*	105	109	114	121	0.96%
4. Adjusted FASP	*100*	115	132	151	174	2.79%
Selected Forecast	*100*	115	133	157	187	3.18%

Note: CAGR = Compounded Average Annual Growth Rate
Source: AVCON, Inc., Analysis, 2005.

3.3.2.3 Selected Forecast

As shown in **Table 3-5**, the various forecasting methods project between 121 and 179 based aircraft by 2024. Given the existing T-Hangar demand, which is between 22 and 56, the "National Growth" and "National Market Share" methodologies seem too low. The "Historic Growth" and "Adjusted FASP" forecasts seem more reasonable with projections near 130 at the 10-year mark and in the 170s by the 20-year mark. However, these methods were considered to be slightly low considering the FAA national projections of light sport aircraft and sport pilots. These aircraft are meant for recreational users, which is the target user group at X21.

Therefore, for the selected based aircraft forecast, the average annual growth rate (2.80%) from the 2002 FASP was used for the first 10 years. For the second half of the planning period, from 2015 through 2024, the growth rate would be slightly higher due to the projected national growth in light sport aircraft, which are tailored made for a recreational GA facility such as X21. Thus, a growth rate 25% higher (3.49 %) than the 2002 FASP rate was utilized for the last 10 years of the planning period. This yields 187 based aircraft in 2024 with a 20-year average annual growth rate of 3.18%.

3.3.2.4 TAF Comparison

A December 2004 FAA memo from the national Director of Planning and Programming discussed the need for airport forecasts to be consistent with the TAF. This memo further stated that consistency was based upon the forecast falling within 10% of the TAF at the 5-year mark and within 15% at the 10-year mark. If forecasts were not within these ranges, further review of the forecasts at the national level is required. Per FAA guidelines, the selected based aircraft forecast was compared to FAA TAF data as presented in **Table 3-6**. As shown, the selected forecast does not fall within 10% of the TAF by 2009. However, the TAF showed no growth in based aircraft over the 20 years, which does not correspond to existing demand levels in the Titusville area.

TABLE 3-6
SELECTED BASED AIRCRAFT FORECAST

YEAR	TAF	TAF +/– 10/15%			Selected Forecast	% Difference from TAF
Base Year						
2004	*100*	*90*	*to*	*110*	*100*	*0.00%*
Forecasts						
2009	100	90	to	110	**115**	**14.77%**
2014	100	90	to	110	133	32.62%
2019	100	90	to	110	157	57.45%
2024	100	90	to	110	187	86.92%
20-year CAGR	0.00%	Not Applicable			3.18%	Not Applicable

Note:
1. CAGR = Compounded Average Annual Growth Rate
2. 10% TAF used through 2009; then 15% for 2010 and beyond.
Source: AVCON, Inc., Analysis, 2005.

3.3.3 Fleet Mix Projections

Having selected an appropriate based aircraft forecast, a fleet mix projection for these aircraft was prepared. The total based aircraft for the key study years were broken out into the following categories:

- Single-engine
- Multi-engine
- Jet
- Light Sport
- Ultralight

The projected fleet mix, as shown in **Table 3-7**, was determined by first applying the existing percentage in each aircraft category to the projected annual total based aircraft. These figures were then adjusted to take into account national trends, notably in the Jet and Light Sport classifications.

The initial decrease in ultralight aircraft, shown for 2009, is based upon the fact that some existing ultralight aircraft fall within the light sport definition. Over the 20-year planning period, the fastest growing fleet categories are expected to be light sport and ultralights. The two jets projected by 2024 would most accurately fall within the microjet classification.

TABLE 3-7
FLEET MIX PROJECTIONS

Year	Single	Multi	Jet	Light Sport	Ultralight	Total
Base Year						
2004	*75*	*5*	*0*	*0*	*20*	*100*
Forecasts						
2009	86	6	0	11	12	115
2014	95	7	1	16	14	133
2019	112	8	1	20	16	157
2024	127	9	2	30	19	187

Note: Some existing ultralights were assumed to be reclassified as light sport aircraft based upon the current light sport models.
Source: AVCON, Inc., Analysis, 2005.

3.3.4 Annual Operations

Aircraft activity at an airport consists of operations by local and transient users. The forecast of annual operations takes into account both of these groups. Additionally, the operations forecast also accounts for the small amount of military operations that occur at the airport.

As previously discussed, the available historic values for the annual operations at the Airport are inconsistent with data collected during the inventory. Therefore, an estimated value for the base year (2004) was calculated based on discussions with airport staff. The 2004 base year value of 25,000 was utilized as the starting point for the operations forecast. As noted under Section 3.3.1, this base year value was calculated assuming 250 operations per based aircraft.

3.3.4.1 Selected Forecast

Several standard forecasting methods were initially reviewed for projecting operations at X21 over the 20-year period. These initial forecasts included regression, trend, and share techniques. Regression analysis based on population and per capita income showed very poor correlation factors and therefore, those projections were not considered appropriate. Historic growth trends could not be utilized since the reported historic activity does not represent existing observed activity levels and because no onsite data has been collected over an extended period. National growth trends were also considered; however, the national aviation market is generally slower than those experienced in Florida. Additionally, a forecasting technique using the national market share percentages was not applicable due to the unreliability of the historic operations data that is utilized as the basis for this technique.

TABLE 3-8
ANNUAL OPERATIONS FORECAST

Year	Selected Forecast	% Difference from TAF	TAF	TAF -/+ 10/15%		
Base Year						
2004	*25,000*	*-38.2%*	*40,450*	*36,405*	*to*	*44,495*
Forecasts						
2009	28,704	-30.8%	40,450	36,405	to	44,495
2014	32,957	-20.9%	40,450	36,405	to	44,495
2019	39,147	-6.1%	40,450	36,405	to	44,495
2024[1]	46,499	11.9%	40,450	36,405	to	44,495
CAGR[2]	3.15%	Not Applicable	0.00%	Not Applicable		

Notes:
1. The 2023 value for the FAA TAF was extrapolated.
2. CAGR = Compounded Average Annual Growth Rate
3. 10% TAF used through 2009; then 15% for 2010 and beyond.

Source: AVCON, Inc., Analysis, 2005.

Therefore, other forecasting techniques were evaluated. An operations per based aircraft (OPBA) method was determined to be the most appropriate method to estimate future levels of annual operations at X21. An OPBA ratio of 250 was used in these calculations, as suggested in FAA Order 5090.3C for GA facilities with limited itinerant activity. The results of this OPBA forecast are given in **Table 3-8**. While the compounded average annual growth rate of 3.15% may appear somewhat high for growth in operational activity, it does reflect the growth anticipated for based aircraft at X21. It is likely that as the number of based

aircraft grows that a wider range of services might be provided by the fixed-base operator (FBO), which in turn could potentially attract further itinerant users.

3.3.4.2 TAF Comparison

Table 3-8 presents a comparison of the selected forecast and the FAA TAF operations forecast. The selected forecast through 2019 falls below the 90% of the TAF value and is within 15% of the TAF value in 2024. As discussed in **Section 3.3.1**, the annual operations reported in the FAA TAF database for 2004 do not reflect observable activity levels. Additionally, the FAA TAF shows no growth in operations over the 20-year period, which does not seem reasonable considering the anticipated growth in based aircraft. Therefore, the FAA TAF numbers should be changed to reflect the selected forecast.

3.3.4.3 Military Operations

A review of FAA TAF data showed military operations to be estimated at 450 a year since 1985 except for 1988 when no military operations were reported. Currently, there are no based military aircraft at X21 nor are there expected to be any throughout the planning period. In keeping with the likelihood that some training operations (i.e., touch-and-go's) do occur at the airport, military operations were estimated to remain at the level reported in the TAF. Thus, for each year of the forecast, 450 military operations are included in the selected forecast through 2024.

3.3.4.4 Local–Itinerant Activity Levels

One classification system used by the FAA to describe operations is based upon the distance to or from the subject airport that an aircraft travels. The FAA definitions of these two categories are given below:

- **Local Operations**: Aircraft operating within sight of the airport, which is generally assumed to be within a 20-mile radius.
- **Itinerant Operations**: Any aircraft operation that is not considered a local operation; thus, it can be assumed that the aircraft travels beyond 20 miles from the subject airport. Most often this is an aircraft traveling between two airports.

The majority of operations at the Airport should be classified as local operations, mainly due to the high level of training activities, which are often referred to as touch-and-go operations. A touch-and-go maneuver is actually counted as two operations–one landing and one takeoff. Due to the observed level of touch-and-go operations, it was thus assumed that local activity accounts for 70% and itinerant activity accounts for 30% of the annual operations for 2004. These percentages are assumed to stay constant throughout the planning period because of the recreational nature of operations at X21. The results of these calculations are given in **Table 3-9**.

TABLE 3-9
PROJECTED LOCAL–ITINERANT GA ACTIVITY LEVELS

YEAR	LOCAL GA		ITINERANT GA		TOTAL GA
Base Year					
2003	*17,185*	*70%*	*7,365*	*30%*	*24,550*
Forecasts					
2008	19,810	70%	8,490	30%	24,550
2013	22,960	70%	9,840	30%	28,300
2018	27,160	70%	11,640	30%	32,800
2023	32,410	70%	13,890	30%	38,800

Source: AVCON, Inc., Analysis, 2005.

Similarly, military operations were also broken out into local and itinerant activity. It is assumed that military users will be coming from and returning to another airport to conduct limited touch-and-go operations at the airport. Thus, the majority of the military operations, except for the initial landing and the last takeoff, should be considered local operations. Therefore, for each year of the planning period, it was estimated that 80% of all military operations will be local operations and 20% will be itinerant, as shown by the breakout given below:

Local Military:	360
Itinerant Military:	90
Total Military:	450

3.3.5 Peak Hour Activity

It is generally accepted that adequate airport facilities should be planned and provided to accommodate the demand for a peak period. At airports, this peak period is defined as the peak hour of an average day during the peak month as described in FAA AC 150/5300-13 *Airport Design*. If reliable activity counts are available, the peak month is determined from those records. However, for X21, no monthly operational activity records exist. Therefore, the peak activity for this analysis is determined based upon observations at the airport and from experience from other similar airports.

The peak month was estimated to be 10% of the annual operations. Normal practice is to assume the peak month has 30 days. Thus, the average day of the peak month is determined by dividing the peak monthly operations by 30. This assumes that operations are evenly distributed throughout the month. For the peak hour an assumption was made that 15% of the average day of the peak month operations would occur during that peak hour. The results of this peaking analysis are presented in **Table 3-10**.

TABLE 3-10
PEAK HOUR OPERATIONS ANALYSIS

YEAR	ANNUAL OPERATIONS	PEAK MONTH	AVERAGE DAY	PEAK HOUR
Base Year				
2004	*25,000*	*2,500*	*83*	*12*
Forecasts				
2009	28,750	2,875	96	14
2014	33,250	3,325	111	17
2019	39,250	3,925	131	20
2024	46,750	4,675	156	23

Source: AVCON, Inc., Analysis, 2005.

3.4 SUMMARY OF FORECASTS

For ease of reference, the aviation activity forecasts discussed in this chapter are summarized in **Table 3-11**. These projections will be utilized in future study phases to determine what improvements are needed at the airport to meet this demand. Additionally, the timing of any needed developments will be estimated based upon these forecasts.

TABLE 3-11
SUMMARY OF FORECASTS

YEAR	ANNUAL OPERATIONS								BASED AIRCRAFT
	LOCAL GA	ITINERANT GA	TOTAL GA	LOCAL MILITARY	ITINERANT MILITARY	TOTAL MILITARY	TOTAL ANNUAL OPERATIONS	PEAK HOUR	
Base Year									
2004	*17,185*	*7,365*	*24,550*	*360*	*90*	*450*	*25,000*	*12*	*100*
Forecasts									
2009	19,810	8,490	28,300	360	90	450	28,750	14	115
2014	22,960	9,840	32,800	360	90	450	33,250	17	133
2019	27,160	11,640	38,800	360	90	450	39,250	20	157
2024	32,410	13,890	46,300	360	90	450	46,750	23	187
20-year CAGR	3.22%	3.22%	3.22%	0.00%	0.00%	0.00%	3.18%	3.31%	3.18%

Note: CAGR = Compounded Average Annual Growth Rate
Source: AVCON, Inc., Analysis, 2005.

CHAPTER 4
FACILITY REQUIREMENTS

4.1 INTRODUCTION

This phase of the master plan focuses on the identification of future facility requirements for Arthur Dunn Airpark. These facility requirements cover both the airfield and landside needs based upon the projected aviation demand presented in Chapter Three, Aviation Activity Forecasts. Standard planning practices have been utilized in the facility analysis. For example, the FAA has developed methodologies for projecting future facility needs at general aviation (GA) airports in FAA Advisory Circulars (AC) 150/5300-13, *Airport Design*, and AC 150/5060-5, *Airport Capacity and Delay*. References will be provided throughout this chapter noting the source for methods utilized. Additionally, for those facilities that were noted as being in fair or poor condition in the inventory, a cursory assessment of recommended improvements will be documented.

This facility requirement analysis documents the minimum facility need; however, as decisions are made to move forward with the design for such facilities, the space requirements may need to be adjusted based upon the actual demand at that time or as determined by general business decisions. While some of these facility requirements are associated with a certain year related to the activity forecasts, the actual development should not be undertaken until the aviation demand justifying the development actually materializes. Development alternatives to meet or exceed the identified facility requirements will be evaluated in the next study phase, the Alternatives Analysis.

4.2 DESIGN AIRCRAFT

Airports must have an aircraft that is designated as the design aircraft to determine the development criteria for future airport and airfield improvements. An airport's design aircraft is one with the fastest approach speed and the largest wingspan that has at least 500 operations on the airfield every year. The design aircraft is used to determine the appropriate Airport Reference Code (ARC) for the airport. The ARC is written as an alphanumeric designation based upon the Aircraft Approach Category (AAC) and the Airplane Design Group (ADG) of the critical aircraft.

Table 4-1 provides the criteria for these classifications. The FAA design standards include the special case for

"Group I – Small Aircraft Only." This classification applies when the Maximum Takeoff Weight MTOW of users does not exceed 12,500 pounds.

TABLE 4-1
FAA AIRCRAFT CLASSIFICATIONS

Aircraft Approach Category

Category	Approach Speed (knots)
A	< 91
B	91 but < 121
C	121 but <141
D	141 but < 166
E	> 166

Airplane Design Groups

Design Group	Wingspan (feet)
I	< 49
II	49 but < 79
III	79 but < 118
IV	118 but < 171
V	171 but < 214
VI	214 but < 262

Source: FAA AC 150/5300-13, Airport Design.

Currently, Skydive Center operates a King Air B-90 which is a B-II aircraft based on an approach speed of 100 knots and a wind span of 50.2 feet. This aircraft is slightly larger than the other aircraft that operate at Arthur Dunn Airpark. Although the Airport could be designated a B-II airport because of the King Air activity, a management decision was made to designate the Airport as B-I – Small Aircraft Only. Several factors support this decision, including:

- The wingspan of the King Air B-90 only exceeds Group I criteria by approximately one foot.
- In the past, Group I Small Aircraft Only, has served as the design standard.

- The existing runway length is not sufficient to support operations by many aircraft models exceeding a B-I Small Aircraft Only, classification.
- The recreational use nature of the airport.

4.3 AIRFIELD CAPACITY

It is important to determine how an airfield is being used before enhancements to the current layout are made. An airfield capacity analysis is used to determine what percentage of the airfield's theoretical capacity is being used and to determine what delays might develop given the airfield's calculated capacity. The FAA provides a methodology to find the maximum annual theoretical capacity of an airfield in AC 150/5060-5.

There are many criteria that affect an airfield's capacity including:

- **Runway Configuration:** The number and alignment of runways at an airport is the greatest contributor to operational capacity. Generally, as the number of runways increases, so does the annual operational capacity.
- **Taxiway Configuration:** Aircraft enter and exit the runway from taxiways. If taxiways are spaced in optimum locations along the runway, arriving aircraft can exit the runway quicker allowing another aircraft to arrive or depart thereby increasing the overall capacity.
- **Aircraft Fleet Mix:** Pilots are required for safety reasons to maintain set distances from other aircraft during flight. These separations are based upon aircraft size, speed, number of engines, and the wake turbulence produced. Generally, these wake turbulence forces are larger for jet aircraft and increase as aircraft weight increases.
- **Percentage of Aircraft Arrivals:** Arriving aircraft generally occupy a runway for a longer period of time than for departing operations. Thus, if the percent of arrivals during the peak period is over 50%, then the hourly capacity will be lower than if arrivals equaled departures.
- **Percentage of Touch-and-Go Activity:** A touch-and-go operation consists of an aircraft landing and then powering up and taking off immediately. This type of operation takes less time than a single landing with the aircraft leaving the runway or coming to a complete stop followed by an aircraft departure. A high volume of touch-and-go activity will increase the hourly runway capacity.
- **Meteorological Conditions:** During periods of reduced visibility or a lowered cloud ceiling, aircraft maintain a greater distance from each other for increased safety.

4.3.1 Annual Airfield Capacity

The annual airfield capacity is referred to as the Annual Service Volume (ASV) and is reported in units of operations per year. The *Capacity* AC includes several methods of determining the ASV. Given the operational characteristics at Arthur Dunn Airpark, the ASV was determined from Table 2.1 in FAA AC 5060-5, by selecting the appropriate runway use diagram. Using this method, the ASV was determined to be 230,000 operations per year for Arthur Dunn Airpark's current layout given the current aircraft fleet mix, as presented in **Table 4-2**.

TABLE 4-2
RUNWAY USE DIAGRAM

Runway Configuration	Mix Index	Hourly Capacity (Ops/Hr)		Annual Service Volume
	%(C+3D)	VFR	IFR	Ops/Yr
	0 to 20	98	59	230,000
	21 to 50	77	57	200,000
	51 to 80	77	56	215,000
	81 to 120	76	59	225,000
	121 to 180	72	60	265,000

Source: FAA, AC 150/5060-5, Airport Capacity and Delay 1994.

4.3.2 Percent Capacity Assessment

The forecast annual demand divided into the ASV yields a Percent Capacity seen in **Table 4-3**. The Percent Capacity is a measure of the demand on the airfield versus the total capacity the airfield can theoretically accommodate. This determines the amount of delay that aircraft would likely encounter at the airport. The amount of delay is taken from Figure 2-2 in AC 150/5060-5. At the current capacity of 10.9 percent, the average delay is less than 15 seconds, and even in 2024 when the percent capacity is equal to 20.3 percent, the expected delay does not exceed 15 seconds. Currently the Percent Capacity is too low to justify any enhancements to increase capacity because very little or no delay exists or is projected to occur through 2024 on the airfield.

4.4 AIRSPACE

Arthur Dunn Airpark currently has GPS approaches into both ends of Runway 15-33. The current approach minimums are high, 720 feet for Runway 15 and 800 feet for Runway 33, with visibility minimums of one mile or greater. Airport management has expressed a desire to lower these minimums to less than one mile but greater than ¾ mile. To have the approach minimums lowered an updated aeronautical survey (i.e., Area Navigation Approach Survey (ANAPC)) may be required. The ANAPC would identify heights of structures that could prevent the approach minimums from being lowered. The ANAPC survey covers precision, conventional landing, including approach, primary, transition, and missed approach surfaces. Several towers to the southeast and southwest of the airfield are noted on the approach plates for Runway 15-33. These towers may prevent lowering the approach minimums.

TABLE 4-3
AIRFIELD CAPACITY ANALYSIS

Year	Forecast Annual Demand	Annual Service Volume	Percent Capacity
2004	25,000	230,000	10.9%
2009	28,750	230,000	12.5%
2014	33,250	230,000	14.5%
2019	39,250	230,000	17.1%
2024	46,750	230,000	20.3%

Note: Capacity given in operations per year.
Source: AVCON, INC., 2005.

As discussed in the Inventory, a variety of airspace uses exist around the Airport. At times, airport users are required to coordinate via radio with air traffic control towers at Space Coast Regional Airport, Orlando International Airport, or Cape Canaveral Air Station. Even with the somewhat crowded airspace, no airspace conflicts have been reported. Only when NASA has a launch from their facilities at Cape Canaveral or Kennedy Space Center does Arthur Dunn, as well as any other airport in the area, have to periodically limit operations.

4.5 RUNWAY REQUIREMENTS

FDOT and the FAA have set design standards for runways. These standards are summarized in **Table 4-4**. Additionally, the current runway orientations do not provide the required necessary 95 percent wind coverage individually. Combined together, the wind coverage for Runways 15-33 and 4-22 exceeds the required 95 percent under all-weather conditions. Therefore, both runways are needed to support the existing and future aircraft operations.

4.5.1 Runway Length Analysis

A runway length analysis is conducted to determine if the current runway length is suitable for the aircraft type that it is currently serving or is anticipated to serve throughout the planning period. FAA AC 150/5325-4B provides insight into the required runway length and provides details on how to perform a runway length analysis. According to this guidance and the operational characteristics at Arthur Dunn, an analysis was performed using the FAA's computer program, *Airport Design for Microcomputers, Version 4.2d.* The conditions requested by the program include Airport elevation (30 feet), mean daily maximum temperature of hottest month (91°F), maximum difference in runway centerline elevation (6 feet), condition of the runway (wet and slippery), and the length of haul for airplanes of more than 60,000 pounds (500 miles). This last criterion does not apply to Arthur Dunn Airpark because it does not serve nor is it capable of servicing aircraft of that weight. **Table 4-5** on the next page shows the results of this analysis. The minimum recommended runway length at Arthur Dunn Airpark for planning purposes is 3,090 feet, which will serve 95 percent of small aircraft.

4.5.2 Runway 15-33

As noted in the Inventory, Runway 15-33 has a current runway length of 3,014 feet. This is only 74 feet less than the recommended runway length as determined by the *Airport Design* software. Because the difference between the recommended distance resulting from the FAA program and the existing length is minimal and since the program takes into account many extreme conditions, a lengthening of Runway 15-33 is not recommended at this time based solely on the runway length analysis.

However, as noted in the Inventory, the Runway 33 arrival threshold is displaced by 487 feet from the runway pavement end. This displacement is necessary to clear the perimeter fence to the southeast. The fence borders property currently not owned by the Airport Authority. Airport management has expressed a desire to relocate the arrival threshold to the pavement end. To do so the Airport Authority would need to acquire the parcel of land to the south of Runway 33. This land will be needed to maintain the proper clearance on approach as well as to provide the appropriate RSA, OFA, and OFZ prior to the arrival threshold. Runway 15-33 has non-precision approaches to each runway end; however, the pavement is only painted with visual runway markings.

These markings should be updated to include threshold markings and aiming point markings at both runway ends. If the GPS approach visibility minimums are lowered below a visibility of one mile, FAA standards recommend that runways be identified with precision markings. In addition to the items above, these would also include side stripes and touchdown zone markings. Another FAA recommendation for implementing an approach below one-mile visibility is the addition of an approach lighting system.

4.5.3 Runway 4-22

Runway 4-22 meets all the operational requirements set forth by the FAA in **Table 4-4**. However, FDOT standards per FAC 14-60 requires that a runway for ultralight activity be at least 150 feet wide and that effective landing area length of a runway be at least 2,400 feet. Runway 4-22 is used by ultralight aircraft as well as others.

Therefore, consideration should be given to lengthening and widening the runway to meet the FDOT standards. The Alternative Analysis will evaluate options to provide this longer runway length.

4.5.4 Pavement Condition

No improvements are necessary in the short-term to upgrade the current pavement of Runway 15-33 which is currently in good condition. It is recommended, however, that continuing maintenance be completed to maintain the runway's condition over the planning period. In addition to the new required markings, other markings require routine maintenance so that they remain highly visible.

4.6 TAXILANE REQUIREMENTS

There are some issues involving the minimum separation of T-Hangars at Arthur Dunn Airpark. The FAA required minimum Taxilane Object Free Area Width is a 79-foot separation. Numerous T-Hangars are spaced below the 79-foot minimum. Airport management should be advised that when these T-Hangars are replaced that the new buildings should meet or exceed these requirements. It should also be noted that the apron located at the southeastern end of the airfield where aircraft are tied down comes within close proximity with the airport perimeter fence.

4.7 HANGAR AND APRON DEMAND

As the number of based aircraft at Arthur Dunn Airpark grows, so must the facilities to house and store these aircraft. With the projected growth at Arthur Dunn, it will be necessary to increase the quantity of T-Hangars and box-style hangars to match the projected airport growth. Currently there are nine rows of T-Hangars that house 89 units. In addition to the T-Hangars there is one box hangar, as well as two corporate hangars leased to Skydive Center.

4.7.1 T-Hangars and Box Hangars

Aircraft owners generally prefer hangars for aircraft storage because it provides an area to conduct routine maintenance and to store various parts. Additionally, storing the aircraft inside, out of the Florida sun, can prolong the useful life of tires, paint, etc. The number of required hangars is determined by the number and type of based aircraft at the airport. T-Hangars house most single-engine and sport category aircraft while larger box hangars are required for light twin-engine aircraft. To house only a single-engine or small multi-engine aircraft T-Hangars and box hangars require approximately 1,200 square feet based on an area of wingspan and aircraft length. The current facilities will not be able to meet future demands for hangars according to **Table 4-7.**

TABLE 4-4
RUNWAY DESIGN STANDARDS

Design Parameter	Runway 15-33	Runway 4-22 (Unpaved)
Width	60'	60' (FAA) / 150' (FDOT)
Shoulder Width	10'	-
Pavement Grades	Maximum Longitudinal: ±2% Transverse: ± 1 to 2%	
Runway Safety Area Width	120'	
Runway Safety Area Length	Prior to Landing Threshold: 240' Beyond Runway End: 240'	
Obstacle Free Zone Width	250'	120'
Design Parameter	**Runway 15-33**	**Runway 4-22 (Unpaved)**
Obstacle Free Zone Length (Beyond R/W Threshold)	200'	
Object Free Area Width	250'	
Object Free Area Length Beyond Runway End	240'	
Exisitng Runway Protection Zone Dimensions	Dimensions: 1,000' x 250' x 450' Acreage: 48.978	Dimensions: 1,000' x 250' x 450' Acreage: 8.035
Runway Centerline Separation Distance From:		
Hold Line (Visual or Nonprecision approach)	125'	
Taxiway/Taxilane Centerline	150'	
Aircraft Parking Area	125'	

Note: Runway Protection Zone dimensions given as "Length x Inner Width x Outer Width."
: FAA, AC 150/5300-13, Airport Design, 2005. FDOT, FAC14-60, 2005.

