DY Consultants

"City on the Gulf"
CITY OF VENICE

City of Venice

Venice Municipal Airport

Volume I: Report of Findings

Supplemental Master Plan

New Opportunities

July 2011

FINAL REPORT

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1.0 City Goals, Objectives and Aircraft Counts

1.1 Introduction

In January of 2009, the City of Venice entered into an agreement with DY Consultants to revisit and reevaluate the Venice Municipal Airport Master Plan Update (MPU) and associated Airport Layout Plan (ALP) completed in 2008 by Hanson Consulting Engineers. The 2008 plan was completed in accordance with Federal Aviation Administration (FAA) requirements however the final documentation was not supported nor approved by the Venice City Council. Several issues had been raised about the 2008 MPU in which the City consequently requested the Update be reassessed for the benefit of the community. The main items that were reassessed included:

- ***Aircraft operations and design aircraft:*** The City of Venice requested to have an aircraft count conducted to more accurately reflect the number and types of aircraft operating at the Venice Municipal Airport on a regular basis. The 2008 MPU/ALP as well as the prior 2000 City and FAA approved Dufresne Henry MPU/ALP were based on and developed with the best information and data available at the time. Each of those planning documents depicts the airport as an existing and future Airport Reference Code (ARC) C-II facility capable of accommodating design aircraft with approach speeds of 121 knots or more but less than 141 knots and wingspans 49 feet up to but not including 79 feet.

- ***Establish airport design standards and evaluate options:*** The City of Venice wished to explore and evaluate airport scenarios for several specific FAA design requirements and planning standards for Airport Reference Code (ARC) B-II and C-II aircraft. The scenarios examined the runway protection zone (RPZ) location off the Runway 13 end, runway safety area (RSA) requirements off the Runway 4 end (also referred to as the Runway 22 departure end RSA), runway object free area (ROFA) impacts to the Lake Venice Golf Course leasehold property, and the runway centerline to taxiway centerline separation distance for Taxiway C.

- ***Provide a consensus building process and select a preferred plan:*** The City of Venice indicated the need to have regular public meetings at key intervals as the study progressed to not only share the information obtained and produced, but also receive public input relative to the future of the airport. In addition, the City would also coordinate with the FAA to discuss and present a preferred plan for the future.

The City of Venice dedicated its own financial resources in an effort to resolve the above issues for the community. As such, the effort undertaken was not a “traditional” FAA planning approach to reach a consensus plan. The overall purpose of the effort was to address the

aforementioned items and evaluate the feasibility of operating Venice Municipal Airport in a manner that meets safety and utility requirements for those who wish to use the airport while maintaining financial sustainability and minimizing disruption to the surrounding community. The study presents a technical evaluation against a series of Federal Aviation Administration criteria that should be met in order to ensure that utility of the airfield is not compromised by any preferred plan the City may wish to undertake.

1.2 City Goals and Objectives

The conceptual goals and objectives of the City of Venice became evident early in the consensus building process. The establishment of goals and objectives was pivotal to the study and shaped the framework necessary to conduct the remainder of the work effort. The established goals and objectives guided the study regarding the evaluated airport scenarios.

The planning process was structured to encourage constructive discussions with no preconceived intentions about the future of the airport. The ultimate goal was to provide an objective analysis of alternative visions and to assist the decision makers (Venice City Council) with developing a vision that would be satisfactory to all interested parties, including neighboring communities. It was evident in open discussions with the public that the City was interested in resolving the following:

- Define the Airport as an ARC B-II facility or C-II facility by utilizing the aircraft counting system as a basis of comparison against FAA's definition of each ARC category and the established 500 annual operations threshold.
- Resolve the conflict of the Runway 13 end by examining the FAA RPZ requirements and the residential homes that exist within its limits.
- Resolve the FAA design standards and impacts of future RSA and ROFA modifications to the golf course facilities.
- Resolve the FAA design standards and Taxiway C runway-to-taxiway separation distance.
- Define future aviation-related use areas for hangar development.

During the aircraft operations counting period, DY Consultants and the City worked to establish three to four general airport scenarios as a baseline for further study and evaluation. Venice City Council and public input led to the initial examination of the following Airport scenarios:

- Existing Conditions - Keep Airport "As Is"
- Comply to FAA Standards by Modifying the Airport
- Comply to FAA Standards by Modifying Adjacent Land Uses
- Reduction of Airport Reference Code/ Design Aircraft

The B-II or C-II critical aircraft designation could not be fully determined until after the aircraft counting had been completed for a minimum six-month time period.

1.3 Aircraft Counts

1.3.1 Introduction

In order to move forward with a technical analysis a determination of the number and type of aircraft operating at the airport and the resulting critical design aircraft was necessary. To accomplish the determination, an innovative data collection effort was undertaken to count aircraft on a 24-hour basis, seven days per week for an initial period of six months.

At the conclusion of six months, it became apparent the system was providing accurate and valuable data for the City's use in the planning process. The City of Venice made a decision to purchase the equipment and continue the counting program in order to have a full twelve-month period of data for the study.

1.3.2 Methodology

A 3-technology approach includes camera imaging, Scout transponder and FAA data feed was developed by VECTOR Airport Solutions. The VECTOR system was used to track aircraft operations at the Venice Municipal Airport. The system used has been proven to capture aircraft operations in a more comprehensive manner than any other solution available today, regardless of cost. The aircraft sensor system provides visual verification through captured images, tracks transponder signals emitted by more advanced aircraft, and provides a secured data feed from all flights plans filed with the FAA. The VECTOR system is a fully automated data engine that compiles raw data. The system continually improves the data by combining it with numerous additional sources of reference into a form that yields the most comprehensive information available at non-towered airports. The data is initially stored on a system-provided local airport server and is transported almost immediately to the Central Operations Processing Engine located in a secure, hosted, data processing center.

Figure 1-1 depicts an Aircraft Sensor. Each sensor is free-standing, solar-powered, communicates wirelessly, and requires no construction or ground preparation. The sensors are usually placed on rubber matting to eliminate the need for weed control and to allow some clearance for mowers. The systems stand only 4-feet tall and use invisible infrared illumination at night to not interfere with aircraft operations.

Six of the Aircraft Sensors were placed adjacent to the taxiway in key locations. Figure 1-2 on the following page, displays the locations of the Sensors which are outside of the Object Free Areas. Since the devices are frangibly constructed, they did not pose any hazard to aircraft operations.

Four of the sensor locations were placed with the intent of capturing aircraft departures since it may be accomplished with fewer hardware devices and therefore, provided a more economical solution for the counting process. Two of the sensor systems were provided to capture touch and go activity. Since one touch and go is considered by FAA standards equal to a departure and a landing.

In addition to the camera sensor system, a SCOUT Transponder Receiver was provided. SCOUT is a solid-state, Mode-S, and ADS-B Transponder Receiver which was sited to identify landings and takeoffs made by Mode-S and ADS-B transponder equipped aircraft operating at the Airport. Transponder data received from the equipped aircraft was stored locally on the Vector Network Server and automatically transported via internet connection to Vector's central servers for further processing and analysis. The processing and analysis provides the following information:

- Aircraft Registration Number (Tail Number)
- Activity (Departure or Arrival)
- Date/Time
- Flight Profile (i.e., 2500 feet to 0 feet over 30 seconds)

Figure 1-1: Aircraft Sensor

Figure 1-2: Aircraft Counting Sensor Locations

This device is an extremely good source of primary aircraft activity data both in terms of price and performance. The system automatically receives, processes, and fuses data from the FAA's radar and flight plan data feed (the "FLIGHTPLAN feed") transmitted by the FAA Volpe Center. The aforementioned data feed, which is only available to certified users with systems in place to handle and process the data, provided data for aircraft filing IFR flight plans to/from the airport. Vector uses the FAA supplementary data in conjunction with the system's primary data gathering devices such as SCOUT and the Airfield Imaging Systems. The system only uses this data to supplement the primary capture technologies being used.

One of the main reasons that this system was selected for use at Venice was the unique ability of its "Data Fusion Engine". This engine, which runs on the centralized VECTOR back office servers, is continuously accepting data from the three primary VECTOR devices used to collect data (camera imaging, Scout transponder and the data feed). Fusing this data together yields a much stronger, cleaner, and highly comprehensive aircraft operational data set than any one of these systems can generate alone. As part of the data fusion process, the system automatically determines an aircraft's model, weight, and other characteristics such as engine type and number among other characteristics. In addition, VECTOR uses a combination of data sources along with the proprietary VECTOR database to determine the best operator contact for each aircraft.

VECTOR compiled monthly data and provided it in an Excel spreadsheet format to DY Consultants. DY would then examine the data and categorize each and every aircraft type into its proper Airport Reference Code grouping as defined in FAA's Advisory Circular (AC) 150/5300-13. The definition of the Airport Reference Code for an aircraft is explained in the paragraphs below.

Airport Reference Code

Airport Reference Code (ARC) as defined in FAA Advisory Circular (AC) 150/5300-13 is a coding system used to relate airport planning and design criteria to the operational and physical characteristics of aircraft anticipated to operate at the airport on a continuing basis. The ARC is made up of two aircraft operational components; approach category and wingspan. The first component referenced by a letter, is the aircraft approach category as it relates to the aircraft approach speed.

- Category A: aircraft approach speed less than 91 knots
- Category B: speed 91 knots or more but less than 121 knots
- Category C: speed 121 knots or more but less than 141 knots
- Category D: speed 141 knots or more but less than 166 knots
- Category E: speed 166 knots or more.

The second component, referenced by a Roman numeral, is the airplane design group and as it relates to an aircraft's wingspan.

- Group I: wingspan up to but not including 49 feet
- Group II: 49 feet up to but not including 79 feet
- Group III: 79 feet up to but not including 118 feet
- Group IV: 118 feet up to but not including 171 feet
- Group V: 171 feet up to but not including 214 feet.

The ARC is selected by considering the present and future critical aircraft types, the present and future role of the airport, and the forecasts of aviation demand as established in the Master Plan. The critical aircraft or family of aircraft is based on that which operates on a regular basis (500 operations/year). However, during the study process the FAA made it clear that at a facility with an existing ARC of C, the airport proprietor must consider any based C aircraft as well as those that operate in and out of the airport regardless of the number of operations.

Various sources were used to identify the aircraft approach speed and design groups including the FAA, aircraft specification manuals, as well as aviation and aerospace publications.

1.3.3 Aircraft Counting Program Results

The VECTOR sensors were installed on February 14, 2009 and were tested for a two-week period to ensure that the six camera system was working properly. For the purpose of the study, the counts have been on-going and are reported in this final report for a two-year period beginning on March 1, 2009 and ending February 28, 2011. The system continues to collect data at the Venice Municipal Airport and the City of Venice will compile monthly statistics in a manner similar to what was performed for the study.

Throughout the study period, full data and summary data reports were provided to the City of Venice. In addition, several members of the community took it upon themselves to review the data to determine if it was being reported correctly. DY worked with the City and community throughout the twelve-month period to identify all aircraft types accurately and openly in an effort to instill confidence with the aircraft counting program.

Volume II contains a compilation of data for the period of March 1, 2009 through June 30, 2011. The data consists of all departures recorded as well as touch-and-go operations.

An aircraft operation is defined as either a departure or an arrival with a touch-and-go counting as two operations. **Tables1-1 thru 1-3** summarizes the data by departures, month, aircraft design group, and the number of touch-and-goes. **Figures 1-3 thru 1-5** depict that the largest percent of all sensor-captured operations at Venice Municipal Airport during the time period of March 2009 through February 2011 were A and B ARC category aircraft. As noted on the tables, there were system malfunctions in April 2009 and February 2011 resulting in slightly lower counts than usual.

Table 1-1: Summary VNC Annual Operations Data (March 2009 – February 2010)

Operations= Departures x2	March 2009	April 2009	May 2009	June 2009	July 2009	August 2009	September 2009	October 2009	November 2009	December 2009	January 2010	February 2010	12-Month Total
A-I	2,366	1,166	1,778	1,326	1,522	944	1,258	1,834	1,910	1,576	1,794	1,482	18,956
A-II	6	2	6	6	4	2	14	4	0	4	6	4	58
B-I	570	252	378	324	286	182	148	214	284	160	246	246	3,290
B-II	134	122	76	84	52	40	48	46	90	74	166	174	1,106
C-I	26	24	26	8	6	8	8	8	30	16	24	24	208
C-II	12	18	6	2	6	6	0	6	2	6	4	0	68
D-I	6	2	0	0	0	2	0	0	4	0	6	4	24
D-II	0	0	2	0	0	2	2	4	4	0	4	4	22
H	2	0	0	0	2	0	0	2	0	0	0	0	6
A/C unknown	6	4	4	0	0	0	0	4	0	0	0	0	18
Touch and Gos x2	3,370	1,662	2,954	3,584	2,782	2,926	2,670	3,752	3,848	2,874	2,942	2,656	36,020
Total Operations	**6,498**	**3,252**	**5,230**	**5,334**	**4,660**	**4,112**	**4,148**	**5,874**	**6,172**	**4,710**	**5,192**	**4,594**	**59,776**

NOTE: System Malfunction in April 2009 – incomplete Count

Table 1-2: Summary VNC Annual Operations Data (March 2010 – February 2011)

Operations= Departures x2	March 2010	April 2010	May 2010	June 2010	July 2010	August 2010	September 2010	October 2010	November 2010	December 2010	January 2011	February 2011	12-Month Total
A-I	1,960	2,212	2,090	1,358	1,386	1,392	1,538	2,174	1,896	1,864	1,514	640	20,024
A-II	8	12	4	4	10	12	8	2	12	2	10	8	92
B-I	306	356	292	200	214	218	220	248	232	264	214	102	2,866
B-II	194	172	178	162	124	30	58	88	132	112	92	78	1,420
C-I	32	28	14	8	12	10	4	12	14	16	12	8	170
C-II	8	14	8	4	2	2	0	8	4	4	8	2	64
D-I	8	4	6	6	2	0	0	10	14	4	8	4	66
D-II	0	0	0	0	0	0	2	0	0	2	4	0	8
H	4	2	6	0	0	2	2	0	2	0	2	0	20
A/C unknown	2	0	2	2	0	0	0	0	2	0	0	0	8
Touch and Gos x2	2,844	2,444	3,434	2,408	2,334	2,540	2,684	3,282	3,024	2,986	2,856	818	31,654
Total Operations	**5,366**	**5,244**	**6,034**	**4,152**	**4,084**	**4,206**	**4,516**	**5,824**	**5,332**	**5,254**	**4,720**	**1,660**	**56,392**

NOTE: System Malfunction in February 2011 – incomplete Count

Table 1-3: Summary VNC Annual Operations Data (January 2010 – December 2010)

Operations= Departures x2	January 2010	February 2010	March 2010	April 2010	May 2010	June 2010	July 2010	August 2010	September 2010	October 2010	November 2010	December 2010	12-Month Total
A-I	1,794	1,482	1,960	2,212	2,090	1,358	1,386	1,392	1,538	2,174	1,896	1,864	21,146
A-II	6	4	8	12	4	4	10	12	8	2	12	2	84
B-I	246	246	306	356	292	200	214	218	220	248	232	264	3,042
B-II	166	174	194	172	178	162	124	30	58	88	132	112	1,590
C-I	24	24	32	28	14	8	12	10	4	12	14	16	198
C-II	4	0	8	14	8	4	2	2	0	8	4	4	58
D-I	6	4	8	4	6	6	2	0	0	10	14	4	64
D-II	4	4	0	0	0	0	0	0	2	0	0	2	12
H	0	0	4	2	6	0	0	2	2	0	2	0	18
A/C unknown	0	0	2	0	2	2	0	0	0	0	2	0	8
Touch and Gos x2	2,942	2,656	2,844	2,444	3,434	2,408	2,334	2,540	2,684	3,282	3,024	2,986	33,578
Total Operations	**5,192**	**4,594**	**5,366**	**5,244**	**6,034**	**4,152**	**4,084**	**4,206**	**4,516**	**5,824**	**5,332**	**5,254**	**59,798**

Figure 1-3: VNC Operations Data (March 2009 – February 2010)

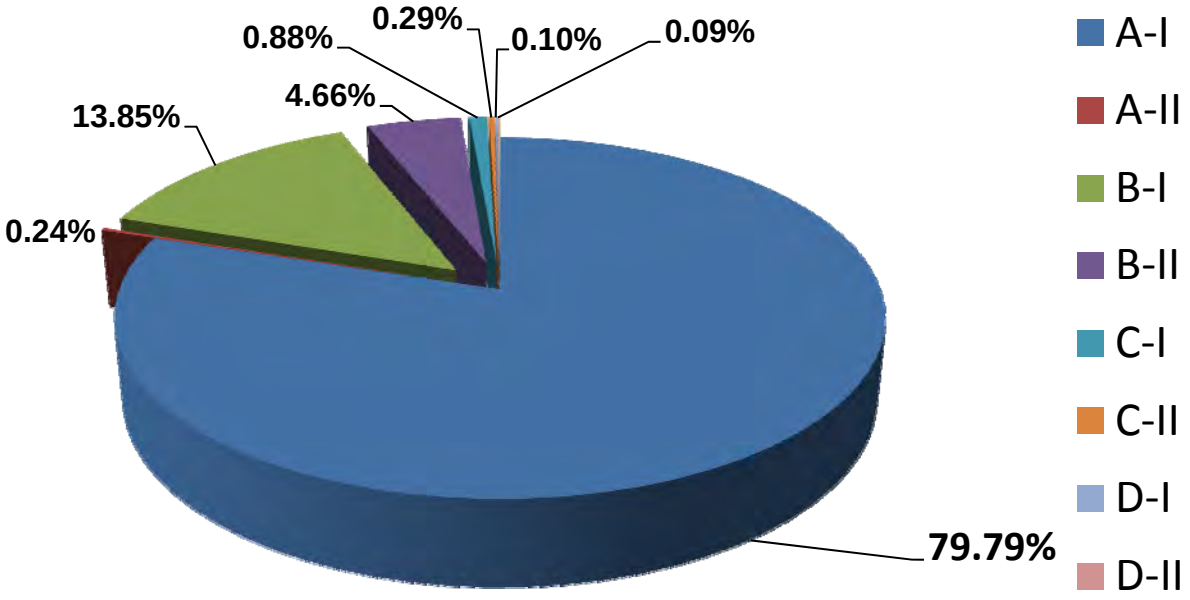


Figure 1-4: VNC Operations Data (March 2010 – February 2011)

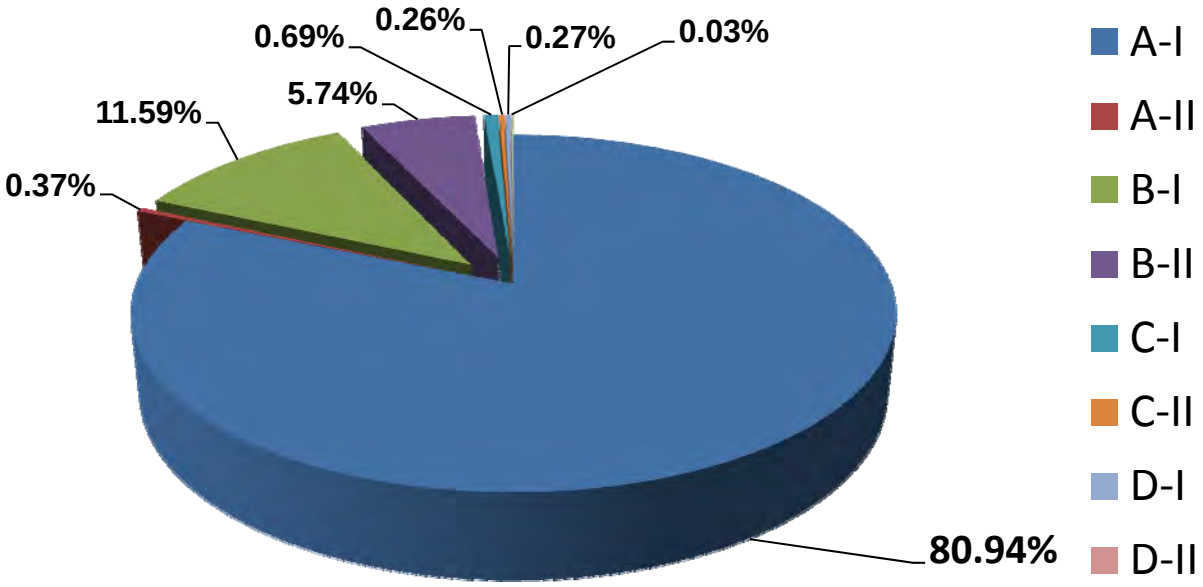
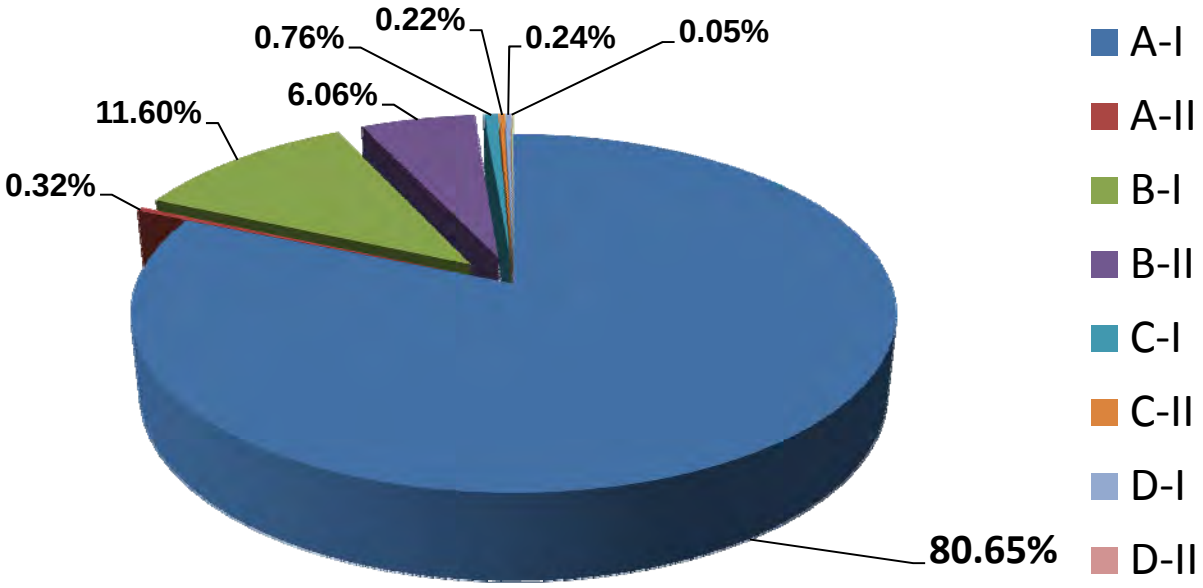


Figure 1-5: VNC Operations Data (January 2010 – December 2010)



1.3.4 Other Documented Counts at VNC

The only other documented aircraft count completed at VNC to date, was conducted by the Airport Tenants Union (ATU) in March of 2008. According to the ATU study, the count was conducted from March 3, 2008 to March 31, 2008 by 25 members of the ATU. The counting commenced each morning from 7:00 a.m. or 8:00 a.m. for 12 hours per day within the specified time period. The ATU also sampled "night" traffic on three separate occasions, however traffic was light and did not justify the time required to conduct a full nighttime count. Instead of a nighttime count, the ATU applied a 5% night factor when adjusting total operations for the month.

The results of the ATU study did not provide a breakdown by ARC type however; the study provided a count by single-engine, multi-engine, turboprop, jet, helicopter, and touch and go activity. A total of 8,596 operations were tabulated during the month of March 2008. 4,466 of the 8,596 operations were considered touch-and-go or training activity. According to ATU data, 37 percent of the activity consisted of single-engine aircraft, three percent multi-engine, one percent turbo props, three percent jet, one percent helicopter, and touch-and-goes were 55 percent of the activity. Although the aircraft types were categorized differently from the VECTOR Counting System and subsequent DY Consultants analysis, the total number of operations and touch-and-go activity correlate fairly well as shown in **Table 1-4**.

Table 1-4: Comparison of March 2008 ATU Traffic Count to DY March 2009, 2010, and 2011

	ATU Count – March 2008	**DY Count – March 2009**	**DY Count – March 2010**	**DY Count – March 2011**
Touch and Go Training	4,466	3,370	2,844	1,836
Landings and Takeoffs	3.907	3,128	2,522	2,902
Total Operations	8,596	6,498	5,366	4,738

1.4 Define Existing Conditions Including Design Aircraft

By determining the aircraft types that are using the airport, the existing critical design aircraft can be identified for planning purposes. The design aircraft is typically the most demanding aircraft or family of aircraft that uses the airport. According to FAA and airport planning guidelines, the design aircraft should conduct a minimum of 500 annual operations, use the airport on a regular basis for conducting business and/or be based at the airport. Once the design aircraft has been determined an ARC is established based upon the specific characteristics of the aircraft or the aircraft design group.

1.4.1 Existing Based Aircraft

Recent counts taken by airport management showed a total of 221 aircraft. This includes 186 single engine aircraft, 27 multi-engine aircraft and 6 jets. In addition, the airport currently

does not have a waiting list for hangars. In past years the waiting list for hangars at one time was up to 61 potential occupants.

1.4.2 Existing and Future Design Aircraft

The appropriate designation for FAA planning purposes is a C-II design aircraft having a speed of 121 knots or more but less than 141 knots and a wingspan of 49 feet up to but not including 79 feet.

2.0 Airport Requirements

Section 2 of this report is intended to provide the future requirements necessary for Venice Municipal Airport through the development of forecasts that are primarily based upon real data obtained from the aircraft counting program conducted over a twelve month period. Forecasts of Aviation Demand will be presented followed by an explanation of what the forecast mean in terms of the Airport Reference Code system that relates design criteria and planning standards to the operational characteristics and physical characteristics of aircraft operating or expecting to operate at Venice in the future.

2.1 Future Demand

Forecasts of aviation demand are essential to the future planning of Venice Municipal Airport. In this regard, demand forecasts, are based upon the desires and needs of the service area, and provide a basis for determining the type, size, and timing of aviation facility development. Demand forecasts also serve as a platform upon which master planning and airport layout plan studies are based. Consequently, these forecasts influence virtually all phases of the planning process. Major sections of this chapter include:

- Technical Approach
- Aviation Demand Elements
- General Aviation Activity Forecasts
- Demand Forecast Summary
- Comparisons With Other Forecasts
- Critical Aircraft

2.1.1 Technical Approach

Aviation demand forecasts proceed through two distinct phases or processes: the analytical, followed by the judgmental. During the analytical process, past aviation activity data are examined for trends in anticipation of future activity levels. Past trends in the various demand elements are extended into the future using a variety of procedures and assumptions, and a series of projections are developed. After preparing a number of such projections, the analyst is able to identify a range of growth within which the true trend will probably fall.

The second phase of demand forecasting requires experienced professional judgment. The analyst examines various growth projections for each demand element, studies the character of the airport and the community and how they will influence the particular element, then the analyst makes a subjective determination of the preferred forecast.

2.1.2 Projection Methodology

The most reliable way to estimate aviation demand is to use more than one analytical technique. The four methods considered in this forecast include regression analysis, market share analysis, trend analysis, and on-site survey analysis.

Socioeconomic Regression Analysis

The socioeconomic regression projection is based upon an assumed causal relationship between population or employment and the aviation activity in a particular area. This projection of demand is obtained by relating socioeconomic data via regression analysis to aviation activity. The resulting set of regression equations produces a projection of aviation activity when they are coupled with independent projections of future socioeconomic data.

This Forecast utilized population and employment statistics as the independent socioeconomic variables. These statistics were obtained from the U.S. Department of Commerce, Bureau of Economic Analysis, and projections of these variables through 2030 were obtained from *Sarasota County's Major Employment Center Land Use Study, 2006.*

Market Share Projection

Market share projections are developed by calculating historical shares of Venice Municipal Airport activity measures and projecting these respective shares into future time frames. This method of projection reflects demand based upon trends occurring in the entire U.S. It is essentially a "top-down" method of forecasting where other forecasts of activity for larger areas are used as drivers of the local share of that demand. Socioeconomic projections, on the other hand, are considered "bottom-up" methodologies and are based upon local factors. Market share projections reflect historical trends and may include increasing, constant, or decreasing future market shares.

Trend Analysis

Trend projections use historical data to formulate predictions of future activity. For this study, two trend analysis methods were used to project baseline aviation activity: double exponential smoothing and least squares linear trending. The double exponential smoothing process produces projections by combining the forecast for the previous period with an adjustment for past errors. It is desirable to correct for past errors when the error has resulted from changes in the trend. In this case, correcting for past errors will put the forecast back on track. Double exponential smoothing is appropriate when the time series contains a linear trend. It acts by calculating two smoothed series - a single and a double smoothed value. Both will lag behind any trend. However, the difference between them indicates the size of the trend. This difference is used to adjust the forecast for the trend.

The second trend method incorporated is a least squares linear trend. This method

uses aviation activity regressed against time to produce a projection. The R^2 statistics are used to gauge the significance of the trend. An R^2 of 0 means there is no statistical relationship between the passage of time and the trend of growth or decline of a forecast variable. R^2 values near 1 indicate a significant relationship and trend. For this study, R^2 values over 0.80 were considered significant.

On-Site Survey Analysis

Surveys are perhaps the only method of projection having nearly universal application. In the absence of usable historical data, surveys can be developed to indicate present and future levels of aviation demand. For this study, the on-site data collection effort conducted by Vector Solutions and DY consultants as described in Section 1 was used to determine the actual number of operations over a 12-month period, and the operational fleet mix of existing aircraft. In addition historic records of based aircraft, fuel sales and other available information were used.

2.1.3 Activity Forecast for VNC

Forecasts of aviation demand can be developed for a variety of activity indicators. Venice Municipal Airport's key demand elements revolve around existing and future general aviation activity. Basic activity indicators include the type and number of aircraft operations, along with the number of aircraft based at the airport. Other important elements are derived from these basic indicators. The airport does not have a scheduled air carrier. Therefore, aviation activity forecasts were prepared for the following general aviation activity indicators:

- Study Area Registered Aircraft
- Venice Municipal Airport's Based Aircraft
- Based Aircraft Fleet Mix
- Aircraft Operations
- GA Operational Fleet Mix
- Peak Period Operations
- General Aviation Enplanements

General aviation activity defines all flying except that of the airlines and the military. At Venice Municipal Airport, general aviation accounts for 99 percent of aircraft operations while the military conducts less than one percent of operations. Forecasts of general aviation activity are presented in the following sections.