TABLE 4-5
RUNWAY LENGTH ANALYSIS

Runway Length Criteria	Value Used
Airport Elevation	30 ft
Mean Daily Maximum Temperature of the Hottest Month	91°F
Maximum Difference in Runway Centerline Elevation	6 ft
Average Stage Length	500 miles
Runway Conditions	Wet and Slippery
Aircraft Description	**Runway Length**
Small airplanes with approach speeds of less than 30 knots	300 ft
Small airplanes with approach speeds of less than 50 knots	800 ft
Small airplanes with less than 10 passenger seats:	
75% of these small airplanes	2,520 ft
95% of these small airplanes	**3,090 ft**
100% of these small airplanes	3,660 ft

Note: Small airplanes have weights less than 12,500 pounds, whereas large aircraft exceed this weight.
Source: Chapter 2, AC 150/5325-4A, Change 1, Runway Length Requirements for Airport Design.

TABLE 4-6
TAXIWAY DESIGN STANDARDS

Design Parameter	Dimensions
Width	25'
Taxiway Safety Area Width	49'
Taxiway Object Free Area Width	89'
Taxilane Object Free Area Width	79'

Source: FAA, AC 150/5300-13, Airport Design, 2005

TABLE 4-7
HANGAR DEMAND ANALYSIS

Year	T- and Box Hangars			Corporate		
	Existing	Future	Additional	Existing	Future	Additional
2004	90	90	0	2	2	0
2009		105	15		4	2
2014		121	31		5	3
2019		143	53		6	4
2024		170	80		8	6

Note: To determine the additional hangars needed subtract the "Existing Quantity" from the projected annual demand.
Source: AVCON, INC., 2005.

4.7.2 Corporate Hangars

With a change in the amount of aircraft activity, a growth in diversity of the aircraft using Arthur Dunn Airpark can also be expected. Growth in not only single-engine, but multi-engine, sport category, and the possibility of microjets based at the airport is anticipated. Corporate hangars are more likely to be used to house larger multi-engine aircraft and microjets. The corporate hangars provided by FBOs will allow for the owners of these aircraft to have a safe place to store and service their aircraft. With a 500 square feet office area and room to store a microjet the corporate hangars should be at minimum 2,500 square feet in area.

4.7.3 Apron

Both based and transient users park aircraft on the apron. As previously noted most based users at Arthur Dunn prefer to store their aircraft in hangars. In addition, transient users typically conduct touch-and-go's and do not use the apron often.

An assessment of future apron use was conducted assuming 300 square yards for each based aircraft and 360 square yards for each transient aircraft.

In **Table 4-8** there is no need for additional apron based on just projected apron capacity; however, additional apron area could be needed if based on business decisions. For example, should a full-service FBO or restaurant locate at Arthur Dunn, transient users would be more enticed to stop for long periods, which could require additional apron.

Another reason which might necessitate additional apron would be expansions into other airfield quadrants. The current aprons provide a combined area of approximately 11,400 square yards, with tiedowns available for 22 aircraft.

TABLE 4-8
APRON REQUIREMENTS

Year	Itinerant Aircraft Apron	Based Aircraft Apron	Total Apron Needed	Current Apron	Apron Needed
2004	2,520	1,500	4,020	9,763	-5,743
2009	3,240	1,800	5,040		-4,723
2014	3,600	2,100	5,700		-4,063
2019	4,320	2,400	6,720		-3,043
2024	5,040	2,700	7,740		-2,023

Note: All measurements given in square yards.
Source: AVCON, INC., 2005

4.8 SUPPORT FACILITIES

With the projected growth in activity at Arthur Dunn Airpark, other facilities can be expected to grow as well. In addition to the development of new hangars, physical expansion of the FBO and the addition of other services they provide are necessary.

4.8.1 Fixed-Based Operator

As mentioned in Chapter Two, the current limited FBO at Arthur Dunn Airpark is operated by Skydive Center. Current services are limited and the number of

transient aircraft that use the facility is minimal. A full-service FBO would be suitable to handle future demand. With the introduction of more based aircraft, many of which could be housed in a corporate FBO hangar, it becomes more financially feasible to support an FBO that provides many more services. Services that aircraft owners might request include preparation of their aircraft for flight (fueling, catering, etc...), light maintenance, washing of aircraft, avionics repair, and other services. FBO facilities should be substantially improved over the forecast period to meet user's demands. This case is especially true for corporations that might base their aircraft at the FBO or for microjet operators. The current FBO building is in poor condition and will need to grow physically into the forecast years as seen in **Table 4-9**. The required square footage for the FBO takes into account the peak hour of the day when most pilots and passengers would likely be in the FBO's terminal. In addition to the space required for the pilots and passenger using the FBO, office space must be taken into consideration for the employees of the FBO. Therefore, it is recommended that possible options be evaluated to provide additional FBO space.

This will ensure that adequate space is reserved should a FBO decide to expand the services available at the Airport.

4.8.2 Fuel Farm

The current fuel farm, located on Skydive Space Center's apron is suitable for current and future operations. The spare 5,000-gallon tank can be used for either AvGas or Jet A depending on the demand for either of the fuels. Currently the ability to purchase Jet A is limited to the hours the FBO operates. Turboprop and jet operators may require fueling services beyond the hours the FBO operates. Extending the FBO's operating hours or making fueling services on call after hours may be necessary.

TABLE 4-9
FBO SQUARE FOOTAGE REQUIREMENTS

Year	Total GA/Military Operations	Peak Hour GA Operations	Peak Hour Itinerant Operations	Peak Hour GA Pilots & Passengers	Total FBO Requirement (square feet)	Existing FBO Area (sf)	Additional Space Required (sf)
2004	25,000	13	4	8	1,154	1,440	-286
2009	28,704	15	4	9	1,325		-115
2014	32,957	17	5	10	1,521		81
2019	39,147	20	6	12	1,807		367
2024	46,499	24	7	14	2,146		706

Source: AVCON, INC., 2005.

4.9 VEHICULAR REQUIREMENTS

Another area of concern for airports is providing adequate access to vehicles. Proper planning must be provided to ensure that there is sufficient access to the airport via outside roadways, suitable parking at the airport, and internal airport roadways to provide access to necessary facilities. Without these necessary infrastructure elements, an airport will not operate efficiently.

4.9.1 Vehicle Parking

To accommodate for the increase in airport activity over the next 20 years, the amount of vehicle parking must be increased. The current facilities often overflow into separate lots during the peak hours of skydiving activity leaving little or no room for those who will be using the FBO's facilities. With the projected increase in based aircraft and flight activity, parking for those using the facilities must be increased. The current parking situation is suitable for the FBO's projected operations, but does not satisfy the needs of the FBO and the users of Skydive Center combined. If the FBO expands to a new facility, additional parking should be located with the building. T-Hangar and box hangar parking accessed via a vehicular gate should continue as is. This will allow tenants to park at their individual hangar and not require the airport to build a separate parking lot for these users. Additionally, adequate parking should be provided at other new facilities constructed at Arthur Dunn.

4.9.2 Local Road System

The roads that provide access to the airport mentioned in Chapter Two are sufficient and should continue to serve the airport into the future. Access to Interstate 95 can be made via S.R. 406 which intersects the roads leading to the airport. However, it should be noted that the eastside of the Airport is accessible only through residential streets. If a larger FBO wishes to operate on this side of the airfield, renovations to the current road system should be taken into considerations to handle any increase in traffic. The type and amount of traffic traveling on these roads to use the airport and its facilities is not expected to grow drastically, but improving the roadways should be considered to provide more direct access routes.

4.10 LAND USE AND ZONING

Land use near airports is of vital concern in most communities throughout the country, due to various safety issues as well as the noise generated from aircraft. Additionally, developments have continued to encroach upon airports as communities have grown thereby limiting aviation-related development options.

This is the case at Arthur Dunn. Both federal and state regulations have been enacted to address the issue of having compatible land uses near airports. The following sections summarize the federal and state requirements and then present an assessment of the compliance of Brevard County and the City of Titusville with these requirements.

4.10.1 Federal Requirements

The FAA is the federal agency responsible for enacting regulations and requirements outlining the details of items contained in federal statutes relating to land use and zoning near airports. FAA regulations and standards place the responsibility for land use compatibility and zoning upon the airport owner/operator.

The following list describes the various federal requirements:

- **Code of Federal Regulations, Title 14, Chapter 1, Part 77, *Objects Affecting Navigable Airspace*:** This federal regulation governs airspace surrounding airports. It prescribes vertical clearance requirements for the existing and future approach procedures to the Airport. This section of the federal code also describes obstruction standards related to airports and heliports. Subparts B and D discuss requirements to provide notice of construction to the FAA, which then initiates an aeronautical study.
- **FAA Order 5190-6A, *Airports Compliance Handbook*:** This document covers a variety of compliance issues related to land use compatibility near airports. Specifically, Sections 4-9 and 4-10 summarize the need to comply with Part 77 requirements and how zoning ordinances can help communities address land use near airports.
- **FAA AC 70/7460-2K, *Proposed Construction or Alteration of Objects that May Affect the Navigable Airspace*:** Construction involving objects greater than 200 feet in height above ground level or that are located near or on an airport require a notification to be sent to the FAA. This notification should be done at least 30 days prior to construction. FAA Form 7460-1, *Notice of Proposed Construction or Alteration*, is the standard notification form that should be used. The FAA will then make a determination as to whether the object will be a hazard to navigation. Additionally, this airspace review may be required at the request of the FAA. Those who willfully and knowingly do not comply with this notification process can be subject to civil penalties.
- **FAA AC 150/5190-4A, *Model Zoning Ordinance*:** This FAA guidance material presents a standard local zoning ordinance to address height limitations of objects located near airports. This standard incorporates airspace requirements from 14 CFR Part 77.
- **FAA AC 150/5200-33A, *Hazardous Wildlife Attractants on or near Airports*:** For those airports that have received federal grant-in-aid assistance, developments must comply with the standards set forth in this advisory circular. This document describes several key wildlife attractant developments including, but not limited to: solid waste landfills, wetlands, stormwater management ponds, wastewater treatment plants, golf courses, and agricultural production. Criteria include no wildlife attractants within 10,000 feet of the airport's aircraft operations area for turboprop and turbojet operations and 5,000 feet for piston driven aircraft operations. Furthermore, it is recommended that these types of developments be located a distance greater than five miles from the airport's aircraft operations area. Additional guidance

regarding the location of landfills specifically is provided by FAA AC 150/5200-34, *Construction or Establishment of Landfills Near Public Airports*. This guidance should be considered by the County in their approval of any future landfills.

- **FAA Airport Improvement Program (AIP) Grant Assurances 20 & 21:** Any airport owner that has received federal funds through the AIP grant program has to comply with multiple assurances that are made a part of the grant agreement. Grant assurance 20 requires that the airport owner prevent future hazards from being established thru zoning enforcement. Grant assurance 21 requires the airport owner to exercise control to the greatest extent possible regarding nearby land use compatibility. Arthur Dunn Airpark has received federal grant funds in past years and is therefore subject to these requirements.

4.10.2 State Requirements

The State of Florida has adopted various laws and administrative regulations addressing airport operations. Some of these include sections related to zoning and land use near airports. Brief synopses of these related state regulations are given in the following:

- **Florida Title XI, Chapter 163, *County Organization and Intergovernmental Relations*:** This statute discusses local comprehensive plan requirements related to airports. Section 163.3177 notes that an aviation element may be included in the circulation element or as a separate element altogether. Additionally, this same section states that an airport master plan may be incorporated into a comprehensive plan by reference through the plan amendment process. The aviation element should address airport zoning requirements from Florida Statute Section 333. Furthermore, land use decisions should take into account aviation activity. Florida Administrative Code, Chapter 9J-5 covers comprehensive plans in further detail.
- **Florida Title XXV, Chapter 330, *Regulation of Aircraft, Pilots, and Airports*:** This chapter of state law gives the Department of Transportation (DOT) authority to license and inspect airports. Paragraph 2 of Section 330.35 gives airports zoning protection according to criteria in Chapter 333. The DOT has full zoning control of state-owned airports.
- **Florida Statute 333, *Airport Zoning*:** Section 333.03 requires local governments to enact and enforce appropriate zoning ordinances to address an airport hazard area, which includes any area as defined by Title 14 CFR Part 77 regulations. Landfills are limited to areas as discussed in FAA AC 150/5222-33A. Paragraph (2) (d) of Section 333.03 requires that schools and residential uses be located further than one-half the length of the longest runway from the sides and end of each runway. Furthermore, educational facilities cannot be located along the direct arrival path to each runway end for a distance of five miles and having a width equal to one-half the runway length. Other sections address the need to prevent further incompatible land uses within airport safety clearance zones.
- **Florida Administrative Code (FAC) Chapter 14-60, *Airport Licensing, Registration, and Airspace Protection*:** In general, this section of the FAC provides more detailed explanations of aviation-related state statutes as well as providing minimum design standards for airports. Paragraph (2) Section 14-60.007 makes the compliance with 14 CFR Part 77 a requirement for state airport licenses. Paragraph (8) of this same section requires that all objects determined to be airport hazards by FDOT to be removed. Section 14-60.009 requires objects located within 10 miles of an airport and exceeding Part 77 height restrictions to be permitted by FDOT. Additionally, this section also states that obstructions should be marked and lighted.

4.10.3 Zoning Compliance Review

Arthur Dunn Airpark is located within both the City of Titusville and Brevard County. As such, both the City and County should maintain appropriate zoning related to land uses near the airport as summarized in the two previous sections. Copies of both governments' code were reviewed from the Municipal Code Corporation's website, which serves as an electronic repository for city and county code of ordinances across the U.S. **Table 4-10** provides a summary of whether or not the codes of Brevard County and the City of Titusville comply with the aforementioned state and federal zoning and land use requirements. Both of these governing bodies should work to amend the codes for any items not currently found to be in compliance. The

Comprehensive Plan of Brevard County does not go into specifics regarding future plans for the airports within the County. The plan does, however, make mention that the County will support all plans that provide improvements to airport facilities as long as they are environmentally and economically sound.

4.11 SUMMARY

This chapter identified improvements necessary for Arthur Dunn Airpark throughout the planning period. **Table 4-11** presents a summarized table of these identified improvements. The next chapter, Planning Alternatives, will address the different alternatives to accomplish these improvements.

TABLE 4-10
LOCAL ZONING REQUIREMENT COMPLIANCE REVIEW

Regulation Description	Zoning/Land Use Requirements	Does County Code Comply?	Does City Code Comply?
Federal Statutes/FAA Regulations and Advisory Materials			
14 CFR Part 77, FAA Order 5190-6A, FAA AC 150/5190-4A	Sets forth the criteria for the determination of an airspace obstruction	Yes	Yes
14 CFR Part 77, FAA AC 70/7460-2K, FAA AC 150/5190-4A	Requires the notification of the FAA prior to construction on airports or of tall objects near airports	Yes	No Should be added.
FAA AC 150/5222-33A	Requires developments that are wildlife attractants, such as landfills, to be located a certain distance from airports	No Should be added.	No Should be added.
AIP Grant Assurance 21, FAA Order 5190-6A	Enforces appropriate land use control measures	Yes	Yes
State Statutes/Administrative Code			
FS Chapter 163, FS Chapter 332	Addresses aviation elements that can be incorporated in a county's comprehensive plan	Comprehensive plan addresses no specific aviation issues.	Not Applicable
FS Chapter 333	Location of landfills and educational facilities	No Should be given.	No Specific distances are not given.
FS Chapter 333, FAC 14-60	Sets forth height requirements and restrictions as well as requirements for FDOT obstruction permits	No Needs FDOT permit prior to construction.	No Needs FDOT permit prior to construction.
FS Chapter 333	Sets forth appropriate land use classifications near airports	No Specific uses not given.	No Specific uses not given.

Note: FAC=Florida Administrative Code; FS=Florida Statute.
Source: AVCON, INC., 2005.

TABLE 4-11
FACILITY REQUIREMENT SUMMARY

Facility Category	Improvement Needed	Reason for Improvement (Safety, Standards, Capacity, or Other)
Airspace	Implement GPS approaches	Capacity
Runway	Remove displaced threshold at Runway 15-33 (Requires Land Acquisition)	Safety
	Update runway 15-33 markings to at least nonprecision standards	Standards
	Increase Runway 4-22 length to 2,400 feet	Standards
	Increase Runway 4-22 width to 150 feet	Standards
	Perform necessary, periodic pavement maintenance	Safety
Taxiway	Purchase land at approach of Runway 33 to fence line from penetrating Taxiway A Object Free Area	Safety & Standards
Taxilane	Construct new T-Hangars at least 79-feet apart	Standards
Hangars	Increase T-Hangars and other hangars to meet the projected demand	Capacity
FBO	Either construct new or further expand current FBO facility, as needed	Capacity
	Expand services of FBO, as needed	Other
Vehicle Parking	Create additional parking for users of the FBO and other airport facilities	Capacity
Vehicular Access	Improve roadways providing more direct access as needed	Other
Zoning Recommendations	Revise County and City Codes to meet federal and state zoning requirements	Other

Source: AVCON, INC., 2005.

CHAPTER 5
AIRPORT IMPROVEMENTS

5.1 INTRODUCTION

The goal of the Airport Improvements chapter is to identify solutions to the deficiencies and needs discussed in the previous chapter, Facility Requirements. The expansion and development of both landside and airside facilities at Arthur Dunn Airpark (X21) are addressed in this chapter. Various standards from the Federal Aviation Administration (FAA) and the Florida Department of Transportation (FDOT) were used in determining the airside development concepts.

Landside development options rely on analysis from the consultant, local codes and standards, and information provided by airport management to determine the direction of landside developments. Four possible alternatives for the landside facilities were developed. These concepts look into the possibilities for the layout of an FBO, corporate hangars, and T-Hangars. A selected development plan was chosen based on input from airport management, a technical advisory group, and the general public.

5.2 AIRSPACE

One of the major components affecting the successful growth of X21 is the airspace that surrounds the airport. The airspace affects many items such as the approach types and minimums for runways and the type of operations, which will occur at the airport. As previously mentioned in Chapter 4, an Area Navigation Approach Survey (ANAPC) studies the surrounding airspace and is required to lower the runway approach minima.

5.2.1 Runway 15-33

It is the goal of airport management to have the approach minimum lowered for both of the GPS approaches to Runway 15 and 33. Currently the visibility minimum is set at 1 mile for both ends whereas the ceilings are designated 630 feet and 710 feet, respectively. Future minimums could go as low as a ¾-mile visibility with a cloud ceiling height of 350 feet. By lowering the approach minima, a pilot would be able to make approaches to the airport in lower visibility or lower ceiling conditions. This becomes beneficial in poor weather because the pilot must be lower and closer to the runway to determine if they can complete the approach and land at the airport.

However, decreasing the visibility minimum from 1-mile to ¾-mile would require an important widening and lengthening of the Runway Protection Zone at each runway end. As a result, a significant number of residential parcels would have to be acquired. Additionally, the installation of an Omni Directional Approach Lighting System (ODALS) at each end of the runway would be needed. Yet, the low frequency of occurrences during which the visibility is comprised between ¾-mile and 1-mile does not seem to justify the important cost associated with the implementation of the ODALS and land acquisition. Therefore, it is not recommended that the Airport seek instrument approaches with a ¾-mile minimum at Arthur Dunn Airpark.

With the proposed removal of the displaced threshold at Runway 33, changes must be made within the approach surfaces south of the runway. As a result of the proposed relocation of the threshold back to the end of the runway pavement, objects that originally did not penetrate Part 77 surfaces now do. Trees and other vegetation to the south will penetrate the Runway 15-33 primary surface. Once the land is acquired or an easement is obtained, these penetrations can be removed.

5.2.2 Runway 4-22

Because Runway 4-22 has only visual approaches it is not necessary to lower the approach minimum in the short-term. However, some existing trees penetrate the defined approach surfaces to the actual runway ends; therefore, the approach thresholds are currently displaced. Removal of the trees would allow airport management to remove the displaced thresholds.

5.3 AIRFIELD IMPROVEMENTS

A major factor in improving facilities at an airport relates to making improvements to the airfield. Some airfield deficiencies to FAA and FDOT's standards exist at X21. This discussion presents solutions to bring these characteristics into compliance with FAA and FDOT requirements. However, not all of the needs at X21 as identified in the previous chapter are because facilities do not meet current FAA and FDOT requirements. Rather these needs are to support the future operational changes to X21. In Chapter 4, Facility Requirements, these items were identified and included an assessment of why the improvement is

needed. The following sections present the recommended airfield improvements as shown in **Exhibit 5-1**.

5.3.1 Runway 15-33 Improvements

Because of the existing non-precision GPS approaches for both ends of Runway 15-33, new markings are necessary. The runway currently only has markings required for visual approaches.

TABLE 5-1
REQUIRED THRESHOLD STRIPES

Runway width	Number of stripes
60 feet (18 m)	4
75 feet (23 m)	6
100 feet (30 m)	8
150 feet (45 m)	12
200 feet (60 m)	16

Source: FAA AC 150/5340-1J, *Standards For Airport Markings*

With active non-precision approaches, additional markings, such as threshold markings, are required by FAA standards. Threshold markings provide pilots with enhanced visual reference to the width of the runway, which is used to determine the number of threshold bars needed. **Table 5-1** presents the markings required for each of the runway widths. Runway 15-33 qualifies for four threshold bars because it is less than 75 feet but greater than 60 feet wide. The threshold markings for Runway 15-33 would consist of 150 foot long by 5.75 foot wide white stripes located 20 feet off of the runway threshold. With the addition of the threshold bars the other markings on the runway such as the designation and centerline markings will need to be relocated to meet FAA standards.

As recommended in the Facility Requirements Chapter, the displaced landing and take-off threshold to Runway 33 should be relocated to the actual pavement end. The acquisition or control of land to the south of the Runway 33 approach is necessary so that FAA runway safety area (RSA) requirements can be met. Purchasing this land will allow the relocation of the airport perimeter fence and will provide the necessary RSA. Upon removing the threshold a small section, approximately 125 square yards, of pavement is necessary at the new Runway 33 threshold to square off the runway pavement. Removal of the displaced threshold will allow pilots approximately 500 feet of additional pavement when landing on Runway 33.

5.3.2 Runway 15-33 Runway Protection Zone

Because a future non-precision approach would allow for aircraft operations with lower visibility requirements, a larger RPZ is designated by FAA standards. The RPZ's function is to enhance the protection of people and property on the ground. For this reason, airport management would like to acquire as much of the RPZ as feasible in order that it might fall under their direct control. This action is beneficial to preserving the airspace around the airport and to protect and enhance the approaches to the runways.

While it is not required that the airport own the land within the RPZ, it is important that airport management work with local governments to implement zoning control. A formal easement in lieu of purchase may meet this overall need. The proposed Runway Protection Zone associated with the Ultimate Non-Precision Approach would encompass approximately 28 acres prior to each runway end. These RPZs are designated on **Exhibit 5-1**.

5.3.3 Runway 4-22 Improvements

As noted in the Inventory, both ends of Runway 4-22 are currently displaced due to the height of trees in the approach. The threshold displacements provide the necessary vertical clearance of the defined approach surfaces. These displacements are currently indicated by PVC markers with reflective tape. It is recommended that airport management pursue the removal of these trees so that the existing landing thresholds can be restored to the designated runway ends.

Furthermore, for Runway 4-22 to meet current FDOT standards, the runway dimensions must be increased. A lengthening of 596 feet would bring the runway's total length to 2,400 feet as necessary to meet FDOT minimum standards. The initial concept considered adding the entire 596 feet to the Runway 22 approach end. This concept was deemed unfeasible however, because the future associated parallel taxiway would encroach on the county's animal shelter property. To address this issue, the proposed extension was split by having 346 feet at the Runway 22 approach and 250 feet at the Runway 4 approach. The placement of this extension will also serve as a preparation for the long-term paving of the runway.

FDOT requires that minimum landing area width for a runway that serves sport aircraft be 100 feet wide. In conjunction with the lengthening of the runway, it is recommended that the PVC markers used to designate the runway's edge should be relocated to reflect this runway length.

The total square footage of area that is needed for the expansion of Runway 4-22 is 59,600 square feet of new turf to be maintained for the runway. All of the

expanded area exists within the airport's current property. However, much of the Runway Protection Zones (RPZ) extends beyond the airport's existing property line. It is therefore recommended that airport management pursue either a fee simple purchase of the RPZ area or at minimum acquire easements giving them control over development and natural growth in these areas.

5.3.4 Runway 4-22 Runway Protection Zone

Although it is not considered a need during the planning period, the paving of Runway 4-22 is possible in the very long-range. In addition to the paving of Runway 4-22 beyond the 20-year planning period, improved approaches can also be considered in conjunction with this long-range runway development. It is important for airport management to begin taking steps towards preserving and protecting the airspace around this runway to allow for this future approach. However it is not recommended to implement non-precision approaches and their corresponding RPZ during the 20-year planning period.

5.3.5 Taxiway Improvements

To handle the increase in projected traffic at X21, the development of new taxiways will be necessary. These taxiways will be required to handle an increased load in both based and transient traffic. The taxiways play a very important role in ensuring a smooth flow of traffic to and from the airfield. Also, these taxiway improvements will support developments in other airfield quadrants. All of the new taxiways should be 25 feet wide and designed to meet the FAA requirements for Group B-I, small aircraft only.

5.3.5.1 Runway 15-33 Parallel Taxiway

To assist with the flow of traffic and to provide access to new facilities on the airport, a new parallel taxiway on the west side of Runway 15-33 is needed. This taxiway will run full length with the runway and have several connector taxiways along its length.

5.3.5.2 Runway 4 and Runway 33 Connector Taxiway

This taxiway will connect the approach of Runway 4 and Runway 33 along the southern end of the airfield. This taxiway will be necessary to serve any future developments along the southern end of the airfield. Currently a turf taxiway connects the approach of Runway 4 and the southeastern end of the airfield but a paved taxiway is proposed to handle future traffic needs. The alignment of this taxiway will consider the location of the recently installed AWOS. If absolutely necessary, the AWOS could be relocated at a future date when this taxiway becomes operational.

5.3.5.3 Runway 4-22 Parallel Taxiway

Runway 4-22 does not currently have a parallel taxiway, but to handle the increase in traffic, one is recommended. Located on the north side of Runway 4-22, this taxiway will provide access to future facilities located on the airport. This taxiway will run full length with the expanded 2,400-foot length. Unlike the runway it parallels, the taxiway will be paved.

5.3.5.4 Runway 22 Connector Taxiway

To connect the proposed approach end of Runway 22 to the existing T-Hangars, a short taxiway is necessary. Currently, a turf taxiway connects the T-Hangars with the approach of Runway 22. With the proposed runway extension, no access to the new runway end is available unless this taxiway is built. The new taxiway will be paved.

5.3.5.5 Taxiway A

The current parallel taxiway to Runway 15-33 is designated Taxiway A. As shown in **Exhibit 5-1,** one additional connector to Runway15-33 at its intersection with Taxiway C is proposed. This connection will provide for more efficient airfield circulation.