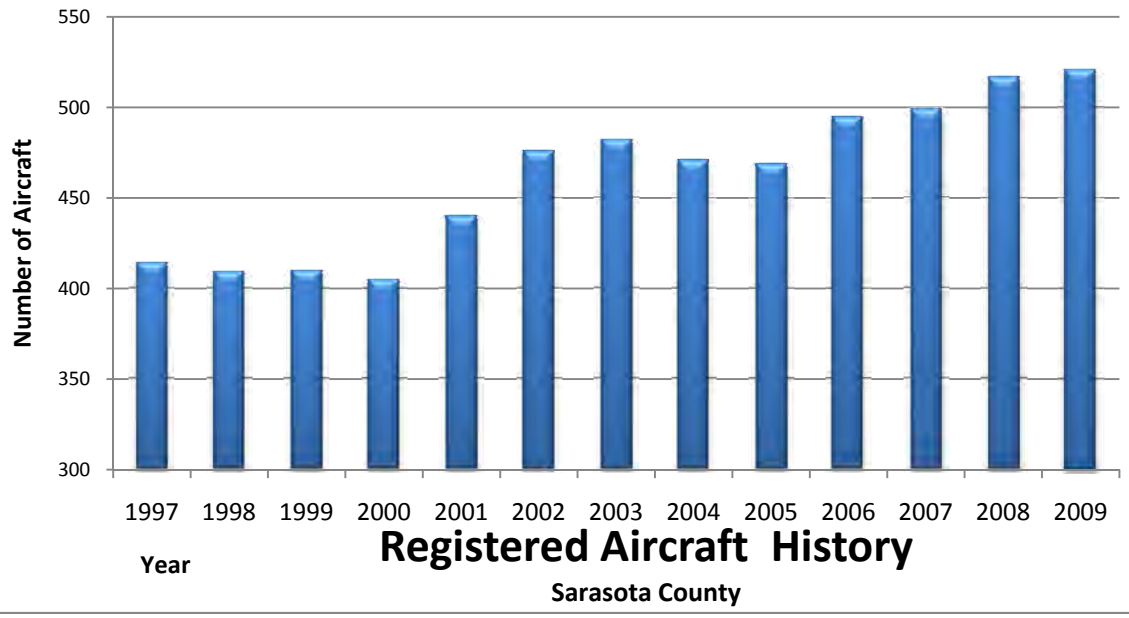
2.1.4 Study Area Registered Aircraft

A registered aircraft is defined as being either fixed or rotary wing, operated in non-airline service with a current registration. The number of aircraft based at Venice Municipal Airport is highly dependent upon the nature and magnitude of aircraft ownership in the study area surrounding the Airport. The Venice Municipal Airport service area has been defined for this study to include Sarasota County.

Historical information used to develop the registered aircraft forecast is based on data compiled by private vendors (Avantext, Hi-Tech Marketing) for the years 1997-2009. These sources provide aircraft information, by type for the service area county on an annual basis. **Figure 2-1** presents a graphic illustration of the study area's registered aircraft growth trends since 1997. As shown, there has been an overall increase in the number of registered aircraft reported in the study area.

To arrive at an acceptable forecast of study area registered aircraft, several projections were made using market share, socioeconomic regression and trend analysis

Figure 2-1



methodologies. Once tabulated, any unreasonable projections were eliminated from consideration and the remainder averaged for the preferred forecast.

Table 2-1 presents a summary of the eight projections of registered aircraft demand for the Venice Municipal Airport service area. The socioeconomic Regression Projections included Population and Employment projections of service area registered aircraft demand. These projections resulted from the regression analyses between each indicator and service area registered aircraft from 1997 through 2009. Both of these projections showed positive growth throughout the period.

The Static Market Share Projection of demand predicts the number of registered aircraft if the Venice Municipal Airport service area keeps pace with the anticipated national growth in registered aircraft. This projection yields a total of 634 service area registered aircraft by the year 2030. The Dynamic Market Share Projection of demand examines historical

market shares and develops a linear trend of these market shares to generate the projection of 647 service area registered aircraft by the year 2030.

The Trend Analysis Projection, similar to the socioeconomic Regression Projections, examined the historical trend of registered aircraft growth using Linear Trend Analysis (least squares) and Double Exponential Smoothing Analysis. Since the historical trend is upward, both the linear trend projection and the exponential smoothing projection show an increase in service area registered aircraft over the period.

Table 2-1 - Projections of Study Area Registered Aircraft

	2009	2010	2015	2020	2025	2030	R^2
Regression							
Population	521	545	607	670	736	803	0.874
Employment	521	536	577	618	659	699	0.875
Market Share							
Static	521	526	552	577	607	634	
Dynamic	521	524	554	583	616	647	
Trend Analysis							
Linear Trend	521	534	585	636	687	738	0.895
Exp Smoothing	521	533	583	634	685	736	
Derived Projections							
High/Low Average	521	535	580	624	672	719	
Multi-Average	521	533	577	620	665	710	
Selected Forecast	**521**	**533**	**577**	**620**	**665**	**710**	

The Derived Projections are simply derivatives of the other existing projections. For example, the High/Low Average is the average of the highest and lowest viable projections. The Multiple Average is the average of all viable projections. As shown, these Derived Projections produce mid-range estimates of demand.

The Selected Forecast considered each of the projections as a possible forecast for the registered aircraft within Venice Municipal Airport's service area. Since none could be ruled out on statistical grounds, the Multi-Average projection was selected as the preferred registered aircraft forecast. This forecast represents the mid-range or average of all of the projections. The forecast of registered aircraft shows a growth from 521 in the year 2009 to 710 by the year 2030 - a 36.3 percent growth over the period.

2.1.5 Venice Municipal Airport Based Aircraft

The based aircraft population at Venice Municipal Airport was projected using a market share methodology. In this instance, a static market share of based aircraft was developed. The static share remains constant at the 2009 level through the forecast time frame. **Table 2-2** provides the forecast of based aircraft at Venice Municipal Airport.

Table 2-2 - Forecast of Based Aircraft

Year	Venice Municipal Based Aircraft	Study Area Registered Aircraft	Market Share
2003	230	482	47.72%
2004	230	471	48.83%
2005	230	469	49.04%
2006	230	495	46.46%
2007	283	499	56.71%
2008	285	517	55.13%
2009	212	521	40.69%
Forecast	Static Share		
2010	217	533	40.69%
2015	235	577	40.69%
2020	252	620	40.69%
2025	271	665	40.69%
2030	289	710	40.69%

The Market Share forecast shows a growth from the current 212 based aircraft to 235 by the year 2015, 252 by the year 2020, 271 by the year 2025, and 289 by the year 2030. This market share forecast indicates that based aircraft levels could rebound to prior 2007/2008 levels by the end of the 20-year planning period.

2.1.6 Based Aircraft Fleet Mix

An aircraft fleet mix refers to the characteristics of a population of aircraft. General aviation aircraft are classified with regard to specific physical traits such as aircraft type (whether fixed wing or rotorcraft), their weight, and number and type of engines. Aircraft having dissimilar physical and operating traits require varying types and amounts of airport facilities.

In the forecasting process, the based aircraft fleet mix is used as one component to help determine operational fleet mix forecasts. It is also used to determine the future design category for the airport (in this case, either B-II or C-II airport reference code). Fleet mix categories included: single engine, multi-engine, turbojet, and rotorcraft. This information

was collected from on-site inventories of the Airport and the data survey compiled for the initial forecast period.

Historic records of jets based at VNC for six months or longer were not available. The fixed based operator that existed in the early stages of the study (Venice Jet Center) was unable to provide any lease agreements that would identify whether or not the jets were based for a period of six months or more or on a month to month type of agreement.

Airport management reviewed all records available to them during the study period to assist with determining the number of based jets at the airport. The analyses indicated that there were a total of 212 based aircraft in 2009 of which 3 were B jet aircraft and 1 was a C jet. This provided the necessary base to begin the development of the demand forecasts.

The projection of the fleet mix involved the consideration of the effects of the national trends in aircraft manufacturing, and the service area registered aircraft fleet mix. Because the total number of based aircraft at Venice Municipal Airport is expected to grow moderately over the forecast period, fleet mix changes will occur as a result of new aircraft at the Airport. **Table 2-3** presents the forecast of based aircraft fleet mix anticipated for Venice Municipal Airport. As shown, the predominance of single engine aircraft will continue into the future, with gains in multi engine and turbo-jet aircraft. Jet aircraft have been subdivided into B and C categories at the request of the community.

Table 2-3 - GA Based Aircraft Fleet Mix

Year	Single Engine	Multi Engine	Jet**Aircraft B	Jet**Aircraft C+	Rotorcraft	Other	Total
2009*	**178**	**28**	**3**	**1**	**2**	**0**	**212**
Airport %	83.96%	13.21%	1.89%		0.94%	0.00%	100%
National %	76.57%	11.10%	5.22%		4.55%	2.57%	236,235
2010 (projected)	**182**	**29**	**2**	**1**	**2**	**0**	**217**
Airport %	83.87%	13.36%	1.84%		0.92%	0.00%	100%
2015	**197**	**31**	**3**	**2**	**2**	**0**	**235**
Airport %	83.83%	13.19%	2.13%		0.85%	0.00%	100%
2020	**211**	**33**	**4**	**2**	**2**	**0**	**252**
Airport %	83.73%	13.10%	2.38%		0.79%	0.00%	100%
2025	**225**	**36**	**4**	**3**	**3**	**0**	**271**
Airport %	83.03%	13.28%	2.58%		1.11%	0.00%	100%
National %	73.43%	9.15%	9.14%		6.10%	2.17%	275,230
2030	**240**	**38**	**4**	**4**	**3**	**0**	**289**
Airport %	83.04%	13.15%	2.77%		1.04%	0.00%	100%

*2009 and 2010 information obtained from VNC Airport Records as of March 2010; ** Based jets obtained from Airport records.

2.1.7 Aircraft Operations

An aircraft operation is defined as either a takeoff or a landing. A takeoff and landing are counted as two separate operations. The annual general aviation operations forecast is derived for both local and itinerant operations through the use of an operations per based aircraft (OPBA) ratio. Typically, the OPBA ratios are calculated as an average of historical information.

There has been significant disagreement within the community as to the "actual" number of operations that have occurred on a yearly basis at Venice Municipal Airport. Without an air traffic control tower, operations at any airport are usually estimated using the best information available at the time from tenants and FBOs. City officials have insisted that the operations at VNC have been over-inflated in prior master planning efforts thus providing the impetus for the City's initiative to undertake an actual 24-hour count for an entire year.

As provided in Section 1, there were 59,776 total aircraft operations for a twelve month period beginning March 2009 through February 2010. The full year count from January 2010 through December 2010 yielded similar results of 59,798 annual operations. The data is inclusive of peak months and includes touch and go operations. The data represents approximately 64 percent fewer annual operations than the 164,495 base year 2000 operations published in the 2000 Airport Master Plan. The operations collected for this Master Plan Update are approximately 65.5 percent less than the 172,835 annual operations published in the April 2007 Airport Master Plan. The FAA accepted the forecasts developed in the 2007 Master Plan and subsequently were considered when the FAA published the 2008 Terminal Area Forecast.

In an effort to demonstrate that actual operations occurring at Venice are quite lower than the official TAF numbers, the team sought to determine a methodology to calculate prior year operations using other existing available data to establish a more consistent historic base to build from for use in the development of the forecast. The only consistent and recent information available for this use was fuel sales data obtained from Airport Management records. Actual fuels sales for 2009/2010 were correlated to the actual operations data collected in the counting program as shown in **Table 2-4**.

In order to estimate historical operation counts for the years 2007 and 2008, the number of aircraft jet operations was calculated by using the correlation of gallons of Jet A fuel sold during the 12 month period and the number of operations of aircraft with an ARC of "C" or larger during the same period. The number of total operations was then calculated by using the ratio of total fuel sold (both AvGas and Jet A fuel) during the period and total operations during the same period. Using this ratio with past fuel sales, the total number of operations for the years 2007 and 2008 was calculated. In addition, the number of operations of aircraft with an ARC of "C" or larger could be split out from the totals using the fuel ratio and actual operations counting data. **Table 2-5** provides the current and historical number of Airport operations using fuel sales data.

Table 2-4 - Venice Municipal Airport's Operations and Fuel Sales						
2009/2010	**Operations**	**Fuel (Gallons)**	**Gal/Ops**	**C+ Ops**	**Jet A (Gallons)**	**Jet A Gal/C+Ops**
March	6,498	55,685	8.57	44	39,781	904.11
April*	3,252	40,870	12.57	44	30,325	631.77
May	5,230	38,880	7.43	34	22,943	674.79
June	5,334	42,012	7.88	10	22,368	2236.80
July	4,660	15,306	3.28	12	7,518	626.50
August	4,112	22,691	5.52	18	14,808	822.67
September	4,148	15,704	3.79	10	7,888	788.80
October	5,874	27,391	4.66	18	11,663	647.94
November	6,170	31,406	5.09	38	23,457	617.29
December	4,710	55,038	11.69	22	31,116	1414.36
January 2010	5,192	56,691	10.92	38	39,837	1048.34
February 2010	4,594	48,552	10.57	32	32,048	1001.50
Total 12 months	59,774	450,226	7.53	320	283,572	827.9

* System Error – no Touch and Go (T&G) operations were collected 4/3-4/17.

Using this methodology yields yearly operations counts that are more in proportion to the actual counts completed for this study. These numbers better reflect the slowing of general aviation activity that has occurred over the last few years due to economic conditions taking place throughout the country.

Table 2-5 -Venice Municipal Airport Historical Operations				
Year	2007	2008	Mar 2009 – Feb 2010	Jan 2010 – Dec 2010
Based Aircraft *	283	285	212	225
Operations Count	78,813	82,672	59,776**	59,798**
ARC C and D Operations Count	**436**	**458**	**322*** **	**344*** **
Operations per Based Aircraft (all)	278	290	282	266
Operations per Based Jet Aircraft (B or C)	179	173	135	136

*Historic based aircraft
**Actual 12 month data count
***Actual number of C and higher jet operations during 12 month study period.

Local and Itinerant General Aviation Operations

The FAA distinguishes airport operations between local operations and itinerant operations. Local operations are those operations performed by aircraft that remain in the local traffic pattern, execute simulated instrument approaches or low passes at Venice Municipal Airport, and the operations to or from the Airport and a designated

practice area within a 20 mile radius of the Airport. Itinerant operations are operations performed by an aircraft that lands at Venice Municipal Airport, arriving from outside the Airport area, or departs Venice Municipal Airport and leaves the Airport area. The Airport Master Record, 5010 Form data for Venice Municipal Airport shows the splits between local and itinerant operations at the Airport. In this regard, local operations consist of 54.3 percent of Airport operations and itinerant operations consist of 45.7 percent of Airport operations. It is interesting to note that the aircraft operations data collected as part of this study indicates that 60 percent of the traffic at VNC consists of touch and go activity.

The OPBA for each of these categories were then calculated using the forecast of based aircraft and used in the future forecast of operations. **Table 2-6** presents the current estimated OPBA and the future forecast of operations at Venice Municipal Airport.

As shown, the 12-month period of March 2009 – February 2010 indicates local general aviation aircraft operations were estimated at 32,457 which corresponds to an OPBA of 153. For the same 12-month period, itinerant operations were estimated at 27,317, corresponding to an OPBA of 129. These aircraft utilization ratios as well as those shown for calendar year 2010 yield forecasts of total general aviation operations of 66,310 in 2015, 71,064 in 2020, 76,442 in 2025, and 81,498 by the year 2030.

Table 2-6 - Annual General Aviation Operations Forecast

		Local Operations		Itinerant Operations		
Year	Based Aircraft	Number	OPBA	Number	OPBA	Total
Mar ’09- Feb’10	212	32,457	153	27,319	129	59,776
2010 Actual Jan - Dec	225	32,469	144	27,327	122	59,798
2015	235	35,995	153	30,315	129	66,310
2020	252	38,556	153	32,508	129	71,064
2025	271	41,463	153	34,959	129	76,442
2030	289	44,217	153	37,281	129	81,498

2.1.8 Operational Fleet Mix Forecast

The operational fleet mix forecast reveals a great deal of information about the operational character of the Airport, and as such, can serve as a basis for developing airfield and landside facility designs. A forecast of the general aviation operational fleet mix was developed by applying the percentage of based aircraft within each of the fleet mix categories derived in Table 2-3 to the total number of forecast operations derived from the operations per based aircraft in Table 2-6. Specifically for Venice, jets have been subdivided categorized into B or C and higher approach speeds to determine future numbers of operations within each group. Analyses completed earlier on in the study process did not depict the numbers of B jet that are presently represented at VNC and those that use the airport on a frequent basis. The community requested that a forecast be completed of each. **Table 2-7** presents the results of the forecast using this process. As shown, B jet activity is expected to outnumber C or greater activity throughout the duration of the twenty year planning period.

Table 2-7 – VNC Fleet Mix Forecast

Year	Single Engine	Multi Engine	Jet Aircraft B	Jet Aircraft C+	Helicopter*	Total
2015	55,674	8,760	938	355	584	66,310
2020	59,665	9,388	1,006	380	625	71,064
2025	64,181	10,098	1,082	409	673	76,442
2030	68,425	10,766	1,153	436	717	81,498

*Helicopter operations are based on estimates per based aircraft. Cameras are not set up to capture all operations.

2.1.9 Peak Period Operations

Since many of the Airport's facility needs are related to the levels of activity during peak periods, forecasts were developed for peak month, design day, and design hour. Ideally, a comprehensive historical data pool should be analyzed to determine the peaking characteristics. The alternative approach taken in developing these activity descriptions is outlined as follows:

- ***Peak Month Operations:*** This level of activity is defined as the calendar month when peak aircraft operations occur. Peak Month percentages at airports such as Venice Municipal Airport are typically 15 percent busier than an average month operations. The peak month obtained during the aircraft counts was March 2009. The average of the remaining 11 months is 4,843 operations. At Venice the peak month appears to be 25.5 percent higher than the average.

- ***Design Day Operations:*** This level of operations is defined as the average day within the peak month. This indicator can be easily developed by dividing peak month operations by either 30 or 31. A 31 day peak month was assumed for design day operations at Venice Municipal Airport.

- ***Peak Hour Operations:*** This level of operations is defined as the peak hour within the design day. Typically, these operations will range between 15 and 20

percent of the design day operations for airports with the activity profile similar to Venice Municipal Airport. A 20 percent peaking factor was used for this forecast.

Table 2-8 presents the forecast of peaking characteristics for general aviation operations at Venice Municipal Airport.

Table 2-8 - General Aviation Operational Peaking Forecast

Year	Annual Operations	Peak Month Operations	Design Day Operations	Peak Hour Operations
Mar '09 – Feb '10	59,776	6,498	210	42
Jan – Dec 2010	59,798	6,034	195	39
2015	66,310	6,355	205	41
2020	71,064	6,810	220	44
2025	76,442	7,326	236	47
2030	81,498	7,810	252	50

2.1.10 Demand Forecast Summary

The major demand forecast elements of this Master Plan Update are summarized in **Table 2-9** and **Figures 2-2** and **2-3**. The demand elements from these forecasts can be used throughout the master planning process to help develop facility requirements and identify alternatives.

Table 2-9- Summary of Aviation Demand Forecasts

ITEM	**Mar '09 – Feb '10**	**Jan – Dec 2010**	**2015**	**2020**	**2025**	**2030**
Service Area Registered Aircraft	521	533	577	620	665	710
Venice Municipal Airport Based Aircraft	212	225	235	252	271	289
Operations						
GA Local	32,457	32,469	35,995	38,556	41,463	44,217
GA Itinerant	27,317	27,327	30,315	32,508	34,959	37,281
Total	59,776	59,798	66,310	71,064	76,442	81,498
Peak Hour	42	38	41	44	47	50

Figure 2-2

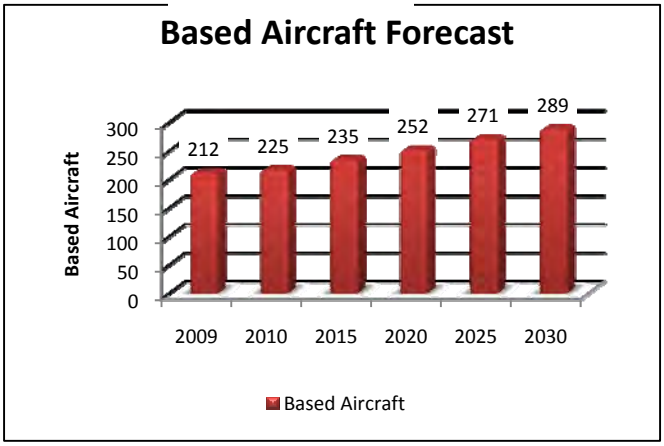
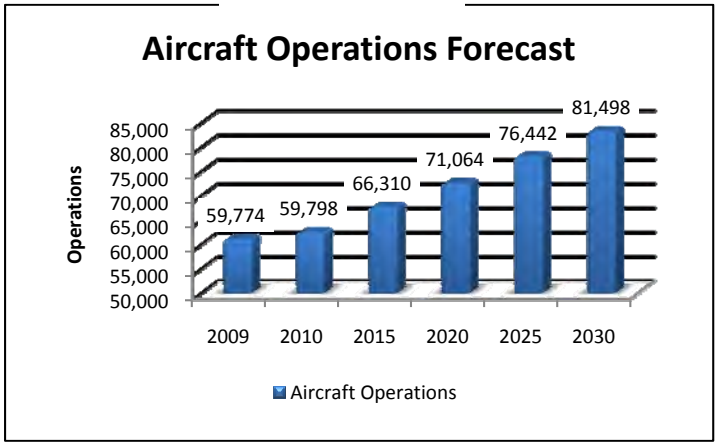


Figure 2-3



2.1.11 Comparison with Other Forecasts

One way to estimate how reasonable a set of forecasts may be is to compare them with previous or existing forecasts. For Venice Municipal Airport, forecasts for the previous Venice Municipal Master Plan (2000), and the most recent FAA Terminal Area Forecast (TAF) were used to compare the forecast growth of based aircraft and operations. These comparisons are shown in **Table 2-10**.

Table 2-10- Forecast Comparisons

Forecast/Component	Mar '09 – Feb '10	2010	2015	2020	2025	2030*	Yearly Growth
FAA Terminal Area Forecasts (2009)[1]							
Based Aircraft	231	231	236	240	246	251	0.40%
Total Aircraft Operations	186,074	190,709	215,685	243,941	275,910	312,015	2.49%
2000 Master Plan[2]							
Based Aircraft	297	303	329				1.72%
Total Aircraft Operations	207,864	216,646	242,992				2.64%
2009/2010 Forecast Study	**Actual[3]**	**Actual**					
Based Aircraft	**212**	225	235	252	271	289	1.49%
Total Aircraft Operations	**59,776**	59,798	66,310	71,064	76,442	81,498	1.49%

[1] Year 2030 extrapolated by consultant.
[2] Individual years extrapolated from the Master Plan's forecast of years 2007 to 2017.
[3] Actual number of based aircraft.

As shown, the FAA's 2009 Terminal Area Forecasts shows a yearly growth of 2.49 percent in operations over the period. This forecast does not use the actual based aircraft count for 2008 and the forecasted operations count for 2009 is off by roughly 300 percent when compared to the number of operations that the Airport's Counting Program predicts. The 2000 Master Plan for Venice Municipal Airport shows more operations and more aircraft than this Plan's forecast of aviation demand over the long term. The 2000 Master Plan is nine years old and it was not able to take into account for the drop from 285 based aircraft in 2008 to 212 based aircraft in 2009. The 2000 Master Plan also shows an increase in based aircraft by 1.72 percent per year. This Plan's forecast has a growth rate of based aircraft between the previous two forecasts. This forecast takes all of these trends into account in producing reasonable forecasts through the year 2030 and using actual data for the base year.

The City of Venice has made a significant investment by purchasing the aircraft counting equipment and has made a commitment to its community to continue the monthly counts and data sorts for an indefinite period of time. The goal is to acquire an historic database of annual operations activity that can be used in future forecasting and planning efforts. In addition, the City will update the forecasts of aviation demand as part of an environmental assessment (EA) for planned runway improvements that may result from this study and the updated ALP.

2.2 Implications to Airport Reference Code

2.2.1 Introduction

Airport planning and design is based in part on the airport reference code or ARC for the airport. The airport reference code has two components relating to the airport design aircraft. The first component, depicted by a letter, is the *aircraft approach category* and relates to aircraft approach speed (operational characteristic). The second component, depicted by a Roman numeral, is the *airplane design group* and relates to airplane wingspan or tail height (physical characteristics), whichever is the most restrictive. Generally, runways standards are related to aircraft approach speed, airplane wingspan, and designated or planned approach visibility minimums. Taxiway and taxilane standards are related to airplane design group.

Approach Category

The aircraft approach category is a grouping of aircraft based on an aircraft's approach speed known as V_{REF} or calculated by multiplying an aircraft's stall speed in landing V_{SO} configuration at maximum certificated landing weight by 1.3. The approach categories are as follows:

- Category A: Speed less than 91 knots.
- Category B: Speed 91 knots or more but less than 121 knots.
- Category C: Speed 121 knots or more but less than 141 knots.
- Category D: Speed 141 knots or more but less than 166 knots.
- Category E: Speed 166 knots or more.

Airplane Design Group

The airplane design groups is a grouping of airplanes based on wingspan or tail height. Where an airplane is in two categories, the most demanding category should be used. The groups are as follows:

- Group I: Up to but not including 49 feet (15 m) wingspan or tail height up to but not including 20 feet.
- Group II: 49 feet (15 m) up to but not including 79 feet (24 m) wingspan or tail height from 20 up to but not including 30 feet.
- Group III: 79 feet (24 m) up to but not including 118 feet (36 m) wingspan or tail height from 30 up to but not including 45 feet.
- Group IV: 118 feet (36 m) up to but not including 171 feet (52 m) wingspan or tail height from 45 up to but not including 60 feet.
- Group V: 171 feet (52 m) up to but not including 214 feet (65 m) wingspan or tail height from 60 up to but not including 66 feet.
- Group VI: 214 feet (65 m) up to but not including 262 feet (80 m) wingspan or tail height from 66 up to but not including 80 feet.
-

2.2.2 Venice Municipal Airport Reference Code

The critical aircraft is defined as the aircraft or family of aircraft with the largest wingspan and highest approach to landing speed that uses the airport on a regular basis. "Regular basis" is defined by the FAA as more than 500 itinerant operations a year. In some cases, the critical aircraft may be two different aircraft where one aircraft establishes design criteria based on the largest wingspan and another establishes design criteria based on the highest approach to landing speed.

Currently, there are over 1,100 operations by jet aircraft each year. Of these, most are by Cessna Citation aircraft. These aircraft are classified as B-II. Jet aircraft with an ARC of "C" or larger conducted 320 total operations during the 12 month study period. Given these low numbers of ARC C aircraft operations for the study period, the current classification of the Airport would normally be a B-II. However, prior planning efforts categorized the airport as a C-II facility on the ALP and the airport previously accepted federal grant money for Runway 13-31 to be reconstructed to C-II standards. The FAA has indicated that the C standard must be maintained for any C based or itinerant aircraft users. Although the counts have indicated that there are not 500 annual C aircraft operations, the airport does serve a significant number of C operators and is home to C based aircraft throughout the year. The FAA has indicated that utility and safety of an airport may not be compromised for any presently based aircraft or others that operate on a regular basis at Venice.

The forecast estimates the addition of one based jet aircraft per five year period starting in 2015 for a total of four additional based jet aircraft by 2030. These jet aircraft are projected to be similar to the ratio of the current based aircraft (one additional C-II or greater jet aircraft and three additional B jets aircraft). The estimates clearly indicate that Venice Municipal Airport will continue to have a large number of jets operating at the

airport in the future.

Knowing the discrepancy between the actual data counts and prior estimates developed in previous airport planning efforts conducted for Venice Municipal Airport, the City indicated its desire in January 2010 to further pursue investigating the advantages and disadvantages of a B-II ARC in the alternatives analysis. Section 3 of the report will assess many alternatives and the affect ARC B-II and C-II standards would have on the utility and safety of Venice Municipal Airport and the impact to its present users. .

3.0 Planning Standards and Alternatives

Introduction and Background

On May 6th, June 9th and June 30th, 2010 representatives from the City of Venice and DY Consultants met with FAA staff members from Orlando and Washington D.C. to address community concerns expressed about homes located in the Runway 13 end Runway Protection Zone (RPZ) and minimizing physical impacts to the Venice Golf Association (VGA) golf course leasehold.

The following existing factors were addressed during the discussion:

- Homes located in the existing Runway 13 end RPZ.
- Runway Safety Area (RSA) deficiencies at the Runway 4 end and potential impacts to the VGA driving range and golf course leasehold and facilities.
- Runway Object Free Area (ROFA) deficiencies along the west side of Runway 13-31 and at the Runway 4 end and resulting potential impacts to the VGA golf course leasehold and facilities.
- Runway centerline to taxiway centerline separation distance of Taxiway E to Runway 4 is 250 feet; FAA standard for an airport reference code (ARC) C-II is 300 feet.

A full range of alternatives were identified and reviewed that could potentially alleviate these concerns and at the same time enhance safety and maintain utility of the airport. The options further discussed in this report address alternatives for each runway and range from shifting runway threshold locations to the use of Engineered Materials Arresting Systems (EMAS).