5.3.5.6 Aircraft Runup Pads

It is recommended that designated runup pads be installed along any paved, parallel taxiways at each runway end. These areas are used by aircraft conducting engine checks before departure. These areas allow for another aircraft to pass on the parallel taxiway while an aircraft is performing a runup. Having these designated areas will allow for efficient airfield circulation, especially during peak times.

5.4 LANDSIDE IMPROVEMENTS

Four different alternatives were developed to assess the possible future landside facilities for X21. The projected growth in traffic and based aircraft will create a demand for facilities that are reflected in these alternatives. Facilities such as an FBO, T-Hangars, road realignments, etc., are taken into consideration. The alternatives take into account the expected future expansion of the airport property as well. Some of the facilities are common among the different alternatives while others differ. The common features will be presented first, followed by brief overviews of each landside concept. These concepts are shown on **Exhibits 5-2** through **5-5**.

5.4.1 Common Features

Each landside alternative considers the airspace and airfield improvements presented under **Sections 5.2**

and **5.3**. In addition, several other common features exist among the alternatives. These include the realignment of roads and a T-Hangar development area south of the airfield.

5.4.1.1 Flake Road Closure

A closure of Flake Road to public traffic is expected because only airport facilities will exist along this road in the future. The road will remain in place and serve as an access road to the airport facilities located along it. Access to the road will be provided by gates located at the north end near the county animal shelter and to the south where the current Flake Road meets Airport Drive. These gates will only be opened by those who are provided access by airport management.

5.4.1.2 South T-Hangar Development Area

To support the growth in the based aircraft over the planning period, development of new T-Hangars is necessary. A proposed area to the south of the current airfield would provide a large area to house two rows of eight, 14-unit T-Hangar structures. This area would provide up to 224 T-Hangar units for based aircraft users to house their aircraft. This amount exceeds the 20-year need forecast, however it is prudent for airport management to begin considering very long-range needs so that they can take steps to ensure land use availability and compatibility.

For aircraft owners, facilities to perform maintenance of their aircraft will be available at the north side of the proposed T-Hangar development. This facility will allow aircraft owners to obtain services for their aircraft that they would not be able to do in their own hangars. Additionally, a wash rack will be located adjacent to the maintenance hangar for aircraft owners to wash their airplanes.

Access to the T-Hangars would come from taxilanes in between and along the outside of the T-Hangars. To access the rest of the airfield, the T-Hangars would connect with the proposed Taxiway E connecting the Runway 33 and Runway 4 approach ends.

Vehicular access to the proposed T-Hangars would come from existing roads at Hilltop Drive and Merry Lane via North Williams Avenue. Although, there is no traffic light at the intersection of Hilltop Lane and Garden Street, this should not pose a problem for those who need to cross Garden Street.

5.4.2 Alternative A

Alternative A as seen in **Exhibit 5-2** features a layout consisting of an FBO located on the western side of the airfield and the existing jump school located at the southeastern end of the airfield.

The proposed FBO consists of a building approximately 20,000-square feet in size and would be located on an apron of approximately 28,950-square yards in size. The apron is accessible to the airfield via connectors to the proposed parallel taxiways to Runways 15-33 and 4-22. There is an additional taxiway parallel to Runway 15-33 that runs from the apron's north end to the approach of Runway 15. As the airport continually grows in the future, land to the southwest would be reserved for further development of the FBO. A new parking lot must also be constructed to support the FBO and its facilities. A parking lot consisting of approximately 50 spaces and covering approximately 2,220-square yards is proposed adjacent to the FBO facility. In addition, there will be a restaurant proposed adjacent to or within the FBO.

To support the growth of business aviation at X21, several new corporate hangars are proposed at the north end of the airport along the taxiway connecting the FBO apron and the approach end of Runway 15. At 60 by 60 feet, these corporate hangars will be able to support larger aircraft or house multiple smaller aircraft. In addition to the hangars, individual apron areas are shown for each corporate hangar.

Because no direct vehicle access currently exists to the area of the proposed FBO and corporate hangars, a new road must be developed. This road will enter at the existing recreation department's entrance and continue directly into the FBO's parking lot. This follows the airport's current access easements. Additionally, the road will have an entrance to the north and provide access to the corporate hangars.

Located at the north end of the airfield would be an airport maintenance facility. This 10,000 square foot structure would house vehicles and tools for the use of the airport maintenance staff. Access would be provided by the current infrastructure in place.

At the southeast end of the airfield, the jump school will consist of the existing building located on the apron. Users of the jump school will be able to access the facility via the N. Williams Avenue extension. Parking for the jump school will consist of a 30 space parking lot approximately 1,300-square yards in total area.

For the skydivers, two drop zones will be available for landing. A drop zone with a 100 foot radius and another with a 300 foot radius are proposed to the north of the jump school. These drop zones are located in between Flake Road and Dixie Avenue. This requires the removal of existing structures in this area.

An expansion of approximately 8,900 square yards to the existing apron is anticipated. Aircraft access to the airfield will be via existing connectors on the apron with Taxiway A.

5.4.3 Alternative B

Shown in **Exhibit 5-3**, Alternative B has the same jump school and corporate hangar layout as Alternative A. However, Alternative B differs from Alternative A on the west side of the airport. The FBO and restaurant are located to the north end of the future apron with airport maintenance located at the south end. Additionally, new T-Hangars and bulk storage hangars are proposed to the east of the existing T-Hangar facilities. A proposed airport maintenance hangar is located along the FBO's apron.

The proposed jump school is located on the existing apron and will use the existing facility. It has an adjacent parking lot that covers approximately 1,300-square yards and has 30 spaces. The apron in this alternative has a planned expansion that is the same as that of Alternative A. Access to the jump school would be provided by Airport Drive and the extension of North Williams Avenue.

The proposed drop zones for the jump school are located directly to the west of jump school. Like Alternative A, there are two drop zones, one with a 100-foot radius and one with a 300-foot radius. The smaller of the two is located closer to the jump school. The 300-foot radius drop zone is located between Runway 15-33 and Runway 4-22 along the existing Taxiway D.

Alternative B features a proposed set of T-Hangars and bulk storage hangars located to the east of the existing T-Hangar facilities. The proposed facilities include 82 new T-Hangar units and 12 new bulk storage hangars. The bulk storage hangars measure 50 by 100 feet and can be used to store multiple aircraft. Access to the hangars will be made via taxilanes that connect the proposed hangars with the existing facilities. A large area is left undeveloped because only 20% of a well area can have an impervious surface. The proposed layout surrounds this well area.

For aircraft owners, facilities to perform maintenance on their aircraft will be available to the west of the T-Hangar development. This facility will allow aircraft owners to perform services their aircraft that they would not be able to do in their own hangars. Additionally, a wash rack will be located adjacent west of the existing T-Hangars for aircraft owners to wash their airplanes.

At the present time, numerous buildings exist where the projected hangars are to be built. As airport management acquires these properties, these buildings would be relocated or removed.

5.4.4 Alternative C

Alternative C features a different approach than that of Alternative A and B to the layout of the proposed facilities for X21. Presented in **Exhibit 5-4**, the proposed FBO is located on the southeastern side of the airfield while the proposed jump school is moved to the southwestern side of the airfield. The proposed hangars to the east of the existing T-Hangar facilities mentioned in Alternative B remain in this alternative.

The proposed FBO would be located along the eastern edge of the east apron expansion mentioned in Alternative A and B. The building consists of 10,000-square feet and is located adjacent to the apron.

A new 1,500-square yard parking lot (providing about 34 spaces) is proposed to be constructed adjacent to the proposed FBO to provide customers with convenient parking. Access to the FBO would be provided by the existing Airport Road and by the extension of North Williams Avenue.

Located on the southwest side of the airfield towards the approach to Runway 4 is the proposed jump school. This 12,500-square foot facility is located adjacent to its own 4,300-square yard apron. Access to the airfield can be made via a connector between the apron and the proposed parallel taxiway to Runway 4-22. The jump school's drop zones are located to the south and east of the facility. To the south, a 100-foot radius drop zone is proposed and to the east in between Runway 4-22 and Runway 15-33, a 300-foot radius drop zone is proposed. Vehicular access to the jump school is provided from Singleton Avenue. A driveway from Singleton Avenue would lead into the proposed jump school's 1,670 square yard parking lot with approximately 37 spaces.

A large area to the west of the airfield will remain open for long-term aviation-related developments. This could include corporate hangars, aircraft maintenance, etc. This area would allow airport management to remain flexible to respond to opportunities as they arose. An airport maintenance facility is proposed in this area during the short-term.

5.4.5 Alternative D

As shown in **Exhibit 5-5**, Alternative D differs greatly from the other alternatives mentioned. Other than the common features previously discussed, Alternative D has only one similarity with the previous alternatives, which is the location of the jump school as presented

in Alternative A and B. The proposed FBO in this alternative is located at the northwest end of the airfield towards the approach of Runway 15.

A proposed 20,000-square foot FBO is proposed in this alternative. It is located at the north end of the proposed taxiway parallel to Runway 15-33. The FBO is located adjacent to the western side of a dedicated apron. A restaurant is also located on the apron next to the FBO facility. The apron measures 5,200-square yards. This apron is located adjacent to the proposed parallel taxiway and provides easy access to the airfield. Additionally, a 120 by 100 foot bulk hangar for aircraft storage on the southern end of this apron is proposed.

Vehicular access to the FBO is provided via two access points: 1) a proposed road that connects with Singleton Avenue through the existing recreational department site and 2) a new driveway onto Singleton Avenue to the north of the recreational facility. This road runs north and leads into the FBO's proposed 3,000-square yard, 67 space parking lot. The parking lot is located adjacent to the FBO and restaurant buildings.

Located on the airfield's west side are multiple rows of box and T-Hangars. This concept shows a total of 96 T-hangar units, with each row varying in size. There are five 50 by 50 foot box hangars at the southern end of this development. Access to the airfield is provided by taxilanes that lead to either the taxiway parallel to Runway 15-33 or the taxiway parallel to Runway 4-22. A wash rack and paint/maintenance facility will be located at the southern end of this development.

The jumps school will continue to operate from its current location. A 4,065 square yard expansion of the apron located directly to the west is expected however.

A proposed airport maintenance facility is located at the southwest end of the airfield towards the approach of Runway 4. This 10,000 square foot building will house all of the airport maintenance equipment. The building will be accessed via Singleton Avenue.

5.5 SELECTED ALTERNATIVE

Based on reviews and discussions with the Airport Authority, the selected alternative is Alternative D. Alternative D provides the best options for the growth and expansion of X21 because of the development options available. Additionally, this flexibility best meets the short-term needs of airport management.

5.6 LAND ACQUISITION

Due to the proposed changes that go along with the selected alternative, new land has been identified for acquisition by the Airport Authority to protect the airport's future growth capability. The expansion of T-hangars and other hangar units will also require land acquisition. To facilitate the proposed non-precision approach to Runway 4-22, new land should be acquired to protect the Part 77 surfaces and to ensure that the surrounding areas are compliant with federal, state, and local regulations regarding airport zoning. As seen in **Exhibit 5-6**, total acreage that will need to be acquired is approximately 85 acres while another 12 acres will be needed for easement purposes.

5.7 ZONING

Due to changes in the airport facilities, the zoning of some surrounding areas should be evaluated. The zoning requirements for X21 were described previously in **Section 4.11**. The specific area of concern for zoning and land compatibility issues is the extension of Runway 4-22 and the land acquisition within runway 15-33 RSA. Federal, State, and local laws require that surrounding areas must be compatible with airport use.

The areas surrounding the airport need to be evaluated to make sure that they will be in compliance with the changes made to the airport. The city and county will need to update their records to match those that will be reflected on the Airport Layout Plan.

5.8 SUMMARY

The previous sections of this chapter have discussed various alternatives for the key facilities to be located at Arthur Dunn Airpark. These alternatives discussed the airside and landside development areas and focused on airfield improvements, hangar construction, developmental areas, and many other facilities that make up the Airport. This overall development plan serves as the basis for the Airport Layout Plan (ALP) set that has been developed in conjunction with this master plan report.

TITUSVILLE-COCOA AIRPORT AUTHORITY

AVCON

AVCON, INC.

ARTHUR DUNN AIRPARK

MASTER PLAN UPDATE

AIRSIDE IMPROVEMENTS

SCALE:

REVISIONS: NO.	DATE	BY	DESCRIPTION

DESIGNED BY:	N.V.
DRAWN BY:	N.V.
CHECKED BY:	A.D.
APPROVED BY:	J.A.K.
DATE:	05/02/07

FAA PROJECT NO. 3-12-0101-010-2002
FDOT PROJECT NO. 247352-1-94-01
AVCON PROJECT NO. 2002.045.01

EXHIBIT

5-1

TITUSVILLE-COCOA AIRPORT AUTHORITY

AVCON

AVCON, INC.

ARTHUR DUNN AIRPARK

MASTER PLAN UPDATE

LANDSIDE DEVELOPMENT ALTERNATIVE A

SCALE:

REVISIONS			
NO.	DATE	BY	DESCRIPTION

DESIGNED BY:	N.V.
DRAWN BY:	N.V.
CHECKED BY:	A.D.
APPROVED BY:	J.A.K.
DATE:	05/02/07

FAA PROJECT NO. 3-12-0101-010-2002

FDOT PROJECT NO. 247352-1-94-01

AVCON PROJECT NO. 2002.045.01

EXHIBIT

5-2

TITUSVILLE-COCOA AIRPORT AUTHORITY

AVCON

AVCON, INC.
ENGINEERS & PLANNERS

ARTHUR DUNN AIRPARK

MASTER PLAN UPDATE

LANDSIDE DEVELOPMENT ALTERNATIVE B

SCALE:

REVISIONS

NO.	DATE	BY	DESCRIPTION

DESIGNED BY: N.V.
DRAWN BY: N.V.
CHECKED BY: A.D.
APPROVED BY: J.A.K.
DATE: 05/02/07

FAA PROJECT NO. 3-12-0101-010-2002
FDOT PROJECT NO. 247352-1-94-01
AVCON PROJECT NO. 2002.045.01

EXHIBIT

5-3

TITUSVILLE-COCOA AIRPORT AUTHORITY

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AVCON, INC.
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ARTHUR DUNN AIRPARK

MASTER PLAN UPDATE

LANDSIDE DEVELOPMENT ALTERNATIVE C

SCALE:

REVISIONS:

NO.	DATE	BY	DESCRIPTION

DESIGNED BY: N.V.
DRAWN BY: N.V.
CHECKED BY: A.D.
APPROVED BY: J.A.K.
DATE: 05/03/07

FAA PROJECT NO. 3-12-0101-010-2002
FDOT PROJECT NO. 247352-1-94-01
AVCON PROJECT NO. 2002.065.01

EXHIBIT

5-4

TITUSVILLE-COCOA AIRPORT AUTHORITY

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AVCON, INC.

ARTHUR DUNN AIRPARK

MASTER PLAN UPDATE

LANDSIDE DEVELOPMENT ALTERNATIVE D

SCALE:

REVISIONS:

NO	DATE	BY	DESCRIPTION

DESIGNED BY: N.V.
DRAWN BY: N.V.
CHECKED BY: A.D.
APPROVED BY: J.A.K.
DATE: 05/02/07

FAA PROJECT NO. 3-12-0101-010-2002
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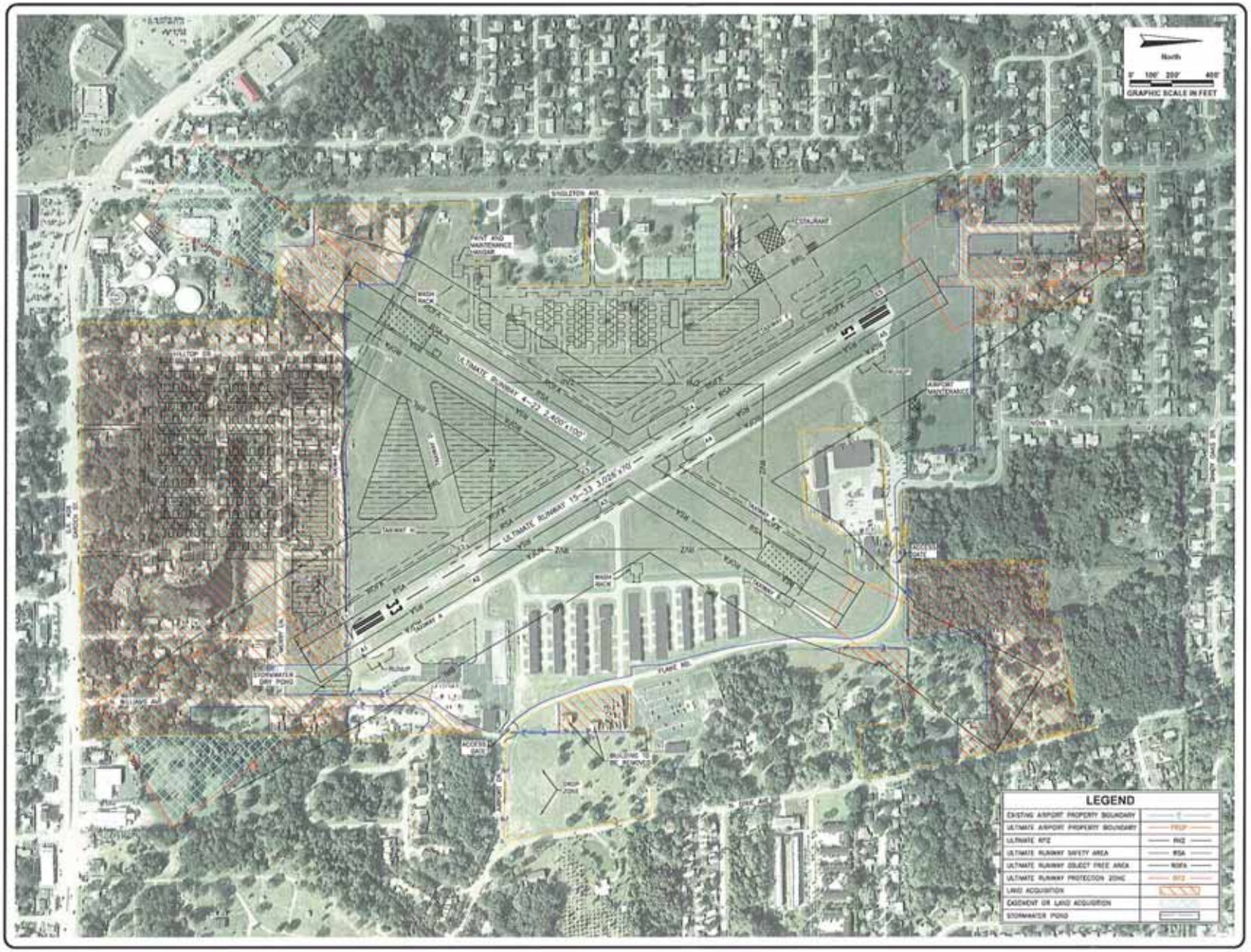
EXHIBIT

5-5



TITUSVILLE-COCOA AIRPORT AUTHORITY

AVCON

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ARTHUR DUNN AIRPARK

MASTER PLAN UPDATE

LAND ACQUISITION & EASEMENT

SCALE:

REVISIONS

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5-6

CHAPTER 6
ENVIRONMENTAL OVERVIEW

6.1 INTRODUCTION

The purpose of this chapter is to evaluate the existing environmental concerns as well as potential impacts resulting from the selected overall development alternative noted in **Section 5.5**. It should be noted that this chapter does not serve as a formal Environmental Assessment, nor does it meet the requirements of any related environmental planning documentation for the Airport or any of the future airport improvement projects. Some of the environmental concerns that are analyzed in this chapter include social impacts, stormwater, wetland, and noise issues.

6.2 EXISTING CONCERNS

The environmental concerns that currently exist at Arthur Dunn Airport (X21) are important to not only the present but the long-term development and functionality of the Airport. The ability to correct or eliminate environmental concerns creates numerous benefits for the Airport including the construction of facilities that function well within their environment, avoiding restrictions from federal, state, or local agencies for not complying to standards, and it helps convey the fact that the Airport is trying to develop good will within the community.

6.2.1 Social Impacts

The process of making changes to a natural environment can draw the attention of various groups of stakeholders. These social impacts play a very significant role in the ability to carry through with a project or not. Generally social impacts arise when an airport improvement project requires the acquisition of land or greatly affects an area off of airport property. Currently there are no known social impacts that exist due to the airport.

6.2.2 Water Wells

Surrounding the airfield at X21 is a field of potable water wells operated by the City of Titusville that produce the drinking water for the city residents and some surrounding areas. The wells provide a large impact on the development of property in that the influence of each well covers an area of 300-feet in diameter, within which only 15% of the area can be impervious.

The wells at Arthur Dunn extend along Flake Road to the East and North, Singleton Avenue to the West and along the perimeter fence to the south. The proposed development options have included considerations of these areas, and no significant development is shown within the limits of these influence areas.

6.2.3 Stormwater

An airport-wide drainage master plan was conducted in 1990/91. Although this Master Plan Update did not replicate this previous study, the proposed development shown on the plans generally avoids conflicting airport water quality and storage areas. Additional water quality retainage ponds are shown on the proposed ALP sheet, and will be used to consolidate drainage. The overall airport drainage features will continue to traverse and exit the airport to the north, and all development will utilize the existing water course off the airport as the ultimate point of discharge. Stormwater development is presently shown as a series of multiple ponds, to be constructed generally with the adjacent taxilanes or hangars developments. It is also possible that the Authority may choose to undertake the master drainage development as a stand alone project, depending on funding and a variety of other funding or development strategies.

6.2.4 Wetlands

Wetlands play a very important role in the natural environment surrounding the Airport. Wetlands are defined as *"Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."* Wetlands also frequently serve as homes to many animal species such as birds indigenous to wet swampy areas. A number of wetlands exist throughout the property at Arthur Dunn. There are no known current issues with the existing wetlands. None of the existing Airport features or immediate developments will have an effect on the surrounding wetlands. As a general rule in future development however, the airport and staff should continue to monitor wetland areas or potential wetland areas to ensure consistent determinations with the regulatory agencies.

6.2.5 Noise

A major environmental concern with almost any airport is the level of noise that aircraft utilizing the airport produce. In the case of Arthur Dunn, noise is a concern. However, the long term objective regarding noise at the airport will be a matter of maintaining the noise levels as opposed to them being too high at the current time. Since the Airport primarily serves light general aviation (GA) aircraft the noise levels at the Airport remain relatively low. Currently, jet operations only very seldom take place at X21 due to the runway length. This trend should be expected to continue based on the runway length. Additional discussion is included in **Section 6.2.4**.

6.3 POTENTIAL IMPACTS

As Arthur Dunn develops over the 20-year planning period, various aspects of the environment surrounding the airport may also need to be changed. Significant changes in the immediately local environment will occur with the development of the west and south quadrants of the Airport, and the other changes to the existing airfield. With these mid and long-term developments the need to construct stormwater ponds, and address other environmental and social concerns will become part of each project.

6.3.1 Social Impacts

The potential for various social impacts exists over the 20-year planning period at X21. Some of the projects that will most likely have a social impact include the development of the West and then South Development areas. Additionally, the purchase or easement of land located within the various runway RPZs may cause social impacts within the surrounding community. It should be noted that not all airport improvement projects will have a negative social impact. The expansion of the hangar areas and associated maintenance facilities as well as expansion of or development of a new FBO has the potential to bring jobs to the region which would also have a positive impact on the community.

6.3.2 Stormwater

The ability to develop suitable stormwater management systems is critical to the development of future airport facilities. As mentioned in **Section 6.1.3**, changes and additions to the stormwater system need to be made. As part of the overall development plan of the Airport, a series of ponds are considered for the west and south development programs along with a supplemental storage and water quality treatment in the former sky dive drop zone between Runway 4 and Runway 33 thresholds.

The developments planned on the ALP will require the creation of stormwater ponds. These stormwater ponds are necessary to control and treat the large amounts of rainwater that are collected after a storm. The construction of buildings, pavement, and other structures creates impervious surfaces where water cannot percolate through the surface. Stormwater ponds collect and treat this water from various structures or pavements near the ponds. From these ponds the water can percolate through the bottom of the pond or be conveyed elsewhere through drainage structures.

6.3.3 Wetlands

Over the 20-year planning period as the various areas of the Airport are developed, changes to wetlands located on Airport property may be necessary. Some of the proposed future developments lie along and may impact perceived wetlands, especially in the development of new storm ponds. Before construction can take place the mitigation of these wetlands must be completed. The process of mitigating these wetlands (if any are declared) will be necessary to minimize the impacts to the existing environment while allowing the airport to develop as planned.

6.3.4 Airport Noise

As mentioned in **Section 6.1.5**, the noise developed by an airport can be a substantial environmental concern, especially when planning for future airport operations. At X21 introduction of forecast jet operations is anticipated over the planning period. With these jet operations come concerns over the amount of noise they will produce. Although jet operations are anticipated to increase, the amount of jet activity is expected to remain fairly minimal. The majority of aircraft operations over the planning period will consist of single and multi-engine GA aircraft.

Additionally, the evolution of the jet engine has produced more powerful yet much quieter engines. "New Stage 3 jet engines produce roughly one fifth the amount of noise older Stage 2 engines produced," according to jet engine manufacturer General Electric. Further, aircraft with stage 2 engines and most other corporate jets are precluded from operating at X21 due to runway length constraints.

However, the new Very Light Jet (VLJ) program, which continues to gain momentum within the national aviation community, may cause a change in noise levels around the airport, even by perception if not reality. Historically, jet activity generally does increase noise levels around an airport. However in the case of

X21, the new VLJ is being designed not to add significant noise around the airports they serve. They will certainly not be the predominant activity type, and significant increases in aircraft noise levels are not expected.

The updated noise contours for the airport have included provisions for the VLJ in the fleet mix. As noted in the noise contour drawings on **Exhibit 6-1**, nearly all the proposed 65 LdN noise contours are contained within the airport boundary.

Airport noise should continue to be a responsibility of the entire flying public using common sense in operating around the airport. Late night engine run-ups, high-performance operations, and other features should be monitored, and the Authority should continue to advocate compatible operations within the adjacent community to all its tenants and transient users.

The potential for airport noise related issues within the surrounding community can still exist. There are many ways to resolve the issue of airport noise and many airports use various programs for the mitigation of aircraft noise. The most prominent is the self-policing requirement of runway length. The nominal 3000 feet of operational length on Runway 15-33 prohibits all but the most rudimentary and small jet operations from even occurring at Arthur Dunn.

6.3.5 Coastal Zone Management and Coastal Barriers

All of Brevard County is considered part of the coastal zone. The City has developed and implemented a coastal management section for their comprehensive plan. From a previous review of this document, it appears that none of the proposed development will impact the coastal zone contrary to this policy.

6.2.6 Threatened and Endangered Species.

There are known habitats for threatened and endangered species in the area surrounding Arthur Dunn, although no specific determination have been made to the best of our knowledge. Prior to these development objectives being undertaken, it is recommended that a biological survey be undertaken to determine if any of the subject species are located on the Airpark property or within proposed development areas.