DY was asked to further investigate the alternatives that were addressed during the working sessions. Several experts in their respective fields were also called upon by DY for additional information necessary to assist with the assessment of the alternatives. In addition to the research and evaluation efforts of DY Consultants, the following specialists provided valuable information used during the development of this report:

- Zodiac Aerospace – Engineered Arresting Systems Corporation (ESCO) - EMAS
- Barbaron, Inc. – Mr. Terry LaGree – Golf Course Architect
- Mr. Gary Raymond – FAA Airspace Evaluation Program Specialist

The community desires an airport that does not impact existing homes and minimizes impacts to the Lake Venice Golf Course. Prior planning documents completed for Venice Municipal Airport have indicated that the airport is a C-II facility. In particular, the 2000 approved ALP and Master Plan designate the existing and future ARC as design category C-II. Unfortunately, the 2000 ALP does not properly depict the correct dimensions for the Runway 13 end RPZ. This error led to a great deal of misunderstanding amongst the City Council and

its constituents during the 2007/2008 ALP Update process when the correct C dimensions were shown to overlay 26 homes off the Runway 13 end. Council rejected the 2008 ALP Update on the basis that it was not acceptable to have homes located within the RPZ. In addition, Council was not in favor of approving any major impacts to the golf course necessary to meet FAA RSA and ROFA requirements for a C category airport.

To meet "C" requirements, past solutions have shown that homes will exist within the Runway 13 approach RPZ, RSA improvements are needed to the Runway 4 end impacting the Lake Venice Golf Course and ROFA improvements are needed along the west side of Runway 13-31 and Runway 4 end, possibly impacting the golf course as well.

Goals and Objectives

Goals and objectives of the planning effort and meetings with the FAA are as follows:

- To the extent practicable, relocate the Runway 13 RPZ onto existing airport property.
- Maintain design standards and operational utility of a primary runway (same as Runway 13-31 is today).
    - Equal landing and departure lengths
    - Approach capabilities should be equivalent to those that are presently in place on Runway 13-31
    - Maintain existing airport reference code
- If a standard, graded RSA cannot be achieved due to site constraints, provide equivalent RSA with a standard EMAS providing 70 knot capability.
- Provide for 600 feet of approach RSA.
- Increase the width and length of the Object Free Areas while minimizing impacts to the golf course.
- Provide adequate wind coverage.
- Conform to all FAA design criteria to the extent practicable as set forth by FAA Advisory Circulars, Orders, regulations and standards.

The ultimate objective of the working sessions with the FAA were to determine if a concept exists that could resolve Council and community concerns and at the same time satisfy FAA safety standards; maintain runway utility and avoid potential impacts to users and based aircraft.

Potential solutions could not reduce runway utility or safety for any tenant, based aircraft or those that use the airport on a regular basis. Several concepts were identified to address the key concerns previously identified ranging from shifting runway threshold locations to the use of Engineered Materials Arresting Systems (EMAS) and are presented within Section 3.

3.1 Planning Guidelines

Moving forward with the development of alternatives requires the establishment of the airport design standards that will be followed in FAA Advisory Circular (AC) 150/5300-13 Airport Design (including latest changes). The FAA has a myriad of airport design standards that relate back to characteristics of aircraft that operate now or in the future at airports. The intent of the FAA's standards and policies is to provide a safe and efficient airport for aviation users as well as the airport's surrounding environs.

Table 3-1 below highlights the dimension criteria that will be referred to most often in the case of Venice.

Table 3-1 Venice Dimensional Criteria

VNC Dimensional Criteria	B-II	C-II
Runway Width	75 ft	100 ft
Runway Shoulder Width	10 ft	10 ft
Runway Blast Pad Width	95 ft	120 ft
Runway Blast Pad Length	150 ft	150 ft
Runway Safety Area Width	150 ft	500 ft
Runway Safety Area Length Prior to Landing Threshold	300 ft	600 ft
Runway Safety Area Length Beyond RW End	300 ft	1,000 ft
Runway Object Free Area Width	500 ft	800 ft
Runway Object Free Area Length Beyond RW End	300 ft	1,000 ft

The visibility minimums for Venice are currently 1 mile or greater. Therefore each runway end RPZ would have the following dimensions shown in **Table 3-2**:

Table 3-2 RPZ Dimensions

	Length (feet)	Inner Width (feet)	Outer Width (feet)
B visual and not lower than 1 mile	1,000	500	700
C visual and not lower than 1 mile	1,700	500	1,010

Although the Runway 13 end RPZ was not depicted correctly on the 2000 ALP drawing, the 2000 Master Plan documentation and the ALP provide written dimensions that equate to those of a “C visual and not lower than 1 mile”.

3.2 Runway Utility and Length Analysis

A runway length analysis was conducted for VNC using FAA AC 150/5325-4B. The analysis was completed for airplanes within a maximum certificated takeoff weight of more than 12,500 pounds up to and including 60,000 pounds. The results indicated that to satisfy 75 percent of the family grouping of these large airplanes as defined in AC 150/5325-4B, 4,650 feet of runway is required at Venice. To satisfy 100 percent of the same family grouping of aircraft at 60 percent useful load, the airport would need approximately 5,450 feet. Further, based upon DY Consultants-Vector departure operations data collection information and survey data of based aircraft and tenants, it was determined that an existing runway length of 5,000 feet should be maintained at a minimum to accommodate the mix of aircraft currently based at the airport and those that use the airport on a regular basis.

3.2.1 Wind Analysis

Local prevailing meteorological conditions such as wind direction, cloud ceiling heights, and visibility have a direct influence on the utility of the runway system. In a wind analysis, particular care is given to the assessment of the local origin and velocity of prevailing winds, specifically in the determination of the required number and orientation of runways at an airport. Ideally, any single runway should be aligned with the prevailing winds that, to varying degrees, have a direct affect on all aircraft. Generally, the smaller the aircraft, the more it is affected by the wind, particularly crosswind components. The crosswind component is the resultant vector of the runway direction and existing wind that acts at a right angle to the runway. FAA Advisory Circular (AC) 150/5300-13, *Airport Desig*n, recommends that at least 95 percent crosswind coverage be provided by the runway system (one or more runways) at any airport. The most desirable runway orientation provides the greatest runway wind coverage with the least crosswind component.

When surface winds cross the runway at an angle during landing and takeoffs, the wind exerts both headwind and crosswind components upon the aircraft. For operational safety considerations, pilots desire to use runways that, to the greatest extent practicable, offer the greatest headwinds and least crosswinds. Each aircraft (by factory design) has a maximum recommended demonstrated crosswind velocity limit, which is the crosswind component for which adequate control of the airplane was demonstrated during takeoff and landing. As a rule, most airplanes are limited to a crosswind component of 20 percent of the maximum certificated weight stall speed with recommended landing flaps. Runway wind coverage, as used in airport planning, measures the percent of time crosswind components are below maximum acceptable velocity limits.

An initial review was completed of the existing information available from previous studies describing the windrose coverage for Venice Municipal Airport. The initial windrose analysis was obtained from the Hanson Draft Master Plan completed in 2008, and the Dufresne Henry Master Plan completed in 2000. The data used in each study was obtained from the National Climatic Data Center in Asheville, who provided data compiled at the Venice Pier located just west of the airport. Both study sources provide consistent findings indicating that the existing runway configuration provides adequate coverage for all aircraft in all-weather conditions. Neither runway individually provides the recommended 95 percent coverage for crosswind components of 10.5 and 13.0 knots, those most applicable to the types of aircraft commonly used at VNC.

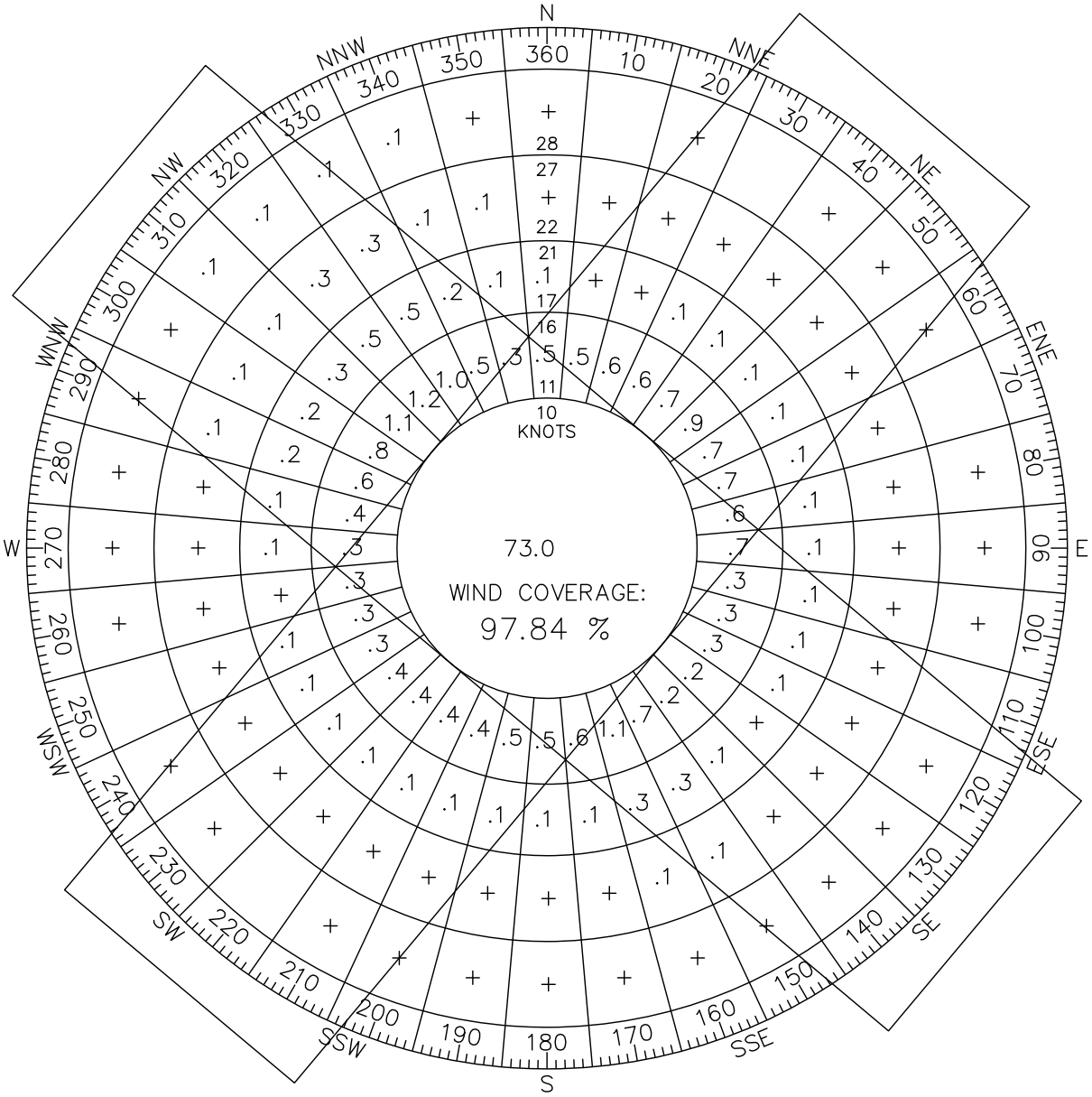
At the request of the FAA, further analysis and additional data was obtained to verify the wind coverage statistics on record for Venice Municipal Airport. Wind data for the analysis were obtained from the National Climatic Data Center (NCDC) in Asheville, North Carolina for the Venice Pier located just west of the airport for the period 2000 through 2009. No data was available for 2005 as the National Oceanographic and Atmospheric Administration (NOAA) upgraded their weather observation instrumentation located at the pier during that year. The NCDC compiles data received from pier station VENF1 which is owned and maintained by the National Data Buoy Center (NDBC). The VENF1 station is not capable of providing visibility and ceiling information to generate individual IFR and VFR windroses. However, sufficient wind data exists to generate an all-weather windrose to provide an understanding of wind direction and speed at Venice Municipal Airport.

The FAA recommends 95 percent wind coverage for various crosswind components based on specific airport reference codes (ARC). The 95 percent wind coverage is computed on the basis of the crosswind not exceeding 10.5 knots for ARC A-I and B-I aircraft, 13 knots for ARC A-II and B-II, 16 knots for ARC A-III, B-III, and C-I through D-III, and 20 knots for ARC A-IV through D-VI as detailed in FAA AC 150/5300-13 "Airport Design."

The present ARC classification for VNC is C-II according to the approved 2000 Airport Layout Plan. However, 90 percent of all aircraft operations taking place at VNC are within the A-I and B-I aircraft design groups. Using FAA AC 150/5300-13, Appendix 1, wind coverage for the airport was computed for a 10.5 knot crosswind component under all-weather conditions for each runway on its own as well as combined. This is warranted due to the number of smaller single-engine piston and twin-engine piston aircraft that utilize the airport on a regular basis and are more susceptible to crosswinds than larger, faster aircraft.

Windrose charts are depicted on **Figures 3-1 and 3-2** and illustrate wind coverage amounts for each runway individually as well as the overall airport in its current configuration. Neither runway alone provides sufficient coverage. The combination of the two runways does currently provide 97.84 percent coverage for the 10.5 knot crosswind component for all weather conditions. Runway 4-22 provides 84.98 percent coverage and Runway 13-31 provides 89.25 percent coverage in all weather conditions. In other words, according to the charts, Runway 4-22 crosswinds exceed 10.5 knots 15.02 percent of the year or 55 days. Runway 13-31 crosswinds exceed 10.5 knots 10.75 percent of the year or 39 days.

Both runways have existing widths of 150 feet which is feet greater than the standard design width of 100 feet. City council has expressed their desire to maintain both runways at 150 feet in width.



Runway	10.5kts=12mph	13kts=15mph	16kts=18.4mph	20kts=23mph
Combined	97.84	99.22	99.74	99.92

SOURCE: NCDC Data, Venice Pier - Jan. 2000 - Dec. 2009.

VENICE MUNICIPAL AIRPORT
CITY OF VENICE, FLORIDA

ALL WEATHER WIND ROSE
COMBINED 10.5 KNOTS

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FIGURE NO.
3-1

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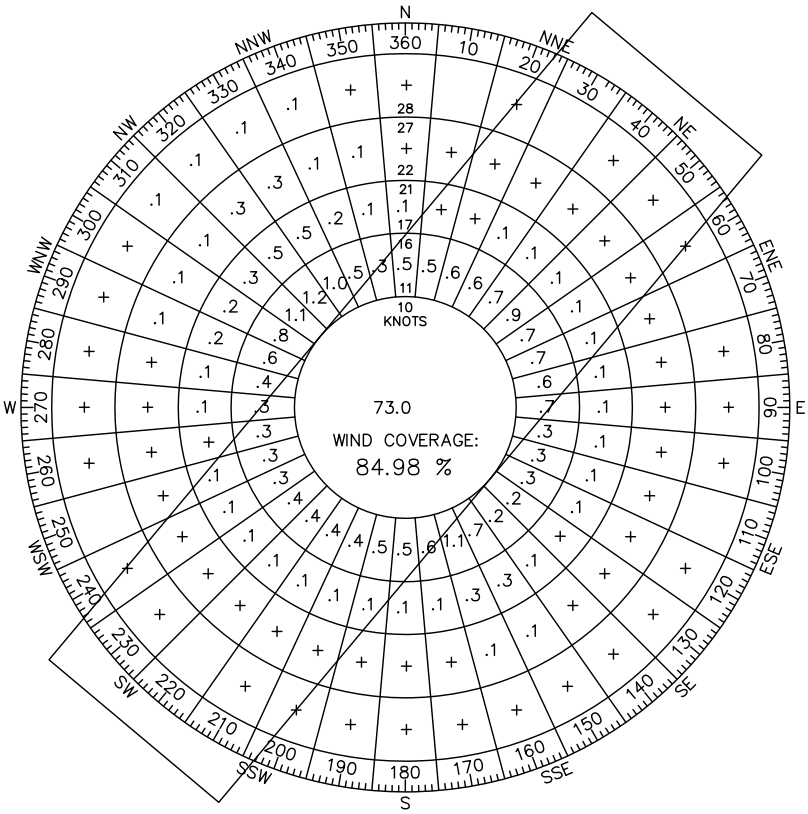
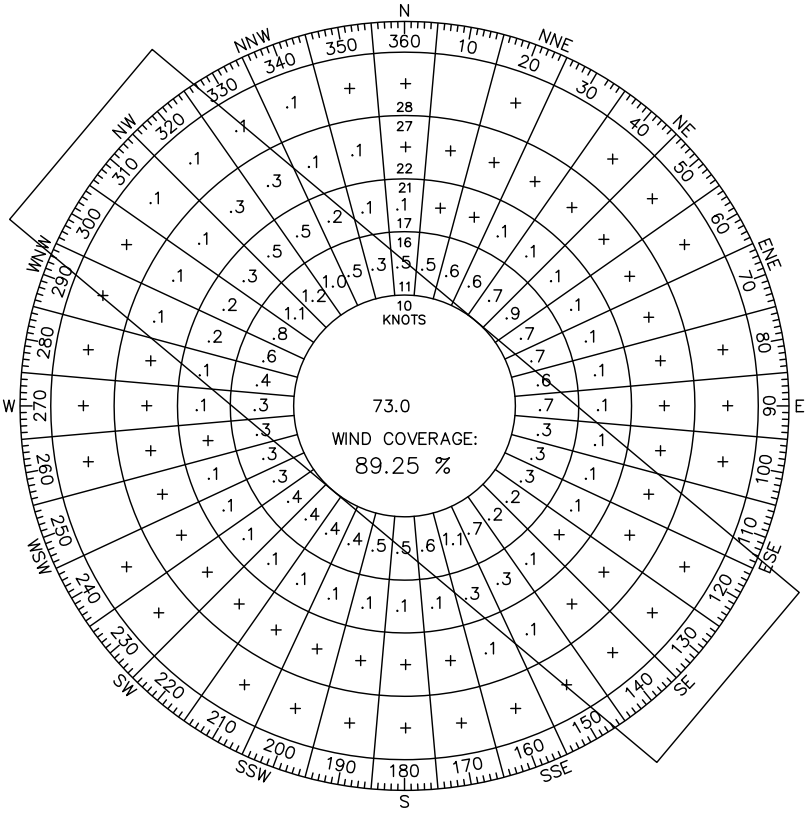


Runway	4-22
10.5kts=12mph	84.98
13kts=15mph	90.09
16kts=18.4mph	94.99
20kts=23mph	97.70



Runway	13-31
10.5kts=12mph	89.25
13kts=15mph	94.12
16kts=18.4mph	98.20
20kts=23mph	99.39

SOURCE: NCDC Data, Venice Pier - Jan. 2000 - Dec. 2009.

VENICE MUNICIPAL AIRPORT
CITY OF VENICE, FLORIDA

ALL WEATHER WIND ROSES
10.5 KNOTS

DRAWN:	CHKD:	DATE:	PROJECT NO.
RRC	LJM	07-29-2011	401.00

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FIGURE NO.
3-2

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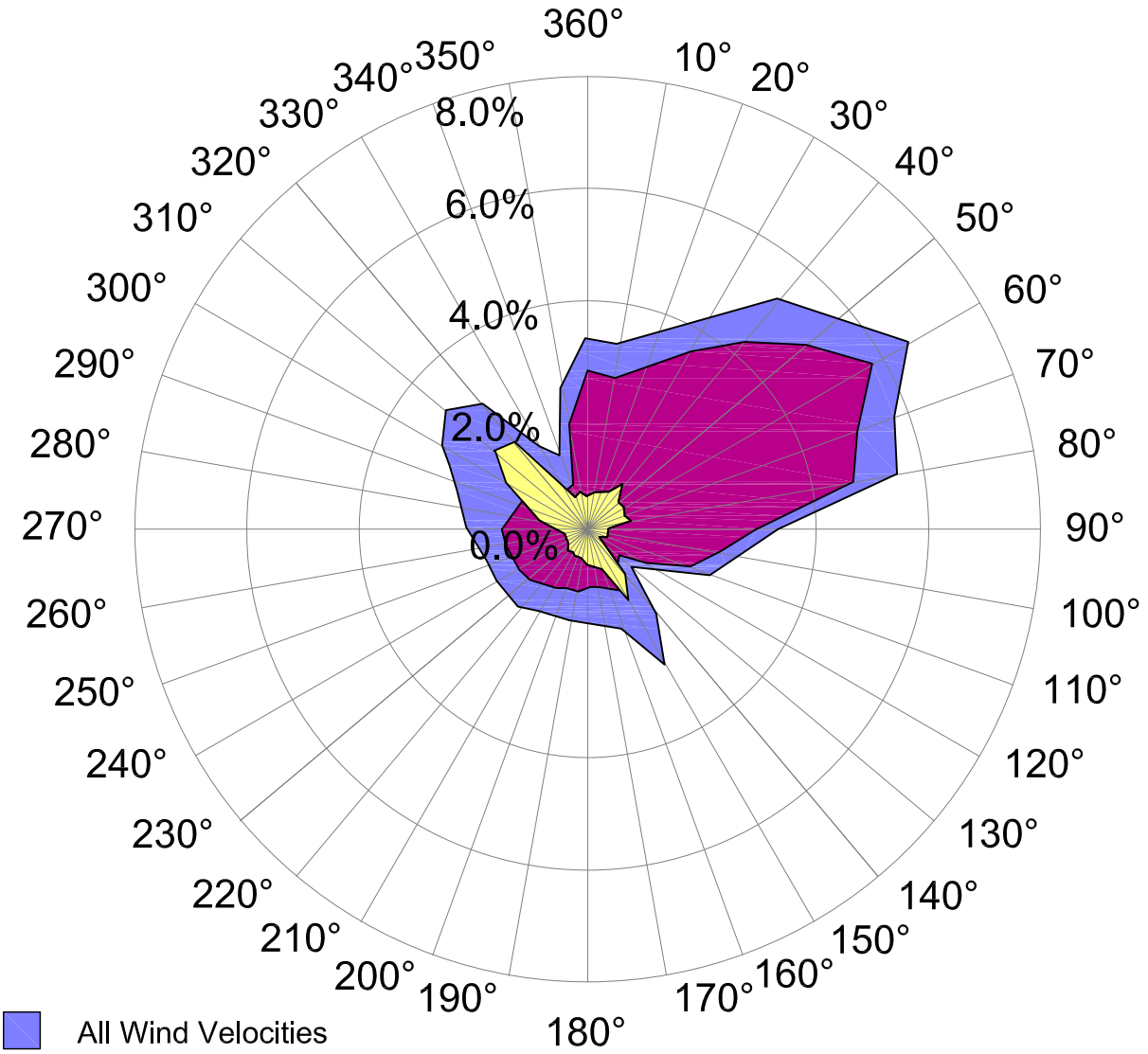
To provide a better understanding of the wind conditions, additional analyses of the wind tabulation data was conducted of predominant wind patterns at VNC. These patterns are denoted in this report as a wind persistency chart, which is useful in readily depicting the relative wind origins and velocities as expressed as a percentage of time.

The annual all-weather wind persistency chart is provided in **Figure 3-3**. The chart plots the percentage of recorded occurrences that wind blew from each true compass heading during the data period January 2000 – December 2009. According to the data, calm winds and those less than 11 knots occur 72 percent of the time and on an average annual basis originate from a heading or direction favoring Runway 4-22. Wind velocities greater than 11 knots according to the data occur 27 percent of the time and can vary seasonally but overall on an annual basis favor the use of Runway 13-31 during those conditions. Presently, in calm wind conditions and whenever possible, the airport encourages pilots to use Runway 4-22 for noise abatement purposes.



All Wind Velocities

Wind Velocities of >0 to 10 Knots

Wind Velocities of 11 knots of greater

SOURCE: NCDC Data, Venice Pier - Jan. 2000 - Dec. 2009.

VENICE MUNICIPAL AIRPORT
CITY OF VENICE, FLORIDA

ANNUAL WIND PERSISTENCY CHART

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3.3 Other Airport Planning and Design Criteria

Several additional criteria will be considered during the analysis of runway alternatives. The following criteria are among those that may not have been discussed in detail at public meetings and will therefore be reviewed briefly.

3.3.1 Threshold Siting Surface (TSS)

The threshold siting surfaces are used to establish the location of runway thresholds to meet the approach obstacle clearance requirements, particularly as they affect instrument approach visibility minimums. The TSS is an imaginary inclined plane extending from the runway threshold (the approach end of the portion of runway used for landing). For runways having visual approaches or an instrument approach visibility minimum of one mile or greater, as is the case at VNC, the slope is 20:1. The dimensional standards of the surface vary depending upon the runway type and approach it is expected to support.

3.3.2 Departure Obstacle Clearance Surface

The departure surface is a fairly new FAA requirement that is considered in planning for any instrument runway. The 40:1 surface is calculated out to 22.09 nautical miles from the runway end within an arc of 180° centered along the runway centerline extended. These requirements are part of FAR Part 77.23(a)(3). The standard aircraft departure climb gradient (CG) is 200 feet per nautical mile. This value is designed to provide 48 feet of clearance at one nautical mile from the departure end of the runway (DER). Obstacles that are located within 1 NM of the DER and penetrate the 40:1 surface are referred to as “low, close-in obstacles.” The standard required obstacle clearance (ROC) of 48 feet per NM to clear these obstacles would require a climb gradient greater than 200 feet per NM for a very short distance, only until the aircraft was 200 feet above the DER. To eliminate publishing an excessive climb gradient, the obstacle AGL/MSL height and location relative to the DER is noted in the “Take-off Minimums and (OBSTACLE) Departure Procedures” section of a given Terminal Procedures Publication (TPP) booklet. The purpose of this note is to identify the obstacle(s) and alert the pilot to the height and location of the obstacle(s) so they can be avoided. This can be accomplished in a variety of ways, e.g., the pilot may be able to see the obstruction and maneuver around the obstacle(s) if necessary; early liftoff/climb performance may allow the aircraft to cross well above the obstacle(s); or if the obstacle(s) cannot be visually acquired during departure, preflight planning should take into account what turns or other maneuver may be necessary immediately after takeoff to avoid the obstruction(s).

3.4 Introduction to Alternatives

Prior planning studies, grants and deed restrictions obligate the City to continue to provide facilities and a safe operating environment for all aircraft types based at the airport and those users who frequent the airport on a regular basis. According to the approved 2000 ALP and prior studies VNC is designated as a C-II airport.

The FAA willingly worked together with the City to investigate alternatives that could potentially solve some of the following key concerns the City and community expressed throughout the study:

- Homes located in the existing Runway 13 end Runway Protection Zone.
- Safety area deficiencies at the Runway 4 end and potential impacts to the VGA golf course leasehold and facilities.
- Runway Object Free Area deficiencies along the west side of Runway 13-31 and at the Runway 4 end and resulting potential impacts to the VGA golf course leasehold and facilities.
- Runway centerline to taxiway centerline separation distance of Taxiway E to Runway 4 is 250 feet; FAA standard for C is 300 feet.

The following technical goals and objectives must be addressed:

- To the extent practicable, relocate the Runway 13 RPZ onto existing airport property.
- Maintain design standards and operational utility of a primary runway (same as Runway 13-31 is today).
    - Equal landing and departure lengths
    - Approach capabilities should be equivalent to those that are presently in place on Runway 13-31
    - Maintain existing airport reference code
- If a standard, graded RSA cannot be achieved due to site constraints, provide equivalent RSA with a standard EMAS providing 70 knot capability.
- Provide for 600 feet of approach RSA.
- Increase the width and length of the Object Free Areas while minimizing impacts to the golf course.
- Provide adequate wind coverage.
- Conform to all FAA design criteria to the extent practicable as set forth by FAA Advisory Circulars, Orders, regulations and standards.

The ultimate objective of the alternatives analysis is to determine if a concept exists that resolves City Council and community concerns and at the same time satisfy and meet FAA

safety standards; maintain runway utility and avoid potential impacts to users and based aircraft.

The following sections provide an overview of the potential solutions that were assessed during the study process with the public and FAA. A viable solution must not reduce runway utility or safety for any tenant, based aircraft or those that use the airport on a regular basis. Within each of the alternative cases several concepts were identified to address the key concerns previously identified ranging from shifting runway threshold locations to the use of Engineered Materials Arresting Systems (EMAS).