6.3.7 Department of Transportation Act, Section 4(f)

Section 4(f) of the DOT Act specifies that the Secretary of Transportation shall not approve airport projects that use publicly owned land from any of the following:

1) A public Park
2) A recreation Area
3) A wildlife or waterfowl refuge of national, state, or local significance; or
4) An historic site of national, state, or local significance.

Any of the proposed actions would not require the use of lands that are within any of the above categories.

While there are recreational uses currently on Airpark property, they are on property that is owned by the Airport Authority and leased on a temporary basis. FAA Order 5050.4B states that: "Where property is owned by the currently designated for use by a transportation agency and a part or recreation use of the land is being make only on an interim bases, a section 4(f) determination would not be ordinarily required." Therefore 4(f) impacts are not otherwise anticipated for any proposed development on the airpark.

6.3.8 Biotic Communities

FAA Order 5050.4B states the following with respect to biotic communities:

"If the proposal would impact only man-dominated areas such as previously disturbed airport property, populated areas, or farmland, it may be assumed that there would be no significant impacts on biotic communities.

Since the proposed actions would only impact previously disturbed Airpark property and man-dominated areas, an impact on biotic communities is not anticipated.

6.3.9 Wild and Scenic Rivers

Although the airport lies only a mile from the Indian River waterway, there are no specific rivers within the project area. Thus there is no conflict with this requirement.

6.3.10 Farmland, Prime or Unique Lands

The soil survey from Brevard County was reviewed to determine that no unique or prime lands are present at the airport. All of the lands have been previously disturbed by predecessor groups.

6.3.11 Light Emission

Except for infrequent aircraft or vehicle lighting on and approaching the airport, no lighting impacts will be generated by airport operations.

However, as part of the long term development strategies, the FBO apron area may be lighted by area

lighting that will illuminate the area surrounding the apron pavement. This lighting requirement meets the needs of both safety and security at airports. Typically these lights are directed downward to the pavement, and light off airport should be minimal.

In addition, the long-term development also provides for a new Omni Directional Approach Light System, which is a sequence of flashing strobes that lead an aircraft to the threshold of the runway. These lights are actually designed to "reach out" to the aircraft, and as such, they will contribute to light intrusion into the surrounding area. As part of the development of the ODAL system, an environmental review of the lighting will be required. All of the lights are located on property programmed to be obtained as part of the Runway Protection Zone (RPZ) land acquisition. The timing and prioritization of the ODAL installation and land acquisition will determine the overall impact of this project on the surrounding neighborhoods.

6.3.12 Construction Impacts

Each project on the airport will involve some level of actual field construction activities on and around the airfield. As a result, some impacts from the construction can be expected. These may include dust, exhaust emissions, ground water turbidity, and related noise.

All of these impacts will be mitigated by the appropriate special provisions to be contained in each proposed bid package. These mitigating measures will include specific requirements for dust control; limitations on work hours to minimize or eliminate impacts on the surrounding community; and compliance with state and federal regulatory provisions for construction on airports.

6.4 SUMMARY

While this chapter provides a glimpse into the potential environmental plans and needs over the 20-year planning period further planning and permitting will be need for each individual project. The environmental issues addressed in this chapter relate to the planned developments of **Section 5.6.5**. Additional projects that may arise over the planning period will likely require additional environmental analysis.

Coordination with federal, state, and local agencies such as the Florida Department of Environmental Protection and the South Florida Water Management District are very important to the success of many of these projects. Additional stormwater and wetland issues will be addressed in the stormwater master plan associated with this report.

TITUSVILLE-COCOA AIRPORT AUTHORITY

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ARTHUR DUNN AIRPARK MASTER PLAN UPDATE

AIRPORT LAYOUT PLAN SET

NOISE CONTOURS

SCALE: AS NOTED

REVISIONS			
NO.	DATE	BY	DESCRIPTION

DESIGNED BY: N.V.
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EX 6-1

CHAPTER 7

CAPITAL IMPROVEMENT PLAN

7.1 INTRODUCTION

The goal of the Capital Improvement Program (CIP) chapter is to provide general financial guidance to airport management in making policy decisions regarding the recommended development of the Airport over the 20-year planning period. The CIP has been developed based upon the needs of Arthur Dunn Airpark (X21) identified in the Facility Requirements and the Alternatives Analysis chapters. The various projects identified in the Overall Development Alternative are broken out over three time frames:

- Short-term (2008-2013)
- Mid-term (2013-2018)
- Long-term (2018-2028)

Although the implementation schedule presented in this chapter provides estimated time frames for initiating the proposed projects, continuous re-evaluation of the schedules may be necessary to account for changes in aviation demand and other unforeseen factors. Actual project implementation should generally occur when the actual need for an improvement is realized and when funding for the project is available. Additionally other improvements not identified in this report may be needed over the planning period. All projects noted in this chapter or otherwise shall be compatible with the development noted on the Airport Layout Plan (ALP) drawing. Certain projects may require an FAA approved amendment to the ALP.

In addition to providing a general schedule for the completion of the projects, cost estimates for the individual projects are also provided. The project cost estimates presented in this chapter reflect a preliminary opinion of probable implementation costs. Among the items that are included in the implementation costs are construction costs, engineering, testing, and surveying fees, and a pricing allowance. All cost estimates are provided in 2008 dollars.

7.2 SHORT-TERM PROJECTS

Presented in **Table 7-1** are the projects planned over the short-term time frame. These projects will become the basis for the FAA/FDOT JACIP process, where the appropriate funding can be programmed and applied for following submittal and acceptance of this report. A breakdown of the cost estimates for the individual projects is also presented in this chapter. The total project cost over the short-term time frame is estimated at $ 5,525,000, including a minor land purchase to comply with Runway 33 RSA requirements (i.e. fence and tree obstructions). While actual costs of the completed projects are provided, the exact scopes of these projects have yet to be completed, and may be subject to change. These uncompleted projects costs are estimated as accurately as possible based upon available data. Prior to the initiation of these uncompleted projects a detailed engineering investigation may be needed to obtain a more detailed cost estimate. To the extent possible, the Authority should identify a continuing land purchase program in order to take advantage of any properties coming available throughout the life of the development program.

Of the projects planned in the short-term, several are larger undertakings that may stall the system or funding capacity of the airport. Among these are the west side development and T-hangars. For this purpose, the projects are broken into multiple phases within the short-term. The west side program accounts for over 65 percent of the funding applied for during the short-term period. However, it is important to begin as soon as possible to create and generate additional revenues for the airport to create cash flows for the follow-on projects. A brief of each short-term project is available at the end of this section.

S-1. Runway 33 RSA Land Purchase
Estimated Project Cost: $260,000
This project involves the purchase of all or a portion of a parcel of land located at the southeast corner of the airport property to remove obstructions to the relocation of the operating threshold for Runway 33. This project is FAA eligible.

S-2. Clear Obstruction Runway 15-33 & Runway 4-22
Estimated Project Cost: $284,000
This project involves the removal and/or cutting of 20 acres of trees and obstacles beyond each runway end to avoid the penetration of the Part 77 surfaces and enhanced the safety during take-off and landing.

S-3. Seal Coat Runway 15-33 and Add Non-Precision Markings
Estimated Project Cost: $472,000
This project involves the completion of the southwest corner of the runway pavement, removing the existing markings, treating the runway surface and re-marking the pavement with new Non-Precision pavement markings. Once the obstructions are removed as noted above, this project will restore Runway 15-33 to its full length operating status at 3,026 feet. This project is FAA eligible.

S-4. Taxiway Connectors and Run-up Area
Estimated Project Cost: $1,357,000
This project provides for enhanced access to and from the main Runway 15-33, including new run-up pavement areas at both ends to accommodate multiple aircraft departures at peak times as they arise. This project is eligible for FAA funding.

S-5. West T-Hangars and Access Taxiway – Phase I
Estimated Project Cost: $2,030,000
This project provides for the initial development of the airports West Side, including the primary taxiway connector to the existing airfield, and the first 10-bay T-hangar. This project scope also includes initial roadway access pavement and parking along with basic utilities to the site. This project provides a direct link to the Runway 15-33 pavement, however the initial link is not located at the threshold. That provision is included in the next project.

S-6. Airport Master Plan Update
Estimated Project Cost: $191,000
This project consists of updating of this Master Plan as well as the Airport Layout Plan.

S-7. West Parallel Taxiway – Phase I
Estimated Project Cost: $965,000
This project provides for an initial segment of a new West side parallel taxiway to Runway 15-33. This initial segment will link the first phase T-hangar development and connector taxiway to the Runway 15 threshold. Runway 15 departures can take this taxiway to the end of the runway. Runway 15 arrivals can exit east or exit at the above noted connector taxiway. The work includes new airfield lighting and signage for this early project segment.

S-8. Extend Runway 4-22
Estimated Project Cost: $229,000
This project will complete the full-length extension of the existing Runway 4-22 turf to the ultimate length. The work calls for grading and fine grading the areas of the runway currently not within the operating surface at both ends of the runway. New grading, drainage swales, and upgraded, standard spacing for edge markers will be included. Until the obstructions are removed in the adjacent approaches, the displaced threshold will remain in place. However, full length take-off capability will be available.

TABLE 7-1
SHORT-TERM PROJECTS

	Project Description	Project Cost In 2008 Dollars	Year of Funding	Project Cost In Year of Funding
S-1	RUNWAY 33 RSA LAND	$260,000	2008	$260,000
S-2	CLEAR OBSTRUCTION RUNWAY 15-33 & RUNWAY 4-22	$273,000	2009	$284,000
S-3	SEAL COAT RUNWAY 15-33 & ADD NON-PRECISION MARKINGS	$436,000	2010	$472,000
S-4	TAXIWAY CONNECTORS AND RUN UP AREAS	$1,206,000	2011	$1,357,000
S-5	WEST T-HANGARS AND ACCESS TAXIWAY - PHASE I	$1,735,000	2012	$2,030,000
S-6	AIRPORT MASTER PLAN	$163,000	2012	$191,000
S-7	WEST PARALLEL TAXIWAY - PHASE I	$793,000	2013	$965,000
S-8	EXTEND RUNWAY 4-22	$188,000	2013	$229,000
			SUBTOTAL SHORT-TERM	**$5,788,000**

Note: A yearly inflation of 4.0% was assumed to calculate the project costs in year of funding (Typical of all tables)

7.3 MID-TERM PROJECTS

Table 7-2 presents the projects planned over the mid-term time frame. Like the short-term, the mid-term projects from 2012-2018 have been identified for submittal to the FAA and FDOT for funding. Cost estimates for the projects have been estimated with appropriate adjustments for future costs. The sum of the development project costs and anticipated funding needs over the mid-term time frame is estimated to be approximately $18,544,000. In addition, the mid-term program calls for land purchases that may be undertaken during the time frame, based both on the ready availability of the land, and the potential for grant funding. These lands will provide proper clearance and controls for future approach capabilities, and RPZ protection. The property component of the Mid-Term project development is $15,537,000 in 2008 dollars.

The south T-hangar property also provides for enhanced airport compatibility with the surrounding community and additional development of airport revenue properties.

Some of the more significant projects included in the mid-term time frame include continuation and completion of the West Side Development, a new GA terminal and associated access and apron pavements, new fuel farm, seal coating and treatment of all east side taxiways and apron pavements, and construction of the airport maintenance facility. A brief of each of the mid-term projects is provided in the following paragraphs.

M-1. West T-Hangars Phase II 2-10-Bay T-Hangars and Taxilanes
Estimated Project Cost: $2,386,000
This project involves the construction of two additional 10-bay T-hangars with associated taxilane extensions and access taxiway as well as landside access, parking and utilities.

M-2. West Parallel Taxiway – Phase II
Estimated Project Cost: $1,403,000
This project provides for completion of a new West side parallel taxiway to Runway 15-33. This final segment will link the first phase and connector taxiway to the Runway 33 threshold. Runway 33 departures can take this taxiway to the end of the runway. Runway 33 arrivals can exit east or exit at the above noted connector taxiway. The work includes new airfield lighting and signage for this early project segment.

M-3. West Side Development Phase III – Maintenance Hangars and Taxilanes
Estimated Project Cost: $1,625,000
This project involves the construction of two 60' x 60' Maintenance Hangars with associated taxilane extensions and access taxiway as well as landside access, parking and utilities.

M-4. Construct General Aviation (GA) Terminal Complex, Apron and Taxilanes
Estimated Project Cost: $5,603,000
This project involves the construction of a new General Aviation Terminal/FBO complex consisting of a 5000 sf terminal, fuel farm, parking and access, apron pavement and partial parallel taxilane. The work includes a new access off Singleton Avenue connecting to the previously constructed West Side development.

M-5. West Side Development Phase IV – T-Hangars and Taxilanes
Estimated Project Cost: $1,254,000
This project involves the construction of a six-bay large T-hangar to accommodate aircraft larger than small aircraft only. Small twin aircraft and new larger single engine aircraft will be included in the design computations. Taxilane pavement and connectors to the buildings are also included as well as landside access, parking and utilities.

M-6. West Side Parallel Taxilanes – Phase II
Estimated Project Cost: $1,390,000
This project is a continuation of the earlier phases of both Taxiway and dual parallel taxilanes to provide free-flow access to the West Side Development and the General Aviation Terminal Complex, connecting to the West Side parallel taxiway. The work includes new lighting and signage.

M-7. West Side Development Phase V - Two 4-Bay Box Hangars and Taxilanes
Estimated Project Cost: $1,438,000
This project involves the construction of a three-bay large box/bulk hangar to accommodate aircraft larger than small aircraft only. Corporate, twin engine and single engine aircraft can be mixed into the final storage facility in a single or multiple bay building. Taxilane connectors to the building are also included as well.

M-8. Seal Coat East Airfield Taxiways and Ramp Areas

Estimated Project Cost: $231,000

This project involves the application of a sealer/rejuvenator to all of the existing West Side pavements to preserve and enhance their pavement lift. New centerline markings and retro-reflective markers are also provided along all centerlines. This will include Taxiway A, existing aprons, T-Hangar taxilanes, and all other east side pavements.

M-9. West Side Development Phase VI – Maint. Hangar and Wash Rack with Taxilanes

Estimated Project Cost: $1,924,000

This project is a continuation of the West Side development adding a new 60' x 60' maintenance hangar and apron area along with an additional parking area, access road and utilities.

M-11. West Side Development Phase VII – Box Hangars

Estimated Project Cost: $2,074,000

This project involves construction of a new 60' x 60' box hangar along with construction of a 50' x 150' bulk storage hangar and taxilanes to the facility. Additional upgrade to the access and utilities are also provided.

At the conclusion of the West Side Development, a total of approximately 45-50 equivalent hangar units will be constructed, including a combination of T-hangars, box hangars, corporate hangars and maintenance hangars, as well as all supporting infrastructure.

M-13. Airport Maintenance Facility

Estimated Project Cost: $1,230,000

This project involves the design and construction of a new airport maintenance building. A new 3600 SF facility is included, along with utilities, pavements and fencing.

M-10-12-14.

Northeast, Northwest, Southeast and Southwest Land Acquisition

Estimated Project Cost: $23,682,000

This project involves the acquisition of all remaining lands necessary to protect the airport development and approach surfaces. The property purchases are delineated by the parcel, and assembled into groups for each quadrant of the airport. The property should be acquired during times when the land otherwise comes available to the market. The program can be supported by available FAA funding for control or acquisition of RPZ lands. Obviously due to the cost, this will be a long-term program. However, it is important to identify the lands on the master plan and within the CIP program for both eligibility and funding considerations. The total amount shown is for the entire property program for the airport, except for the south T-hangar area. The costs have been escalated to 2020 for funding purposes. Some of the lands may be purchased earlier at more favorable rates.

TABLE 7-2
MID-TERM PROJECTS

	Project Description	Project Cost In 2008 Dollars	Year of Funding	Project Cost In Year of Funding
M-1	WEST T-HANGARS - PHASE II	$1,886,000	2014	$2,386,000
M-2	WEST PARALLEL TAXIWAY - PHASE II	$1,109,000	2014	$1,403,000
M-3	WEST T-HANGARS PHASE III, MAINTENANCE HANGAR AND TAXIWAYS	$1,235,000	2015	$1,625,000
M-4	GA TERMINAL COMPLEX, APRON AND TAXILANE	$4,258,000	2015	$5,603,000
M-5	WEST T-HANGARS - PHASE IV AND BULK HANGAR AND TAXILANE	$916,000	2016	$1,254,000
M-6	WEST SIDE PARALLEL TAXILANES - PHASE II	$1,016,000	2016	$1,390,000
M-7	WEST T-HANGARS - PHASE V AND BULK HANGAR AND TAXILANE	$1,010,000	2017	$1,438,000
M-8	SEAL COAT TAXIWAY A AND EAST RAMP	$156,000	2017	$231,000
M-9	WEST T-HANGARS - PHASE VI	$1,300,000	2018	$1,924,000
M-10	NORTHWEST PROPERTY	$6,620,000	2018	$9,799,000
M-11	WEST T-HANGARS - PHASE VI	$1,347,000	2019	$2,074,000
M-12	SOUTHEAST PROPERTY ACQUISITION	$6,386,000	2019	$9,831,000
M-13	AIRPORT MAINTENANCE FACILITY	$768,000	2020	$1,230,000
M-14	SOUTHWEST AND NORTHEAST PROPERTY	$2,531,000	2020	$4,052,000
			SUBTOTAL MID-TERM	**$44,240,000**

7.4 LONG-TERM PROJECTS

Many of the projects of the preferred development alternative are based upon the assumption that they will be developed over the long-term time frame. These projects have not been scheduled for specific years but rather are prioritized based upon the anticipated need and available funding. The total project development costs and funding needs over the long-term time frame is estimated at $31,831,000 in 2008 dollars. The projects included in the long-term time frame are listed in **Table 7-3.** Some of the more significant projects anticipated over the long-term time frame include the construction of additional corporate and T-hangars, development of an Airport Rescue Fire Fighting (ARFF) facility, and the development of the south quadrant for aviation use. In addition to these, smaller projects such as routine pavement maintenance are also accounted for. A brief of the project descriptions is available in the following sections. A table of the costs of the proposed long-term projects is provided in **Table 7-3**.

L-1. South T-Hangar Property Acquisition
Estimated Project Cost: $23,774,000
This project involves the acquisition of development lands necessary to provide for the long-term development of additional T-hangars and supporting infrastructure on the airport's south side off Garden Street, between N. Williams Avenue and Hilltop Drive, North. The property purchases are delineated by the parcel. The property should be acquired during times when the land otherwise comes available to the market. The program can be supported by available FDOT development funding for preservation of long-term development opportunities for the airport south side. Both T-hangars and other compatible uses can be considered. Obviously due to the cost, this will be a long-term program. However, it is important to identify the lands on the master plan and within the CIP program for both eligibility and funding considerations. The total amount shown is for the entire south T-hangar area. The costs have been escalated to 2021 for funding purposes. Some of the lands may be purchased earlier at more favorable rates.

L-2. ARFF Facility
Estimated Project Cost: $2,719,000
This project involves the construction of a joint use ARFF facility and associated training areas to be developed and used jointly to support public fire protection as well as the Arthur Dunn Airpark. Facilities of this type have been used successfully in many other jurisdictions. Inasmuch as the City of Titusville already provides this support service to the Authority, a continuing resolution is all that would be necessary to support the new facility. Funding for the facility is likely to come from the two different agencies based on a formula yet to be determined.

L-3.,4.,6-14.
Construct South Hangars and Supporting Infrastructure (Phases I – XI)
Estimated Project Cost: $32,317,000
This project involves the clearing and demolition on the sites, construction of Box Storage Hangars, T-hangars and all supporting infrastructure in the south quadrant of the airfield. This project totals $32,317,000 and is broken into approximately 10-11 projects of varying costs from $1,000,000 to $4,000,000. Approximately 153 individual units are incorporated into this development. The specific delineation between the individual phases within the South Hangar Development can vary according to both demand and availability of funding. It is also possible that the Authority may consider a land lease with private developer initiatives used to construct this large scale program. The first phase will include the clearing, demolition and infrastructure necessary to open the site up for development including upgrades to access and utilities from Garden Street. The type and number of hangars built will depend on the demand from the airport tenants at the time of the project.

L-5. Airport Master Plan Update
Estimated Project Cost: $294,000
This project consists of updating the most current Master Plan and Airport Layout Plan.

TABLE 7-2
MID-TERM PROJECTS

	Project Description	Project Cost In 2008 Dollars	Year of Funding	Project Cost In Year of Funding
L-1	SOUTH T-HANGARS PROPERTY	$14,278,000.	2021	$23,774,000
L-2	ARFF STATION	$1,784,000	2021	$2,970,000
L-3	SOUTH T-HANGARS - PHASE I	$1,968,000	2022	$3,408,000
L-4	SOUTH T-HANGARS - PHASE II	$2,061,000	2023	$3,712,000
L-5	MASTER PLAN UPDATE	$163,000	2023	$294,000
L-6	SOUTH T-HANGARS - PHASE III	$1,028,000	2024	$1,925,000
L-7	SOUTH T-HANGARS - PHASE IV	$1,072,000	2025	$2,088,000
L-8	SOUTH T-HANGARS - PHASE V	$1,681,000	2026	$3,405,000
L-9	SOUTH T-HANGARS PHASE VI	$1,626,000	2027	$3,426,000
L-10	SOUTH T-HANGARS - PHASE VII	$2,209,000	2028	$4,840,000
L-11	SOUTH T-HANGARS - PHASE VIII	$1,238,000	2029	$2,821,000
L-12	SOUTH T-HANGARS - PHASE IX	$1,163,000	2030	$2,756,000
L-13	SOUTH T-HANGARS - PHASE X	$629,000	2031	$1,550,000
L-14	SOUTH T-HANGARS - PHASE XI	$931,000	2032	$2,386,000
			SUBTOTAL LONG-TERM	**$59,355,000**

7.5 FUNDING SOURCES

Because X21 does not currently have Part 139 commercial service operations, the Airport relies on revenues from tenants and funding from governmental sources. Various funding sources exist to support the development of the proposed airport improvement projects over the planning period. Funding from the FAA and state agencies such as the Florida Department of Transportation (FDOT) are very important to Airports such as X21 whose main revenue from tenant leases and fuel sales may cover operating costs but do not cover the costs of many airport improvement projects.

As previously mentioned, sources of funding range from Federal to state as well as local sources. Based upon the type of project type it may be eligible for FAA or FDOT funding. The following sections describe several funding programs and general eligibility requirements associated with each.

7.5.1 Federal Funding

The Airport Improvement Program (AIP) developed by the FAA has been established to assist in the development of public-use airports within the National Plan of Integrated Airport System (NPIAS) so that they may meet the projected growth in civil aviation. The AIP provides grants to public-use airports such as X21 for a wide variety of airport improvement projects. A sample of projects funded by the AIP includes runway and taxiway rehabilitation and construction, land acquisition, planning and environmental studies, navigational aid installation, and airfield lighting projects. The AIP funds disbursed to general aviation (GA) airports such as X21 are referred to as "discretionary" money. These funds are also available to commercial service airports as well. Airports compete for these funds based upon the apparent need for each of the projects.

The FAA has developed a priority ranking system which accounts for the type of project and airport. Projects concerning runway safety are generally the first priority. From these rankings the appropriate funds are distributed. For small GA airports such as X21 the AIP will fund up to 95 percent of the eligible costs of the project. The remaining five percent is the responsibility of an airport's local governing body and potential matching monies from the state. Some of the projects over the 20-year planning period at X21 that are eligible for AIP funding include the rehabilitation of Runway 15-33, the extension of Runway 4-22, the construction of new taxiways, airfield lighting upgrades, and the development of an ARFF facility.

Another part of the AIP which provides funding to general aviation airports is the Wendell H. Ford Aviation Investment and Reform Act for 21st Century (AIR-21). This program now entitled Vision 100 allows for the annual disbursement of $150,000 to applicable GA airports within the NPIAS. This program only lasts through 2007 however it is assumed that the FAA will continue to provide an amount close to $150,000 disbursements throughout the planning period. This money is referred to as Non-Primary Entitlement money. In order for an airport to receive this money it must be applied for each year. Additionally, the money may only be used towards the development of projects which are approved for federal funding under the AIP.

7.5.2 State Funding

Like the FAA, the FDOT has established a program to support the funding of various airport improvement projects. The FDOT aviation grant program provides funding to four major types of projects: airport planning, airport improvement, land acquisition, and airport economic development. Examples of projects funded under these different categories that may apply to X21 include:

- **Airport Planning:** master plans, master drainage plans, and environmental assessments;
- **Airport Improvements:** hangar construction, terminal building improvements and runway/taxiway construction;
- **Land Acquisition:** acquisition of land on an approved ALP, aviation easements, and mitigation land;
- **Airport Economic Development:** industrial park infrastructure and building development and other the development of other facilities that will enhance economic impact.

The FDOT provides up to one-half of the local share of project costs when federal funding is available. For example if the FAA provides 95 percent of the eligible project costs the remaining five percent is divided equally among the FDOT and local sources.

Projects that are not eligible for FAA funding but are eligible for FDOT funding are covered up to 80 percent of the project cost. The remaining 20 percent is covered by local entities. Additionally the FDOT provides up to 50 percent of the costs to build on-airport revenue producing capital improvements such as T-hangar complexes and other facilities at general aviation airports such as X21.

In addition to the FDOT funding, the state of Florida has established numerous economic development programs to provide incentives for companies to locate to Florida. These programs are administered through Enterprise Florida, a public-private partnership responsible for leading Florida's statewide economic development efforts. Some of the programs administered by Enterprise Florida include:

- **Qualified Target Industry Tax Refund:** Available for companies that create high wage jobs in targeted high value-added industries;
- **The High Impact Performance Incentive:** A negotiated grant used to attract and grow major high impact facilities in Florida;
- **Qualified Defense Contractor Tax Refund:** Up to $5,000 is offered per job created or saved in Florida through: the conversion of defense jobs to civilian production, the acquisition of a new defense contract, or the consolidation of a defense contract which results in at least a 25 percent increase in Florida employment or a minimum of 80 jobs;
- **Capital Investment Tax Credit:** is used to attract and grow capital-intensive industries in Florida; and
- **Enterprise Zone Incentives:** Assortment of tax incentives to businesses that choose to create employment within an enterprise zone, which is a specific geographic area targeted for economic revitalization such as Brevard County.

While these programs are not meant to fund airport improvement projects, they may be utilized to fund commercial development areas, similar to those planned for X21. Further information regarding Enterprise Florida and their economic development programs can be found at www.eflorida.com.

7.5.3 Local Funding

Depending on the type of project funding available, local funding sources may or may not account for a major part in the costs of an airport improvement projects. Sources of local funding can vary over a diverse group from county and city governments to private investors. While it is usually necessary for the Airport to cover some percentage of the costs associated with these projects, the local percentage is generally quite small compared to other entities.