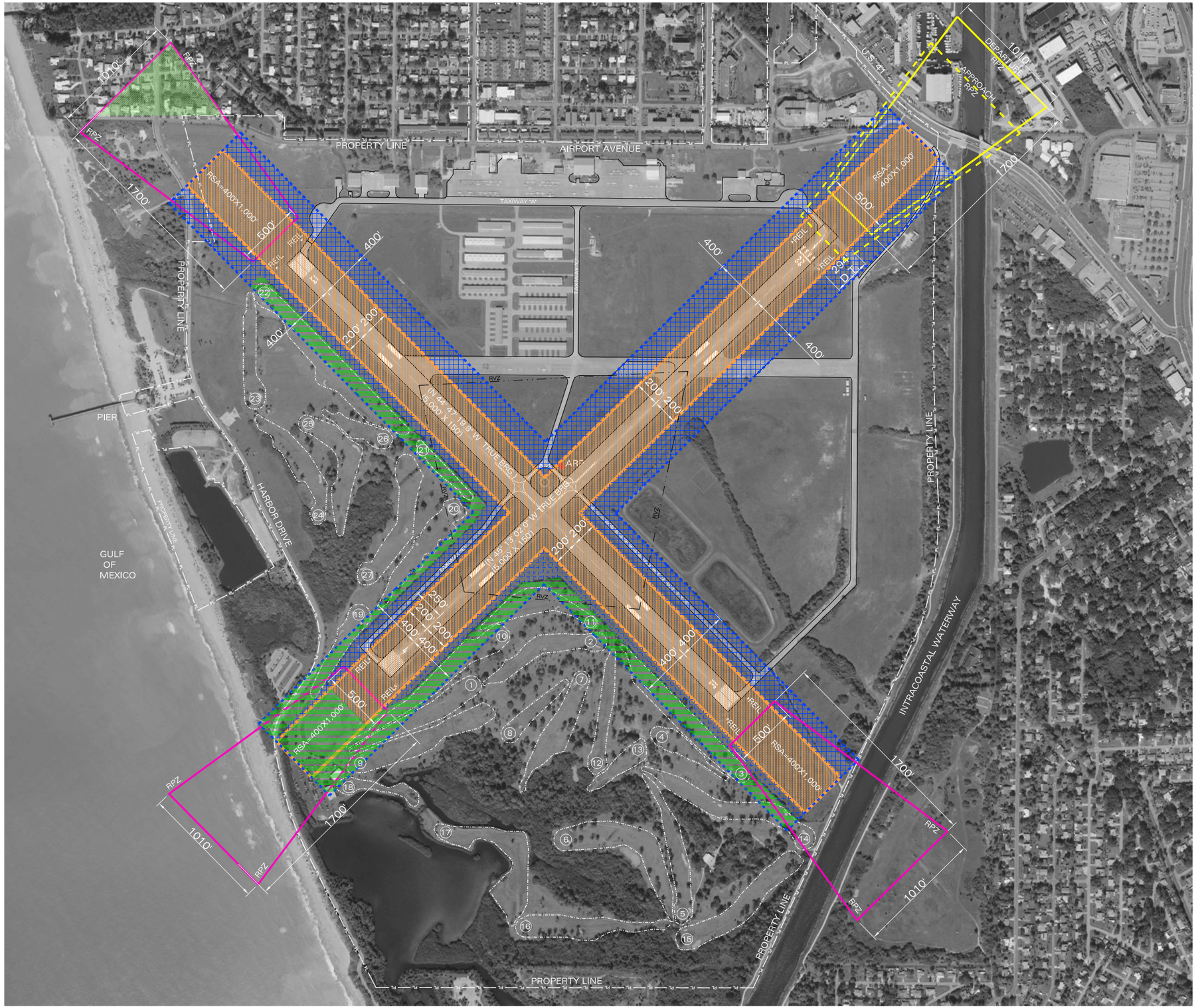
3.4.1 Existing "As- Is" Conditions

Figure 3-4 provides an overview of the existing "As-Is" RSA, ROFA and RPZ conditions at VNC. The existing conditions will serve as a baseline to compare impacts of other alternatives that may be considered for implementation. The alternative presents a scenario where all existing conditions would remain and the City would ask the FAA for modifications to standards. Runway use remains "as-is" meaning that fewer jets will use Runway 4-22 as a noise abatement runway on a consistent basis until it is rehabilitated from its present condition and it lacks a nonprecision approach to either runway end. Existing conditions to note regarding Runway 13-31:

- The Runway 13 RPZ contains 26 homes within its C-II dimensions.
- The ROFA west of Runway 13-31 is not standard.
- The center of the intracoastal waterway is located approximately 1,300 feet from the approach end of Runway 31. The waterway is at sea-level and is used intermittently by water vessels to and from the Gulf of Mexico. Sailboat mast heights above 50 feet would currently clear the existing 20:1 threshold siting surface but slightly penetrate the existing 34:1 approach surface and 40:1 departure surface when passing by the runway. Research to date indicates that the vast majority of all sailboat masts are less than 65 feet. This is a manufacture design characteristic generated by the fact that federal highway bridge design criteria call for a 65-foot waterway clearance (mean high water). Therefore, any mast greater than 65 feet would typically not be able to pass under (non-opening) bridges located throughout the U.S. waterways system.

Runway 4-22 existing conditions::

- The VGA golf course driving range and parts of the golf course impede compliant RSA and ROFA standards.
- The bascule bridge (Circus Bridge) over the intracoastal waterway on Business 41 is located approximately 1,200 feet northeast of the existing end of Runway 22. The bridge has two leafs that open on demand for water vessels needing more than 25 feet of vertical clearance. The top elevation of the bridge when open is approximately 93 feet. The open height of the bridge must be considered for the approach, threshold



LEGEND:

- PROPERTY LINE
- APPROACH AND DEPARTURE RPZ COINCIDENT
- RUNWAY DEPARTURE PROTECTION ZONE (RPZ)
- RUNWAY APPROACH PROTECTION ZONE (RPZ)
- RUNWAY OBJECT FREE AREA (ROFA)
- RUNWAY SAFETY AREA (RSA)
- NON-STANDARD
- RESIDENTIAL
- RUNWAY VISIBILITY ZONE (RVZ)

TRUE NORTH
MAGNETIC NORTH
(2009) 4°E-2°E

GRAPHIC SCALE
400 0 200 400 800
(IN FEET)
1' = 400'

VENICE MUNICIPAL AIRPORT
CITY OF VENICE, FLORIDA

EXISTING CONDITIONS

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siting and departures surfaces for Runway 4-22. According to calculations conducted a 526 foot displaced threshold is necessary to clear the existing 20:1 approach surface. In addition the bridge is located within the Runway 4 40:1 departure surface.

Runway Object Free Area (ROFA) Deficiencies and the Golf Course

As previously indicated, the ROFA along the entire length of the west side of Runway 13-31 does not meet current FAA design standards nor does the ROFA on either side of Runway 4-22 southwest of the runway intersection due to the location of the fence separating the airport from the Venice Golf Association (VGA) leasehold. Therefore in all of the alternatives described in the following sections an attempt has been made to improve the ROFA standard to the maximum extent possible.

The existing ROFA to Runway centerline dimension varies along the entire length of Runway 13-31 anywhere from 280 to 290 feet. The existing ROFA standard dimension for this runway and Runway 4-22 is 400 feet. The Runway 4-22 ROFA southwest of the runway intersection varies on both sides due to the location of the golf course and narrows even further as it continues toward the runway end.

To determine the maximum distance the fence could be relocated without an adverse impact to the golf course Barbaron Inc. was asked to investigate the site and provide suggestions to accomplish this goal. It was determined that the fence located to the west of Runway 13-31 which is south of the intersection of Runway 4-22 has no room for improvement.

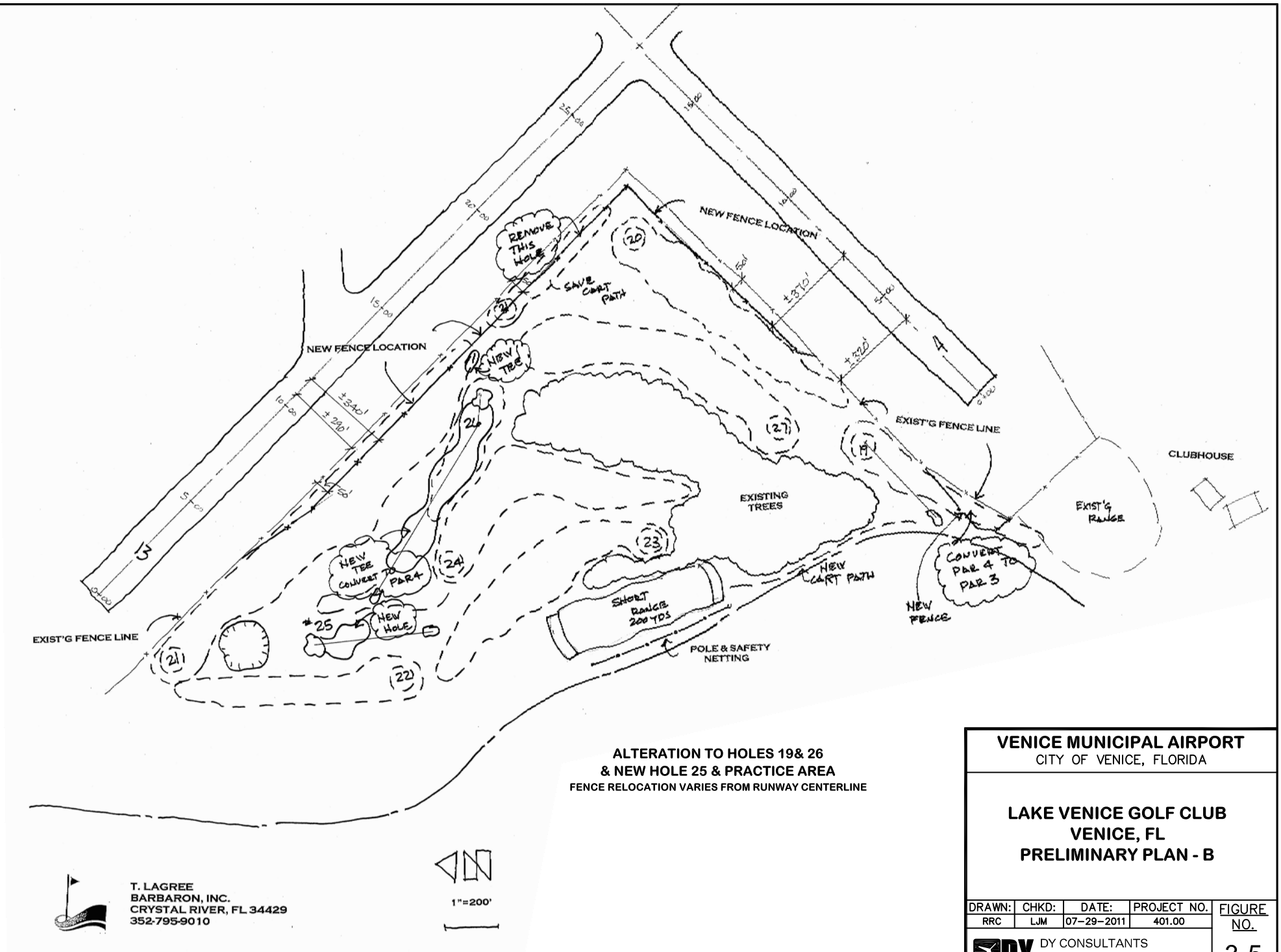
North of the Runway 4-22 intersection and west of Runway 13-31 some improvement could be made with minor changes to the golf course. It was estimated that the maximum the fence could be relocated without adversely impacting the golf course would be 50 feet in some areas. To achieve this, no changes would be necessary to Existing Hole 22 due to its existing length and size. If the FAA desired, Hole 21 could be relocated and the cart path retained if the additional 50 feet were continued to the corner north of Runway 4-22. The fence could conceivably be relocated along the north side of Ruwnay4-22 with no change to Hole 20 and converting Hole 19 from a Par 4 to a Par 3 depending upon the extent of ROFA that FAA will require.

The “Preliminary Plan B” illustrated on **Figure 3-5** depicts the 50 foot fence relocation resulting in an approximate 340 foot ROFA centerline dimension along Runway 13-31 and up to 370 feet along a portion of Runway 4-22. The related improvements necessary to the golf course are also depicted. The approximate cost to relocate Tees on Holes #19 and 21 as well as provide a new hole #25 and relocate the driving range for Runway 4-22 RSA improvements is in the range of $340,000 to $350,000. Estimated cost for relocating the approximately 3,000 linear feet of fence would range from $200,000 to $250,000 assuming new perimeter type fencing.

The ROFA would continue to be nonstandard however the FAA does consider the improvement an enhancement to safety at the airport. Barbaron Inc. did develop an additional scheme that would provide for a full 400 foot ROFA dimension in the northwest

quadrant. To achieve this setback, modification of Tee complexes to five holes would be required as well as the elimination and recreation of two holes. "Preliminary Plan A" is shown on **Figure 3-6** for informational purposes and cost comparison. The work required to achieve a standard ROFA setback in this quadrant and relocate the driving range is upwards of $1.2 million including the fence.

It should be noted that the two concepts provided here are by no means final. The City will continue discussions with the VGA well beyond the completion of the master planning process to determine the best solution(s) for the airport and the golf course. Final decisions will likely hinge on funding the solutions that evolve from discussions with the VGA, City and FAA.



ALTERATION TO HOLES 19& 26
& NEW HOLE 25 & PRACTICE AREA
FENCE RELOCATION VARIES FROM RUNWAY CENTERLINE

T. LAGREE
BARBARON, INC.
CRYSTAL RIVER, FL 34429
352-795-9010

VENICE MUNICIPAL AIRPORT
CITY OF VENICE, FLORIDA

LAKE VENICE GOLF CLUB
VENICE, FL
PRELIMINARY PLAN - B

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FIGURE NO.
3-5

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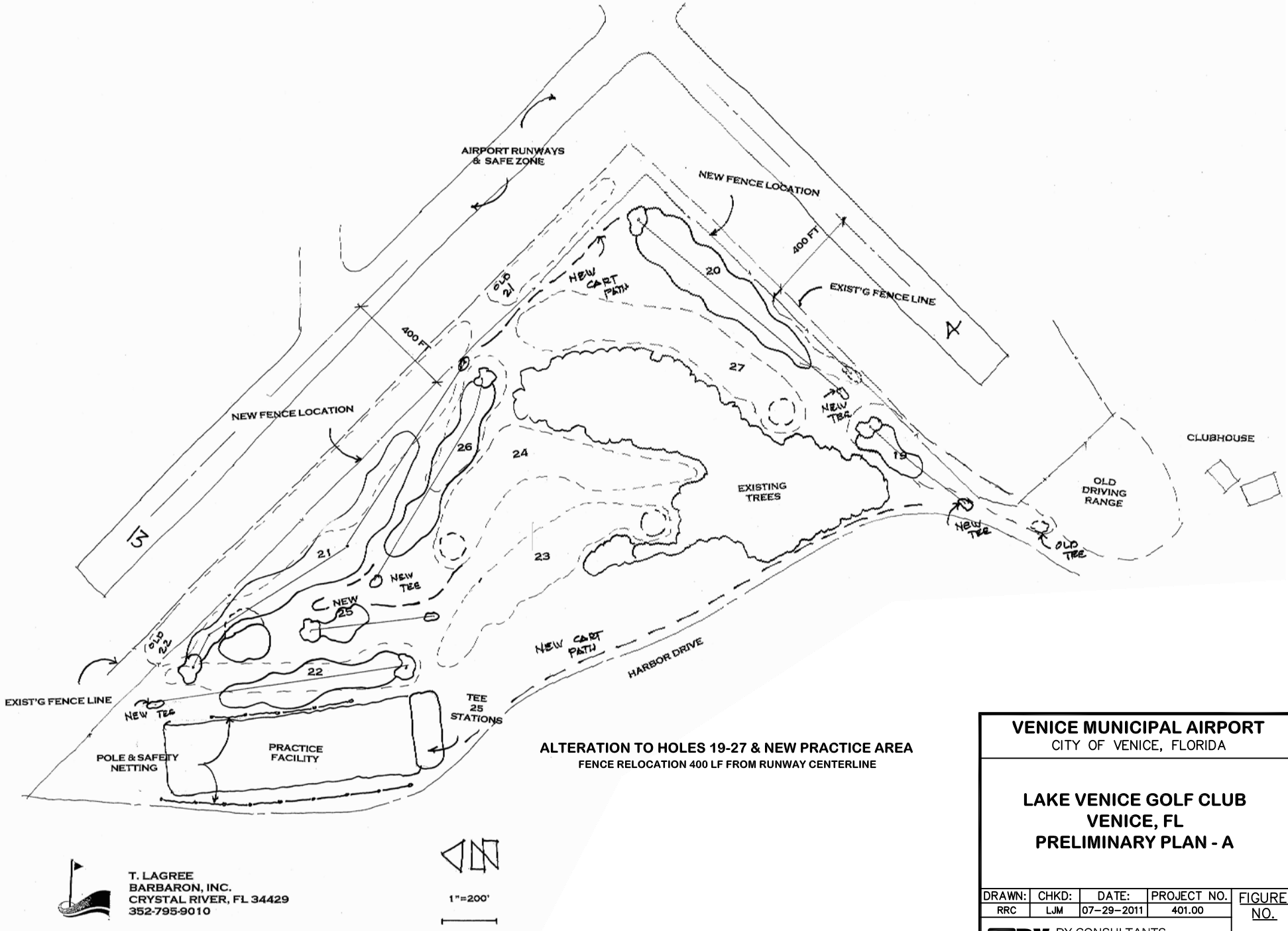

ALTERATION TO HOLES 19-27 & NEW PRACTICE AREA

FENCE RELOCATION 400 LF FROM RUNWAY CENTERLINE

T. LAGREE
BARBARON, INC.
CRYSTAL RIVER, FL 34429
352-795-9010

VENICE MUNICIPAL AIRPORT
CITY OF VENICE, FLORIDA

LAKE VENICE GOLF CLUB
VENICE, FL
PRELIMINARY PLAN - A

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FIGURE NO.
3-6

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3.5 Alternatives Reviewed and Dismissed

Alternatives reviewed and dismissed early in the process included the following:

- ***Relocate Runway 13-31***
  In this alternative, the team assessed whether there was adequate land available to relocate Runway 13-31 completely to the west or east of its present location to remove the Runway 13 RPZ from its present location. It was determined that due to increased impacts to the golf course, intracoastal waterway, other residential properties and additional technical constraints this alternative would not provide a viable option to meet the goals and objectives of the study. It was therefore eliminated from any further consideration.

- ***Re-orient Runway 13-31***
  Under this alternative, the team assessed the potential to re-orient the alignment of the runway such that the RPZ would be relocated with no impacts to homes. It was determined that due to land constraints including the golf course, and intracoastal waterway this alternative would not meet the goals and objectives of the effort. In addition new impacts would be introduced to homes located south and east of the intracoastal not presently located in an RPZ. This alternative was eliminated from further consideration.

3.6 Runway Alternatives Investigated

At the May 6th and June 9th, 2010 working sessions with the FAA, it was determined that the alternatives being analyzed in detail should be grouped by runway as follows.

1. Alternatives for the Existing Primary Runway
2. Alternatives to Designate a New Primary Runway

Profile sketches for all of the alternatives are contained in the Appendix of this report.

3.6.1 Alternatives for the Existing Primary Runway

Alternative 1A – Shift Runway 13-31 800 feet Southeast and use Declared Distances

Alternative 1A as illustrated in **Figure 3-7** would remove the homes from the RPZ at the Runway 13 end. To achieve this, Runway 13-31 must be shifted 800 feet to the southeast, an additional 800 feet added to the Runway 31 end and have declared distances in place to achieve the maximum takeoff and landing distance available in both directions.

The Runway 13 departure end RSA is 400 feet wide and extends 1,000 feet beyond the runway end. The Runway 31 arrival RSA is 400 feet wide and 600 feet prior to the 31 landing threshold. At the north end of the runway the Runway 31 departure end RSA is 400 feet wide and extends 1,000 feet beyond the 13 threshold. In conjunction with the runway shift, existing parallel Taxiway D would be extended to meet the new Runway 31 threshold location. The published runway length would be 5,800 feet and the declared distances or useable runway length available in this scenario would be as shown in **Table 3-4**:

Table 3-4
Alternative 1A Declared Distances

(in feet)	Runway 13	Runway 31
TORA	5,000	5,000
TODA	5,000	5,000
ASDA	5,000	5,000
LDA	4,200	5,000

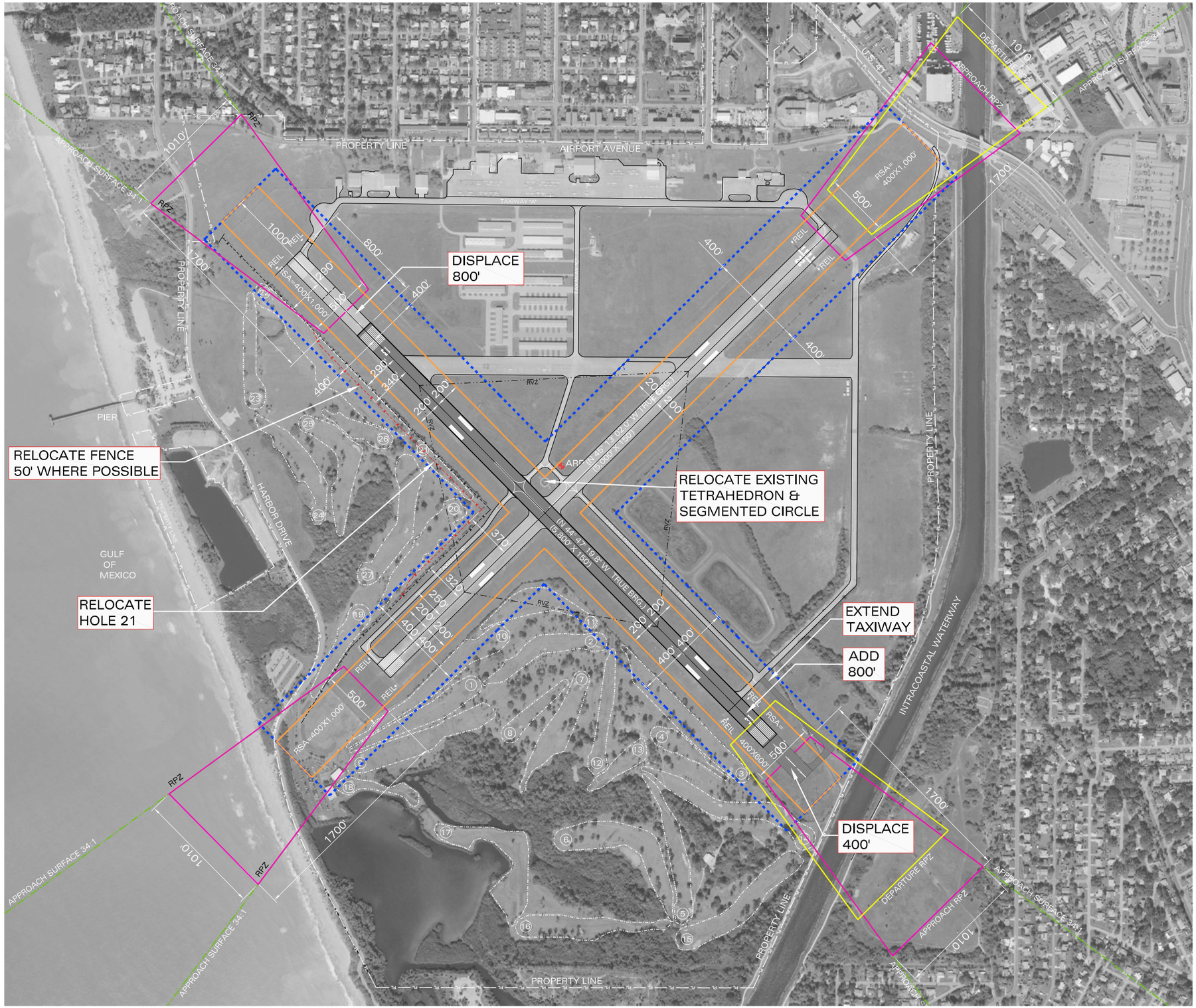
Runway 13 would have an 800 foot displaced threshold to bring the RPZ onto airport property. This displacement would limit the landing distance available to 4,200 feet reducing runway utility from what exists today.

The Runway 31 threshold would be displaced 400 feet to meet arrival RSA requirements. The Omni Directional Approach Lights to Runway 31 would need to be assessed to determine if reconfiguring the system would be possible.

Relocating the Runway 13-31 thresholds will require an airspace evaluation to adjust the existing GPS approach procedures. The 20:1 threshold siting surface would clear intermittent water vessels having a maximum mast height of 50 feet. However FAA has indicated that a standard mast height of 65 feet may need to be considered as a controlling factor. If that is the case, then Runway 31 would require a longer displaced threshold.

Alternative 1A would comply with FAA standards with the exception of the ROFA. A modification to this standard could be requested. Although the published runway length would be 5,800 feet, Alternative 1A as the primary runway decreases the useable runway length available and would therefore decrease the utility of the runway impacting various airport users who presently need 5,000 feet for landing distance available.

Aircraft will fly slightly higher on approach and departure over the residential area off the end of Runway 13 due to the threshold being shifted to the southeast. The reverse will be true over homes under the flight path to and from Runway 31. Aircraft will be at a lower altitude over these homes.



LEGEND:

- PROPERTY LINE
- APPROACH RPZ
- RUNWAY DEPARTURE PROTECTION ZONE (RPZ)
- RUNWAY OBJECT FREE AREA (ROFA)
- RUNWAY SAFETY AREA (RSA)
- APPROACH SURFACE
- NEW FENCE
- RUNWAY VISIBILITY ZONE (RVZ)

TRUE NORTH
MAGNETIC NORTH
(2007) 1°42'-21'

GRAPHIC SCALE
400 0 200 400 800
(IN FEET)
1" = 400'

1. ADD 800' OF RUNWAY TO RUNWAY 31 END.
2. DISPLACE ARRIVALS TO 31 400'.
3. EXTEND PARALLEL TAXIWAY TO RELOCATED RUNWAY 31 END.
4. DISPLACE RUNWAY 13 END 800'.
5. ROFA: RELOCATE FENCE 50' WEST WHERE POSSIBLE AND RELOCATE HOLE 21
6. NO HOMES IN RPZ.
7. RELOCATE EXISTING TETRAHEDRON & SEGMENTED CIRCLE.

DECLARED DISTANCES

	13	31
TORA	5,000'	5,000'
TODA	5,000'	5,000'
ASDA	5,000'	5,000'
LDA	4,200	5,000'

NOTE: Published Runway Length 5,800'.

VENICE MUNICIPAL AIRPORT
CITY OF VENICE, FLORIDA

ALTERNATIVE 1A SHIFT RUNWAY 13-31 800 FEET TO SOUTHEAST USE DECLARED DISTANCES

DRAWN:	CHKD:	DATE:	PROJECT NO.	FIGURE NO.
RRC	LJM	07-29-2011	401.00	3-7

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3.6.2 Alternative 1B – Shift Runway 13-31 400 feet Southeast, Construct EMAS, No Declared Distances

Alternative 1B (**Figure 3-8**) would provide 5,000 feet of useable runway length in both directions and would have no declared distance application. Alternative 1B as illustrated would involve the installation of engineered materials arresting systems (EMAS) at the Runway 31 end. A 1,000 foot standard RSA is equivalent to a 70 knot arrestor bed placed within the rear of a 600 foot RSA (for undershoot protection). To obtain a full 5,000 feet of useable runway without declared distances applied, the RPZ would encompass a total of eight homes.

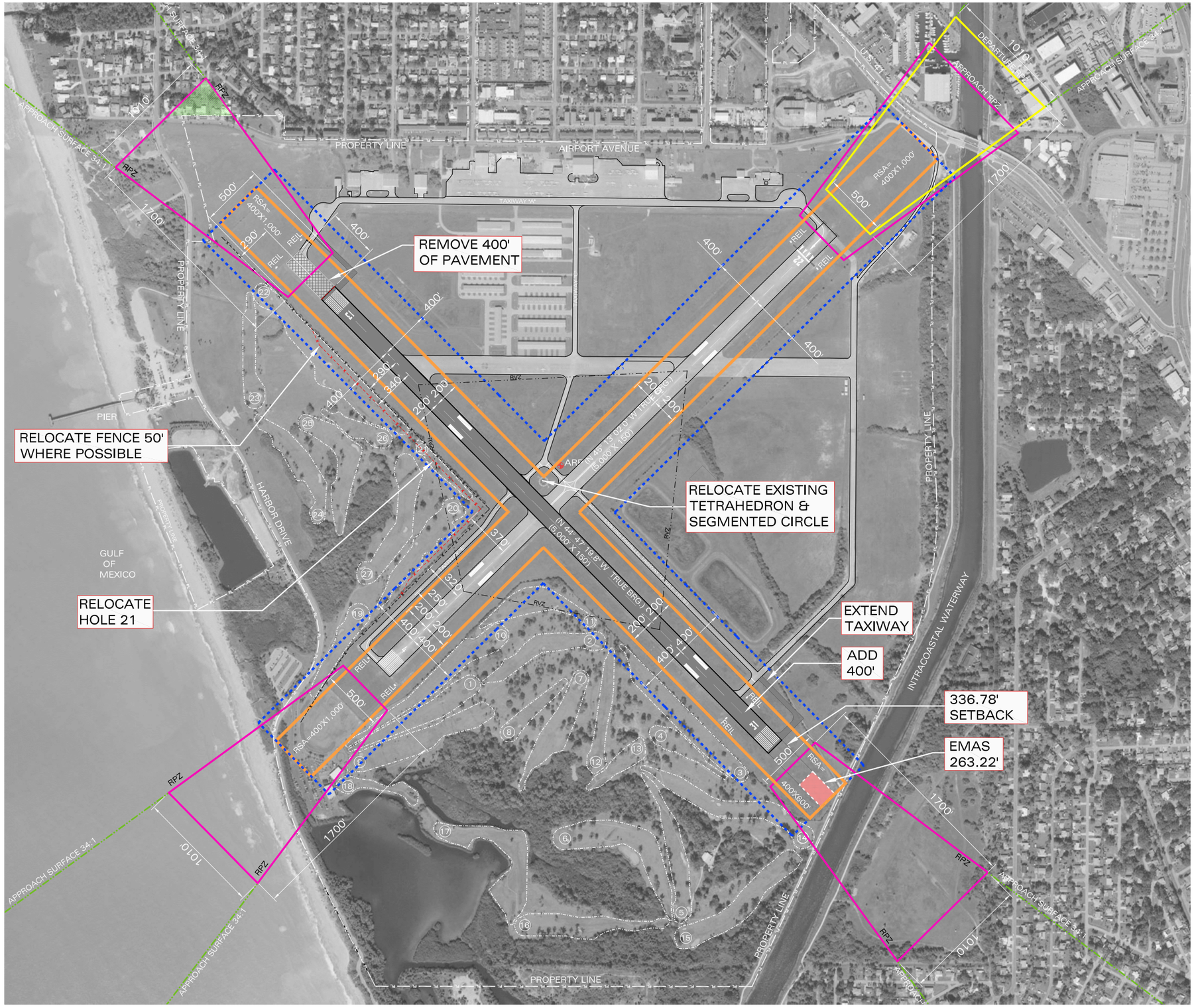
Runway 13-31 is shifted 400 feet to the southeast, an additional 400 feet is added to the Runway 31 end and a 263.22 foot long by 100 or 150 wide EMAS bed is placed at the rear of a 600 foot RSA to achieve maximum takeoff and landing distance available in both directions. The EMAS has a 336.78 foot setback from the bed to the end of the runway.

Existing parallel Taxiway D would be extended to meet the new Runway 31 threshold location. At the north end of the runway the 400 feet of pavement could be removed or marked with chevrons as unusable.

Relocating the Runway 13-31 thresholds will require an airspace evaluation to adjust the existing GPS approach procedures. It appears that the 20:1 threshold siting surface would clear intermittent water vessels having a maximum mast height of 50 feet. The Omni Directional Approach Lights to Runway 31 would need to be assessed to determine if reconfiguring the system would be possible.