The local share of airport improvement projects that receive FAA or FDOT funding are generally funded through the governing body of the airport. In this case the Titusville Cocoa Airport Authority would be responsible for funding the local share of the improvement projects. Other projects throughout the Airport that may receive additional funding from the City include the development of infrastructure such as commercial and industrial development areas that would increase the number of revenue producing tenants on Airport property. How the city goes about funding their share of a project can vary.

Funding may be drawn from various Authority sources or it may be drawn from programs such as issuing a development bond. Although issuing bonds is more common at larger commercial service airports which produce large revenues as opposed to small GA airports such as X21, it remains a viable source of funding.

In the case of private developments on an airport, local funding may account for a much higher amount if not all of the funding necessary for certain developments. Historically, private investors are generally not a major source of funding for airport improvement projects unless they have a very significant impact on a particular current or future tenant. However a recent occurrence at more than one airport includes a private investor wishing to fully fund a development that is strictly an investment such as a T-hangar complex for subsequent lease, hangar, apron or other facility.

A major source of private investments often comes from Fixed Base Operators (FBO). At smaller airports FBOs frequently have a great amount of leverage in the developmental decisions of an airport because of the impact they can have on aircraft traffic levels. An FBO may request an improvement project to the airport such as runway lengthening or apron expansion that they may determine will cause increases their business.

Due to the potential increase in business, the FBO may be willing to front a portion of the costs if funding is not available. This can vary case-by-case as each FBO has a different business plan.

In the case of X21 the area of undeveloped land along Singleton Avenue and near the end of Runway 15 has been reserved for the development of a future FBO facility. The development of this area could receive FAA funding for public space, transient apron, etc. Income and exclusive use areas will primarily be the responsibility of the private investor.

7.6 SUMMARY

Tables 7-1 through **7-3** provide a companion funding scenario for the short, mid, and long-term time frames based upon current programs and eligible funding sources. It should be noted that these current programs are subject to change and the CIP should be updated at least annually to adjust for changes in funding and priorities as necessary. In addition to the funding sources the projected cost estimated for the various airport improvement projects are also provided at the end of this chapter. **Tables 7-4 through Table 7-6 provide** a proposal for grant funding and costs over the planning development period. These tables will need to be addressed continuously among all parties to the funding process.

The proper management of funds is important to X21 to maintain self-sufficient operation as well as the ability to develop the airport to match the projected need over the planning period. It is advised that the Airport apply for all available grant money that that it may be eligible for. By garnering government assistance to foster airport improvements throughout the study period, the ability of the Airport to progress toward both operational and capital self-sufficiency will be greatly enhanced in future years. Additionally, a sound capital improvement plan may actually reduce the reliance of X21 on governmental aid as the airport continues to grow and mature as an economic engine.

TABLE 7-4
GRANT FUNDING – SHORT-TERM

	Project Description	Project Cost In 2008 Dollars	Year of Funding	Project Cost In Year of Funding	FAA AIP Funding GA Entitlements	FAA Grant Discretionary	FDOT Matching	Local Matching
	SHORT-TERM PROJECTS							
S-1	RUNWAY 33 RSA LAND	$ 260,000	2008	$ 260,000	$ 150,000	$ 96,000	$ 7,000	$ 7,000
S-2	CLEAR OBSTRUCTION RUNWAY 15-33 & RUNWAY 4-22	$ 273,000	2009	$ 284,000	$ 150,000	$ 120,000	$ 7,000	$ 7,000
S-3	SEAL COAT RUNWAY 15-33 & ADD NON-PRECISION MARKINGS	$ 436,000	2010	$ 472,000	$ 150,000	$ 298,000	$ 12,000	$ 12,000
S-4	TAXIWAY CONNECTORS AND RUN UP AREAS	$ 1,206,000	2011	$ 1,357,000	$ 150,000	$ 1,139,000	$ 34,000	$ 34,000
S-5	WEST T-HANGARS AND ACCESS TAXIWAY - PHASE I	$ 1,735,000	2012	$ 2,030,000	-	-	$ 1,624,000	$ 406,000
S-6	AIRPORT MASTER PLAN	$ 163,000	2012	$ 191,000	$ 150,000	$ 31,000	$ 5,000	$ 5,000
S-7	WEST PARALLEL TAXIWAY - PHASE I	$ 793,000	2013	$ 965,000	-	-	$ 772,000	$ 193,000
S-8	EXTEND RUNWAY 4-22	$ 188,000	2013	$ 229,000	$ 150,000	$ 67,000	$ 6,000	$ 6,000
	SUBTOTAL SHORT-TERM	$ 5,054,000		$ 5,788,000	$ 900,000	$ 1,751,000	$ 2,467,000	$ 670,000

Note: All numbers are rounded
A yearly inflation of 4.0% was assumed to calculate the project costs in year of funding (Typical of all tables)

TABLE 7-5
GRANT FUNDING – MID-TERM

	Project Description	Project Cost In 2008 Dollars	Year of Funding	Project Cost In Year of Funding	FAA AIP Funding GA Entitlements	FAA Grant Discretionary	FDOT Matching	Local Matching
	MID-TERM PROJECTS							
M-1	WEST T-HANGARS - PHASE II	$ 1,886,000	2014	$ 2,386,000	-	-	$ 1,909,000	$ 477,000
M-2	WEST PARALLEL TAXIWAY – PHASE II	$ 1,109,000	2014	$ 1,403,000	$ 150,000	$ 1,183,000	$ 35,000	$ 35,000
M-3	WEST T-HANGARS – PHASE III, MAINTENANCE HANGAR AND TAXIWAYS	$ 1,235,000	2015	$ 1,625,000	-	-	$ 1,300,000	$ 325,000
M-4	GA TERMINAL COMPLEX, APRON AND TAXILANE	$ 4,258,000	2015	$ 5,603,000	-	-	$ 4,482,000	$ 1,121,000
M-5	WEST T-HANGARS PHASE IV AND BULK HANGAR AND TAXILANES	$ 916,000	2016	$ 1,254,000	-	-	$ 1,003,000	$ 251,000
M-6	WEST SIDE PARALLEL TAXILANES – PHASE II	$ 1,016,000	2016	$ 1,390,000	$ 300,000	$ 1,020,000	$ 35,000	$ 35,000
M-7	WEST T-HANGARS PHASE V AND BULK HANGAR AND TAXILANES	$ 1,010,000	2017	$ 1,438,000	-	-	$ 1,150,000	$ 288,000
M-8	SEAL COAT TAXIWAY A AND EAST RAMP	$ 156,000	2018	$ 231,000	$ 219,000	-	$ 6,000	$ 6,000
M-9	WEST T-HANGARS – PHASE VI	$ 1,300,000	2018	$ 1,924,000	-	-	$ 1,539,000	$ 385,000

	Project Description	Project Cost In 2008 Dollars	Year of Funding	Project Cost In Year of Funding	FAA AIP Funding GA Entitlements	FAA Grant Discretionary	FDOT Matching	Local Matching
	MID-TERM PROJECTS							
M-10	NORTHWEST PROPERTY	$ 6,620,000	2018	$ 9,799,000	$ 81,000	$ 9,228,000	$ 245,000	$ 245,000
M-11	WEST T-HANGARS PHASE VII	$ 1,347,000	2019	$ 2,074,000	-	-	$ 1,659,000	$ 415,000
M-12	SOUTHEAST PROPERTY ACQUISITION	$ 6,386,000	2019	$ 9,831,000	$ 150,000	$ 9,189,000	$ 246,000	$ 246,000
M-13	AIRPORT MAINTENANCE FACILITY	$ 768,000	2020	$ 1,230,000	-	-	$ 984,000	$ 246,000
M-14	SOUTHWEST AND NORTHEAST PROPERTY	$ 2,531,000	2020	$ 4,052,000	$ 150,000	$ 3,700,000	$ 101,000	$ 101,000
	SUBTOTAL MID-TERM	**$ 30,538,000**		**$ 44,240,000**	**$ 1,050,000**	**$ 24,320,000**	**$ 14,694,000**	**$ 4,176,000**

Note: All numbers are rounded

TABLE 7-6
GRANT FUNDING – LONG-TERM

	Project Description	Project Cost In 2008 Dollars	Year of Funding	Project Cost In Year of Funding	FAA AIP Funding GA Entitlements	FAA Grant Discretionary	FDOT Matching	Local Matching
	LONG-TERM PROJECTS							
L-1	SOUTH T-HANGAR PROPERTY	$ 14,278,000	2021	$ 23,774,000	-	-	$ 19,019,000	$ 4,755,000
L-2	ARFF STATION	$ 1,784,000	2021	$ 2,970,000	$ 150,000	$ 2,672,000	$ 74,000	$ 74,000
L-3	SOUTH T-HANGARS – PHASE I	$ 1,968,000	2022	$ 3,408,000	-	-	$ 2,726,000	$ 682,000
L-4	SOUTH T-HANGARS – PHASE II	$ 2,061,000	2023	$ 3,712,000	-	-	$ 2,970,000	$ 742,000
L-5	AIRPORT MASTER PLAN UPDATE	$ 163,000	2023	$ 294,000	$ 280,000	-	$ 7,000	$ 7,000
L-6	SOUTH T-HANGARS – PHASE III	$ 1,028,000	2024	$ 1,925,000	-	-	$ 1,540,000	$ 385,000
L-7	SOUTH T-HANGARS – PHASE IV	$ 1,072,000	2025	$ 2,088,000	-	-	$ 1,670,000	$ 418,000
L-8	SOUTH T-HANGARS – PHASE V	$ 1,681,000	2026	$ 3,405,000	-	-	$ 2,724,000	$ 681,000
L-9	SOUTH T-HANGARS – PHASE VI	$ 1,626,000	2027	$ 3,426,000	-	-	$ 2,741,000	$ 685,000
L-10	SOUTH T-HANGARS – PHASE VII	$ 2,209,000	2028	$ 4,840,000	-	-	$ 3,872,000	$ 968,000
L-11	SOUTH T-HANGARS – PHASE VIII	$ 1,238,000	2029	$ 2,821,000	-	-	$ 2,257000	$ 564,000

	Project Description	Project Cost In 2008 Dollars	Year of Funding	Project Cost In Year of Funding	FAA AIP Funding GA Entitlements	FAA Grant Discretionary	FDOT Matching	Local Matching
	LONG-TERM PROJECTS							
L-12	SOUTH T-HANGARS – PHASE IX	$ 1,163,000	2030	$ 2,756,000	-	-	$ 2,205,000	$ 551,000
L-13	SOUTH T-HANGARS – PHASE X	$ 629,000	2031	$ 1,550,000	-	-	$ 1,240,000	$ 310,000
L-14	SOUTH T-HANGARS – PHASE XI	$ 931,000	2032	$ 2,386,000	-	-	$ 1,909,000	$ 477,000
	SUBTOTAL LONG-TERM	$ 31,831,000		$ 59,355,000	$ 430,000	$ 2,672,000	$ 44,954,000	$ 11,299,000

Note: All numbers are rounded

CHAPTER 8
AIRPORT LAYOUT PLAN

8.1 INTRODUCTION

In Chapter 5 the overall development alternatives for Arthur Dunn Airpark (X21) for the 20-year planning period have been analyzed. A need for numerous airside and landside developments has been noted and discussed in that chapter. These proposed improvements have been refined into a set of drawings know as the Airport Layout Plan (ALP) set that graphically displays these planned improvements. Originally conceived as a "blueprint" for the future development of an airport, the requirements of an ALP have become much more extensive over the years. Because of the increased importance of the ALP, the Federal Aviation Administration (FAA) now requires more than just a single ALP sheet but a whole set of sheets, each of which focus on certain development areas of the ALP. The three primary purposes of an ALP are:

- To preserve areas needed for future facility development, and to illustrate on the drawings how the airport facility will look at the end of the planning period;
- To indicate in detail, FAA design standards to assure that appropriate safety areas are protected;
- To provide an opportunity for the various branches of the FAA to review the set of plans so that the development requirements of each group are considered.

8.2 ALP SET

The ALP set for X21 consists of eleven sheets that together provide a complete picture of the existing and proposed facilities at the Airport. The ALP set is provided on 24 by 36 inch sheets, however a smaller 11 by 17 inch set is provided at the end of this chapter for ease of reference. The sheets included in the OBE ALP set include:

1. Cover Sheet
2. Airport Data Sheet
3. Airport Layout Plan Sheet
4. Terminal Area Drawing
5. Airport Airspace Drawing
6. Runway 15 Inner Approach Drawing
7. Runway 33 Inner Approach Drawing
8. Runway 04 Inner Approach Drawing
9. Runway 22 Inner Approach Drawing
10. Land Use Plan
11. Airport Property Map

The ALP set has been developed in accordance with FAA AC 150/5300-13, *Airport Design*, and other FAA guidelines. The following sections provide a brief overview of the purpose behind each sheet and some of the key elements that can be found on them.

8.2.1 Cover Sheet

Sheet 1, the Cover Sheet, provides a table of contents as well as general information regarding the master plan update project. In addition to this information, two maps help to locate the airport geographically and general information regarding the Airport is provided.

8.2.2 Airport Data Sheet

Sheet 2, the Airport Data Sheet, provides a summary of the general airport data. Included in this data are the runway and taxiway requirements, the windroses, and other general Airport information. The data is presented in a side-by-side format that compares the existing facility data and requirements to that which will be required over the 20-year planning period. Some of the key items on this sheet are the existing and future runway dimensions, the windroses, and the dimensions of the runway safety areas.

8.2.3 ALP Sheet

Sheet 3, the ALP Sheet, is the most utilized sheet of the ALP set. This sheet shows the overall development plan for the Airport over the planning period. All of the other sheets in the ALP Set are derived from the developments planned in this sheet. The ALP Sheet should be updated upon the completion of any major airfield project such as a runway extension. Some of the key developments shown on the ALP Sheet for X21 include:

- Restoration of full-length operation on Runway 13-31and a 596-foot Extension of Runway 4-22;
- The construction of new T-Hangars, corporate hangars, and box hangars;
- The addition of new access taxiways for both Runways 13-31 and 4-22;
- The expansion of the aircraft parking apron,
- The Western and southern Hangar complex development areas.

Some of the improvements that have been noted on the ALP Sheet have been derived from previous ALPs, however those previous sheets are no longer current and should not be used for planning purposes.

8.2.4 Terminal Area Plan

Sheet 4, the Terminal Area Plan, provides a more detailed drawing to the landside developments that have been noted on the ALP. This sheet focuses on the Terminal Area of the airfield where the existing landside development is located. Key items on this sheet include the expansion of the apron area and relocation of skydive drop zones. The proposed cul-de-sac treatment of the existing Flake Road is also shown at both ends to eliminate pass through traffic across the Runway 4-22 RSA and interference with the drop zones.

8.2.5 Airspace Drawing

Sheet 5, the Airspace Drawing sheet, provides a visual representation of the Part 77 Imaginary Airspace surfaces at X21 over the 20-year planning period. This Part 77 surfaces include the primary surface, runway approach surfaces, transitional surfaces, horizontal surface, and conical surface. The surfaces presented on the drawing are based upon the overall developments of the airport. These surfaces will remain the same unless changes are made to the approaches of the runways, a lengthening of a runway, or a change is made the Airport Reference Code (ARC) of a runway.

8.2.6 Inner Approach Drawings

Sheets 6 through 9, the Inner Approach Drawings, provide a much more detailed look at the Part 77 surfaces provided in the Airspace Drawing. The drawings focus upon the immediate approach of each runway end. The various approach surfaces are provided in a plan and profile view. In these views various obstructions are identified and their penetration to the approach surfaces are noted.

8.2.7 Land Use Plan

Sheet 10, the Land Use Plan, provides a look at the future land use of the Airport over the planning period. Additionally, the land use of the surrounding areas is also provided. This sheet can help Airport Management to understand future land uses and help minimize conflict between the different uses.

In addition the proposed land uses, the drawing also incorporates the Noise Contours developed from the Integrated Noise Modeling software (INM). It should be noted that the 65 LdN is contained almost wholly within the existing airport boundary.

8.2.8 Airport Property Map

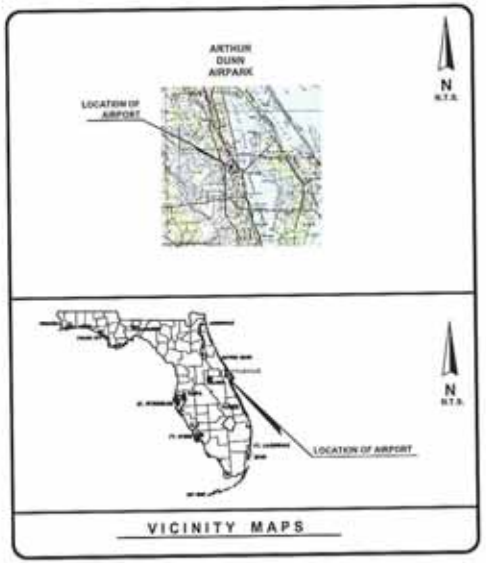
Sheet 11, the Airport Property Map, depicts the existing as well as the future airport property lines developed over the planning period.

ARTHUR DUNN AIRPARK

TITUSVILLE, FLORIDA

AIRPORT LAYOUT PLAN

APRIL 2007



VICINITY MAPS

INDEX

FAA AIP NO. 3-12-0101-010-2002
FDOT FIN NO. 247352-1-84-01

REVISIONS

NO.	DATE	DESCRIPTION	SHEETS

TITUSVILLE-COCOA AIRPORT AUTHORITY BOARD MEMBERS AND SENIOR STAFF

JERRY SANSOM — CHAIRMAN
PATRICIA PATCH — VICE-CHAIRMAN/TREASURER
KEN RIVARD — SECRETARY
JAY G.M. SCHENCK
VERONICA CLIFFORD
KEN GRIFFIN
DR. WASIM NIAZI
MICHAEL D. POWELL, A.C.E. EXECUTIVE DIRECTOR
TIMOTHY F. PICKLES, ESQ. ATTORNEY

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AVCON

AVCON, INC.
ENGINEERS & PLANNERS

TITUSVILLE-COCOA AIRPORT AUTHORITY

RUNWAY DATA TABLE

	RUNWAY 15-33		RUNWAY 4-22	
	EXISTING	ULTIMATE	EXISTING	ULTIMATE
AIRCRAFT APPROACH CATEGORY (AAC)	B	SAME	A	SAME
AIRCRAFT DESIGN GROUP (ADG)	I	SAME	I	SAME
CRITICAL AIRCRAFT	KING AIR B-90 (SMALL AIRCRAFT ONLY)	SAME	ULTRA LIGHTS (SMALL AIRCRAFT ONLY)	SAME
PAVEMENT	ASPHALT	SAME	TURF	SAME
RUNWAY LENGTH	2,981' FT	3,026' FT	1,604' FT	2,400 FT
RUNWAY WIDTH	75' FT	SAME	100' FT	SAME
RUNWAY SAFETY AREA (RSA) WIDTH	120' FT	SAME	120' FT	SAME
RSA LENGTH PRIOR TO LANDING THRESHOLD	240' FT	SAME	240' FT	SAME
RSA LENGTH BEYOND RUNWAY END	240' FT	SAME	240' FT	SAME
RUNWAY OBJECT FREE AREA (OFA) WIDTH	250' FT	SAME	250' FT	SAME
RUNWAY OFA LENGTH BEYOND EACH RUNWAY END	240' FT	SAME	240' FT	SAME
RUNWAY OBJECT FREE ZONE (OFZ) WIDTH	250' FT	SAME	120' FT	SAME
RUNWAY OFZ LENGTH BEYOND END	200' FT	SAME	200' FT	SAME
MINIMUM RUNWAY CENTERLINE TO EDGE OF PARKING	125' FT	SAME	125' FT	SAME
PAVEMENT MARKINGS	VISUAL	NON-PRECISION	NONE	SAME
PAVEMENT LIGHTING	MIRL	SAME	NONE	SAME
PAVEMENT STRENGTH SINGLE WHEEL GEAR	12,500 LBS.	SAME	N/A	N/A
% EFFECTIVE GRADIENT	1.0 %	SAME	1.2 %	SAME
RUNWAY CENTERLINE TO HOLD LINE	125' FT	SAME	125' FT	SAME
RUNWAY CENTERLINE TO TAXIWAY	200' FT	SAME	200 FT	SAME
RUNWAY CENTERLINE TO AIRCRAFT PARKING	400' FT	SAME	400' FT	SAME

(*) 60 FEET IS REQUIRED PER FAA CRITERIA

AIRPORT DATA TABLE

	EXISTING	ULTIMATE
AIRPORT ELEVATION (MSL)	30' AMSL	
AIRPORT REFERENCE POINT (ARP) DATA		
LATITUDE:	28° 31' 21.17" N	28° 31' 20.79" N
LONGITUDE:	80° 50' 07.46" W	80° 50' 07.52" W
MEAN MAXIMUM TEMPERATURE	91° F	
AIRPORT & TERMINAL NAVAIDS	GPS, ROTATING BEACON, SEGMENTED CIRCLE, LIGHTED WINDCONE	EXISTING PLUS WAAS

WIND OBSERVATION DATA

SOURCE: NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
STATION: NO. 72204, TITUSVILLE, FL (TIX)
PERIOD: SEPTEMBER 1994 - AUGUST 2004

	RUNWAY 15		RUNWAY 33	
	EXISTING	ULTIMATE	EXISTING	ULTIMATE
RUNWAY END ELEVATION (AMSL)	24.5' FT	SAME	30.0' FT	29.4' FT
LATITUDE	28° 31' 34.15" N	SAME	28° 31' 09.82" N	28° 31' 08.46" N
LONGITUDE	80° 50' 15.66" W	SAME	80° 49' 58.57" W	80° 49' 58.17" W
NORTHING	1560393.18	SAME	155785S.16	155760S.59
EASTING	708238.66	SAME	709166.56	709801.06
DISPLACED THRESHOLD				
ELEVATION	NONE	SAME	30.0' FT	NONE
LATITUDE	NONE	SAME	28° 31' 12.75" N	NONE
LONGITUDE	NONE	SAME	80° 50' 01.09" W	NONE
TRUE BEARING	149° 00' 21.215"	SAME	329° 00' 18.785"	SAME
APPROACH CATEGORY	UTILITY NON-PRECISION	NON-PRECISION*	UTILITY NON-PRECISION	NON-PRECISION*
APPROACH VISIBILITY MINIMUMS	1- MILE	SAME	1-MILE	SAME
NAVIGATIONAL AIDS	GPS	SAME	GPS	SAME
VISUAL AIDS	PAPI	SAME	PAPI	SAME
FAR PART 77 APPROACH SLOPE	20:1	34:1	20:1	34:1

* WITH THE ADDITION OF VERY LIGHT JET (VLJ) OPERATIONS, RUNWAY 15-33 WILL LOSE ITS STATUS OF UTILITY RUNWAY

	RUNWAY 4		RUNWAY 22	
EXISTING	ULTIMATE	EXISTING	ULTIMATE	
27.8 FT	26.0 FT	25.8 FT	25.0 FT	
28° 31' 12.93" N	28° 31' 10.09" N	28° 31' 28.04" N	28° 31' 30.20" N	
80° 50' 13.44" W	80° 50' 15.46" W	80° 50' 02.94" W	80° 50' 01.10" W	
1558249.85	155795S.34	1559177.34	1559965.42	
708438.55	708260.04	709399.97	709537.00	
27.7 FT	NONE	26.0 FT	NONE	
28° 31' 13.76" N	NONE	28° 31' 25.53" N	NONE	
80° 50' 12.84" W	NONE	80° 50' 04.43" W	NONE	
32°9'35.694"	SAME	212°9'35.694"	SAME	
UTILITY VISUAL	SAME	UTILITY VISUAL	SAME	
≥ 3 - MILE	SAME	≥ 3 - MILE	SAME	
NONE	SAME	NONE	SAME	
NONE	SAME	NONE	SAME	
20:1	SAME	20:1	SAME	

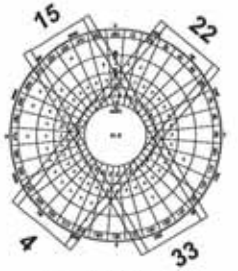
RUNWAY PROTECTION ZONE LENGTH	1,000' FT	1,000 FT	1,000' FT	1,000 FT
RUNWAY PROTECTION ZONE INNER WIDTH	250' FT	500 FT	250' FT	500 FT
RUNWAY PROTECTION ZONE OUTER WIDTH	450 FT	700 FT	450 FT	700 FT
RUNWAY PROTECTION ZONE AREA	8.035 AC	13.770 AC	8.035 AC	13.770 AC

1,000' FT	SAME	1,000' FT	SAME
250' FT	SAME	250' FT	SAME
450 FT	SAME	450 FT	SAME
8.035 AC	SAME	8.035 AC	SAME

TAXIWAY DATA TABLE

TAXIWAY LIGHTING	MITL
TAXIWAY WIDTH (MINIMUM)	25' FT
TAXIWAY SAFETY AREA WIDTH	49' FT
TAXIWAY OBJECT FREE AREA WIDTH	89' FT
TAXILANE OBJECT FREE AREA WIDTH	79' FT
TAXIWAY EDGE SAFETY MARGIN	5' FT

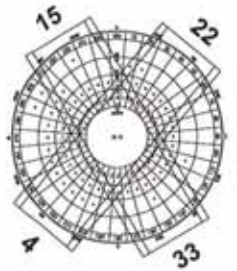
RADIUS OF TAXIWAY TURN	75' FT
LENGTH OF LEAD-IN TO FILLET	50' FT
FILLET RADIUS FOR TRACKING CENTERLINE	60' FT
TAXIWAY WINGTIP CLEARANCE	26' FT
TAXIWAY CENTERLINE TO FIXED OR MOVABLE OBJECT	44.5' FT
TAXIWAY CENTERLINE TO PARALLEL TAXIWAY/TAXILANE CENTERLINE	69' FT



ALL WEATHER

+ PLUS INDICATES WINDS LESS THAN 0.1%
ALL WEATHER WIND COVERAGE BY RUNWAY (%)

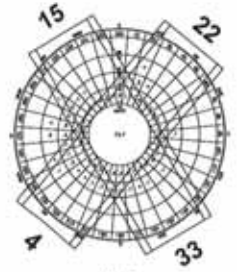
RUNWAY	10.5 KNOT (12 MPH)	13 KNOT (15 MPH)
4 - 22	92.24 %	95.36 %
15 - 33	91.77 %	95.81 %
BOTH	97.89 %	99.49 %



VFR

+ PLUS INDICATES WINDS LESS THAN 0.1%
VFR WIND COVERAGE BY RUNWAY (%)