Alternative 1B would comply with FAA standards with the exception of the ROFA and eight homes would remain in the RPZ. As the primary runway it maintains the existing useable runway length available thereby satisfying airport user needs that are presently based or frequent the airport.

Aircraft will fly slightly higher on approach and departure over the residential area off the end of Runway 13 due to the threshold being shifted to the southeast. The reverse will be true over homes under the flight path to and from Runway 31. Aircraft will be at a lower altitude over these homes.



LEGEND:

- PROPERTY LINE
- APPROACH RPZ
- RUNWAY DEPARTURE PROTECTION ZONE (RPZ)
- RUNWAY OBJECT FREE AREA (ROFA)
- RUNWAY SAFETY AREA (RSA)
- APPROACH SURFACE
- NEW FENCE
- EMAS
- RUNWAY VISIBILITY ZONE (RVZ)
- EXISTING PAVEMENT TO BE REMOVED

TRUE NORTH
MAGNETIC NORTH
(2007) 4°E-2°E

GRAPHIC SCALE
400 0 200 400 800
(IN FEET)
1" = 400'

1. ADD 400' TO RUNWAY 31 END.
2. EXTEND PARALLEL TAXIWAY ON RUNWAY 31 END.
3. ADD 263.22' EMAS BED.
4. 336.75' EMAS SET BACK ON RUNWAY 31.
5. RELOCATE RUNWAY 13 THRESHOLD 400', AND REMOVE PAVEMENT.
6. 8 HOMES IN RPZ.
7. ROFA: RELOCATE FENCE 50' WEST WHERE POSSIBLE AND RELOCATE HOLE 21.
8. RUNWAY 13 RPZ WILL INCLUDE 8 HOMES.
9. FULL 5,000' RUNWAY.
10. RELOCATED EXISTING TETRAHEDRON & SEGMENTED CIRCLE.

VENICE MUNICIPAL AIRPORT
CITY OF VENICE, FLORIDA

ALTERNATIVE 1B
SHIFT RUNWAY 13-31 400' SOUTHEAST, ADD EMAS, NO DECLARED DISTANCES

DRAWN:	CHKD:	DATE:	PROJECT NO.	FIGURE NO.
RRC	LJM	07-29-2011	401.00	3-8

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3.6.3 Alternative 1C – Shift Runway 13-31 727 feet Southeast, Construct EMAS, use Declared Distances

Alternative 1C (**Figure 3-9**) as illustrated would involve the installation of engineered materials arresting systems (EMAS) at the Runway 31 end. A 1,000 foot standard RSA is equivalent to a 70 knot arrestor bed placed within the rear of a 600 foot RSA (for undershoot protection). This alternative uses the second EMAS option previously described.

Runway 13-31 is shifted 727 feet to the southeast and 400 feet of pavement removed. An additional 727 feet is added to the Runway 31 end and a 312 foot long by 100 or 150 wide EMAS bed is placed at the rear of a 600 foot RSA to achieve maximum takeoff and landing distance available in both directions. The EMAS has a 35 foot setback and a 254 foot displaced threshold would begin outside of the setback to provide a full 600 foot approach RSA. The Runway 31 end must be displaced 327 feet to clear the The published runway length would be 5,327 feet however, the FAA has agreed to the declared distances or useable runway length shown in **Table 3-5** as follows:

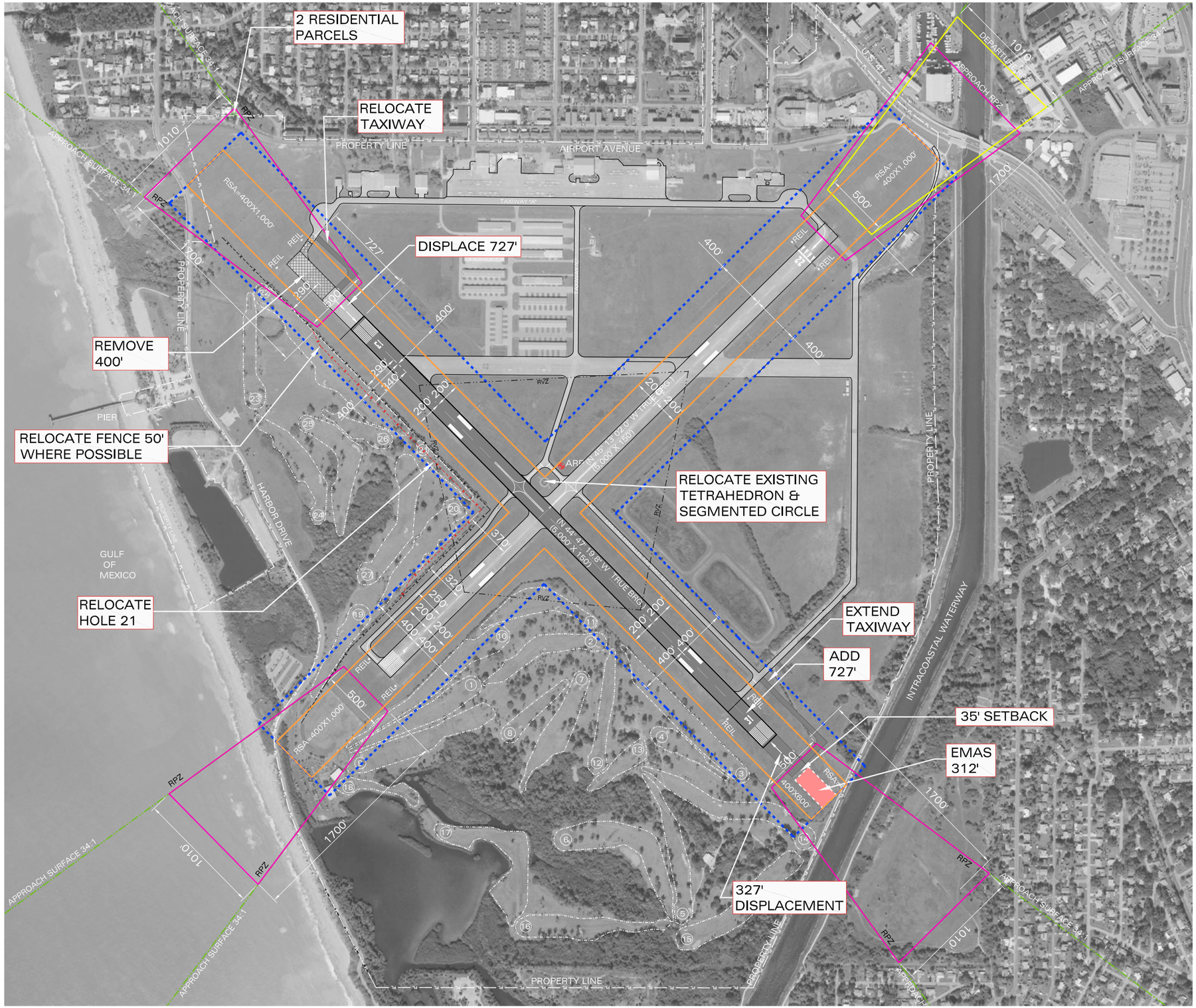
Table 3-5
Alternative 1C Declared Distances

(in feet)	Runway 13	Runway 31
TORA	5,000	5,000
TODA	5,000	5,000
ASDA	5,000	5,000
LDA	5,000	5,000

Relocating the Runway 13-31 thresholds will require an airspace evaluation to adjust the existing GPS approach procedures. It appears that the 20:1 threshold siting surface would not clear intermittent water vessels having a maximum mast height of 50 feet. The Omni Directional Approach Lights to Runway 31 would need to be assessed to determine if reconfiguring the system would be possible.

Aircraft will fly slightly higher on approach and departure over the residential area off the end of Runway 13 due to the threshold being shifted to the southeast. The reverse will be true over homes under the flight path to and from Runway 31. Aircraft will be at a lower altitude over these homes.

Existing parallel Taxiway D would be extended to meet the new Runway 31 displaced threshold location. Alternative 1C would comply with FAA standards with the exception of the ROFA and two homes would remain in the RPZ. As the primary runway it maintains existing useable runway length available. This alternative will satisfy airport user needs that are presently based or frequent the airport.



LEGEND:

- PROPERTY LINE
- APPROACH RPZ
- RUNWAY DEPARTURE PROTECTION ZONE (RPZ)
- RUNWAY OBJECT FREE AREA (ROFA)
- RUNWAY SAFETY AREA (RSA)
- APPROACH SURFACE
- NEW FENCE
- EMAS
- RUNWAY VISIBILITY ZONE (RVZ)

TRUE NORTH
MAGNETIC NORTH
(2005) 4°42'-21'

GRAPHIC SCALE
400 0 200 400 800
(IN FEET)
1' = 400'

1. ADD 727' OF PAVEMENT TO RUNWAY 31 END.
2. THRESHOLD ON RUNWAY 31 DISPLACED 327'.
3. EXTEND PARALLEL TAXIWAY 727'.
4. DISPLACE 727' FROM RUNWAY 13 END.
5. ADD 312' EMAS BED PLUS 35' SETBACK.
6. ROFA: RELOCATE FENCE 50' WEST WHERE POSSIBLE AND RELOCATE HOLE 21.
7. 2 PROPERTIES IN RPZ.
8. RELOCATE EXISTING TETRAHEDRON & SEGMENTED CIRCLE.
9. PARTIAL IMPACTS - TWO RESIDENTIAL PARCELS.

DECLARED DISTANCES		
	13	31
TORA	5,000'	5,000'
TODA	5,000'	5,000'
ASDA	5,000'	5,000'
LDA	5,000'	5,000'

NOTE: Published Runway Length 5,327'.

VENICE MUNICIPAL AIRPORT
CITY OF VENICE, FLORIDA

ALTERNATIVE 1C
SHIFT RUNWAY 13-31 727' SOUTHEAST, 312' EMAS, USE DECLARED DISTANCES

DRAWN:	CHKD:	DATE:	PROJECT NO.	FIGURE NO.
RRC	LJM	07-29-2011	401.00	3-9

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3.6.4 Alternative 1D – Shift Runway 13-31 725 feet Southeast, Construct EMAS on Both Runway Ends, Use Declared Distances

Alternative 1D (**Figure 3-10**) as illustrated would involve the installation of engineered materials arresting systems (EMAS) at both ends of Runway 13-31. Runway 13-31 is shifted 725 feet to the southeast, an additional 725 feet is added to the Runway 31 end and a 312 foot long by 100 or 150 wide EMAS bed is placed at the rear of a 600 foot RSA to achieve maximum takeoff and landing distance available in both directions. The EMAS has a 35 foot setback and a 253 foot displaced threshold would begin outside of the setback to provide a full 600 foot Runway 31 approach RSA.

The Runway 13 landing threshold would be displaced and located 725 feet from its present location in order to bring the RPZ in onto the airport to the maximum extent possible. The published runway length would be 5,325 feet however the declared distances or useable runway length available in this scenario would be as follows shown in **Table 3-6**:

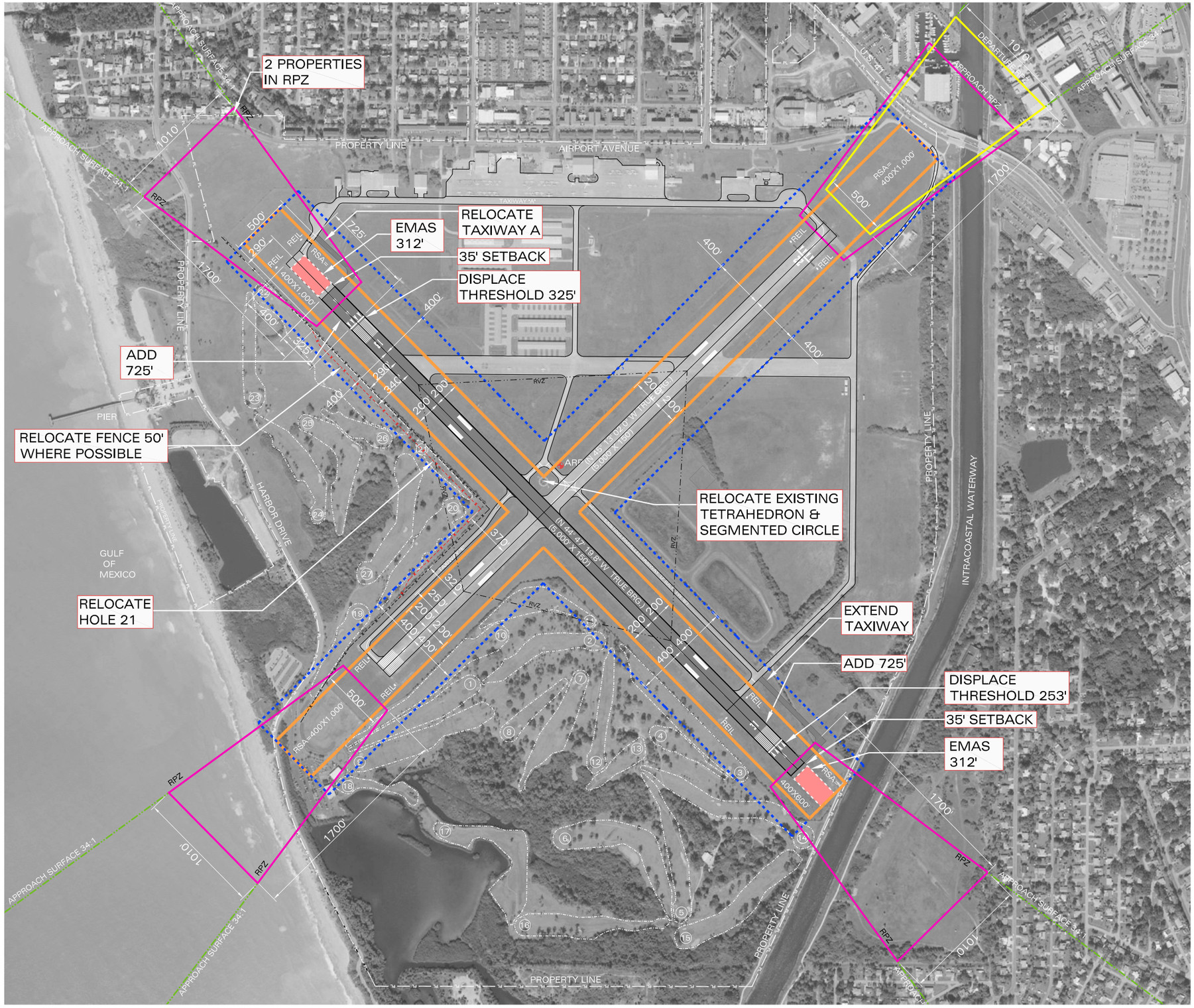
Table 3-6
Alternative 1D Declared Distances

(in feet)	Runway 13	Runway 31
TORA	5,000	5,000
TODA	5,000	5,000
ASDA	5,000	5,000
LDA	5,000	5,000

Relocating the Runway 13-31 thresholds will require an airspace evaluation to adjust the existing GPS approach procedures. It appears that the 20:1 threshold siting surface would not clear intermittent water vessels having a maximum mast height of 50 feet. The Omni Directional Approach Lights to Runway 31 would need to be assessed to determine if reconfiguring the system would be possible.

It would appear that two homes would be located within the Runway 13 RPZ in this alternative. As with the previous alternatives, aircraft will fly slightly higher on approach and departure over the residential area off the end of Runway 13 due to the threshold being shifted to the southeast. The reverse will be true over homes under the flight path to and from Runway 31. Aircraft will be at a lower altitude over these homes.

Existing parallel Taxiway D would be extended to meet the new Runway 31 displaced threshold location. Alternative 1D would comply with FAA standards with the exception of the ROFA and two homes would remain in the RPZ. As the primary runway it maintains existing useable runway length available. This alternative will satisfy airport user needs that are presently based or frequent the airport.



LEGEND:

- PROPERTY LINE
- APPROACH RPZ
- RUNWAY DEPARTURE PROTECTION ZONE (RPZ)
- RUNWAY OBJECT FREE AREA (ROFA)
- RUNWAY SAFETY AREA (RSA)
- APPROACH SURFACE
- NEW FENCE
- EMAS
- RUNWAY VISIBILITY ZONE (RVZ)

TRUE NORTH
MAGNETIC NORTH
(2009) 1°42'-21" W

GRAPHIC SCALE
400 0 200 400 800
(IN FEET)
1' = 400'

1. ADD 725' TO RUNWAY 31 END.
2. EXTEND TAXIWAY A 725' TO RELOCATE 31 END.
3. ADD 312' EMAS PLUS 35' BOTH ENDS.
4. DISPLACE 13 LANDING THRESHOLD 725' SE.
5. RELOCATE RUNWAY 13 END 400' SE.
6. START 35' EMAS SETBACK FROM 325' DISPLACED THRESHOLD.
7. EMAS BED START 360' FROM RUNWAY 13 THRESHOLD.
8. DEPARTURE RPZ IS CONTROLLING POINT - 200' FROM DISPLACED LANDING THRESHOLD.
9. 2 PROPERTIES IN RPZ.
10. RELOCATED EXISTING TETRAHEDRON & SEGMENTED CIRCLE.
11. SIGNIFICANT COST FOR TWO EMAS BEDS.

DECLARED DISTANCES		
	13	31
TORA	5,000'	5,000'
TODA	5,000'	5,000'
ASDA	5,000'	5,000'
LDA	5,000'	5,000'

NOTE: Published Runway Length 5,325'.

VENICE MUNICIPAL AIRPORT
CITY OF VENICE, FLORIDA

ALTERNATIVE 1D
EMAS BOTH RUNWAY ENDS, DECLARED DISTANCES

DRAWN:	CHKD:	DATE:	PROJECT NO.
RRC	LJM	07-29-2011	401.00

FIGURE NO. 3-10

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3.6.5 Alternative 1E – Hybrid – Primary Runway 13-31 and Secondary Runway 4-22 as B-II

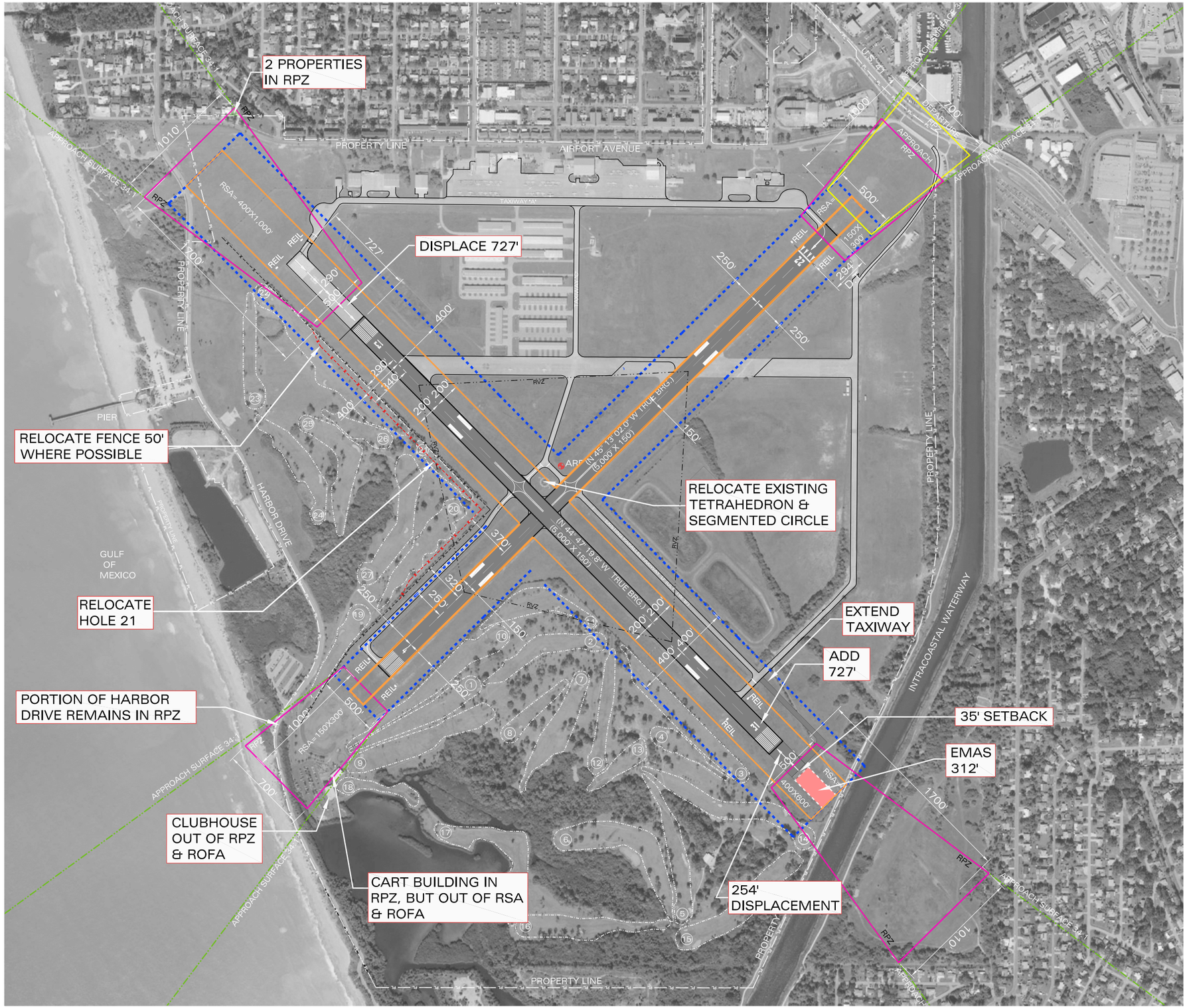
Alternative 1E (**Figure 3-11**) illustrates Runway 13-31 as the primary runway using previously developed Alternative 1C as an example and 4-22 as a secondary B-II runway. The primary advantages of this alternative are that there would be no impacts to the golf course along Runway 4 and it appears that two homes would be located in the Runway 13 end RPZ. Runway 13-31 would have a published runway length of 5,727 feet and 4-22 would be 5,000 feet. The declared distances or useable runway length available in this scenario would be as follows displayed in **Table 3-7**:

Table 3-7
Alternative 1E Declared Distances

(in feet)	Runway 13	Runway 31	Runway 4	Runway 22
TORA	5,000	5,000	5,000	5,000
TODA	5,000	5,000	5,000	5,000
ASDA	5,000	5,000	5,000	5,000
LDA	5,000	5,000	5,000	4,474

Runway 13-31 is shifted 727 feet to the southeast, an additional 727 feet is added to the Runway 31 end and a 312 foot long by 100 or 150 wide EMAS bed is placed at the rear of a 600 foot RSA to achieve maximum takeoff and landing distance available in both directions. The EMAS has a 35 foot setback and a 254 foot displaced threshold would begin outside of the setback to provide a full 600 foot approach RSA. Relocating the Runway 13-31 thresholds will require an airspace evaluation to adjust the existing GPS approach procedures. It appears that the 20:1 threshold siting surface would not clear intermittent water vessels having a maximum mast height of 50 feet. The Omni Directional Approach Lights to Runway 31 would need to be assessed to determine if reconfiguring the system would be possible.

In addition to the above, the City has indicated that Runway 4-22 is the preferred noise abatement runway. Maintaining the runway to B-II standards only would not provide the FAA standard utility necessary for noisier C aircraft to use the runway in a safe manner. RSA, ROFA, and RPZ dimensions would be substandard.



LEGEND:

- PROPERTY LINE
- APPROACH RPZ
- RUNWAY DEPARTURE PROTECTION ZONE (RPZ)
- RUNWAY OBJECT FREE AREA (ROFA)
- RUNWAY SAFETY AREA (RSA)
- APPROACH SURFACE
- NEW FENCE
- EMAS
- RUNWAY VISIBILITY ZONE (RVZ)

TRUE NORTH
MAGNETIC NORTH (2009) 4°42'-21'

GRAPHIC SCALE
400 0 200 400 800
(IN FEET)
1' = 400'

1. ADD 727' OF PAVEMENT TO RUNWAY 31 END.
2. THRESHOLD ON RUNWAY 31 DISPLACED 254'.
3. EXTEND PARALLEL TAXIWAY 727'.
4. DISPLACE 727' FROM RUNWAY 13 END.
5. ADD 312' EMAS BED PLUS 35' SETBACK.
6. ROFA: RELOCATE FENCE 50' WEST WHERE POSSIBLE AND RELOCATE HOLE 21.
7. 2 PROPERTIES IN RPZ.
8. RELOCATE EXISTING TETRAHEDRON & SEGMENTED CIRCLE.
9. FULL 5,000' RUNWAY.
10. RELOCATED EXISTING TETRAHEDRON & SEGMENTED CIRCLE.
11. RELOCATE FENCE 50' WHERE POSSIBLE, RELOCATE HOLE 21.
12. PORTION OF HARBOR DRIVE REMAINS IN THE RPZ.
13. CART BUILDING REMAINS IN RPZ, BUT OUT OF RSA AND ROFA.
14. CLUB HOUSE OUT OF RPZ, ROFA.

DECLARED DISTANCES				
	13	31	4	22
TORA	5,000'	5,000'	5,000	5,000'
TODA	5,000'	5,000'	5,000	5,000
ASDA	5,000'	5,000'	5,000	5,000
LDA	5,000'	5,000'	5,000'	4,474

NOTE: Published Runway Length 5,727'.

VENICE MUNICIPAL AIRPORT
CITY OF VENICE, FLORIDA

ALTERNATIVE 1E HYBRID - DESIGNATE RUNWAY 13-31 AS PRIMARY RUNWAY, AND 4-22 AS SECONDARY B-II

DRAWN:	CHKD:	DATE:	PROJECT NO.
RRC	LJM	07-29-2011	401.00

FIGURE NO. 3-11

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3.6.6 Alternatives to Designate a New Primary Runway

Alternatives 1A through 1E were investigated to determine if any improvements could be made to the existing primary runway to alleviate any of the key concerns of the community and in particular the homes located within the Runway 13 RPZ and to gain additional ROFA and minimize impacts to the golf course.

This second group of alternatives to be investigated in this section is also a result of the working session held on May 6th, 2010 with the FAA. The alternatives examine improving the Runway 4-22 RSA and also assess the ability of the runway to potentially serve as the Primary runway at the airport.

According to discussions with the FAA in order for Runway 4-22 to be designated as the Primary Runway it would need to provide the same level of safety and utility that is currently afforded by Runway 13-31. This would include:

- GPS approaches to both ends of the runway with minimums 1 mile or greater.
- A full 5,000 feet of useable runway for takeoffs and landings.

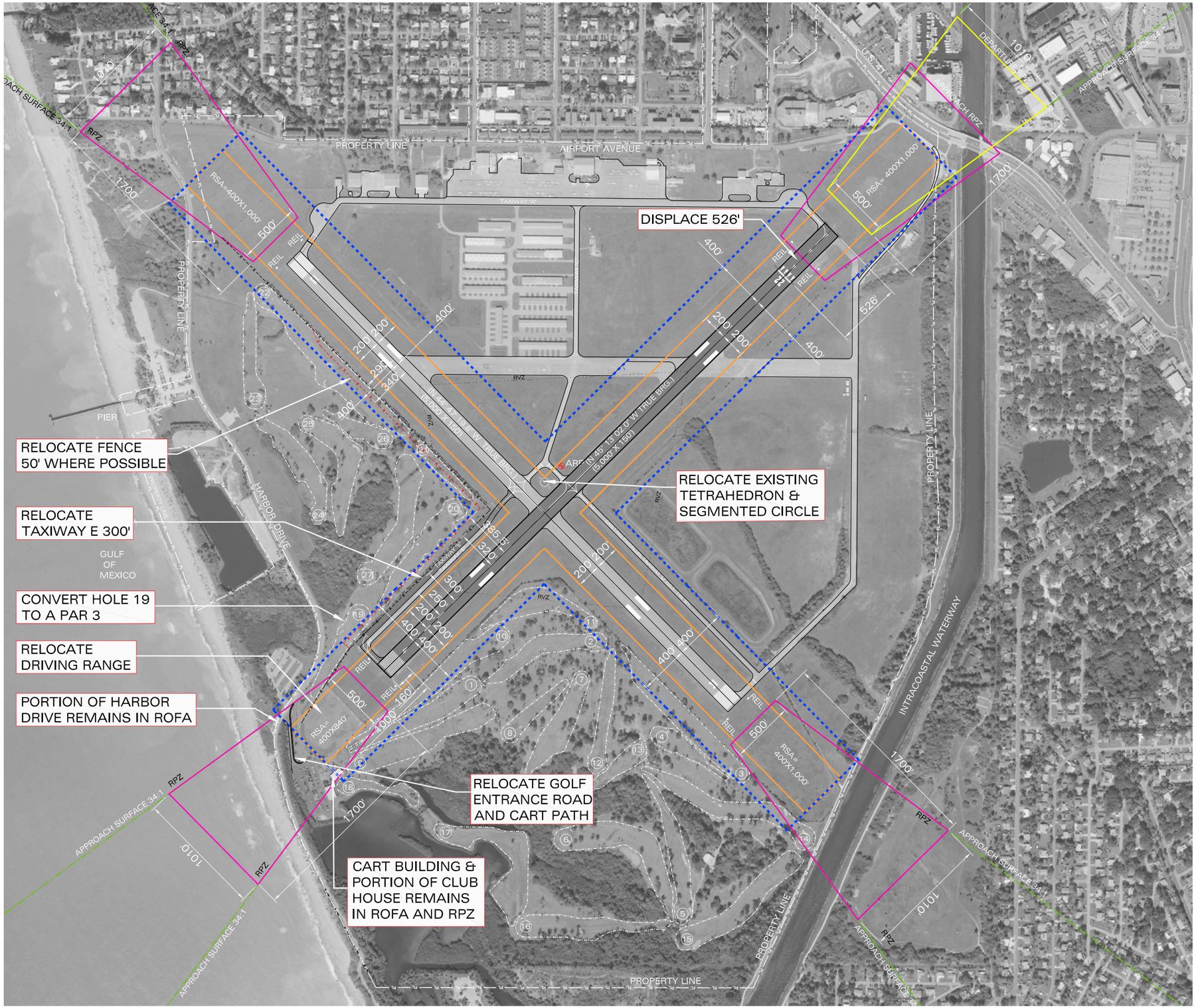
Runway 4-22 was given an airspace "overview" by Mr. Gary Raymond an Airspace Evaluation Program Specialist to determine if a GPS approach with 1 mile visibility minimums or greater could be accommodated to each of the runway ends. According to information available to him at this time, if the runways are marked for non-precision instrumentation the following could be obtained as shown in **Table 3-8**:

Table 3-8
GPS Approaches and Decision Altitudes

Type	Runway 04	Runway 22
LPV	DA 212 visibility 1 SM	Accurate Survey must be conducted of bridge
LNAV/VNAV	DA 262 visibility 1 SM	DA 344 visibility 1.5 SM
LNAV	MDA 300 visibility 1 SM	440 visibility 1 SM

3.6.7 Alternative 2A – Primary Runway 4-22 Standard RSA

Based on the types of aircraft utilizing Runway 4-22 and being that the runway is considered the airport's preferred runway for noise abatement purposes, the RSA should be 400 feet wide and extend 1,000 feet beyond the runway ends and 600 feet prior to the landing threshold. Neither the Runway 4 end or Runway 22 departure end RSA meet RSA requirements. **Alternative 2A (Figure 3-12)** illustrates the requirements necessary to meet the standard and the resulting effects on the golf course.



LEGEND:

- PROPERTY LINE
- APPROACH RPZ
- RUNWAY DEPARTURE PROTECTION ZONE (RPZ)
- RUNWAY OBJECT FREE AREA (ROFA)
- RUNWAY SAFETY AREA (RSA)
- APPROACH SURFACE
- NEW FENCE
- RUNWAY VISIBILITY ZONE (RVZ)

TRUE NORTH
MAGNETIC NORTH
(2005) 4°-2'-21" W

GRAPHIC SCALE
400 0 200 400 800
(IN FEET)
1" = 400'

1. RELOCATE DRIVING RANGE.
2. ROFA: RELOCATE PORTIONS OF FENCE 50' WHERE POSSIBLE AND CONVERT HOLE 19 TO A PAR 3.
3. RUNWAY 22 LENGTH REDUCED
4. CART BLDG. REMAINS IN RPZ.
5. PORTION OF CLUBHOUSE REMAINS IN RPZ.
6. PORTION OF HARBOR DRIVE REMAINS IN ROFA.
7. RELOCATE TAXIWAY "E" FROM 250' TO 300' FROM RUNWAY CENTERLINE.
8. RELOCATE EXISTING TETRAHEDRON & SEGMENTED CIRCLE.
9. DISPLACE RUNWAY 22 LANDING THRESHOLD 526'.

DECLARED DISTANCES		
	4	22
TORA	5,000'	5,000'
TODA	5,000'	5,000'
ASDA	5,000'	4,842'
LDA	5,000'	4,314'

NOTE: Published Runway Length 5,000'.

VENICE MUNICIPAL AIRPORT
CITY OF VENICE, FLORIDA

ALTERNATIVE 2A DESIGNATE A NEW PRIMARY RUNWAY RUNWAY 4-22 STANDARD RSA

DRAWN:	CHKD:	DATE:	PROJECT NO.	FIGURE NO.
RRC	LJM	07-29-2011	401.00	3-12

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The driving range must be relocated for the RSA to be in compliance. The maximum that can be achieved is 840 feet due to land constraints and Harbor Drive.

In addition the ROFA fence could be relocated 50 feet in most areas with minimal impact to the golf course. Hole 19 could be converted to a Par 3 if only 50 feet are required. A portion of the cart building, and clubhouse would remain in the ROFA and RPZ. A portion of Harbor Drive remains in the upper west corner of the ROFA as well. The RSA would require relocation of the driving range the entrance road and a portion of the cart path.

Due to the Circus Bridge height runway length would remain as it is today 5,000 feet however the Runway 22 end displacement will increase to 526 feet. Therefore declared distances for this alternative result in the following lengths shown in **Table 3-9**:

Table 3-9
Alternative 2A Declared Distances

(in feet)	Runway 4	Runway 22
TORA	5,000	5,000
TODA	5,000	5,000
ASDA	5,000	4,840
LDA	5,000	4,314

As previously indicated GPS approaches to Runway 4-22 can likely be achieved. A survey completed in accordance with FAA AC 150-5300-16, 17, and 18B would be required prior to full implementation by the FAA. The Runway 4 departure surface does not clear the Circus Bridge when it is open. It is believed that published departure procedures can be put in place to alert pilots of the bridge.

This alternative also depicts Taxiway E at a standard centerline to runway centerline separation distance of 300 feet. Adjusting the taxiway to meet standards would require additional area between the existing fence and the taxiway safety area. This would require additional adjustments to the golf course. To maintain the proper Taxiway OFA criteria, the fence would actually need to be relocated 65.5 feet.

Alternative 2A would not meet the runway utility requirements in terms of length for a primary runway. It does comply with FAA standards with the exception of the RSA being 160 feet short on the Runway 4 end. Modifications to standards may be required.

3.6.8 Alternative 2B – Shift Runway 4-22 491 feet to the West, Install EMAS, Use Declared Distances

Alternative 2B (**Figure 3-13**) as illustrated would involve the installation of engineered materials arresting systems (EMAS) at the Runway 04 end. Runway 4-22 is shifted 526 feet to the west, an additional 491 feet is added to the Runway 04 end and a 312 foot long by 100' or 150' wide EMAS bed is placed at the rear of a 600 foot RSA to achieve maximum takeoff and landing distance available in both directions and the EMAS has a 35 foot setback. A 253 foot displaced threshold at the Runway 4 approach end would provide a full 600 foot approach RSA.

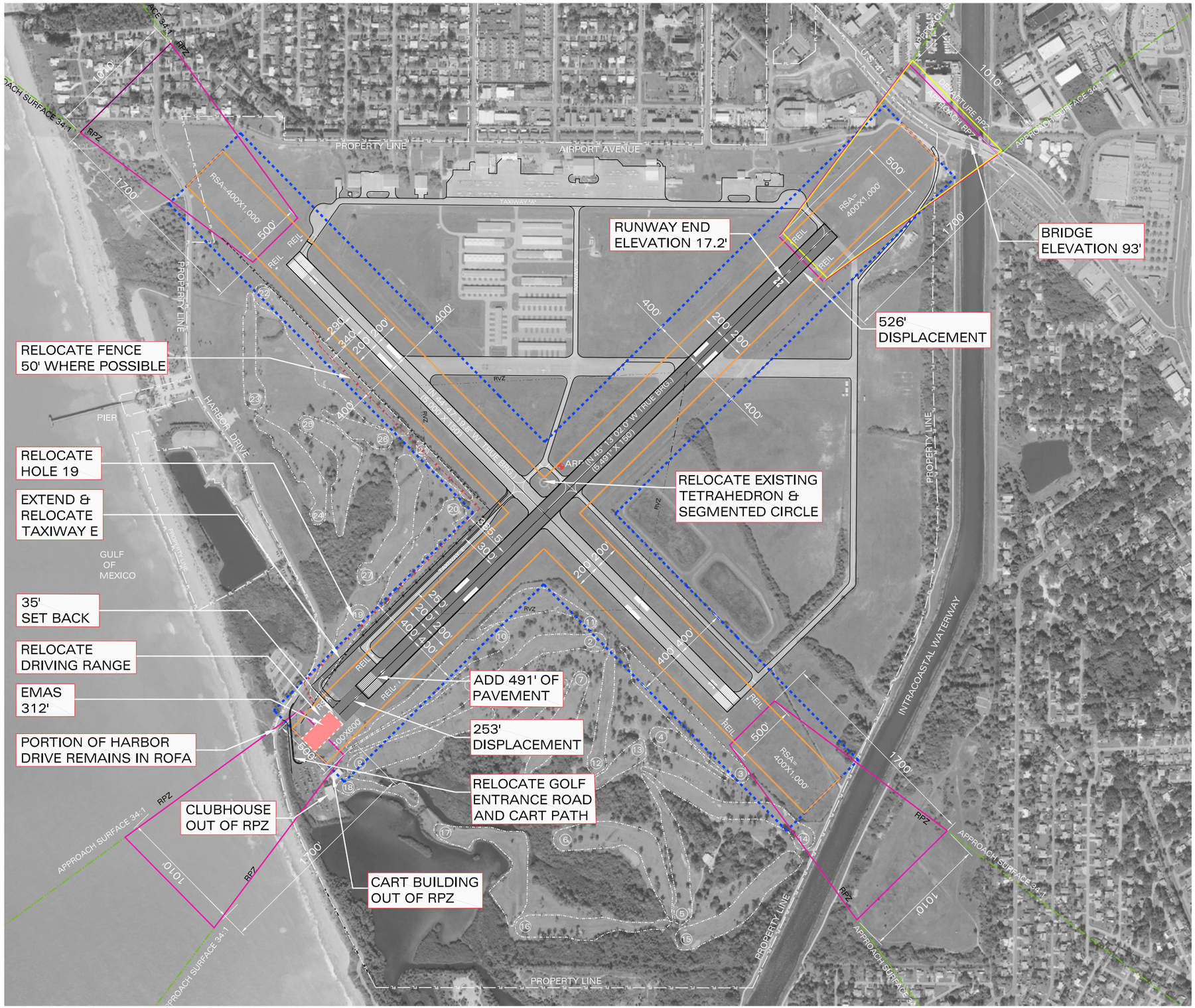
The west end is constrained by a limited area to relocate the golf course entrance road to the parking lot and cart path. The published runway length would be 5,491 feet and declared distances for this alternative would result in the following lengths displayed in **Table 3-10**:

Table 3-10
Alternative 2B Declared Distances

(in feet)	Runway 4	Runway 22
TORA	5,000	5,000
TODA	5,000	5,000
ASDA	5,000	5,000
LDA	5,000	4,965

GPS approaches to Runway 4-22 can likely be achieved. A survey completed in accordance with FAA AC 150-5300-16, 17, and 18B would be required prior to full implementation by the FAA. The threshold siting surface does clear the bridge however the Runway 4 departure surface does not clear the Circus Bridge when it is open. Since this is an existing condition and the bridge is open only on demand it is unclear if published departure procedures can be put in place to alleviate the condition.

Existing parallel Taxiway E would be extended to meet the new Runway 04 displaced threshold location. Extending the taxiway requires that Hole 19 be relocated. This alternative depicts the taxiway at its current location 250 feet from the runway centerline to minimize further impacts to the golf course.



LEGEND:

- PROPERTY LINE
- APPROACH RPZ
- RUNWAY DEPARTURE PROTECTION ZONE (RPZ)
- RUNWAY OBJECT FREE AREA (ROFA)
- RUNWAY SAFETY AREA (RSA)
- APPROACH SURFACE
- NEW FENCE
- RUNWAY VISIBILITY ZONE (RVZ)

TRUE NORTH
MAGNETIC NORTH
(2009) 4°E-2°E

GRAPHIC SCALE
400 0 200 400 800
(IN FEET)
1" = 400'

1. ADD 491' ON RUNWAY 4 END.
2. DISPLACE RUNWAY 22 THRESHOLD 526' FOR BRIDGE AND NON-PRECISION APPROACH.
3. ADD EMAS (312") BED.
4. ADD 35' SETBACK.
5. EXTEND EXISTING PARALLEL TAXIWAY E TO NEW RUNWAY END.
6. RELOCATE FENCE 50' WHERE POSSIBLE, RELOCATE DRIVING RANGE, RELOCATE HOLE 19.
7. CLUBHOUSE & CART BUILDING ARE OUT OF THE RPZ.
8. HARBOR DRIVE REMAINS IN THE ROFA.
9. 5,491' RUNWAY.
10. MORE AREA AVAILABLE FOR WEST END ROAD.
11. RELOCATE EXISTING TETRAHEDRON & SEGMENTED CIRCLE.

DECLARED DISTANCES

	4	22
TORA	5,000'	5,000
TODA	5,000'	5,000
ASDA	5,000'	5,000
LDA	5,000	4,965'

NOTE: Published Runway Length 5,491'.

VENICE MUNICIPAL AIRPORT
CITY OF VENICE, FLORIDA

ALTERNATIVE 2B
SHIFT 4-22 491 FEET TO THE WEST DESIGNATE AS PRIMARY RUNWAY,INSTALL EMAS, USE DECLARED DISTANCES

DRAWN:	CHKD:	DATE:	PROJECT NO.
RRC	LJM	07-29-2011	401.00

FIGURE NO. 3-13

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3.6.9 Alternative 2C – Primary Runway 4-22 and Secondary Runway 13-31 (B-II)

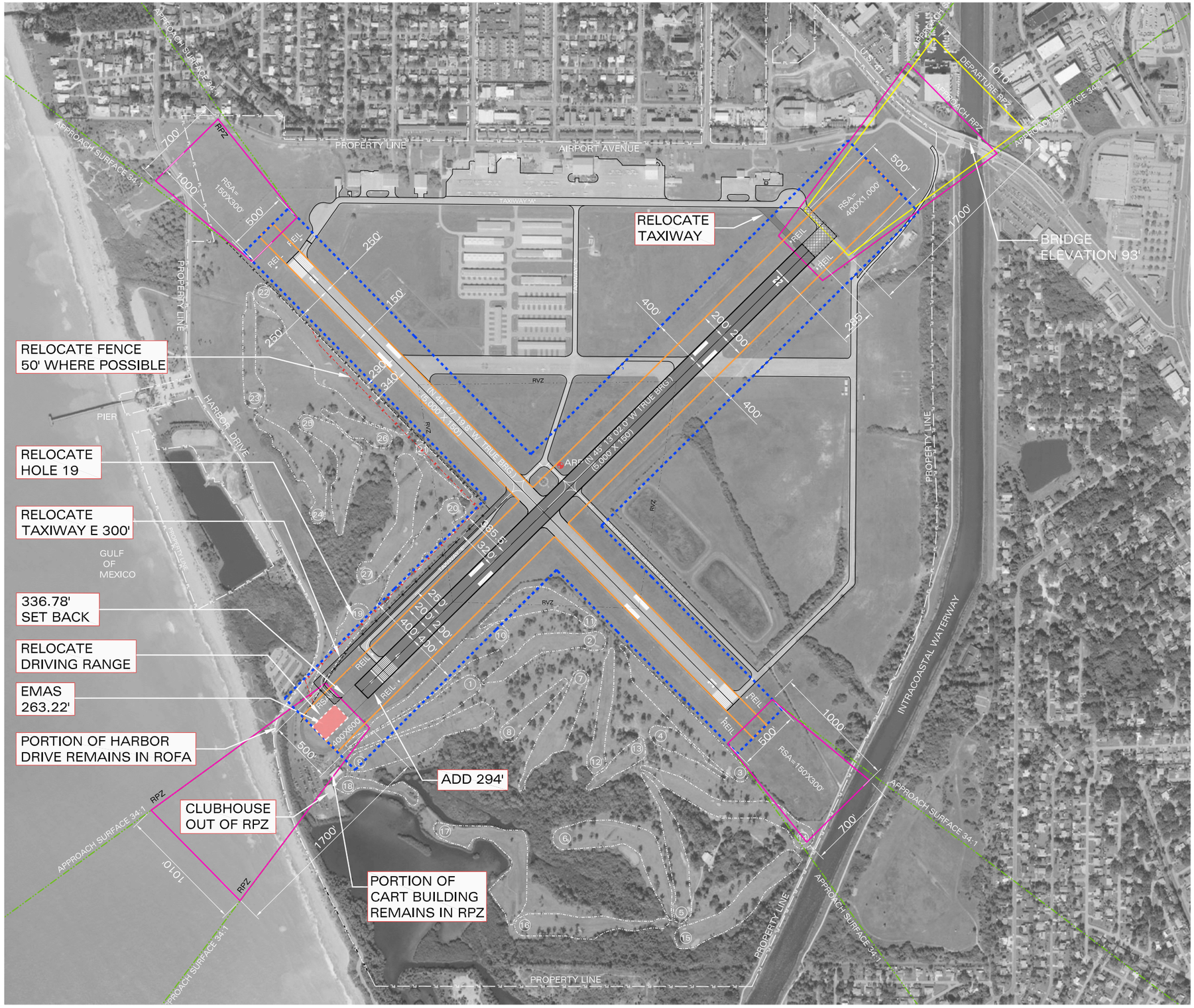
Alternative 2C (**Figure 3-14**) illustrates Runway 4-22 as the primary runway and 13-31 as a secondary runway using B-II standards. This alternative uses a shorter EMAS bed and longer setback on Runway 4-22 to determine if there are any benefits. Published runway length is 5,052 feet with declared distances as shown in **Table 3-11**:

Table 3-11
Alternative 2C Declared Distances

(in feet)	Runway 4	Runway 22
TORA	5,000	5,000
TODA	5,000	5,000
ASDA	5,000	5,000
LDA	5,000	4,768

The FAA has indicated they will not support such an alternative as it violates the grant assurances currently in place on Runway 13-31. In addition, the following items are apparent with this alternative.

- The alternative provides a compliant arrival and departure RSA on Runway 4-22
- Runway 4-22 would not provide a full 5,000 feet of useable runway in both directions
- Runway 4-22 is considered the preferred runway for noise abatement purposes
- GPS approaches can be provided to both ends of the runway
    - TSS clears the Circus Bridge
    - Departure surface does not clear bridge
- If allowed as a secondary runway, the Runway 13 RPZ could potentially be reduced to meet B-II standards thereby removing all homes at no cost.
    - Aircraft would be arriving at a lower altitude over the beach than they presently do.
    - Non-standard Taxiway E Centerline to Runway centerline separation distance.



LEGEND:

- PROPERTY LINE
- APPROACH RPZ
- RUNWAY DEPARTURE PROTECTION ZONE (RPZ)
- RUNWAY OBJECT FREE AREA (ROFA)
- RUNWAY SAFETY AREA (RSA)
- APPROACH SURFACE
- NEW FENCE
- RUNWAY VISIBILITY ZONE (RVZ)
- EXISTING PAVEMENT TO BE REMOVED

TRUE NORTH
MAGNETIC NORTH
(2007) 4°E-2'

GRAPHIC SCALE
400 0 200 400 800
(IN FEET)
1' = 400'

1. ADD 294' ON RUNWAY 4 END.
2. DISPLACE RUNWAY 22 THRESHOLD 526' FOR BRIDGE AND NON-PRECISION APPROACH.
3. ADD EMAS (263.22') BED.
4. ADD 336.78' SETBACK.
5. EXTEND EXISTING PARALLEL TAXIWAY E TO NEW RUNWAY END.
6. 285' OF PAVEMENT ON RUNWAY 22 END TO REMAIN.
7. RELOCATE FENCE 50' WHERE POSSIBLE, RELOCATE DRIVING RANGE, RELOCATE HOLE 19.
8. CLUBHOUSE OUT OF THE RPZ.
9. PORTION OF CART BUILDING REMAINS IN RPZ.
10. HARBOR DRIVE REMAIN IN ROFA.
11. THERE ARE DECLARED DISTANCES.
12. MORE AREA AVAILABLE FOR WEST END ROAD.
13. 13-31 BECOMES SECONDARY RUNWAY.
14. NO HOMES IN RPZ.
15. FENCE RELOCATION ALONG 13-31 NOT NECESSARY.

DECLARED DISTANCES		
	4	22
TORA	5,000'	5,000'
TODA	5,000'	5,000'
ASDA	5,000'	5,000'
LDA	5,000'	4,768'

NOTE: Published Runway Length 5,053'.

VENICE MUNICIPAL AIRPORT
CITY OF VENICE, FLORIDA

ALTERNATIVE 2C HYBRID
PRIMARY RUNWAY 4-22
SECONDARY RUNWAY 13-31

DRAWN:	CHKD:	DATE:	PROJECT NO.	FIGURE NO.
RRC	LJM	07-29-2011	401.00	3-14

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3.6.10 Alternative 2D – Primary Runway 4-22 and Secondary Runway 13-31 (C-II)

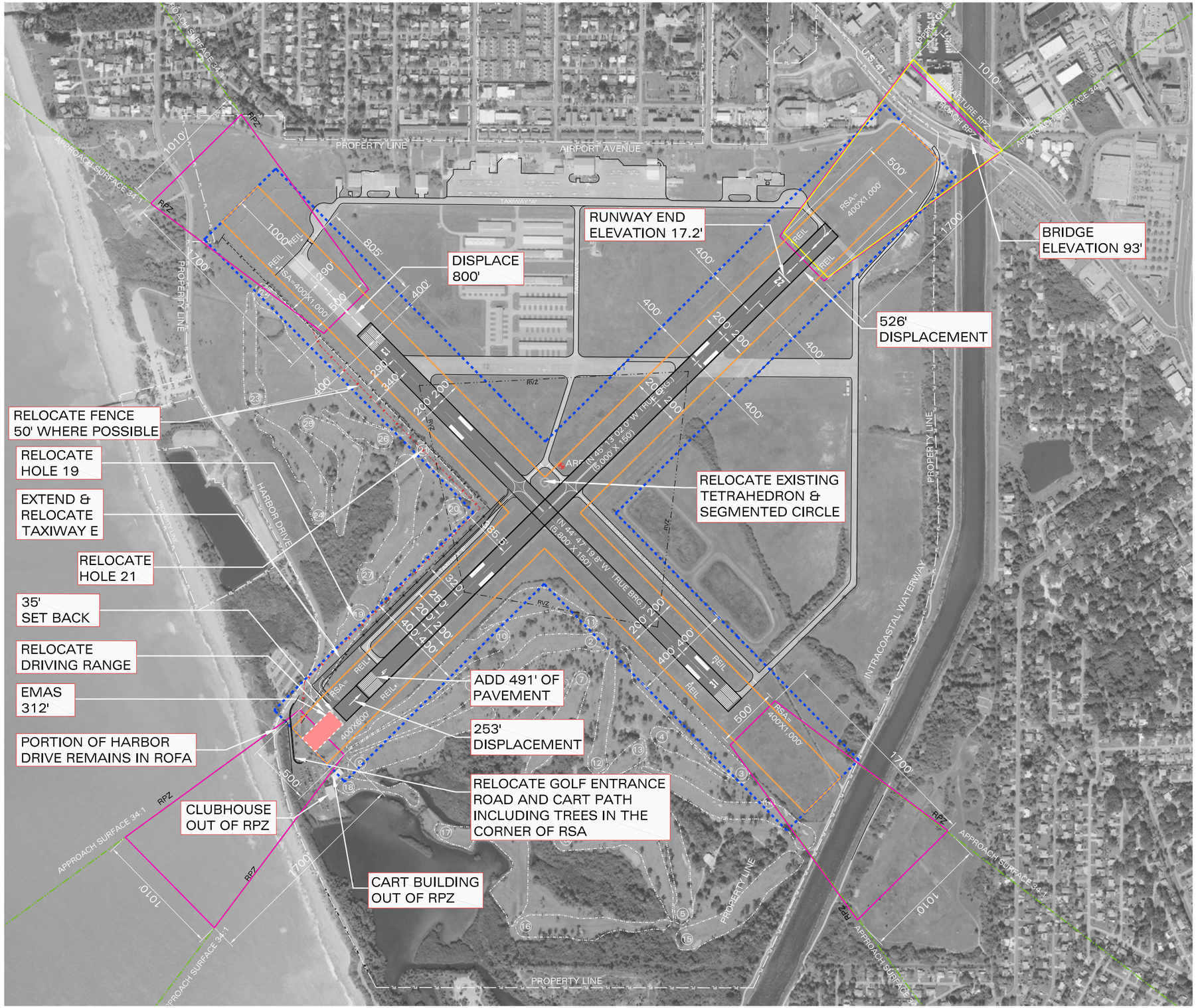
Alternative 2D (**Figure 3-15**) illustrates Runway 4-22 as the primary runway and 13-31 as a secondary runway meeting C-II standards. Declared distances are as follows in **Table 3-12**:

Table 3-12
Alternative 2D Declared Distances

(in feet)	Runway 13	Runway 31	Runway 4	Runway 22
TORA	5,000	4,200	5,000	5,000
TODA	5,000	5,000	5,000	5,000
ASDA	5,000	5,000	5,000	5,000
LDA	4,200	5,000	5,000	4,965

The published length of Runway 13-31 would be 5,000 feet and 4-22 5,491 feet. EMAS would be employed on Runway 4-22 to provide a compliant RSA.

- No homes would be located in the Runway 13 RPZ.
- The alternative provides a compliant arrival and departure RSA on Runway 4-22 and 13-31.
- Neither Runway 4-22 or 13-31 alone would provide a full 5,000 feet of useable runway in both directions. However together as a combined runway system it would be provided.
- Runway 4-22 is considered the preferred runway for noise abatement purposes.
- GPS approaches can be provided to all runway ends.
- TSS clears Circus Bridge.
- Departure surface does not clear bridge.
- Aircraft would be arriving at a lower altitude over the beach than they presently do.



LEGEND:

- PROPERTY LINE
- APPROACH RPZ
- RUNWAY DEPARTURE PROTECTION ZONE (RPZ)
- RUNWAY OBJECT FREE AREA (ROFA)
- RUNWAY SAFETY AREA (RSA)
- APPROACH SURFACE
- NEW FENCE
- RUNWAY VISIBILITY ZONE (RVZ)

TRUE NORTH
MAGNETIC NORTH
(2007) 1°42'-21"

GRAPHIC SCALE
400 0 200 400 800
(IN FEET)
1" = 400'

1. DISPLACE RUNWAY 13 800'.
2. ROFA: RELOCATE FENCE 50' WEST WHERE POSSIBLE AND RELOCATE HOLE 21
3. NO HOMES IN RUNWAY 13 RPZ.
4. RELOCATE EXISTING TETRAHEDRON & SEGMENTED CIRCLE.

DECLARED DISTANCES				
	13	31	4	22
TORA	5,000'	4,200''	5,000'	5,000'
TODA	5,000'	5,000'	5,000'	5,000'
ASDA	5,000'	5,000'	5,000'	5,000'
LDA	4,200'	5,000'	5,000'	4,965'

NOTE: Published Runway 13-31 Length 5,000'
Published Runway 4-22 Length 5,491'

VENICE MUNICIPAL AIRPORT
CITY OF VENICE, FLORIDA

ALTERNATIVE 2D
PRIMARY RUNWAY 4-22
SECONDARY RUNWAY
13-31 C-II

DRAWN:	CHKD:	DATE:	PROJECT NO.
RRC	LJM	07-29-2011	401.00

FIGURE NO. 3-15

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3.7 Summary and Preliminary Order of Magnitude Cost Estimates

Tables 3-13 and 3-14 on the following pages present a summary of the criteria that were assessed for each runway as well as the order of magnitude cost estimates.

The following Alternatives were ***eliminated*** due to the reasons cited:

Alternative 1A – LDA is reduced to 4,200 feet which reduces the utility of the runway for existing tenants and users.

Alternative 1B – 8 homes remain in Runway 13 RPZ.

Alternative 1D – Cost exceeds benefit, other alternative provides same benefit for lower cost.

Alternative 1E – Published length of Runway 13-31 5,727 feet, LDA is reduced to 4,474 feet.

Alternative 2B – LDA reduced to 4,965 feet. Wind analysis indicates that 13-31 should remain primary runway. Circus Bridge presents a predicament for Runway 4-22 to become the primary runway.

Alternative 2C – FAA has indicated that changing Runway 13-31 to a B-II runway would violate grant assurances. Wind analysis indicates that 13-31 should remain primary runway. Circus Bridge presents a predicament for Runway 4-22 to become the primary runway.

Alternative 2D – Runway 13-31 utility is reduced. Wind analysis indicates that 13-31 should remain primary runway. Circus Bridge presents a predicament for Runway 4-22 to become the primary runway.

The proposed alternative is further described on the pages following the summary **Table 3-13**.