RUNWAY	10.5 KNOT (12 MPH)	13 KNOT (15 MPH)
4 - 22	92.25 %	95.35 %
15 - 33	91.73 %	95.81 %
BOTH	97.92 %	99.52 %



IFR

+ PLUS INDICATES WINDS LESS THAN 0.1%
IFR WIND COVERAGE BY RUNWAY (%)

RUNWAY	10.5 KNOT (12 MPH)	13 KNOT (15 MPH)
4 - 22	86.40 %	92.17 %
15 - 33	88.85 %	93.84 %
BOTH	96.81 %	98.64 %

TITUSVILLE-COCOA AIRPORT AUTHORITY

AVCON

AVCON, INC.
ENGINEERS & PLANNERS

ARTHUR DUNN AIRPARK MASTER PLAN UPDATE

AIRPORT LAYOUT PLAN SET

DATA SHEET

SCALE: AS NOTED

REVISIONS:			
NO	DATE	BY	DESCRIPTION

DESIGNED BY: N.V.
DRAWN BY: N.V.
CHECKED BY: J.A.K.
APPROVED BY: S.S.
DATE: 4/20/07

FAA PROJECT NO. 3-12-0101-010-2002
FDOT PROJECT NO. 247352-1-94-01
AVCON PROJECT NO. 2002.045.01

SHEET NUMBER
2 OF 13

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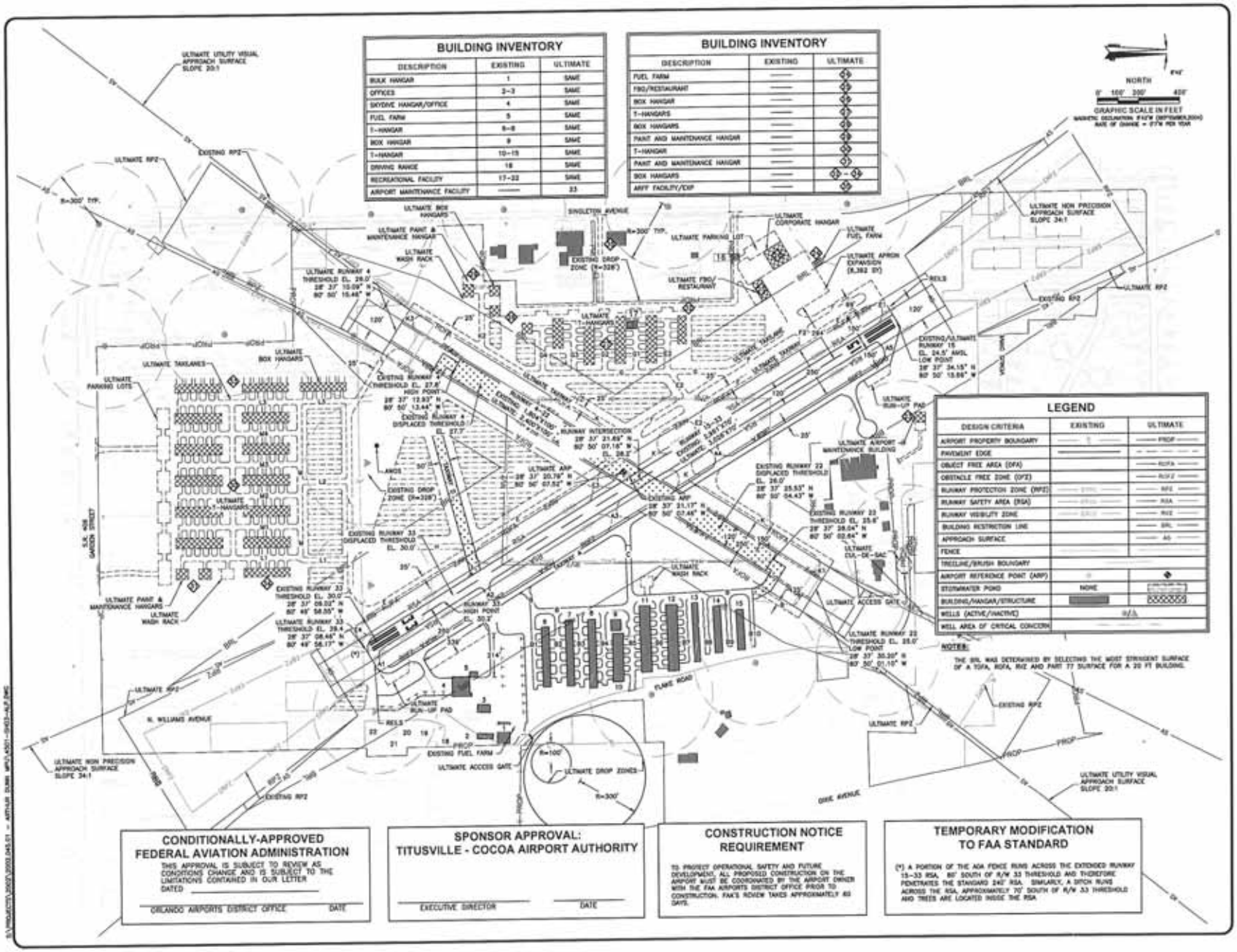

TITUSVILLE-COCOA AIRPORT AUTHORITY

AVCON

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BUCHANAN & HIGHTOWER

ARTHUR DUNN AIRPARK MASTER PLAN UPDATE

AIRPORT LAYOUT PLAN SET

AIRPORT LAYOUT PLAN

SCALE: AS NOTED

REVISIONS:

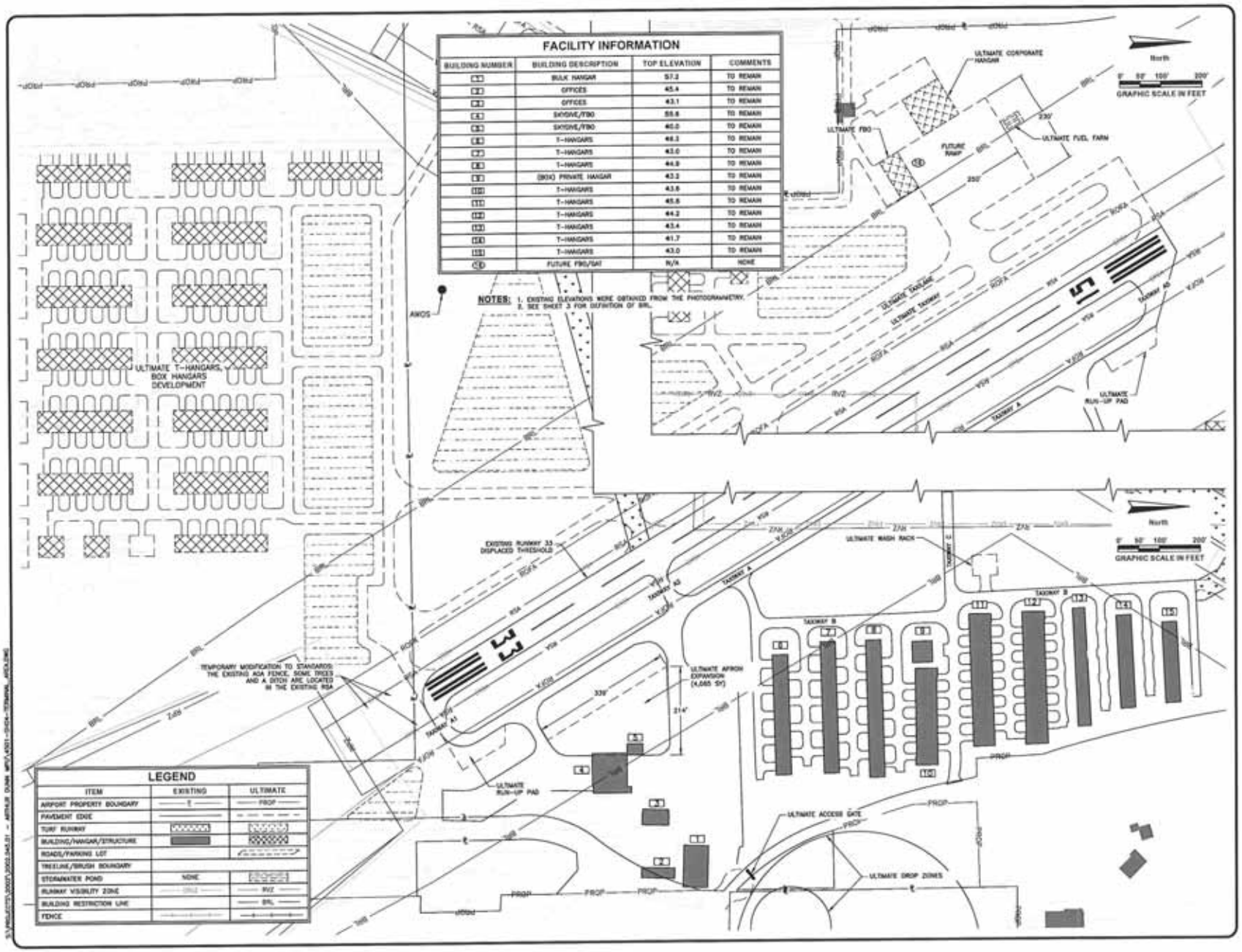
NO.	DATE	BY	DESCRIPTION

DESIGNED BY: N.V.
DRAWN BY: N.V.
CHECKED BY: J.A.K.
APPROVED BY: S.S.
DATE: 4/20/07

FAA PROJECT NO. 3-12-0101-019-2002
FDOT PROJECT NO. 247352-1-94-01
AVCON PROJECT NO. 2002.045.01

SHEET NUMBER
3 OF 13

S:\PROJECTS\2002\2002.045.01 - ARTHUR DUNN MPU\ASD1-01\03-ALP.DWG



TITUSVILLE-COCOA AIRPORT AUTHORITY

AVCON

AVCON, INC.

ARTHUR DUNN AIRPARK MASTER PLAN UPDATE

AIRPORT LAYOUT PLAN SET

TERMINAL AREA DRAWING

SCALE: AS NOTED

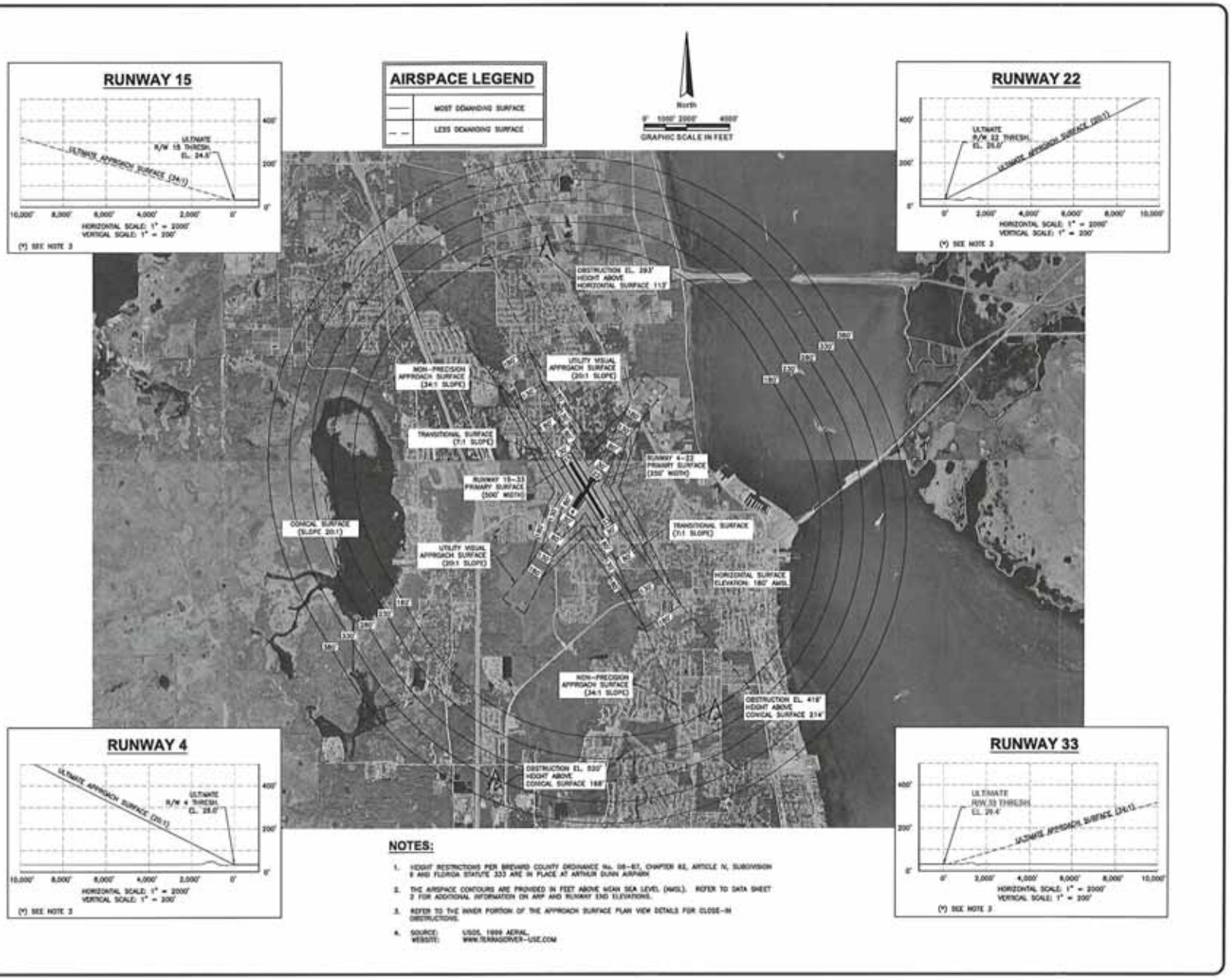
REVISIONS:

NO.	DATE	BY	DESCRIPTION

DESIGNED BY: N.V.
DRAWN BY: N.V.
CHECKED BY: J.A.K.
APPROVED BY: S.S.
DATE: 4/20/07

FAA PROJECT NO. 3-12-0101-010-2002
FDOT PROJECT NO. 247352-1-94-01
AVCON PROJECT NO. 2002.045.01

SHEET NUMBER
4 OF 13



NOTES:

1. HEIGHT RESTRICTIONS PER BREVARD COUNTY ORDINANCE No. 08-67, CHAPTER 62, ARTICLE IV, SUBDIVISION II AND FLORIDA STATUTE 333 ARE IN PLACE AT ARTHUR DUNN AIRPARK
2. THE AIRSPACE CONTOURS ARE PROVIDED IN FEET ABOVE MEAN SEA LEVEL (MSL). REFER TO DATA SHEET 2 FOR ADDITIONAL INFORMATION ON ARP AND RUNWAY END ELEVATIONS.
3. REFER TO THE INNER PORTION OF THE APPROACH SURFACE PLAN VIEW DETAILS FOR CLOSE-IN OBSTRUCTIONS.
4. SOURCE: USGS, 1998 AERIAL
   WEBSITE: WWW.TERRASERVER-USE.COM

TITUSVILLE-COCOA AIRPORT AUTHORITY

AVCON

AVCON, INC.

ARTHUR DUNN AIRPARK MASTER PLAN UPDATE

AIRPORT LAYOUT PLAN SET

AIRSPACE DRAWING

SCALE: AS NOTED

REVISIONS			
NO.	DATE	BY	DESCRIPTION

DESIGNED BY: N.V.
DRAWN BY: N.V.
CHECKED BY: J.A.K.
APPROVED BY: S.S.
DATE: 4/20/07

FAA PROJECT NO. 3-12-0101-010-2002
FDOT PROJECT NO. 247352-1-94-01
AVCON PROJECT NO. 2002.045.01

SHEET NUMBER
5 OF 13

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OBSTRUCTION DATA TABLE

ID	DESCRIPTION (**)	TOP ELEVATION (***)	EXISTING PART 77 (***) ELEVATION	EXISTING FEET ABOVE SURFACE	ULTIMATE PART 77 (***) ELEVATION	ULTIMATE FEET ABOVE SURFACE	DISPOSITION
1	TREE CLUSTER	69.9	63.3	0	59.1	10.8	CUT/REMOVE
2	TREE CLUSTER	62.1	80.8	0	57.6	4.5	CUT/REMOVE
3	UTILITY POLE	78.3	80.4	0	57.4	20.9	UNDERGROUND
4	HOUSE	54.1	73.5	0	53.3	0.8	REMOVE
5	TREE CLUSTER	76.3	71.4	4.9	52.1	24.2	CUT/REMOVE
6	UTILITY POLE	75.7	69.9	5.8	51.2	24.5	UNDERGROUND
7	UTILITY POLE	58.0	69.2	0	50.8	7.2	UNDERGROUND
8	UTILITY POLE	55.8	66.3	0	49.1	6.7	UNDERGROUND
9	TREE	65.8	62.8	3.0	47.1	18.7	CUT/REMOVE
10	TREE CLUSTER	63.7	61.4	2.3	46.2	17.5	CUT/REMOVE
11	UTILITY POLE	52.7	59.5	0	45.1	7.6	UNDERGROUND
12	TREE	50.6	63.3	0	47.3	3.3	CUT/REMOVE
13	UTILITY POLE	57.9	59.5	0	45.1	12.8	UNDERGROUND
14	UTILITY POLE	72.3	59.0	13.3	44.8	27.5	UNDERGROUND
15	UTILITY POLE	56.1	59.7	0	45.2	10.9	UNDERGROUND
16	TREE	57.1	58.8	0	44.7	12.4	CUT/REMOVE
17	TREE	55.4	58.6	0	43.4	12.0	CUT/REMOVE
18	TREE	59.4	54.8	4.6	42.3	17.1	CUT/REMOVE
19	UTILITY POLE	56.8	53.2	3.6	41.4	15.4	UNDERGROUND
20	TREE	50.4	53.6	0	41.6	8.8	CUT/REMOVE
21	TREE CLUSTER	58.7	58.0	0.7	46.1	12.6	CUT/REMOVE
22	HOUSE	40.4	48.8	0	39.4	1.0	REMOVE
23	TREE	50.2	46.8	3.4	37.6	12.6	CUT/REMOVE
24	TREE	65.4	50.0	15.4	39.5	25.9	CUT/REMOVE
25	HOUSE	42.0	45.1	0	36.6	5.4	REMOVE
26	TREE	63.2	48.4	14.8	37.4	25.8	CUT/REMOVE
27	UTILITY POLE	55.1	53.7	1.4	44.9	10.2	UNDERGROUND
28	UTILITY POLE	58.2	48.7	9.5	39.0	17.2	UNDERGROUND
29	UTILITY POLE	77.4	57.9	19.5	47.6	29.8	UNDERGROUND
30	TREE	50.6	46.9	3.7	37.7	12.9	CUT/REMOVE
31	TREE	60.5	49.7	10.8	39.3	21.2	CUT/REMOVE
32	TREE	58.6	48.1	10.5	38.4	20.2	CUT/REMOVE
33	UTILITY POLE	57.8	46.8	10.8	37.8	20	UNDERGROUND
34	TREE	53.7	45.4	8.3	36.8	16.9	CUT/REMOVE
35	TREE CLUSTER	57.6	48.6	9.0	38.7	18.9	CUT/REMOVE
36	HOUSE	38.3	43.7	0	35.8	2.5	REMOVE
37	TREE	52.2	41.8	10.4	34.7	17.5	CUT/REMOVE
38	TREE CLUSTER	50.8	44.7	6.1	36.4	14.4	CUT/REMOVE

OBSTRUCTION DATA TABLE

ID	DESCRIPTION	TOP ELEVATION (***)	EXISTING PART 77 (***) ELEVATION	EXISTING FEET ABOVE SURFACE	ULTIMATE PART 77 (***) ELEVATION	ULTIMATE FEET ABOVE SURFACE	DISPOSITION
60	MERCURY LN.	40.0 (*)	33.7	6.3	29.9	10.1	NONE
61	SATURN DR.	40.0 (*)	33.7	6.3	29.9	10.1	NONE
62	VENUS DR.	40.0 (*)	42.9	0	35.3	4.7	NONE
63	LUNA TER.	40.0 (*)	42.9	0	35.3	4.7	NONE
64	SINGLETON AVE.	40.0 (*)	50.2	0	39.6	0.4	NONE
65	COOPER DR.	40.0 (*)	53.7	0	41.7	0	NONE
66	CONWAY DR.	40.0 (*)	56.1	0	47.5	0	NONE
67	STARLIGHT DR.	40.0 (*)	64.1	0	59.8	0	NONE
68	PEMBROOKE DR.	40.0 (*)	74.8	0	54.0	0	NONE
69	TELKA LYNN DR.	40.0 (*)	74.8	0	54.0	0	NONE

NOTES:

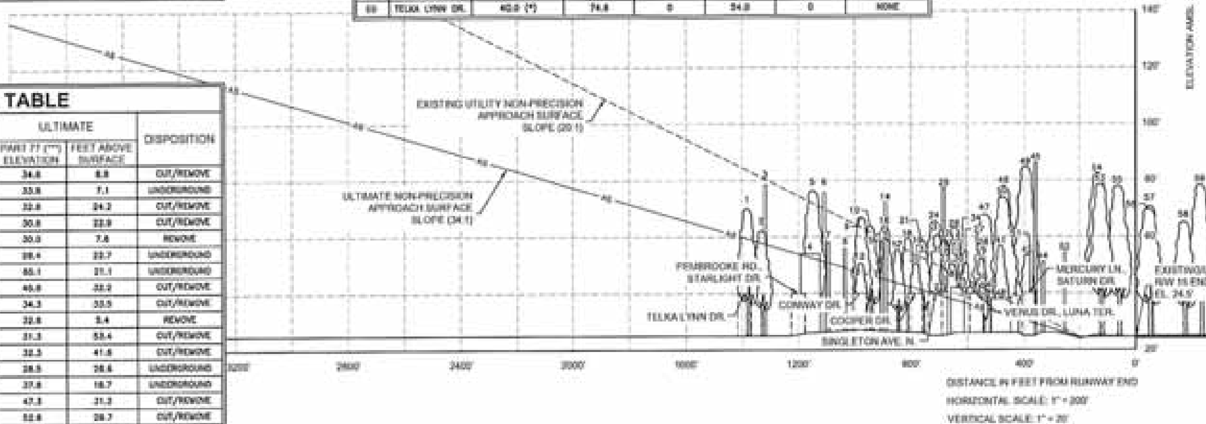
(*) THIS ELEVATION IS BASED ON THE EXISTING GROUND ELEVATION PLUS 15 FEET PER FAA PART 77 REQUIREMENTS FOR PUBLIC ROADWAYS.

(**) ALL EXISTING ELEVATIONS WERE OBTAINED FROM THE PHOTOGRAMMETRY. (TYP. OF ALL INNER APPROACH SHEETS)

(***) PART 77 AND TOP ELEVATIONS ARE EXPRESSED IN FEET ABOVE MEAN SEA LEVEL.

OBSTRUCTION DATA TABLE

ID	DESCRIPTION (**)	TOP ELEVATION (***)	EXISTING PART 77 (***) ELEVATION	EXISTING FEET ABOVE SURFACE	ULTIMATE PART 77 (***) ELEVATION	ULTIMATE FEET ABOVE SURFACE	DISPOSITION
39	TREE CLUSTER	43.5	41.7	1.8	34.6	8.9	CUT/REMOVE
40	UTILITY POLE	40.9	40.3	0.6	33.8	7.1	UNDERGROUND
41	TREE	56.8	38.3	18.5	32.6	24.2	CUT/REMOVE
42	TREE	53.5	34.9	18.6	30.6	22.9	CUT/REMOVE
43	HOUSE	37.6	33.8	3.8	30.0	7.6	REMOVE
44	UTILITY POLE	51.1	31.1	20.0	28.4	22.7	UNDERGROUND
45	UTILITY POLE	86.2	68.6	17.6	65.1	21.1	UNDERGROUND
46	TREE CLUSTER	77.8	51.4	26.4	45.6	32.2	CUT/REMOVE
47	TREE	67.8	41.2	26.6	34.3	33.5	CUT/REMOVE
48	HOUSE	38.0	38.3	0	32.6	5.4	REMOVE
49	TREE	84.7	36.1	48.6	31.3	53.4	CUT/REMOVE
50	TREE	73.9	37.8	36.1	32.3	41.6	CUT/REMOVE
51	UTILITY POLE	65.1	31.3	33.8	28.5	36.6	UNDERGROUND
52	UTILITY POLE	54.3	38.4	15.9	37.6	16.7	UNDERGROUND
53	TREE	78.5	48.3	30.2	47.3	31.2	CUT/REMOVE
54	TREE CLUSTER	82.3	56.9	25.4	52.6	29.7	CUT/REMOVE
55	TREE	77.9	67.9	10.0	67.8	10.1	CUT/REMOVE
56	TREE CLUSTER	69.5	69.3	0.2	59.3	10.2	CUT/REMOVE
57	TREE CLUSTER	70.7	48.6	22.1	48.3	22.4	CUT/REMOVE
58	TREE CLUSTER	65.0	69.3	0	59.3	5.7	CUT/REMOVE
59	TREE CLUSTER	65.0	65.7	0	59.3	5.7	CUT/REMOVE



RUNWAY 15 APPROACH PROFILE

TITUSVILLE-COCOA AIRPORT AUTHORITY

AVCON

AVCON, INC.
ENGINEERS & PLANNERS

ARTHUR DUNN AIRPARK MASTER PLAN UPDATE

AIRPORT LAYOUT PLAN SET

RUNWAY 15 INNER APPROACH SURFACE PLAN

SCALE:	AS NOTED

REVISIONS

NO.	DATE	BY	DESCRIPTION

DESIGNED BY:	N.V.
DRAWN BY:	N.V.
CHECKED BY:	J.A.K.
APPROVED BY:	S.S.
DATE:	4/20/07

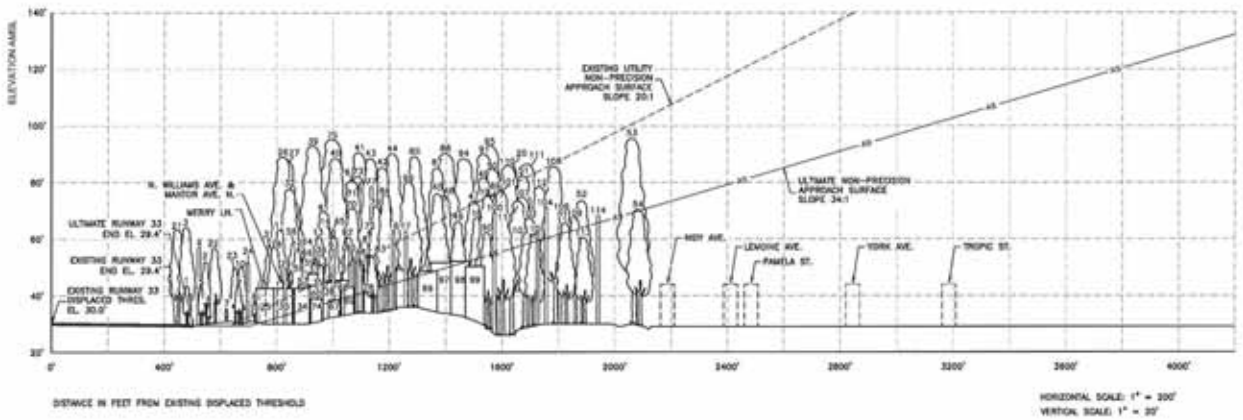
FAA PROJECT NO.	3-12-0101-010-2002
FDOT PROJECT NO.	247352-1-94-01
AVCON PROJECT NO.	2002.045.01

SHEET NUMBER

6 OF 13

OBSTRUCTION DATA TABLE

ID	DESCRIPTION	TOP ELEVATION (***)	EXISTING		ULTIMATE		DISPOSITION
			PART 77 (***) ELEVATION	FEET ABOVE SURFACE	PART 77 (***) ELEVATION	FEET ABOVE SURFACE	
A	N. WILLIAMS AVE.	45.0 (*)	38.3	6.7	32.6	12.4	NONE
B	MERRY LN.	45.2 (*)	35.0	10.2	30.7	14.5	NONE
C	MANTOR AVE. N.	45.0 (*)	38.3	6.7	32.6	13.4	NONE



HORIZONTAL SCALE: 1" = 200'
VERTICAL SCALE: 1" = 20'

NOTES:

(*) THIS ELEVATION IS BASED ON THE EXISTING GROUND ELEVATION PLUS 15 FEET PER FAA PART 77 REQUIREMENTS FOR PUBLIC ROADWAYS.