Table 3-13 Alternatives Summary and Magnitude of Cost Estimates

Criteria Evaluated to Date	Homes in RPZ	Golf Course Modifications	RSA/EMAS	ROFA	Taxiway E	Declared Distances	GPS Approach	Obstructions	Preliminary Cost
ALTERNATIVES FOR EXISTING PRIMARY RUNWAY 13-31									
Existing Conditions	24	none	Standard RSA	Nonstandard request mods.	n/a	n/a	Yes both ends of 13/31	Yes – Vessel Mast ok up to 50 feet	$16.69m
Alternative 1A	0	Move fence 50' where possible and relocate hole 21	Standard RSA	Request modification	n/a	Yes reduces LDA on 13 to 4,200' published length 5,800	Airspace evaluation required to re-site for new threshold locations	Yes – Vessel Mast ok up to 50 feet	$2.0m
Alternative 1B	8	Move fence 50' where possible and relocate hole 21	Standard on 13 end. EMAS on 31 end	Request modification	n/a	No –full 5,000' available	Airspace evaluation required to re-site for new threshold locations	Yes – Vessel Mast ok up to 50 feet	$12.53m
Alternative 1C	2	Move fence 50' where possible and relocate hole 21	Standard on 13 end. EMAS on 31 end	Request modification	n/a	Yes – 5,000 available- Published length 5,327	Airspace evaluation required to re-site for new threshold locations	Yes – Vessel Mast less than 50 feet	$10.07m
Alternative 1D	2	Move fence 50' where possible and relocate hole 21	EMAS Both Runway ends	Request modification	n/a	Yes – 5,000 available- Published length 5,325	Airspace evaluation required to re-site for new threshold locations	Yes – Vessel Mast less than 50 feet	$16.07m
Alternative 1E (1C and Runway 4-22 B-II)	2	Move fence 50' where possible and relocate hole 21	Standard on 13 end. EMAS on 31 end	Request modification	n/a	Yes – 5,000 available – Published length 5,327	Airspace evaluation required to re-site for new threshold locations	Yes – Vessel Mast less than 50 feet	$8.42m

Note: Cost do not include rehabilitation of Runway 4-22

Table 3-13 Alternatives Summary and Magnitude of Cost Estimates Cont'd

Criteria Evaluated to Date	Homes in RPZ	Golf Course Modifications	RSA/EMAS	ROFA	Taxiway E	Declared Distances	GPS Approach	Obstructions	Preliminary Cost
ALTERNATIVES TO DESIGNATE A NEW PRIMARY RUNWAY 4-22									
Existing Conditions	N/A	none	Nonstandard on 4 end - request mods	Nonstandard on 4 end - request mods	Nonstandard on 4 end	Yes LDA to 22 end is reduced to 4,706'	NO	Departure Surface – Circus Bridge needs to be lighted	$0
Alternative 2A	N/A	Move fence 50' where possible and relocate driving range and modify or relocate Hole 19, entrance road, cart path	Improved to extent practical standard	Improved - request mod	improved	Yes - LDA 22 is reduced to 4,314 ASDA 4,842'	YES – possible to both ends	Departure Surface – Circus Bridge needs to be lighted	$3.05m
Alternative 2B	N/A	Move fence 50' where possible and relocate driving range and modify Hole 19	EMAS on 4 end	Improved - request mod	improved	YES – LDA to 22 reduced to 4,965	YES – possible to both ends	Departure Surface – Circus Bridge needs to be lighted	$10.45m
Alternative 2C (does not include cost to rehab 4-22)	0	Move fence 50' where possible and relocate driving range and modify Hole 19	EMAS on 4 end	Improved - request mod	improved	YES – LDA to 22 reduced to 4,768	YES – possible to both ends. Maintain GPS on 13-31	Departure Surface – Circus Bridge needs to be lighted	$9.45m
Alternative 2D	0	Move fence 50' where possible and relocate driving range and modify Hole 19, road, cart path	EMAS on 4 end	Improved - request mod	improved	Yes – Reduces 13 LDA to 4,200 and 22 LDA to 4,965	YES – possible to both ends. Maintain GPS on 13-31	Departure Surface – Circus Bridge needs to be lighted	$10.45m

Note: Cost do not include rehabilitation of Runway 4-22

Table 3-14 Preliminary Breakdown of Estimated Costs

Alternatives	# of Homes	EA	Average Cost per home (plus 20%)	Estimated Cost to Purchase Homes	Relocation Assistance Program (includes attorney fees etc.)	Estimated Cost to Raze Homes	Golf Course mods. For RSA and/or ROFA	Fence Relocation and Replacement	EMAS	Runway and Taxiway Extensions	Survey for Non precision GPS	Taxiway E mod	Estimated Total Cost
Existing 13/31	24.00	$ 250,000.00	$ 360,000.00	$ 8,640,000.00	$ 1,800,000.00	$ 6,000,000.00			$ -	$ -	$ -	$ -	$ 16,690,000.00
ALT 1A	0.00	$ 250,000.00					$ 400,000.00	$ 150,000.00	$ -	$ 1,150,000.00	$ -	$ -	$ 1,950,000.00
ALT 1B	8.00	$ 250,000.00	$ 360,000.00	$ 2,880,000.00	$ 600,000.00	$ 2,000,000.00	$ 500,000.00	$ 150,000.00	$ 5,000,000.00	$ 1,150,000.00	$ -	$ -	$ 12,530,000.00
ALT 1C	2.00	$ 250,000.00	$ 360,000.00	$ 720,000.00	$ 150,000.00	$ 500,000.00	$ 500,000.00	$ 150,000.00	$ 6,000,000.00	$ 1,300,000.00	$ -	$ -	$ 10,070,000.00
ALT 1D	2.00	$ 250,000.00	$ 360,000.00	$ 720,000.00	$ 150,000.00	$ 500,000.00	$ 500,000.00	$ 150,000.00	$ 12,000,000.00	$ 1,300,000.00	$ -	$ -	$ 16,070,000.00
ALT 1E	2.00	$ 250,000.00	$ 360,000.00	$ 720,000.00	$ 150,000.00	$ 500,000.00	$ 500,000.00	$ 150,000.00	$ 5,000,000.00	$ 1,150,000.00	$ -	$ -	$ 8,420,000.00
											$ -	$ -	$ -
Existing 4/22	n/a	n/a	n/a	n/a	n/a	n/a						$ -	$ -
ALT 2A	n/a	$ 250,000.00	n/a	n/a	n/a	n/a	$ 2,000,000.00	$ 100,000.00	$ -		$200,000.00	$500,000.00	$ 3,050,000.00
ALT 2B	n/a	$ 250,000.00	n/a	n/a	n/a	n/a	$ 2,000,000.00	$ 100,000.00	$ 6,000,000.00	$ 1,400,000.00	$200,000.00	$500,000.00	$ 10,450,000.00
ALT 2C	n/a	$ 250,000.00	n/a	n/a	n/a	n/a	$ 2,000,000.00	$ 100,000.00	$ 5,000,000.00	$ 1,400,000.00	$200,000.00	$500,000.00	$ 9,450,000.00
ALT 2D	n/a	$ 250,000.00	n/a	n/a	n/a	n/a	$ 2,000,000.00	$ 100,000.00	$ 6,000,000.00	$ 1,400,000.00	$200,000.00	$500,000.00	$ 10,450,000.00

Costs estimated in August 2010 for Alternative Evaluation Purposes
Estimates do not include rehabilitation of Runway 4-22

3.8 Proposed Alternative

- **Runway 13-31: Alternative 1C - Shift 727 feet Southeast, Construct EMAS, use Declared Distances**
- **Runway 4-22: Alternative 2A - Standard RSA Using Declared Distances.**

The Proposed Alternative as illustrated in **Figure 3-16** at the end of this section would involve the installation of an engineered materials arresting system (EMAS) at the Runway 31 end. A 1,000 foot standard RSA is equivalent to a 70 knot arrestor bed placed within the rear of a 600 foot RSA (for undershoot protection). The runway has been shifted to the maximum extent possible. As such in order to maintain 5,000 feet of useable runway and maintain its current utility, the placement of the Runway 13 RPZ has been located as far onto airport property as possible.

Runway 13-31 is shifted 727 feet to the southeast, an additional 727 feet is added to the Runway 31 end and a 312 foot long by 100 or 150 wide EMAS bed is placed at the rear of a 600 foot RSA to achieve maximum takeoff and landing distance available in both directions. The EMAS has a 35 foot setback and a 254 foot displaced threshold would begin outside of the setback to provide a full 600 foot approach RSA. The declared distances or useable runway length available in this scenario would be as shown in **Table 3-15** as follows:

Table 3-15
Runway 13-31 Declared Distances

(in feet)	Runway 13	Runway 31
TORA	5,000	5,000
TODA	5,000	5,000
ASDA	5,000	5,000
LDA	5,000	5,000

The Runway 13 approach would have a 605 foot displaced threshold. As a result of this displacement, aircraft would be at a higher altitude over the areas off the 13 end. During the last work session, the potential removal of 400 feet of pavement at the 13 end was discussed assuming the intermittent passage of a 50 foot sailboat mast in the intracoastal waterway at the end of 31. The published runway length would be 5,327 feet. Subsequent to the meeting on June 30th, FAA staff asked that further research be conducted to consider the impact of a 65 foot maximum mast height. In that case, 122 feet of pavement at the end of Runway 13 could be removed. If a 65 foot mast height must be used for clearance over the intracoastal the published runway length would increase to 5,705 feet to accommodate a greater displaced threshold on the Runway 31 end. However the declared distances would remain 5,000 feet. Investigations have indicated that a majority of cabin cruisers frequent this area as well as sailboats with 50

foot masts or less. FAA has indicated that this must be substantiated with data and information which can be found in Section 3.12.

Relocating the Runway 13-31 thresholds will require an airspace evaluation to adjust the existing GPS approach procedures. It appears that the 20:1 threshold siting surface will clear intermittent water vessels having a maximum mast height of 50 feet. The Omni Directional Approach Lights to Runway 31 would need to be assessed to determine if reconfiguring the system would be possible.

Existing parallel Taxiway D would be extended to meet the new Runway 31 displaced threshold location. The alternative would comply with FAA standards with the exception of the ROFA and two homes would be impacted within the RPZ. As the primary runway it maintains existing useable runway length available. This alternative will satisfy airport user needs that are presently based or frequent the airport.

Runway 4-22

Runway 4-22 is the City's Preferred Noise Abatement Runway and all pilots are requested to use it when wind and weather conditions permit. Due to its existing condition it is not being used to its greatest potential. Once rehabilitated it is expected that it could be used to a much greater extent if utility is maintained or improved for existing jet users.

Runway 4-22 was given an airspace "overview" by Mr. Gary Raymond an Airspace Evaluation Program Specialist to determine if a GPS approach with 1 mile visibility minimums or greater could be accommodated to each of the runway ends. According to information available to him at this time, if the runways are marked for non-precision instrumentation the following could be obtained as shown in **Table 3-16**:

Table 3-16
GPS Approach Minima for Runway 4-22

Type	Runway 04	Runway 22
LPV	DA 212 visibility 1 SM	Accurate Survey must be conducted of bridge
LNAV/VNAV	DA 262 visibility 1 SM	DA 344 visibility 1.5 SM
LNAV	MDA 300 visibility 1 SM	440 visibility 1 SM

In addition, the ROFA fence could be relocated 50 feet in most areas with minimal impact to the golf course. The golf driving range, entrance road and cart path would need to be relocated to accommodate the RSA. Hole 19 could be converted to a Par 3 depending upon the final FAA requirement for fence relocation in this area. A portion of the cart

building, and clubhouse would remain in the ROFA and RPZ. A portion of Harbor Drive remains in the upper west corner of the ROFA as well.

Due to the Circus Bridge height, runway length would remain as it is today 5,000 feet, however the Runway 22 end displacement will increase to 526 feet. Total published length of Runway 4-22 would be 5,000 feet with resulting declared distances for this alternative are shown in **Table 3-17** as follows:

Table 3-17
Runway 4-22 Declared Distances

(in feet)	Runway 4	Runway 22
TORA	5,000	5,000
TODA	5,000	5,000
ASDA	5,000	4,840
LDA	5,000	4,314

As previously indicated GPS approaches to Runway 4-22 can likely be achieved and would be an additional encouragement for jet operators to use the runway on a more regular basis when possible. A survey completed in accordance with FAA AC 150-5300-16, 17, and 18B would be required prior to full implementation by the FAA. The Runway 4 departure surface does not clear the Circus Bridge when it is open. Since this is an existing condition and the bridge is open only on demand it is unclear if published departure procedures can be put in place to alleviate the condition. An FAA airspace review will make this determination.

This alternative also depicts Taxiway E at a standard centerline to runway centerline separation distance of 300 feet. Adjusting the taxiway to meet standards would require additional area between the existing fence and the taxiway safety area. This would require additional adjustments to the golf course. To maintain the proper Taxiway OFA criteria, the fence would actually need to be relocated 65.5 feet. FAA may allow a modification to this standard.

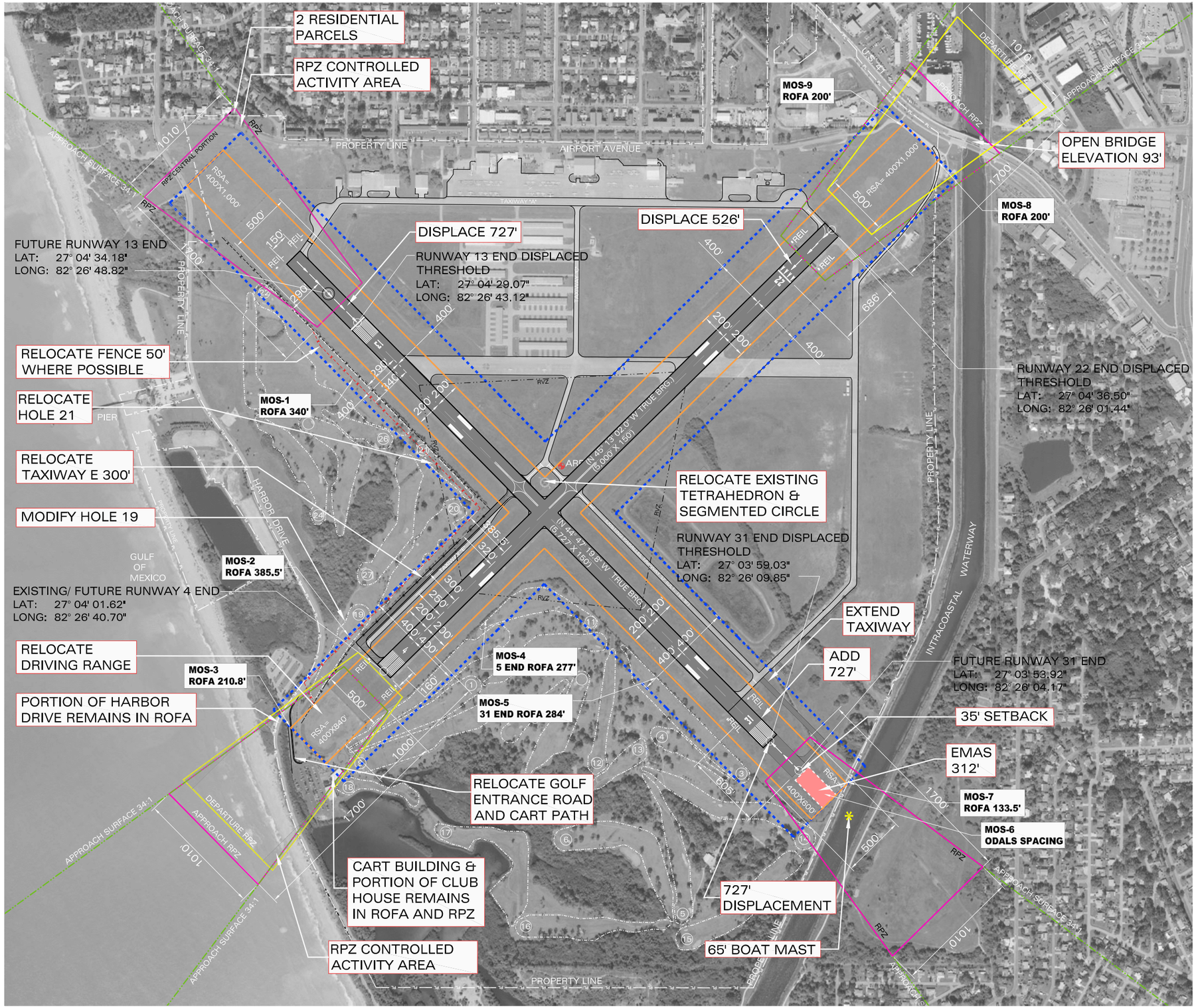
The Runway 22 departure RSA would be 840 feet x 400. This would be the maximum length that can be achieved on the Runway 4 end due to land constraints and Harbor Drive. It would be possible to add 160 feet to the 22 end and provide a new taxiway configuration, however this does not improve LDA and as the secondary runway may not be necessary.

The preliminary order of magnitude costs to implement the Proposed Alternative is as shown in **Table 3-18**.

Table 3-18 Alternatives, Conditions, and Associated Costs

Criteria Evaluated to Date	Homes in RPZ	Golf Course Modifications	RSA/EMAS	ROFA	Taxiway E	Declared Distances	GPS Approach	Obstructions	Preliminary Cost
				Proposed Alternative					
Existing Conditions	24	none	Standard RSA	Nonstandard request mods.	n/a	n/a	Yes both ends of 13/31	Yes - Vessel Mast ok up to 50 feet	$16.69m
Proposed Alternative Runway 13-31 (Alternative 1C)	2	Move fence 50' where possible and relocate hole 21	Standard on 13 end EMAS on 31 end	Request modification	n/a	Yes - 5,000 available- Published length 5,327	Airspace evaluation required to re-site for new threshold locations	Yes - Vessel Mast less than 50 feet ok – Masts are light at night.	$10.07m
Proposed Alternative Runway 4-22 (Alternative 2A)	N/A	Move fence 50' where possible and relocate Hole 19 or convert to Par 3. Relocate driving range, entrance road and cart path	Improved to extent practical using declared distances	Request modification	Improved	Yes – 5,000 available on 13-31 Runway 4-22 LDA reduced to 4,312, ASDA reduced to 4,842	Airspace evaluation required to site threshold locations	Yes – Circus Bridge, bridge needs to be lighted at night.	$3.05m
Total Preliminary Estimate									**$13.12m**

Note: Costs do not include rehabilitation of Runway 4-22.



LEGEND:

- PROPERTY LINE
- APPROACH RPZ
- RUNWAY DEPARTURE PROTECTION ZONE (RPZ)
- RUNWAY OBJECT FREE AREA (ROFA)
- RUNWAY SAFETY AREA (RSA)
- APPROACH SURFACE
- NEW FENCE
- EMAS
- RUNWAY VISIBILITY ZONE (RVZ)
- EXISTING PAVEMENT TO BE REMOVED

TRUE NORTH
MAGNETIC NORTH
(2009) 4.5°-2°

GRAPHIC SCALE
400 0 200 400 800
(IN FEET)
1" = 400'

RUNWAY 13-31

1. ADD 727' OF PAVEMENT TO RUNWAY 31 END.
2. THRESHOLD ON RUNWAY 31 DISPLACED 727'.
3. EXTEND PARALLEL TAXIWAY 727'.
4. DISPLACE 727' FROM RUNWAY 13 END.
5. ADD 312' EMAS BED PLUS 35' SETBACK.
6. ROFA: RELOCATE FENCE 50' WEST WHERE POSSIBLE AND RELOCATE HOLE 21.
7. PARTIAL IMPACTS - 2 RESIDENTIAL PARCELS.
8. RELOCATE EXISTING TETRAHEDRON & SEGMENTED CIRCLE.

RUNWAY 4-22

9. RELOCATE TAXIWAY "E".
10. DISPLACE RUNWAY 22 LANDING THRESHOLD.
11. RELOCATE DRIVING RANGE.
12. ROFA: RELOCATE PORTIONS OF FENCE 50' WHERE POSSIBLE.
13. CART BLDG. REMAINS IN RPZ.
14. PORTION OF CLUBHOUSE REMAINS IN RPZ.
15. PORTION OF HARBOR DRIVE REMAINS IN ROFA.

DECLARED DISTANCES

	13	31	4	22
TORA	5,000'	5,000'	5,000'	5,000'
TODA	5,000'	5,000'	5,000'	5,000'
ASDA	5,000'	5,000'	5,000'	4,840'
LDA	5,000'	5,000'	5,000'	4,314'

NOTE:
Published Runway 13-31 Length 5,727'
Published Runway 4-22 Length 5,000'

VENICE MUNICIPAL AIRPORT
CITY OF VENICE, FLORIDA

PROPOSED ALTERNATIVE

DRAWN:	CHKD:	DATE:	PROJECT NO.	FIGURE NO.
RRC	LJM	07-29-2011	401.00	3-16

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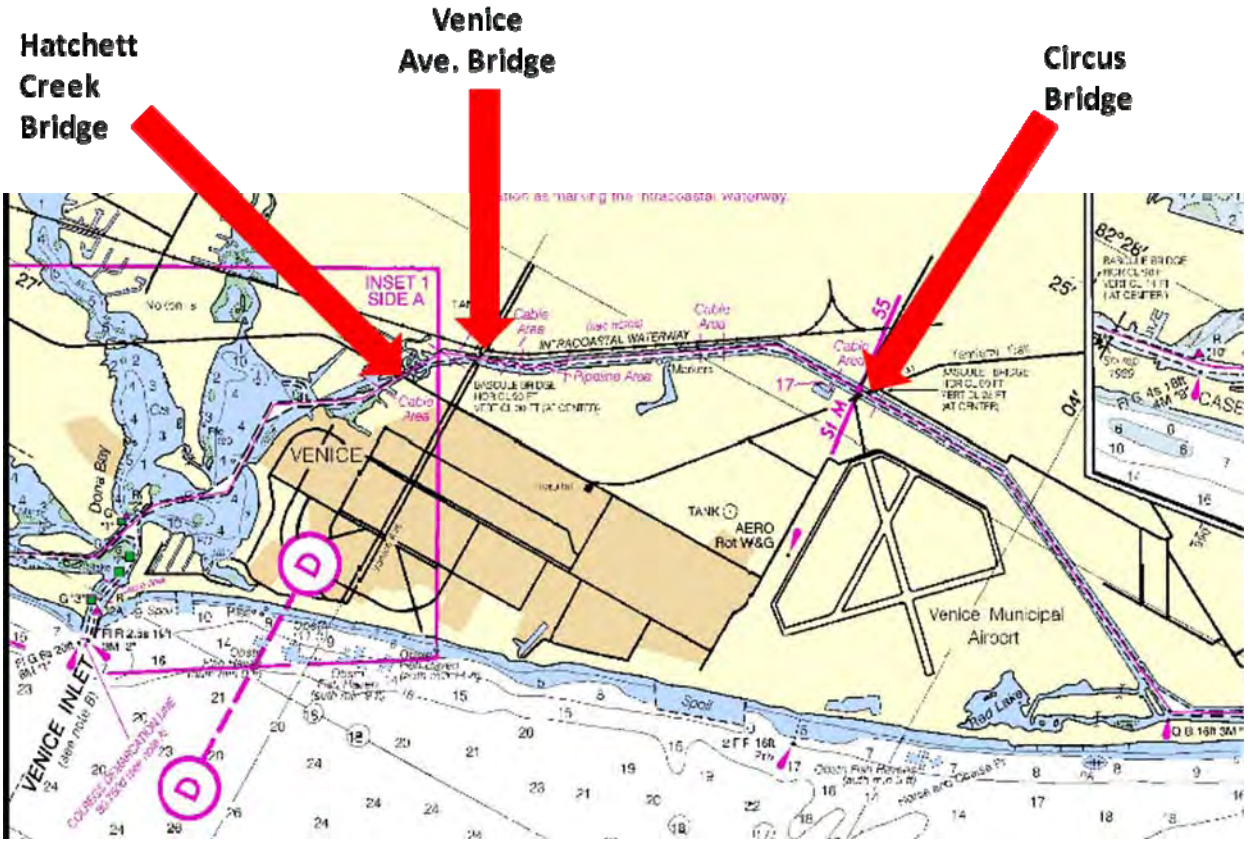
3.9 Intracoastal Waterway – Supplemental Information

The Gulf Intracoastal Waterway runs adjacent to Venice Municipal Airport's Runway 31 end. Today, the Waterway lies approximately 1,300 feet from the end of the Runway. The Waterway serves as an alternative to vessels traveling in the Gulf of Mexico as it has calmer waters due to being protected from the larger body of water by land. North of the Airport, the Intracoastal opens up at the Venice Inlet, roughly 4.5 miles away from the Airport. To the south, the nearest opening into the Gulf of Mexico occurs roughly 13 miles away, at Manasota Key.

Three major bridges for the Gulf Intracoastal Waterway are located in the vicinity of Venice Municipal Airport. Drawbridges represent a deterrent to boaters of larger craft, who must wait for bridges to be opened to allow their vessels to pass. The northern most bridge, Hatchett Creek Bridge, is located along Business Route 41. It has a closed vertical clearance of 30 feet. That is to say, that vessels needing additional vertical clearance would require a bridge opening. The Venice Avenue Bridge is located north of the Airport, and also has a closed vertical clearance of 30 feet. The third bridge is Circus Bridge, and it is located adjacent to the approach end of Runway 22 at the Airport. Circus Bridge has a closed vertical clearance of 25 feet. The locations of the bridges are shown below:

DY Consultants conducted a site evaluation of residential communities in the City of Venice that have dock space available that leads out into the Gulf Intracoastal Waterway. It can be reasonable inferred that these "based vessels" are more frequent visitors of their local waters, and associatively will be more likely to be using the waters adjacent to the Venice Municipal Airport. The two communities located and surveyed were Country Club Estates and Harbor Lights Coop.

The Country Club Estates property is a senior living community located less than one mile north of the Airport. It contains a series of housing, as well as dock space in a small channel that leads directly into the Gulf Intracoastal Waterway. A count of the largest vessels in this community indicated 8 large sailboats that would be higher than 20 feet, with the majority of those vessels having mast heights of 30-40 feet. The two tallest sailboats had masts closer to 50 feet. It would be difficult for larger vessels to use this community, as the channel leading to the Intracoastal is relatively small. Harbor Lights Coop is a similar type of facility with 15 sailboats larger than 20 feet in mast height. The largest of the sailboats had masts of approximately 50-60 feet, with the remaining smaller than 50 feet in mast height. This community is located much further away, at about 3 miles north, and is located immediately adjacent to the opening in the Gulf of Mexico. These vessels are almost exclusively going to use the Gulf for their travels, and would only travel south in the Intracoastal during severe inclement weather.



Map Courtesy of National Oceanic and Atmospheric Administration

In 2007 a Harbor Management Plan Survey was conducted by the City of Venice Planning and Zoning Department. The survey is based upon responses given by vessels known to be local in Venice waters. The survey contains a population of 165 vessels, of which 11% of those vessels had a mast height in excess of 50 feet. Those vessels estimated that they were in Venice waters an estimated 3.65 days per year. The remaining 89% of vessels had a mast height of 50 feet or less. The average mast height of the population in the survey was 36 feet. This plan is also not a perfectly accurate representation of the vessels using the Intracoastal Waterway, as it represents vessels using the Venice Harbor. It could be reasonable to assume that some, if not all, of the larger vessels were using the harbor and not the intracoastal passage located near the Runway 31 end as a transient point on their voyages. The harbor contains all the services that would be required for transient vessels. This information is appended in the Appendix " 2007 Harbor Management Plan Survey"

A further study was conducted by the City of Venice in 2010 that analyzed available transient vessel logs from two large facilities that handle Venice traffic, the Crow's Nest Marina and the Venice Yacht Club (See Appendix). This information is also representative of vessels using the Venice Harbor and not necessarily the Intracoastal Waterway near the Runway 31 end. The results of this study indicated that at the Crow's Nest Marina 11.9% of the 921 vessels sampled exceeded 50 feet in mast height, with .07% of those exceeding 65 feet. The average mast

height of the sailing vessels (251 of the 921 sampled) in this study was approximately 50 feet. At the Venice Yacht Club, 11.5% of the 2,208 vessels sampled exceeded 50 feet in height, with .08% of those vessels exceeding 65 feet in height. The average height of the sailing vessels (456 of the 2,208 sampled) was approximately 51 feet.

Weather conditions have an impact on vessels using the Intracoastal Waterway. The particular stretch of the Intracoastal adjacent to Venice Municipal Airport has little to no services available in transit, and would most likely be used primarily by transient vessels in times of poor weather, as they would benefit from the calmer waters this inland waterway provides.

A weather analysis was conducted as a part of the proposed alternative development. Using the Beaufort Wind Force Scale, we can select a certain criteria for wind speeds that would lead to rough waters. A 5 on the scale of 0-12 is described as a “fresh breeze” and is identified by having winds of 16-20 knots, with wave heights of 6-9 feet. For the purposes of this report, we define potential inclement weather as having wind speeds of greater than 16 knots. Using information from the Annualized Wind Persistency Chart of the Venice Pier, approximately 7% of the time conditions are reporting winds in excess of 16 knots. This is a conservative estimate, as the delays incurred by the opening and closing of the drawbridges would have to be weighed against the inclement conditions of the water.

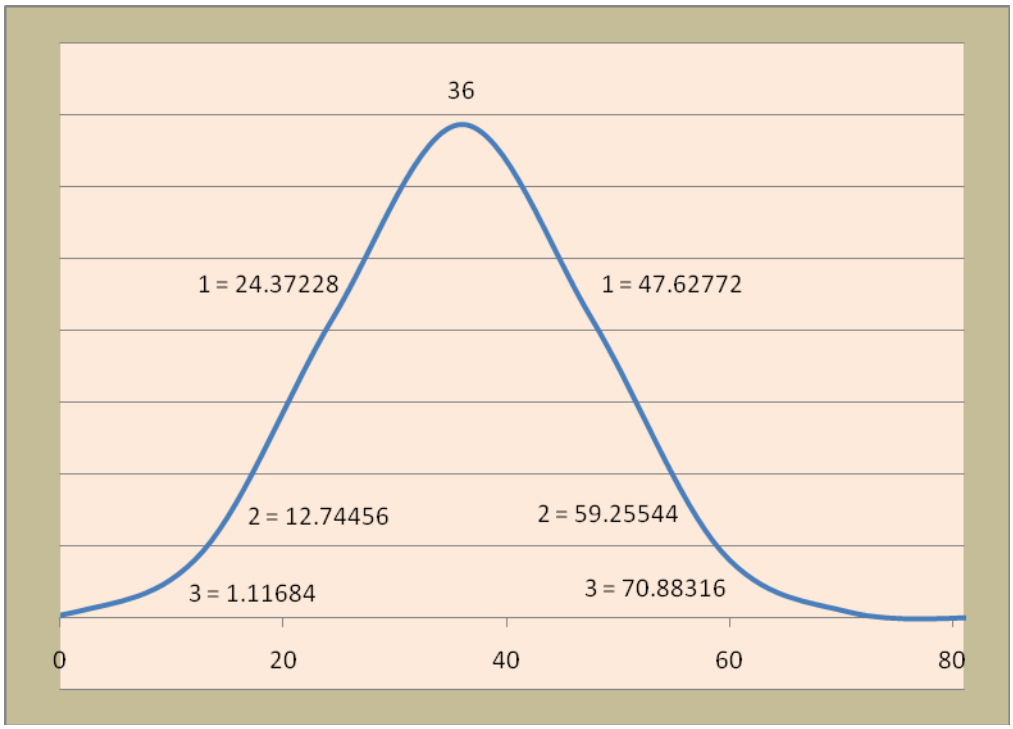
Methodology

With no direct count of vessels using the Intracoastal Waterway in the vicinity of Venice Municipal Airport, some assumptions must be made. We have obtained a great deal of information regarding transient vessels. While that must carry significance, it must be measured against the constraints of the Intracoastal Waterway (delays at the bridge, slower speeds). In general, it was found that the Intracoastal Waterway would most likely only be used by transient traffic in times of inclement weather, of which occurs approximately 7% of the time using our definition of winds in excess of 16 knots.