(**) ALL EXISTING ELEVATIONS WERE OBTAINED FROM THE PHOTOGRAMMETRY. [TYP. OF ALL INNER APPROACH SHEETS]

(***) PART 77 AND TOP ELEVATIONS ARE EXPRESSED IN FEET ABOVE MEAN SEA LEVEL.

(****) SEE SHEET 8 FOR OBSTRUCTION DETAILS

RUNWAY 33 APPROACH PROFILE

TITUSVILLE-COCOA AIRPORT AUTHORITY

AVCON

AVCON, INC.
ENGINEERS & PLANNERS

ARTHUR DUNN AIRPARK MASTER PLAN UPDATE

AIRPORT LAYOUT PLAN SET

RUNWAY 33 INNER APPROACH SURFACE PLAN

SCALE: AS NOTED

REVISIONS:

NO.	DATE	BY	DESCRIPTION

DESIGNED BY: N.V.
DRAWN BY: N.V.
CHECKED BY: J.A.K.
APPROVED BY: S.S.
DATE: 4/20/07

FAA PROJECT NO. 3-12-0101-010-2002
FDOT PROJECT NO. 247353-1-94-01
AVCON PROJECT NO. 2002.045.01

SHEET NUMBER
7 OF 13

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OBSTRUCTION DATA TABLE

ID	DESCRIPTION	TOP ELEVATION (**)	EXISTING		ULTIMATE		DISPOSITION
			PART 77 (**) ELEVATION	FEET ABOVE SURFACE	PART 77 (**) ELEVATION	FEET ABOVE SURFACE	
1	TREE	43.5	35.0	8.5	34.4	9.1	CUT/REMOVE
2	TREE CLUSTER	52.0	33.4	18.6	33.9	18.1	CUT/REMOVE
3	UTILITY POLE	64.1	52.7	11.4	52.1	12	UNDERGROUND
4	UTILITY POLE	57.1	56.1	1.0	55.4	1.7	UNDERGROUND
5	TREE	42.4	30.0	12.4	29.4	13.0	CUT/REMOVE
6	TREE	37.2	30.0	7.2	29.4	7.8	CUT/REMOVE
7	TREE	35.8	30.0	5.8	29.4	6.2	CUT/REMOVE
8	TREE	38.0	34.1	3.9	29.8	8.1	CUT/REMOVE
9	TREE CLUSTER	43.6	33.3	10.3	29.4	14.2	CUT/REMOVE
10	TREE	43.7	41.0	2.7	38.4	5.3	CUT/REMOVE
11	TREE CLUSTER	63.3	72.5	0	67.7	0	NONE
12	TREE CLUSTER	56.2	61.7	0	55.4	0.8	CUT/REMOVE
13	TREE	60.7	53.7	7.0	45.7	15.0	CUT/REMOVE
14	TREE	60.7	58.7	2.0	49.7	11.0	CUT/REMOVE
15	UTILITY POLE	52.7	84.4	0	54	0	NONE
16	UTILITY POLE	62.0	68.5	0	53.4	8.5	UNDERGROUND
17	UTILITY POLE	62.0	71.8	0	57.4	5.9	UNDERGROUND
18	TREE CLUSTER	67.8	91.1	0	62	5.8	CUT/REMOVE
19	TREE CLUSTER	75.5	87.7	0	67.4	8.1	CUT/REMOVE
20	TREE CLUSTER	86.8	97.1	0	75.8	11.0	CUT/REMOVE
21	TREE CLUSTER	63.7	60.7	3.7	59.0	4.7	CUT/REMOVE
22	TREE CLUSTER	56.8	48.4	8.4	47.7	9.1	CUT/REMOVE
23	TREE	46.8	33.3	16.8	28.4	20.5	CUT/REMOVE
24	UTILITY POLE	51.4	44.6	6.8	35.8	15.6	UNDERGROUND
25	HOUSE	42.8	50.7	0	41.4	1.2	REMOVE
26	TREE CLUSTER	69.1	58.3	30.8	47.9	41.2	CUT/REMOVE
27	TREE CLUSTER	68.2	69.9	18.3	59.3	28.9	CUT/REMOVE
28	TREE	57.0	37.7	19.3	32.0	25.0	CUT/REMOVE
29	UTILITY POLE	49.4	39.8	9.66	33.1	16.3	UNDERGROUND
30	HOUSE	42.8	48.0	0	35.7	6.9	REMOVE
31	TREE	57.8	45.7	12.1	35.7	22.1	CUT/REMOVE
32	TREE	77.7	40.6	37.1	33.7	44.0	CUT/REMOVE
33	HOUSE	47.8	50.6	0	39.7	8.8	REMOVE
34	HOUSE	42.8	41.8	0.8	34.4	8.2	REMOVE
35	HOUSE	43.2	44.3	0	35.9	7.3	REMOVE
36	UTILITY POLE	54.4	45.8	8.6	36.8	17.6	UNDERGROUND
37	TREE	51.0	47.0	4.0	37.5	13.5	CUT/REMOVE
38	HOUSE	45.4	48.6	0	38.4	7.0	REMOVE
39	TREE CLUSTER	83.0	83.4	29.6	51.6	41.4	CUT/REMOVE
40	TREE CLUSTER	88.8	66.0	33.8	41.8	46.7	CUT/REMOVE
41	TREE CLUSTER	90.6	77.0	13.6	69.0	21.6	CUT/REMOVE
42	TREE CLUSTER	85.3	88.6	0	81.9	3.4	CUT/REMOVE
43	TREE CLUSTER	86.5	80.3	28.2	43.4	43.1	CUT/REMOVE
44	TREE CLUSTER	90.2	58.8	31.4	44.4	45.8	CUT/REMOVE
45	TREE CLUSTER	76.0	66.7	9.3	49.1	26.9	CUT/REMOVE
46	TREE CLUSTER	66.3	73.7	0	54.7	11.6	CUT/REMOVE
47	TREE CLUSTER	73.3	63.2	0	63.6	9.7	CUT/REMOVE
48	TREE CLUSTER	75.1	80.9	0	72.7	2.4	CUT/REMOVE
49	TREE CLUSTER	81.7	85.4	0	75.3	6.4	CUT/REMOVE
50	TREE CLUSTER	84.8	112.4	0	88.4	0	NONE
51	TREE CLUSTER	82.4	102.1	0	78.1	6.3	CUT/REMOVE
52	TREE CLUSTER	73.8	89.0	0	69.4	4.2	CUT/REMOVE
53	TREE CLUSTER	65.5	116.4	0	77.7	17.8	CUT/REMOVE
54	TREE	70.4	102.4	0	70.1	0.3	CUT/REMOVE
55	FENCE	35.4	40.9	0	33.9	1.5	REMOVE
56	TREE	58.8	41.2	17.7	34.1	24.8	CUT/REMOVE
57	HOUSE	43.7	42.6	1.1	34.9	8.8	REMOVE
58	TREE CLUSTER	48.0	44.1	4.0	35.8	12.8	CUT/REMOVE

OBSTRUCTION DATA TABLE

ID	DESCRIPTION	TOP ELEVATION (**)	EXISTING		ULTIMATE		DISPOSITION
			PART 77 (**) ELEVATION	FEET ABOVE SURFACE	PART 77 (**) ELEVATION	FEET ABOVE SURFACE	
59	TREE CLUSTER	50.9	46.0	4.9	38.9	14	CUT/REMOVE
60	HOUSE	44.9	47.7	0	37.9	7.0	REMOVE
61	TREE	57.8	46.5	11.3	37.2	20.6	CUT/REMOVE
62	TREE	60.7	50.9	9.8	39.8	20.9	CUT/REMOVE
63	UTILITY POLE	56.3	50.1	6.2	40.9	15.4	UNDERGROUND
64	UTILITY POLE	55.8	44.8	11.0	36.2	19.6	UNDERGROUND
65	UTILITY POLE	63.0	48.0	15.0	38.1	24.9	UNDERGROUND
66	UTILITY POLE	53.0	45.0	7.0	38.3	15.7	UNDERGROUND
67	HOUSE	38.4	47.9	0	38.0	0.4	REMOVE
68	UTILITY POLE	41.6	49.7	0	39.1	2.5	UNDERGROUND
69	HOUSE	43.0	49.8	0	39.2	3.8	REMOVE
70	TREE	70.8	57.8	13.3	47.1	23.8	CUT/REMOVE
71	TREE	80.4	54.3	26.3	41.7	38.7	CUT/REMOVE
72	UTILITY POLE	62.8	57.0	5.8	45.3	17.5	UNDERGROUND
73	TREE CLUSTER	82.1	52.8	29.5	40.8	41.3	CUT/REMOVE
74	BUILDING	38.8	45.0	0	36.3	2.6	REMOVE
75	TREE CLUSTER	95.3	48.2	47.1	38.2	57.1	CUT/REMOVE
76	TREE CLUSTER	80.8	51.8	29.0	40.2	40.4	CUT/REMOVE
77	TREE CLUSTER	78.5	54.8	23.7	42.1	36.4	CUT/REMOVE
78	HOUSE	48.5	54.8	0	42.1	6.4	REMOVE
79	TREE CLUSTER	71.6	55.7	15.9	42.6	29	CUT/REMOVE
80	UTILITY POLE	55.8	51.1	4.3	39.9	15.7	UNDERGROUND
81	UTILITY POLE	55.8	52.3	3.3	40.6	15.0	UNDERGROUND
82	TREE	54.1	53.8	0.3	41.5	12.6	CUT/REMOVE
83	TREE	58.8	55.0	1.8	42.2	14.4	CUT/REMOVE
84	TREE CLUSTER	75.8	57.9	18.2	43.7	43.7	CUT/REMOVE
85	TREE CLUSTER	89.2	62.7	26.5	46.7	42.2	CUT/REMOVE
86	HOUSE	48.6	64.9	0	48.0	0.6	REMOVE
87	TREE CLUSTER	85.1	66.7	18.4	49.1	36.0	CUT/REMOVE
88	TREE CLUSTER	90.3	68.3	22.0	50.0	40.3	CUT/REMOVE
89	TREE	75.3	75.8	0	54.3	21.0	CUT/REMOVE
90	TREE	82.4	75.4	0	54.2	8.2	CUT/REMOVE
91	TREE CLUSTER	90.1	74.9	15.2	53.9	36.2	CUT/REMOVE
92	TREE CLUSTER	49.1	68.1	0	49.9	0	NONE
93	HOUSE	49.1	71.7	0	52.0	0	NONE
94	TREE CLUSTER	88.5	71.5	17.0	51.9	36.6	CUT/REMOVE
95	TREE CLUSTER	93.1	76.1	17.0	54.6	38.5	CUT/REMOVE
96	TREE CLUSTER	80.2	61.6	18.6	46.1	34.1	CUT/REMOVE
97	HOUSE	51.7	67.1	0	49.3	2.4	REMOVE
98	HOUSE	52.1	70.1	0	51.1	0	NONE
99	HOUSE	50.4	72.4	0	52.4	0	NONE
100	UTILITY POLE	69.3	78.6	0	54.9	14.4	REMOVE
101	TREE	78.8	78.0	0	55.7	21.2	CUT/REMOVE
102	UTILITY POLE	67.5	62.9	0	58.6	8.9	REMOVE
103	TREE	61.9	63.7	0	59.1	2.8	CUT/REMOVE
104	UTILITY POLE	71.1	67.1	0	62.1	9.0	REMOVE
105	UTILITY POLE	62.2	64.3	0	59.4	2.8	REMOVE
106	UTILITY POLE	69.6	68.2	0	61.7	7.9	REMOVE
107	TREE CLUSTER	74.6	61.7	0	57.9	16.8	CUT/REMOVE
108	TREE CLUSTER	85.7	67.5	0	61.3	24.4	CUT/REMOVE
109	TREE CLUSTER	67.6	61.1	0	63.4	4.2	CUT/REMOVE
110	TREE CLUSTER	66.1	79.3	6.8	56.5	24.6	CUT/REMOVE
111	TREE CLUSTER	66.6	62.7	3.9	56.5	26.1	CUT/REMOVE
112	TREE CLUSTER	78.5	64.8	0	59.7	19.8	CUT/REMOVE
113	TREE	60.5	62.6	0	64.3	0	NONE
114	UTILITY POLE	68.3	65.0	0	65.7	2.6	UNDERGROUND
115	TREE CLUSTER	73.5	61.3	0	57.5	16	CUT/REMOVE
116	TREE CLUSTER	65.6	69.4	0	62.4	3.2	CUT/REMOVE

NOTES: (*) ALL EXISTING ELEVATIONS WERE OBTAINED FROM THE PHOTOGRAMMETRY. (TYP. OF ALL INNER APPROACH SHEETS)

(**) PART 77 AND TOP ELEVATIONS ARE EXPRESSED IN FEET ABOVE MEAN SEA LEVEL

TITUSVILLE-COCOA AIRPORT AUTHORITY

AVCON

AVCON, INC.
ENGINEERS & PLANNERS

ARTHUR DUNN AIRPARK MASTER PLAN UPDATE

AIRPORT LAYOUT PLAN SET

RUNWAY 33 INNER APPROACH OBSTRUCTION INFORMATION

SCALE: AS NOTED

REVISIONS: NO.	DATE	BY	DESCRIPTION

DESIGNED BY: N.V.
DRAWN BY: N.V.
CHECKED BY: J.A.K.
APPROVED BY: S.S.
DATE: 4/20/07

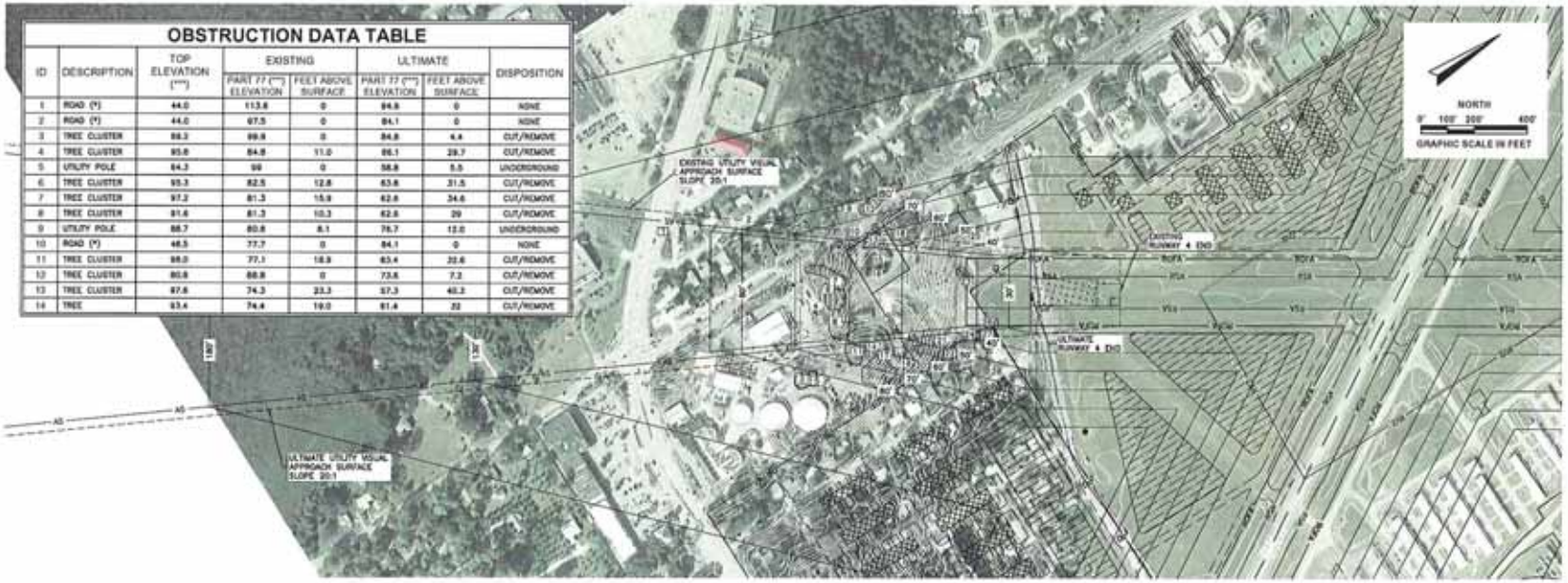
FAA PROJECT NO. 3-12-0101-019-2002
FDOT PROJECT NO. 247352-1-94-01
AVCON PROJECT NO. 2002.046.01

SHEET NUMBER
8 OF 13

S:\PROJECTS\2002\2002.046.01 - ARTHUR DUNN MPU\ASD1-2\OBSTRUCTION_APP_33-OBSTRUCTION.DWG

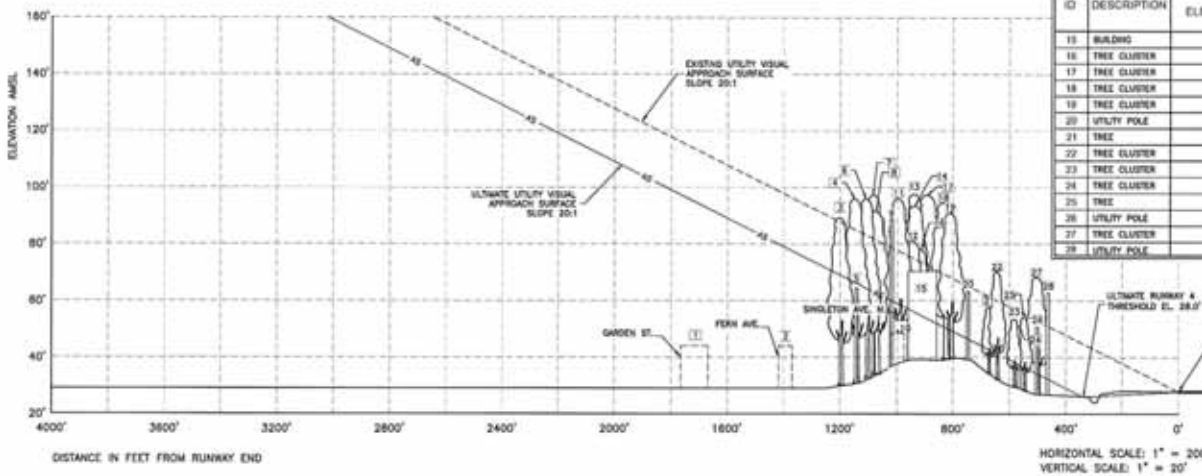
OBSTRUCTION DATA TABLE

ID	DESCRIPTION	TOP ELEVATION (***)	EXISTING		ULTIMATE		DISPOSITION
			PART 77 (***) ELEVATION	FEET ABOVE SURFACE	PART 77 (***) ELEVATION	FEET ABOVE SURFACE	
1	ROAD (*)	44.0	113.6	0	84.6	0	NONE
2	ROAD (*)	44.0	97.5	0	84.1	0	NONE
3	TREE CLUSTER	88.3	99.9	0	84.6	4.4	CUT/REMOVE
4	TREE CLUSTER	95.8	84.8	11.0	66.1	29.7	CUT/REMOVE
5	UTILITY POLE	84.3	99	0	56.8	5.5	UNDERGROUND
6	TREE CLUSTER	93.3	82.5	12.8	63.8	31.5	CUT/REMOVE
7	TREE CLUSTER	97.2	81.3	15.9	62.6	34.6	CUT/REMOVE
8	TREE CLUSTER	91.6	81.3	10.3	62.6	29	CUT/REMOVE
9	UTILITY POLE	88.7	80.6	8.1	76.7	12.0	UNDERGROUND
10	ROAD (*)	48.5	77.7	0	84.1	0	NONE
11	TREE CLUSTER	98.0	77.1	18.9	63.4	32.6	CUT/REMOVE
12	TREE CLUSTER	80.8	66.8	0	73.6	7.2	CUT/REMOVE
13	TREE CLUSTER	87.6	74.3	23.3	57.3	40.3	CUT/REMOVE
14	TREE	93.4	74.4	19.0	61.4	32	CUT/REMOVE



OBSTRUCTION DATA TABLE

ID	DESCRIPTION	TOP ELEVATION	EXISTING		ULTIMATE		DISPOSITION
			PART 77 (***) ELEVATION	FEET ABOVE SURFACE	PART 77 (***) ELEVATION	FEET ABOVE SURFACE	
15	BUILDING	70.4	73.2	0	54.6	15.8	REMOVE
16	TREE CLUSTER	78.3	73.6	4.8	54.6	23.3	CUT/REMOVE
17	TREE CLUSTER	97.3	75.6	21.7	61.7	35.6	CUT/REMOVE
18	TREE CLUSTER	94.5	71.0	23.5	57.0	37.5	CUT/REMOVE
19	TREE CLUSTER	90.6	76.9	14.0	62.7	28.2	CUT/REMOVE
20	UTILITY POLE	83.2	78.6	0	57.2	40.3	UNDERGROUND
21	TREE	97.5	81.5	0	48.0	11.5	CUT/REMOVE
22	TREE CLUSTER	70.2	65.8	4.8	51.6	18.6	CUT/REMOVE
23	TREE CLUSTER	53.5	56.7	0	38.2	15.3	CUT/REMOVE
24	TREE CLUSTER	51.1	77.7	0	38.8	12.3	CUT/REMOVE
25	TREE	54	60.0	0	45.4	8.6	CUT/REMOVE
26	UTILITY POLE	50.7	52.8	0	34.1	26.5	UNDERGROUND
27	TREE CLUSTER	68.2	52.8	15.4	43.8	24.3	CUT/REMOVE
28	UTILITY POLE	52.6	69.1	0	43.8	7.8	UNDERGROUND



NOTES:
(*) THIS ELEVATION IS BASED ON THE EXISTING GROUND ELEVATION PLUS 15 FEET PER FAA PART 77 REQUIREMENTS FOR PUBLIC ROADWAYS.
(**) ALL EXISTING ELEVATIONS WERE OBTAINED FROM THE PHOTOGRAMMETRY. (TYP. OF ALL INNER APPROACH SHEETS)
(***) PART 77 AND TOP ELEVATIONS ARE EXPRESSED IN FEET ABOVE MEAN SEA LEVEL

RUNWAY 4 APPROACH PROFILE

TITUSVILLE-COCOA AIRPORT AUTHORITY

AVCON, INC.

ARTHUR DUNN AIRPARK MASTER PLAN UPDATE

AIRPORT LAYOUT PLAN SET

RUNWAY 4 INNER APPROACH SURFACE PLAN

SCALE: AS NOTED

REVISIONS:

NO.	DATE	BY	DESCRIPTION

DESIGNED BY: N.V.
DRAWN BY: N.V.
CHECKED BY: J.A.K.
APPROVED BY: S.S.
DATE: 4/20/07

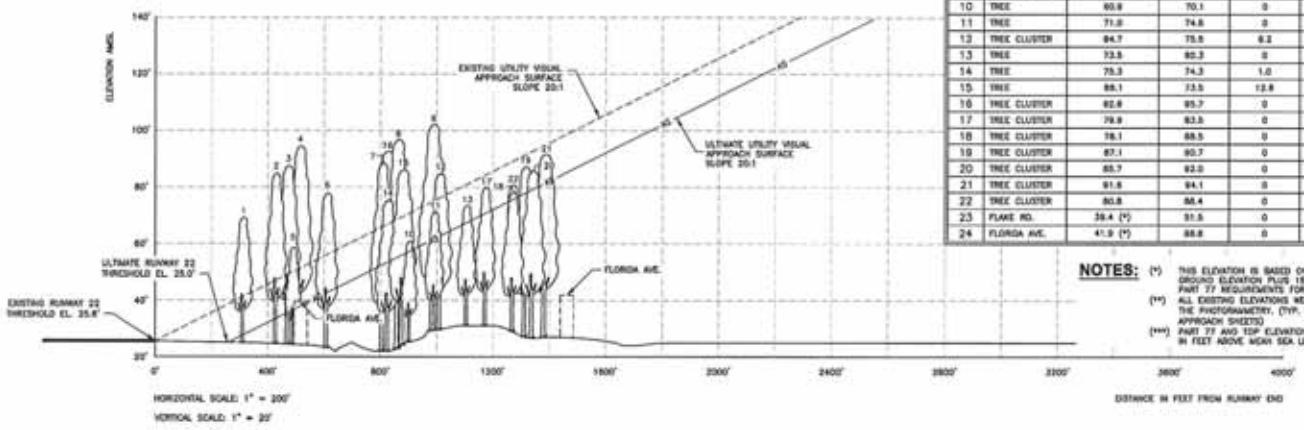
FAA PROJECT NO. 3-12-0101-010-2002
FDOT PROJECT NO. 247352-1-94-01
AVCON PROJECT NO. 2002.045.01

SHEET NUMBER
9 OF 13

S:\PROJECTS\2002\2002.045.01 - ARTHUR DUNN AIRPARK\DGN\2002-045-INNER_APP_4.DWG

OBSTRUCTION DATA TABLE

ID	DESCRIPTION	TOP ELEVATION (***)	EXISTING		ULTIMATE		DISPOSITION
			PART 77 (***) ELEVATION	FEET ABOVE SURFACE	PART 77 (***) ELEVATION	FEET ABOVE SURFACE	
1	TREE CLUSTER	89.2	75.0	0	84.8	4.4	CUT/REMOVE
2	TREE CLUSTER	84.8	88.7	0	79.0	5.8	CUT/REMOVE
3	TREE CLUSTER	87.5	84.1	3.4	74.3	13.2	CUT/REMOVE
4	TREE CLUSTER	84.4	93.9	0	88.1	6.3	CUT/REMOVE
5	TREE	58.8	63.9	0	53.9	4.7	CUT/REMOVE
6	TREE CLUSTER	77.8	78.4	0	68.7	9.1	CUT/REMOVE
7	TREE CLUSTER	88.4	65.2	23.2	52.3	36.1	CUT/REMOVE
8	TREE CLUSTER	95.8	77.6	18.2	67.9	28.9	CUT/REMOVE
9	TREE CLUSTER	102.1	74.1	28.0	61.2	40.9	CUT/REMOVE
10	TREE	60.9	70.1	0	57.2	3.7	CUT/REMOVE
11	TREE	71.0	74.8	0	61.7	9.3	CUT/REMOVE
13	TREE CLUSTER	84.7	75.5	9.2	52.6	32.1	CUT/REMOVE
13	TREE	73.5	80.3	0	67.4	6.1	CUT/REMOVE
14	TREE	75.3	74.3	1.0	64.3	11.0	CUT/REMOVE
15	TREE	86.1	73.5	12.6	63.4	22.7	CUT/REMOVE
16	TREE CLUSTER	92.6	85.7	0	88.1	6.5	CUT/REMOVE
17	TREE CLUSTER	79.9	83.5	0	70.6	9.3	CUT/REMOVE
18	TREE CLUSTER	78.1	88.5	0	75.6	2.5	CUT/REMOVE
19	TREE CLUSTER	87.1	90.7	0	77.8	9.3	CUT/REMOVE
20	TREE CLUSTER	85.7	82.0	0	79.1	6.6	CUT/REMOVE
21	TREE CLUSTER	91.5	94.1	0	81.2	10.4	CUT/REMOVE
22	TREE CLUSTER	80.8	88.4	0	75.5	5.3	CUT/REMOVE
23	FLAKE RD.	39.4 (*)	51.5	0	38.0	1.4	NONE
24	FLORIDA AVE.	41.9 (*)	68.8	0	60.3	0	NONE



NOTES:

(*) THIS ELEVATION IS BASED ON THE EXISTING GROUND ELEVATION PLUS 15 FEET PER FAA PART 77 REQUIREMENTS FOR PUBLIC ROADWAYS.

(**) ALL EXISTING ELEVATIONS WERE OBTAINED FROM THE PHOTOGRAMMETRY. (TYP. OF ALL INNER APPROACH SHEETS)

(***) PART 77 AND TOP ELEVATIONS ARE EXPRESSED IN FEET ABOVE MEAN SEA LEVEL

RUNWAY 22 APPROACH PROFILE

TITUSVILLE-COCOA AIRPORT AUTHORITY

AVCON

AVCON, INC.

ARTHUR DUNN AIRPARK MASTER PLAN UPDATE

AIRPORT LAYOUT PLAN SET

RUNWAY 22 INNER APPROACH SURFACE PLAN

SCALE: AS NOTED

REVISIONS

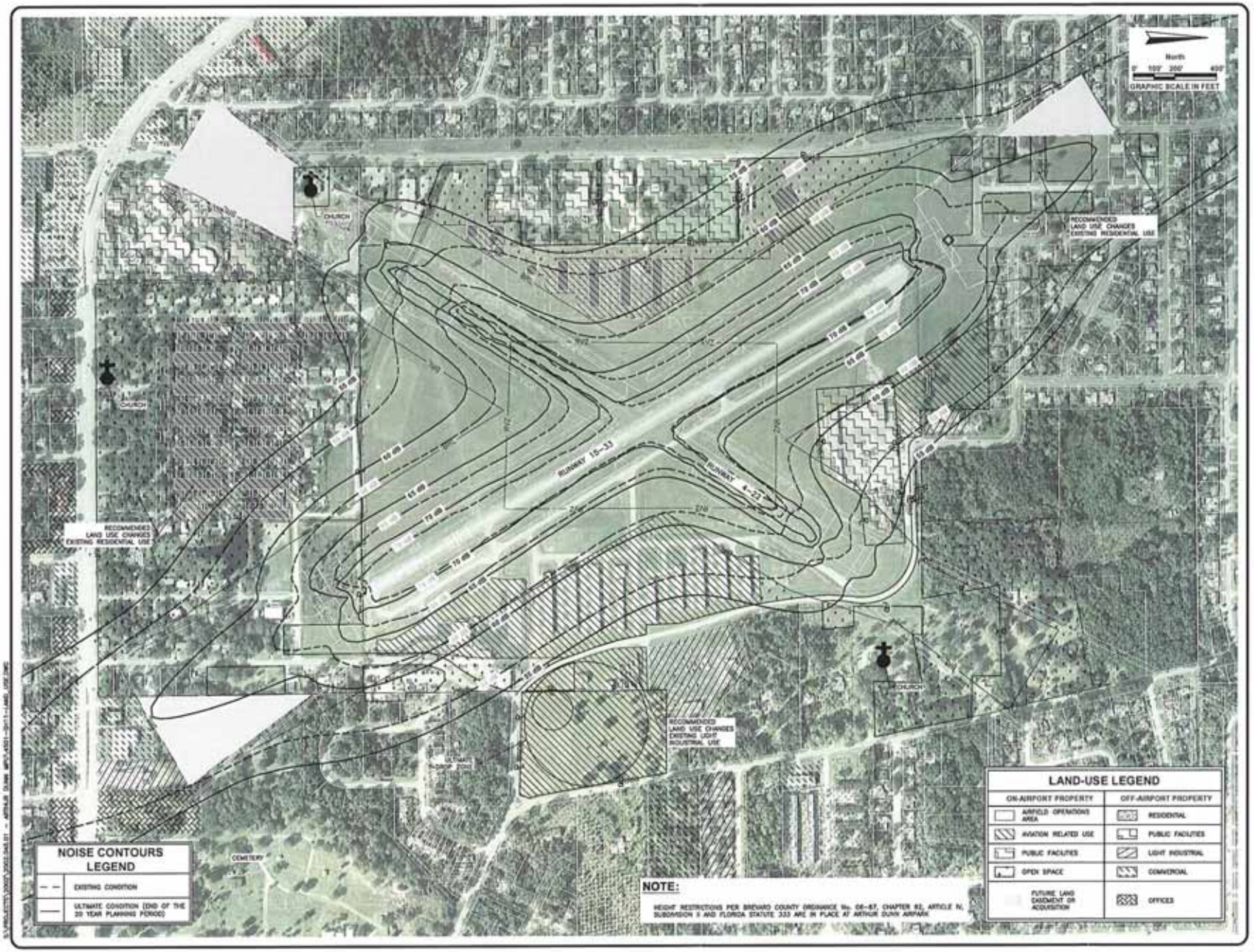
NO.	DATE	BY	DESCRIPTION

DESIGNED BY: N.V.
DRAWN BY: N.V.
CHECKED BY: J.A.K.
APPROVED BY: S.S.
DATE: 4/20/07

FAA PROJECT NO. 3-12-0101-010-2002
FDOT PROJECT NO. 247352-1-94-01
AVCON PROJECT NO. 2002.045.01

SHEET NUMBER
10 OF 13

S:\PROJECTS\2002\2002.045.01 - ARTHUR DUNN AIRPARK\AGI01-OBSTR-INNER_APP_22.DWG



TITUSVILLE-COCOA AIRPORT AUTHORITY

AVCON

AVCON, INC.
ENGINEERS & PLANNERS

ARTHUR DUNN AIRPARK MASTER PLAN UPDATE

AIRPORT LAYOUT PLAN SET

LAND USE MAP

SCALE: AS NOTED

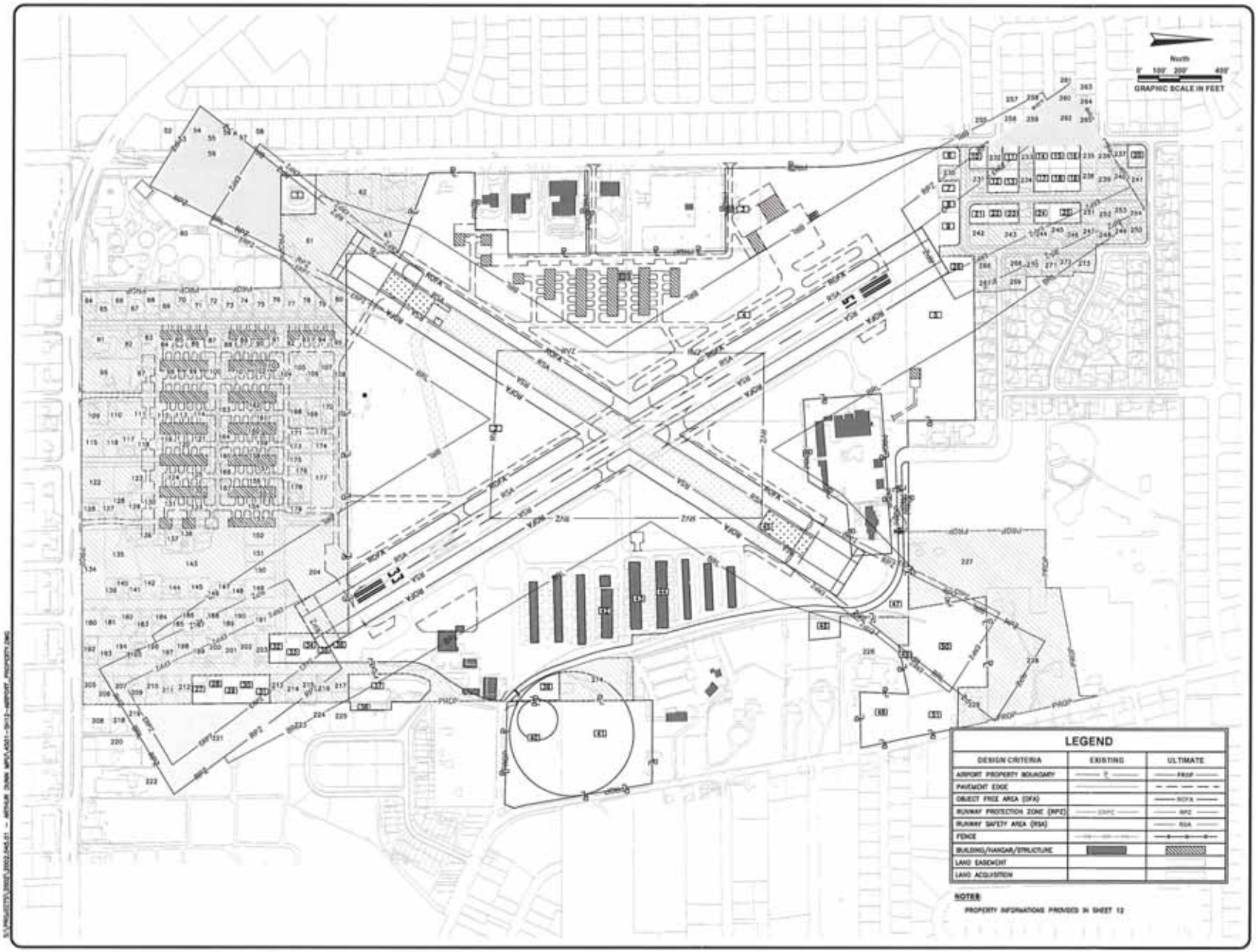
REVISIONS:

NO.	DATE	BY	DESCRIPTION

DESIGNED BY: N.V.
DRAWN BY: N.V.
CHECKED BY: J.A.K.
APPROVED BY: S.S.
DATE: 4/20/07

FAA PROJECT NO. 3-12-0101-015-2002
FDOT PROJECT NO. 247352-1-94-01
AVCON PROJECT NO. 2002.045.01

SHEET NUMBER
11 OF 13



TITUSVILLE-COCOA AIRPORT AUTHORITY

AVCON

AVCON, INC.

ARTHUR DUNN AIRPARK MASTER PLAN UPDATE

AIRPORT LAYOUT PLAN SET

AIRPORT PROPERTY MAP

SCALE: AS NOTED

REVISIONS:

NO.	DATE	BY	DESCRIPTION

DESIGNED BY:	N.V.
DRAWN BY:	N.V.
CHECKED BY:	J.A.K.
APPROVED BY:	S.S.
DATE:	4/20/07

FAA PROJECT NO.	3-12-0101-015-2002
FDOT PROJECT NO.	247352-1-94-01
AVCON PROJECT NO.	2002.045.01

SHEET NUMBER

12 OF 13

PROPERTY INFORMATION

PARCEL #	ACQUISITION DATE	FAA AIP GRANT #	ACREAGE	OWNERSHIP TYPE
EXISTING				
1		N/A	0.74	OWN
2		N/A	64.75	OWN
3		N/A	1.50	OWN
4		N/A	30.44	OWN
5		N/A	7.40	OWN
6		N/A	0.20	OWN
7		N/A	0.17	OWN
8		N/A	0.17	OWN
9		N/A	0.36	OWN
10		N/A	0.30	OWN
11		N/A	0.16	OWN
12		N/A	0.19	OWN
13		N/A	0.20	OWN
14		N/A	0.19	OWN
15		N/A	0.18	OWN
16		N/A	0.18	OWN
17		N/A	0.19	OWN
18		N/A	0.16	OWN
19		N/A	0.19	OWN
20		N/A	0.23	OWN
21		N/A	0.18	OWN
22		N/A	0.16	OWN
23		N/A	0.16	OWN
24		N/A	0.17	OWN
25		N/A	0.53	OWN
26		N/A	0.48	OWN
27		N/A	0.23	OWN
28		N/A	0.23	OWN
29		N/A	0.33	OWN
30		N/A	0.33	OWN
31		N/A	0.24	OWN
32		N/A	0.24	OWN
33		N/A	0.24	OWN
34		N/A	0.24	OWN
35		N/A	0.24	OWN
36		N/A	0.26	OWN
37		N/A	1.13	OWN
38		N/A	0.16	OWN
39		N/A	0.45	OWN
40		N/A	3.03	OWN
41		N/A	4.29	OWN
42		N/A	0.61	OWN
43		N/A	0.97	OWN
44		N/A	0.75	OWN
45		N/A	22.27	OWN
46		N/A	0.38	OWN
47		N/A	0.63	OWN
48		N/A	1.27	OWN
49		N/A	0.12	OWN
50		N/A	3.81	OWN
51		N/A	1.05	OWN
ULTIMATE				
52	N/A	N/A	0.23	PRIVATE
53	N/A	N/A	0.22	PRIVATE
54	N/A	N/A	0.24	PRIVATE
55	N/A	N/A	0.23	PRIVATE
56	N/A	N/A	0.25	PRIVATE
57	N/A	N/A	0.26	PRIVATE
58	N/A	N/A	0.26	PRIVATE
59	N/A	N/A	0.60	COUNTY OWNED
60	N/A	N/A	11.48	COUNTY OWNED
61	N/A	N/A	3.14	PRIVATE
62	N/A	N/A	0.68	PRIVATE
63	N/A	N/A	1.89	PRIVATE
64	N/A	N/A	0.23	PRIVATE
65	N/A	N/A	0.24	PRIVATE
66	N/A	N/A	0.23	PRIVATE
67	N/A	N/A	0.24	PRIVATE

PROPERTY INFORMATION

PARCEL #	ACQUISITION DATE	FAA AIP GRANT #	ACREAGE	OWNERSHIP TYPE
68	N/A	N/A	0.24	PRIVATE
69	N/A	N/A	0.24	PRIVATE
70	N/A	N/A	0.25	PRIVATE
71	N/A	N/A	0.24	PRIVATE
72	N/A	N/A	0.24	PRIVATE
73	N/A	N/A	0.24	PRIVATE
74	N/A	N/A	0.24	PRIVATE
75	N/A	N/A	0.24	PRIVATE
76	N/A	N/A	0.24	PRIVATE
77	N/A	N/A	0.24	PRIVATE
78	N/A	N/A	0.24	PRIVATE
79	N/A	N/A	0.24	PRIVATE
80	N/A	N/A	0.25	PRIVATE
81	N/A	N/A	0.58	PRIVATE
82	N/A	N/A	0.27	PRIVATE
83	N/A	N/A	0.23	PRIVATE
84	N/A	N/A	0.24	PRIVATE
85	N/A	N/A	0.23	PRIVATE
86	N/A	N/A	0.25	PRIVATE
87	N/A	N/A	0.23	PRIVATE
88	N/A	N/A	0.24	PRIVATE
89	N/A	N/A	0.23	PRIVATE
90	N/A	N/A	0.23	PRIVATE
91	N/A	N/A	0.24	PRIVATE
92	N/A	N/A	0.23	PRIVATE
93	N/A	N/A	0.25	PRIVATE
94	N/A	N/A	0.23	PRIVATE
95	N/A	N/A	0.24	PRIVATE
96	N/A	N/A	0.81	PRIVATE
97	N/A	N/A	0.48	PRIVATE
98	N/A	N/A	0.44	PRIVATE
99	N/A	N/A	0.44	PRIVATE
100	N/A	N/A	0.31	PRIVATE
101	N/A	N/A	0.48	PRIVATE
102	N/A	N/A	0.23	PRIVATE
103	N/A	N/A	0.22	PRIVATE
104	N/A	N/A	0.23	PRIVATE
105	N/A	N/A	0.23	PRIVATE
106	N/A	N/A	0.23	PRIVATE
107	N/A	N/A	0.23	PRIVATE
108	N/A	N/A	0.23	PRIVATE
109	N/A	N/A	0.38	PRIVATE
110	N/A	N/A	0.23	PRIVATE
111	N/A	N/A	0.48	PRIVATE
112	N/A	N/A	0.23	PRIVATE
113	N/A	N/A	0.29	PRIVATE
114	N/A	N/A	0.24	PRIVATE
115	N/A	N/A	0.31	PRIVATE
116	N/A	N/A	0.26	PRIVATE
117	N/A	N/A	0.17	PRIVATE
118	N/A	N/A	0.29	PRIVATE
119	N/A	N/A	0.28	PRIVATE
120	N/A	N/A	0.22	PRIVATE
121	N/A	N/A	0.21	PRIVATE
122	N/A	N/A	0.53	PRIVATE
123	N/A	N/A	0.72	PRIVATE
124	N/A	N/A	0.26	PRIVATE
125	N/A	N/A	0.19	PRIVATE
126	N/A	N/A	0.24	PRIVATE
127	N/A	N/A	0.11	PRIVATE
128	N/A	N/A	0.14	PRIVATE
129	N/A	N/A	0.38	PRIVATE
130	N/A	N/A	0.14	PRIVATE
131	N/A	N/A	0.42	PRIVATE
132	N/A	N/A	0.18	PRIVATE
133	N/A	N/A	0.19	PRIVATE
134	N/A	N/A	0.83	PRIVATE
135	N/A	N/A	0.80	PRIVATE
136	N/A	N/A	0.28	PRIVATE

PROPERTY INFORMATION

PARCEL #	ACQUISITION DATE	FAA AIP GRANT #	ACREAGE	OWNERSHIP TYPE
137	N/A	N/A	0.21	PRIVATE
138	N/A	N/A	0.18	PRIVATE
139	N/A	N/A	0.13	PRIVATE
140	N/A	N/A	0.14	PRIVATE
141	N/A	N/A	0.13	PRIVATE
142	N/A	N/A	0.27	PRIVATE
143	N/A	N/A	3.26	PRIVATE
144	N/A	N/A	0.28	PRIVATE
145	N/A	N/A	0.22	PRIVATE
146	N/A	N/A	0.08	PRIVATE
147	N/A	N/A	0.08	PRIVATE
148	N/A	N/A	0.14	PRIVATE
149	N/A	N/A	0.30	PRIVATE
150	N/A	N/A	0.26	PRIVATE
151	N/A	N/A	0.28	PRIVATE
152	N/A	N/A	0.29	PRIVATE
153	N/A	N/A	0.18	PRIVATE
154	N/A	N/A	0.20	PRIVATE
155	N/A	N/A	0.20	PRIVATE
156	N/A	N/A	0.20	PRIVATE
157	N/A	N/A	0.20	PRIVATE
158	N/A	N/A	0.20	PRIVATE
159	N/A	N/A	0.20	PRIVATE
160	N/A	N/A	0.20	PRIVATE
161	N/A	N/A	0.20	PRIVATE
162	N/A	N/A	0.20	PRIVATE
163	N/A	N/A	0.20	PRIVATE
164	N/A	N/A	0.17	PRIVATE
165	N/A	N/A	0.13	PRIVATE
166	N/A	N/A	0.13	PRIVATE
167	N/A	N/A	0.13	PRIVATE
168	N/A	N/A	0.30	PRIVATE
169	N/A	N/A	0.22	PRIVATE
170	N/A	N/A	0.23	PRIVATE
171	N/A	N/A	0.18	PRIVATE
172	N/A	N/A	0.18	PRIVATE
173	N/A	N/A	0.18	PRIVATE
174	N/A	N/A	0.18	PRIVATE
175	N/A	N/A	0.18	PRIVATE
176	N/A	N/A	0.10	PRIVATE
177	N/A	N/A	0.87	PRIVATE
178	N/A	N/A	0.38	PRIVATE
179	N/A	N/A	0.18	PRIVATE
180	N/A	N/A	0.24	PRIVATE
181	N/A	N/A	0.29	PRIVATE
182	N/A	N/A	0.22	PRIVATE
183	N/A	N/A	0.22	PRIVATE
184	N/A	N/A	0.29	PRIVATE
185	N/A	N/A	0.14	PRIVATE
186	N/A	N/A	0.14	PRIVATE
187	N/A	N/A	0.14	PRIVATE
188	N/A	N/A	0.28	PRIVATE
189	N/A	N/A	0.17	PRIVATE
190	N/A	N/A	0.14	PRIVATE
191	N/A	N/A	0.40	PRIVATE
192	N/A	N/A	0.23	PRIVATE
193	N/A	N/A	0.23	PRIVATE
194	N/A	N/A	0.23	PRIVATE
195	N/A	N/A	0.23	PRIVATE
196	N/A	N/A	0.23	PRIVATE
197	N/A	N/A	0.23	PRIVATE
198	N/A	N/A	0.23	PRIVATE
199	N/A	N/A	0.23	PRIVATE
200	N/A	N/A	0.23	PRIVATE
201	N/A	N/A	0.24	PRIVATE
202	N/A	N/A	0.23	PRIVATE
203	N/A	N/A	0.23	PRIVATE
204	N/A	N/A	3.55	PRIVATE
205	N/A	N/A	0.23	PRIVATE

PROPERTY INFORMATION

PARCEL #	ACQUISITION DATE	FAA AIP GRANT #	ACREAGE	OWNERSHIP TYPE
206	N/A	N/A	0.23	PRIVATE
207	N/A	N/A	0.24	PRIVATE
208	N/A	N/A	0.48	PRIVATE
209	N/A	N/A	0.24	PRIVATE
210	N/A	N/A	0.24	PRIVATE
211	N/A	N/A	0.24	PRIVATE
212	N/A	N/A	0.24	PRIVATE
213	N/A	N/A	0.23	PRIVATE
214	N/A	N/A	0.23	PRIVATE
215	N/A	N/A	0.23	PRIVATE
216	N/A	N/A	0.23	PRIVATE
217	N/A	N/A	0.24	PRIVATE
218	N/A	N/A	0.27	PRIVATE
219	N/A	N/A	0.23	PRIVATE
220	N/A	N/A	0.42	PRIVATE
221	N/A	N/A	34.48	PRIVATE
222	N/A	N/A	1.67	PRIVATE
223	N/A	N/A	0.37	PRIVATE
224	N/A	N/A	0.35	PRIVATE
225	N/A	N/A	0.35	PRIVATE
226	N/A	N/A	3.17	PRIVATE
227	N/A	N/A	4.87	PRIVATE
228	N/A	N/A	5.33	PRIVATE
229	N/A	N/A	0.58	PRIVATE
230	N/A	N/A	0.17	PRIVATE
231	N/A	N/A	0.22	PRIVATE
232	N/A	N/A	0.18	PRIVATE
233	N/A	N/A	0.18	PRIVATE
234	N/A	N/A	0.19	PRIVATE
235	N/A	N/A	0.19	PRIVATE
236	N/A	N/A	0.18	PRIVATE
237	N/A	N/A	0.19	PRIVATE
238	N/A	N/A	0.19	PRIVATE
239	N/A	N/A	0.18	PRIVATE
240	N/A	N/A	0.19	PRIVATE
241	N/A	N/A	0.22	PRIVATE
242	N/A	N/A	0.21	PRIVATE
243	N/A	N/A	0.53	PRIVATE
244	N/A	N/A	0.18	PRIVATE
245	N/A	N/A	0.18	PRIVATE
246	N/A	N/A	0.18	PRIVATE
247	N/A	N/A	0.18	PRIVATE
248	N/A	N/A	0.17	PRIVATE
249	N/A	N/A	0.17	PRIVATE
250	N/A	N/A	0.21	PRIVATE
251	N/A	N/A	0.17	PRIVATE
252	N/A	N/A	0.16	PRIVATE
253	N/A	N/A	0.17	PRIVATE
254	N/A	N/A	0.20	PRIVATE
255	N/A	N/A	0.27	PRIVATE
256	N/A	N/A	0.26	PRIVATE
257	N/A	N/A	0.20	PRIVATE
258	N/A	N/A	0.19	PRIVATE
259	N/A	N/A	0.27	PRIVATE
260	N/A	N/A	0.20	PRIVATE
261	N/A	N/A	0.20	PRIVATE
262	N/A	N/A	0.28	PRIVATE
263	N/A	N/A	0.17	PRIVATE
264	N/A	N/A	0.17	PRIVATE
265	N/A	N/A	0.24	PRIVATE
266	N/A	N/A	0.22	PRIVATE
267	N/A	N/A	0.18	PRIVATE
268	N/A	N/A	0.20	PRIVATE
269	N/A	N/A	0.17	PRIVATE
270	N/A	N/A	0.18	PRIVATE
271	N/A	N/A	0.17	PRIVATE
272	N/A	N/A	0.17	PRIVATE
273	N/A	N/A	0.21	PRIVATE
274	N/A	N/A	1.47	PRIVATE

TITUSVILLE-COCOA AIRPORT AUTHORITY

AVCON

AVCON, INC.

ARTHUR DUNN AIRPARK MASTER PLAN UPDATE

AIRPORT LAYOUT PLAN SET

AIRPORT PROPERTY INFORMATION

SCALE: AS NOTED

REVISIONS:

NO.	DATE	BY	DESCRIPTION

DESIGNED BY: N.V.
DRAWN BY: N.V.
CHECKED BY: J.A.K.
APPROVED BY: S.S.
DATE: 4/20/07

FAA PROJECT NO. 3-12-0101-010-2002
FDOT PROJECT NO. 247352-1-94-01
AVCON PROJECT NO. 2002.045.01

SHEET NUMBER
13 OF 13

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