More reliable would be the survey of the based boats using channels that lead directly into the Intracoastal Waterway, which could utilize the waters in front of the Airport for trips down south. For the purposes of this analysis, we will use the maximum height of the sailboats in the closest based community of Country Club Estates of 50 feet. For the Harbor Lights Coop, which is located immediately adjacent to an inlet leading into the Gulf of Mexico, a modest 15% reduction in the maximum height of the tallest vessel, has been used as a factor of probability that a vessel from this location would not elect to use the more convenient Gulf of Mexico for their travels. This leads to the following heights of vessels in the based communities:

- Country Club Estates: 50 feet
- Harbor Lights Coop: 50 feet (using a probability reducing factor of -15%)

Using the data from the 2007 Harbor Management Plan Survey and taking the Standard Deviation of the Mast heights in that survey, the following normal curve is produced:



Source: 2007 Venice Harbor Plan Study

In the chart above values below zero were excluded. This statistical tool indicates the following information about the 2007 Harbor Management Plan Survey:

- 50% of the vessels surveyed are 36 feet in height or below
- 68% of the vessels surveyed are between the heights of 24.3 feet and 47.6 feet
- 95.5% of the vessels surveyed are between the heights of 12.7 feet and 59.25 feet
- 99.7% of the vessels surveyed are between the heights of 1.1 feet and 70.8 feet

Because this survey does not take into account traffic using in the Intracoastal Waterway proper, we must make some inferences on the probability that vessels in Venice Harbor would elect to use the Intracoastal Waterway instead of the Gulf of Mexico due to inclement weather or some other reason. As mentioned earlier, vessels using the Intracoastal would be subject to slower speeds, delays for bridge openings, and other restraints that come with traveling in a narrow body of water. It is prudent then to select the 68% interval, which has a maximum height of 47.6 feet.

The final source of information obtained was from the Crow's Nest Marina and the Venice Yacht Club. As mentioned earlier, these facilities are located close to the inlet out into the Gulf of Mexico, and vessels counted in these surveys are transient boats most likely using the Harbor only, and not the Intracoastal Waterway. The average mast heights obtained from the Crow's Nest Marina and the Venice Yacht Club were 50 and 51 feet, respectively. A similar 15% reduction factors due to their location proximate to the Gulf of Mexico and services available, results in average heights of 42.5 feet and 43.4 feet.

Findings

This analysis includes several sets of data and tools of statistical analysis used to produce reliable heights of vessels that potentially would use the Gulf Intracoastal Waterway in the vicinity of Venice Municipal Airport.

- Country Club Estates: **50 feet**
- Harbor Lights Coop: **50 feet** (using a probability reducing factor of -15% due to location near the gulf and available services)
- 2007 Harbor Management Plan Survey 68% interval of standard deviation (maximum height): **47.6** feet
- Crow's Nest Marina transient log analysis: **42.5 feet** (using a probability reducing factor of -15% due to location near the gulf and available services)
- Venice Yacht Club transient log analysis: **43.4 feet** (using a probability reducing factor of -15%due to location near the gulf and services)

An average of these data points arrives at a height of **46.9 feet**. If we apply a 5% contingency factor to this average, we have a height of **49.25 feet**. It is reasonable, based on the information analyzed, that a maximum mast height of 50 feet is representative of the vessels actually using the Gulf Intracoastal Waterway in the vicinity of Venice Municipal Airport, and that should be the height considered when siting the threshold for Runway 31.

3.10 Runway Safety Area Analysis

DY conducted a review of the runway safety areas for Runway 13-31 and Runway 4-22 at Venice Municipal Airport in accordance with Federal Aviation Order 5200.8 and 5200.9. Runway 13-31 is currently the primary runway with an Airport Reference Code (ARC) of C-II. Runway 4-22 is the crosswind runway and preferential noise abatement runway for the airport. Both runways have an existing ARC of C-II as depicted on the 2000 ALP.

3.10.1 Runway 4 RSA Evaluation

As part of the scope of work for the City's Supplemental Master Plan for the Venice Municipal Airport, DY Consultants prepared a Runway Safety Area analysis which was included in Section 3 of the Final Draft document dated August 31, 2010.

Subsequent to the delivery of that document to the City, an additional meeting was held with the Federal Aviation Administration (FAA) on September 29, 2010 to discuss the Preferred Alternative that would be presented on the Airport Layout Plan (ALP).

DY conducted a review of the runway safety areas for existing Runway 4-22 at Venice Municipal Airport in accordance with Federal Aviation Order 5200.8 and 5200.9. Runway 13-31 is currently the primary runway with an Airport Reference Code (ARC) of C-II. Runway 4-22 is the crosswind runway and preferential noise abatement runway for the airport. Both runways have an existing ARC of C-II. Runway 4-22 will be re-designated as Runway 5-23 in the future due to changes in magnetic declination. For the purposes of this report it will be referred to as Runway 4-22 in the alternatives analysis.

The purpose of this Technical Memorandum is to clarify the Runway Safety Area (RSA) analysis results in relation to the Preferred Alternative for Runway 4-22 that is depicted on the Proposed Airport Layout Plan dated 10-25-2010. The FAA has completed their review of the ALP and submitted comments to the City. The City has incorporated FAA comments in to the ALP and is in the process of adopting the document.

The FAA has established a RSA Program (FAA Order 5200.8) to ensure that federally obligated airports have runway safety areas which are compliant to the extent possible with FAA standards. FAA Order 5200.8, "Runway Safety Area Program," became effective on October 1, 1999 with the objective to ensure that all runway safety areas at federally obligated airports conform to standards contained in FAA Advisory Circular (AC) 150/ 5300-13, "Airport Design." This AC describes the runway safety area (RSA) as "a defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot or excursion from the runway."

In addition to AC 150/5300-13, FAA Order 5190.6B, "Airport Compliance Requirements," outlines the contractual obligation of airports accepting and receiving federal grant funds. The basic objective of these regulations and compliance requirements is to ensure safe and properly

maintained airports which are operated in a manner that protects the public's interest and investment. In Order 5190.6B, Paragraph 4-17j, Conformance to FAA Criteria and Standards, it is stated that: "Any facilities developed with grant funds must be constructed to the then current applicable FAA design standards."

EXISTING CONDITIONS- RUNWAY 4-22

Currently the RSA at the Runway 4 end (Runway 4 approach end or Runway 22 departure end) is approximately 400 feet in length x 400 feet in width. There is a fence that separates the existing RSA from the Venice Golf Association (VGA) driving range. The VGA golf course driving range currently impedes having a compliant C-II Runway 4 end approach RSA of 600 feet in length or a Runway 22 departure end RSA of 1,000 feet in length.

Runway 4-22 is the City's preferred noise abatement runway and all pilots are requested to use it when wind and weather conditions permit. Due to its existing pavement condition it is not being used to its greatest potential. However, once rehabilitated it is expected that it will be used to a much greater extent if utility can be maintained as much as possible.

A runway length analysis was conducted for VNC using FAA AC 150/5325-4B. The analysis was completed for airplanes within a maximum certificated takeoff weight of more than 12,500 pounds up to and including 60,000 pounds. The results indicated that to satisfy 75 percent of the family grouping of these large airplanes as defined in AC 150/5325-4B, 4,650 feet of runway is required at Venice. To satisfy 100 percent of the same family grouping of aircraft at 60 percent useful load, the airport would need approximately 5,450 feet. Further, based upon DY Consultants-Vector departure operations data collection information and survey data of based aircraft and tenants, it was determined that an existing runway length of 5,000 feet should be maintained at a minimum to accommodate the mix of aircraft currently based at the airport and those that use the airport on a regular basis.

An existing condition that must also be incorporated in the evaluation of the RSA alternatives is the bascule bridge (Circus Bridge) over the intracoastal waterway (ICW) on U.S. Business 41 approximately 1,200 feet northeast of the existing Runway 22 end. The bridge has two leafs that open on demand for water vessels needing more than 25 feet of vertical clearance. The top elevation of the bridge when open is approximately 93 feet. The open height of the bridge must be considered for the approach, threshold siting and departures surfaces for Runway 4-22.

According to calculations conducted on the open bridge height, a 526-foot displaced threshold on Runway 22 is necessary for an existing 20:1 approach surface, future 34:1 approach surface and a 20:1 threshold siting surface. In addition the bridge is located within the Runway 4 40:1 departure surface. The displacement required for the bridge does have an effect on Landing Distance Available (LDA) for aircraft landing on Runway 22. This will be addressed further in the RSA alternatives analysis.

The Runway 4 threshold elevation is 12.30 feet above mean sea level (AMSL). RSA grade requirements (AC 150/5300-13) state that the maximum negative grade within the first 200 feet is 3 percent and 5 percent for the remaining 800 feet. Therefore, when applying these numbers, the difference in elevation between the end of the runway and the end of the RSA can be 46

feet. Meeting the grade requirements will not be difficult or expensive since little or no fill will need to be brought in.

The following **Table 3-19** provides a summary inventory of the existing RSA conditions and applicable standards of Runway 4-22 as they exist today.

Providing a standard runway safety area of 1,000 feet in length by 400 feet wide beyond the existing Runway 4 end may be possible. The FAA will determine if impacts can be minimized once survey data is obtained during the Runway 4-22 design process.

Table 3-19
Venice Municipal Airport Existing Runway 4-22 RSA

Runway Data	Existing Conditions*	Applicable Standards	Known Future RSA Improvements for Existing Layout
Airport Reference Code (ARC)	C-II		Same
Approach Visibility Minimums	visual		Non-precision - not greater than 1 mile
Runway Length	5,000’		Same
Runway Width	150’	100’	100 to 150’
Displaced Threshold Runway 4	0		Same
Displaced Threshold Runway 22	294’	526’ (for bridge)	526’ (for bridge)
RSA beyond Runway 4	**400’**	**1000’**	**Improve to meet standard**
RSA beyond Runway 22	1000’	1000’	Relocate fence in NE corner to meet standard
RSA Width	400’	400’	Meets standard
RSA Obstructions	Yes	N/A	Relocate golf course driving range (airport leasehold)
Estimated Cost to Remedy	Yes	Yes	See RSA evaluation below

*Existing conditions are based upon the 2000 Approved ALP

Runway Object Free Area (ROFA) Deficiencies and the Golf Course

In addition to the RSA, the ROFA on either side of Runway 4-22 southwest of the Runway 13-31 intersection does not meet current C-II design standards due to the location of a fence that separates the airfield from the VGA leasehold. The C-II standard for the ROFA is 800 feet wide by 1,000 feet in length.

The Runway 4-22 ROFA southwest of the Runway 13-31 intersection varies on both sides due to the location of the golf course playing areas and narrows even further as it continues toward the Runway 4 end. It was estimated that the maximum the fence could be relocated without adversely impacting the golf course would be 50-65 feet in some areas. The fence could conceivably be relocated along the north side of Runway 4-22 with no change to Hole 20 and a conversion of Hole 19 from a Par 4 to a Par 3 depending upon the extent of ROFA that FAA will require.

A standard ROFA would require modifications to Harbor Drive, the VGA entrance road and parking, as well as relocation or reconfiguration to many golf holes on either side of the runway. The cost to meet the full ROFA standard alone has been estimated to exceed $2.5 million. In a letter dated April 26, 2011, the FAA conditionally approved eight modifications to the ROFA standard. Having these modifications in place minimizes additional impacts to the golf course. Although the ROFA will continue to be nonstandard the FAA does consider the modification conditions and any fence relocation improvements to be an enhancement to safety at the airport.

RSA ALTERNATIVES

Appendix 2, in FAA Order 5200.8 *Runway Safety Area Program*, provides a framework for the development of alternatives. Section 3 of FAA Order 5200.8 states the following:

"The first alternative to be considered in every case is constructing the traditional graded area surrounding the runway. Where it is not practicable to obtain the entire safety area in this manner, as much as possible should be obtained. Thus, the following alternatives shall be addressed in the supporting documentation. The applicability of these alternatives will vary, depending on the location.

a. Relocation, shifting, or realignment of the runway.
b. Reduction in runway length where the existing runway length exceeds that which is required for the existing or projected design aircraft.
c. A combination of runway relocation, shifting, grading, realignment, or reduction in length.
d. Declared distances.
e. Engineered Materials Arresting Systems (EMAS)."

Alternatives Reviewed and Dismissed

Several airfield alternatives were assessed and dismissed during the ALP Update process and those that pertain to Runway 4-22 included:

- ***Relocate Runway 4-22***

  In this alternative, the team assessed whether there was adequate land available to improve the RSA and ROFA. It was determined that due to increased impacts to the golf course, existing airport infrastructure, and additional technical constraints this alternative would not provide a viable option to meet the goals and objectives of the study. It was therefore eliminated from any further consideration.

- ***Re-align Runway 4-22***

  Under this alternative, the team assessed the potential to re-orient the alignment of the runway so the RSA would be relocated with no impacts to the driving range. It was determined that due to land constraints including the golf course, and ICW this alternative would not meet the goals and objectives of the effort. In addition new impacts would be introduced to additional facilities operated by the VGA, as well as Harbor Drive. This alternative was eliminated from further consideration.

- ***Designate Runway 4-22 as a B-II Runway***

  As previously stated, Runway 4-22 is the City's preferred noise abatement runway and all pilots are requested to use it when wind and weather conditions permit. Thus any reduction to the ARC or design standards would not be consistent with the 2000 ALP of record nor the City's noise abatement procedures. Due to its existing pavement condition it is not being used to its greatest potential. However, once rehabilitated it is expected that it will be used to a much greater extent if utility can be maintained as much as possible. This alternative was eliminated from further consideration.

- ***Designate Runway 4-22 as the Primary Runway***

  A wind analysis was conducted as part of the master plan alternatives analysis. The present ARC classification for VNC is C-II according to the approved 2000 Airport Layout Plan. However, according to the data obtained from the aircraft counting program, 90 percent of all aircraft operations taking place at VNC are within the A-I and B-I aircraft design groups. Using FAA AC 150/5300-13, Appendix 1, wind coverage for the airport was computed for a 10.5 knot crosswind component under all-weather conditions for each runway on its own as well as combined. This is warranted due to the number of smaller single-engine piston and twin-engine piston aircraft that utilize the airport on a regular basis and are more susceptible to crosswinds than larger, faster aircraft.

  The combination of the two runways does currently provide 97.84 percent coverage for the 10.5 knot crosswind component for all weather conditions. Runway 4-22 provides 84.98 percent coverage and Runway 13-31 provides 89.25 percent coverage in all weather conditions. In other words, according to the charts, Runway 4-22 crosswinds exceed 10.5 knots 15.02 percent of the year or 55 days. Runway 13-31 crosswinds exceed 10.5 knots 10.75 percent of the year or 39 days.

According to the data, calm winds and those less than 11 knots occur 72 percent of the time and on an average annual basis originate from a heading or direction favoring Runway 4-22. Wind velocities greater than 11 knots according to the data occur 27 percent of the time and can vary seasonally but overall on an annual basis favor the use of Runway 13-31 during those conditions.

Discussions with FAA have indicated that because Runway 4-22 alone would not provide adequate wind coverage for the smaller A and B aircraft that use the airport on a regular basis, it cannot be designated as the airport's primary runway. This alternative was eliminated from further consideration.

Standard RSA

The RSA standard for Runway 04-22 is based upon the airport reference code (ARC) for VNC. The ARC is a coding system used to relate airport design criteria to the operational and physical characteristics of aircraft anticipated to operate at an airport. Dimensional criteria is based upon an aircraft's approach category, represented by a letter A-E corresponding to an aircraft's approach speed and airplane design group, represented by a Roman numeral I-VI corresponding to aircraft wingspan in feet. The critical aircraft currently designated on the VNC ALP for Runway 04-22 is Approach Category C, Design Group II.

Presently the Runway 4 end RSA is 400 feet by 400 feet and is considered nonstandard for C-II design standards. All types of aircraft use Runway 4-22 and it is considered the airport's preferred runway for noise abatement purposes. Meeting C-II standards will require at a minimum, a 400 feet wide by 1,000 feet long area beyond the Runway 4 end.

Several land constraints do exist that would be impacted to achieve a standard RSA. They are the VGA driving range, entrance road, several parking spaces, cart path and probable impacts to wetlands located along Harbor Drive. In addition, there are mangroves located along Harbor Drive that would be impacted and extensive permitting required. Mitigation costs associated with mangrove impacts can range from $150,000 to $200,000 per acre. Further investigations would need to be accomplished to determine the extent of impact, cost and environmental agency coordination.

Although a standard RSA would provide 5,000 feet for takeoffs in both directions the 526 foot displacement on Runway 22 required for the bridge would limit the landing length available on Runway 22 to 4,474 feet if a standard RSA is in place.

A preliminary order of magnitude cost estimate to provide a standard RSA on the Runway 4 end is $1.323 million. The cost includes an EA if required for impacts to mangroves/wetlands, environmental mitigation, relocating the driving range, cart path, parking and entrance road, as well as fence relocation and replacement.

Due to the VGA constraints and extent of impacts and cost, a standard RSA is not recommended.

Declared Distances

There are instances where standardizing the safety area is impracticable and an alternative to achieving runway safety is determined through the use of declared distances. The FAA revised its standards for runway safety areas and linked its design characteristics with declared distance information in AC 150/5300-13, "Airport Design" on September 26, 2005. Previously, the FAA set forth precise and uniform design characteristics for RSAs, which established identical dimensions beyond both runway ends. Realizing that some airports are unable to adhere and comply with these specifications, the FAA incorporated an alternative clause that asserts runway safety areas may be defined within the confines of the runway structural pavement by using declared distances.

The following definitions are necessary to fully understand the terminology and implications of declared distances.

- Take-off Runway Available (TORA) is defined as the distance to accelerate from brake release to lift off, plus safety factors. It defines the length of runway declared available and suitable to satisfy take-off run minimums.
- Take-off Distance Available (TODA) is the distance to accelerate from brake release past lift off to start the take-off climb, plus safety factors. The TODA consists of the TORA plus the length of any remaining runway or clearway beyond the far end of the TORA available for satisfying take-off distance requirements. In this case there is no designated clearway.
- Accelerated Stop Distance Available (ASDA) is the distance to accelerate from brake release to aircraft take-off decision speed (V1) and then decelerate to a stop, plus safety factors. It defines the runway plus stopway declared available and suitable for satisfying ASDA requirements.
- Landing Distance Available (LDA) is the distance from threshold required to complete approach, touchdown and deceleration to a stop, plus safety factors.

According to FAA AC 150/5300-13, "Airport Design", Appendix 14, the use of declared distances should be limited to airports where existing design or physical constraints make it impracticable to extend the RSA, runway object free area (ROFA) or runway protection zone (RPZ). Declared distances for Runway 4-22 will be investigated and included in the alternatives analysis for Venice as it is land constrained by the golf course, Harbor Drive and Gulf of Mexico to the west and southwest as well as the intracoastal waterway to the northeast.

Based on available data, the Runway 22 end meets the 1,000 x 400 foot requirement with the exception of a fence that is presently located in the NW corner of the limits of the RSA. The fence can easily be relocated outside the RSA. This will be verified by survey during the design of Runway 4-22 which is currently ongoing.

The Runway 4 end can be physically improved to 840 feet x 400 feet if the golf course driving range, entrance road and cart path are relocated. This would be the maximum length that can be achieved on the Runway 4 end due to these constraints as well as clubhouse parking.

A more detailed review of the entrance road indicates that the entrance road shift necessary and subsequent wetland/mangrove environmental impacts may constrain the extent of RSA improvement to a very small portion of the furthest northwest corner of its limits. The small portion of the furthest northwest corner is approximately 56 feet x 59 feet. Relocating the entrance in this area will impact a wetland and mangrove area. It is also known that it is costly and time consuming for environmental clearances and permitting of mangroves.

Relocating the road appears to create a potential visual traffic hazard at Harbor Drive due to the curvature of the road and presence of the mangroves. In addition to the road, the RSA impacts the golf bag drop off driveway loop by approximately 10 feet x 10 feet.

Improving the RSA to 840 feet in length where possible will provide a standard 600 foot approach RSA to Runway 4. However, to achieve a standard 1,000 foot long departure RSA for Runway 22, declared distances must be applied. A 526 foot displacement for approaches to Runway 22 is expected to be incorporated into the future runway improvements due to the height of Circus Bridge when open. Total published length of Runway 4-22 would remain 5,000 feet and the resulting declared distances are shown in **Table 3-20**.

Table 3-20
Runway 4-22 Declared Distances

(in feet)	Runway 4	Runway 22
TORA	5,000	5,000
TODA	5,000	5,000
ASDA	5,000	4,840
LDA	5,000	4,314

Any declared distances less than what has been discussed would not be beneficial to the City's overall objective of providing a secondary runway for noise abatement purposes. It would be possible to add 160 feet to the 22 end and provide a new taxiway configuration to improve the ASDA; however this does not improve LDA and as the secondary runway may not be necessary.

For planning purposes, a preliminary order of magnitude cost estimate to improve the RSA on the Runway 4 end to 840 feet x 400 feet and use declared distances was developed as part of this RSA analysis in February 2011. The initial estimate was $623,000 however more accurate cost figures are being determined as part of the Runway 4-22 design. The preliminary costs include relocating the driving range, cart path, parking and slight modification of the entrance road, as well as fence relocation and replacement. The design process will provide a more accurate cost based on the reconfiguration of the access road and extent of impact to mangroves/wetlands.

Engineered Materials Arresting System (EMAS)

EMAS is a manufactured cellular cement material that is placed at the end of a runway in the form of a bed that predictably and reliably crushes under an aircraft's tires as it travels off the

end of the runway. The resistance provided by the crushed material decelerates the aircraft and brings it to a safe stop within the confines of the overrun area and with minimal damage to the aircraft.

FAA AC 150/5220-22, "Engineered Materials Arresting Systems (EMAS) for Aircraft Overruns", contains standards for the planning, design, and installation of EMAS in RSAs and established national standards for arresting systems for civil aircraft two years later. The AC indicates that in conditions where aircraft are unable to safely use the landing and take-off distances, EMAS provides safety, not as a substitute for the RSA, but as an enhanced aircraft overrun protection on runways.

EMAS was developed in conjunction with the FAA. In the case of an overrun, this system provides controlled deceleration as cellular cement material in block form (typically 4 square feet per block) is crushed by the weight of an aircraft. It is designed to stop an overrun by exerting predictable deceleration forces on its landing gear as the EMAS material crushes. Its design also takes into account minimizing the potential structural damage to aircraft.

An EMAS system is fixed by function. The design should be completed for the larger aircraft exiting the runway at 70 nautical miles per hour (knots) under poor braking (0.25 braking friction coefficient) and no reverse thrust conditions. If selected as the preferred method to improve safety at an airport the actual design of an EMAS bed would be completed by the manufacturer. However, FAA AC 150/5220-22, "Engineered Materials Arresting Systems (EMAS) for Aircraft Overruns" was published in 2005 to provide planning and design guidance for EMAS projects in the early stages of development.

An aircraft arresting system such as EMAS is exempt from the requirements of FAR Part 77, "Objects Affecting Navigable Airspace". When EMAS is the selected option to upgrade an RSA, it is considered to meet the runway safety area requirements.

Order 5200.9 is used in conjunction with Order 5200.8 when comparing and determining the best *financially feasible* alternative for RSA improvements. FAA Order 5200.9 establishes the method to determine the maximum feasible financial expenditure for correcting a nonstandard RSA as well as the estimated cost to provide a RSA with EMAS installed. If an alternative is beyond the calculated threshold amount FAA considers it financially infeasible.

Using FAA Order 5200.9 as shown on the following pages, the maximum feasible expenditure to improve the Runway 4-22 RSA has been calculated to be $9.8 million for a 100-foot wide runway. The calculations used to derive the maximum feasible RSA expenditure for Runway 4-22 are provided on **Table 3-21**.

Table 3-21

Venice Municipal Airport
Runway 04 End RSA (100 foot wide Runway)

Maximum Feasible RSA Expenditure
(according to FAA Order 5200.9)

VNC Runway	Design Aircraft	Max TO Weight*	Estimated EMAS Bed Length (in feet) *	Max Feasible Expenditure ($M)**	Life Cycle Cost****
04-22	C-II Mix	43,100	311.85	**$ 9,817,290**	$ 4,038,978

* For initial planning and evaluation purposes only - reference - AC 150/5220-22A, dated 9/30/05 and EMAS manufacturer estimate
** Order 5200.9, Figure 4. calculation check below as per 5200.9 Appendix A
***Generic estimate only using Order 5200.9 Appendix A - calculations below (does not include site specific conditions)
****Life cycle - as per Order 5200.9 Appendix B - calculations below

Maximum Feasible RSA Expenditure and EMAS Installation (Calculation Check)

Runway 04 End RSA			
Site Prep (does not include site specifics at VNC)	$	840,000.00	(width of runway x (length of entire Emas Bed site)x$14/SF
EMAS Bed Install	$	2,432,430.00	(width of runway x bed length x $78/sf installation)
Total Generic EMAS Installation Cost	$	3,272,430.00	(generic site prep + installaion using 5200.9)
Maximum Feasible Cost to Improve RSA	$	**9,817,290.00**	(total generic cost x factor of 3 as per Order 5200.9)

Life Cycle Calculations

Runway 04 End EMAS Life Cycle ****	
EMAS Installation	$3,272,430.00
EMAS Replacement	*$1,308,972.00*
EMAS Annual Inspection and Maintenance	*$10,291.05*
Life Cycle Cost	**$4,038,977.67**
EMAS Installation	$3,272,430.00
Present Value of EMAS replacement after 10 years	*$665,414.99*
Annual Maintenance and inspection cost for 9 years	*$67,048.58*
Annual Maintenance and inspection cost for 11 through 19 years	*$34,084.10*

(****Follows 5200.9 Appendix B)

In addition to the Advisory Circulars, DY Consultants contacted the manufacturer to ascertain the correct size of the EMAS based upon the mix of aircraft operating at Venice. DY provided Engineered Arresting Systems Corporation (ESCO) with the fleet mix obtained from the City's counting system. ESCO uses an FAA validated computer model to provide the predicted performance of various jet aircraft types. ESCO found the Challenger 600, Gulfstream IV, and the Lear 60 to be the most critical for assessing the EMAS requirements.

An EMAS alternative was developed to provide a longer EMAS bed length and shorter setback requirement. Its characteristics were derived to provide the necessary safety for an aircraft exiting the runway at 70 knots or greater. ESCO calculations in this instance indicate the need for a 311.85 foot long EMAS bed with a 35 foot setback. Cost for this EMAS alternative is estimated to be $5.6 million for a 150 foot wide runway and $4.0 million for a 100 foot width. Costs provided by the manufacturer exclude site preparation, construction management and life cycle costs as calculated using FAA guidelines in FAA Order 5200.9.

In accordance with FAA AC 150/5340-1, "Standards for Airport Markings", the EMAS would be marked by yellow chevrons as an area unusable for landing, take-off and taxiing.

Per FAA AC 150/5320-5, "Airport Drainage", the EMAS system must be designed to withstand jet blast, and to prevent water from accumulating on the surface of the EMAS bed, the runway or the runway safety area. The EMAS design must also consider ice accumulation and/or snow removal limitations/requirements.

The RSA grade and construction will need to meet FAA RSA standards from the runway threshold to the end of the EMAS. This means that a full standard RSA width must be constructed to the end of the EMAS. The EMAS will need to be installed on a graded, crowned and paved (shoulder strength) safety area. Typically paved areas are about 15 feet wider on each side of the bed and from the runway end to just beyond the back edge.

The EMAS system is intended to safely decelerate overrunning aircraft. It is considered an option when a full standard RSA or declared distances are impractical to implement. The comparatively high cost of the installation of such a system as well as long-term maintenance requirements renders little support for use of this alternative on the airport's secondary runway.

In addition, it was determined during the alternatives evaluation process that it is practicable to provide other solutions.

In compliance with FAA Order 5200.9, the order of magnitude costs for the alternatives assessed are presented in **Table 3-22.**

Table 3-22 - RSA Alternatives Summary and Magnitude of Cost Estimates

Criteria Evaluated to Date	Golf Course Modifications (RSA Only)	RSA	Declared Distances on Runway 22	Preliminary Order of Magnitude Cost
Existing Conditions	none	Nonstandard on 4 end - request mods	Yes – Future LDA on 22 will be further reduced due to displacement from bridge to 4,034' ASDA – will be 4,500'	$0
Standard RSA	Relocate driving range, cart path, significant portion of VGA entrance road, parking facilities and impacts to wetland area near Harbor Drive – extensive permitting required.	Standard	Yes – due to bridge LDA will be 4,474'.	$1.32m
Declared Distances	Relocate driving range, cart path and slight mod to VGA entrance road. Possible impact to nw corner due to road realignment and impact to wetlands/mangroves.	Extend Runway 4 end RSA to 400' x 840' and apply declared distances. Relocate fence located in the ne corner of 22 end RSA limit.	YES LDA – 4,314' ASDA – 4,840'	$623k
EMAS	Relocate driving range, cart path and slight mod to VGA entrance road	EMAS on 4 end	NO 5,000' for takeoffs both directions LDA 22 – 4,474' due to displaced threshold for bridge	$10.34m

Note: Costs do not include rehabilitation of Runway 4-22, ROFA improvements or Taxiway E improvements

PREFERRED RUNWAY 4 RSA ALTERNATIVE
Improve RSA and Use Declared Distances

Runway 4-22 is the City's preferred noise abatement runway and all pilots are requested to use it when wind and weather conditions permit. Due to its existing condition it is not being used to its greatest potential. Once rehabilitated it is expected that it could be used to a much greater extent if as much utility as possible can be maintained for this secondary runway at the airport.

Based upon available data, the Runway 22 end meets the 1,000 x 400 foot requirement with the exception of a fence that is presently located in the NW corner of the limits of the RSA. The fence can easily be relocated outside the RSA. This will be verified by survey during the design of Runway 4-22 which is currently on-going.

The Runway 4 end can be improved to 840 feet x 400 feet if the golf course driving range, entrance road and cart path are relocated "where possible". This would be the maximum length that can be achieved on the Runway 4 end due to these constraints as well as clubhouse parking.

A more detailed review of the entrance road recently completed as part of the design process indicates that the road modification necessary and subsequent wetland/mangrove environmental impacts may constrain the extent of RSA improvement to a very small portion of the furthest northwest corner of its limits. The small portion of the furthest northwest corner is approximately 56 feet x 59 feet. Relocating the entrance in this area will impact a wetland and mangrove area. It is also known that it is costly and time consuming for environmental clearances and permitting of mangroves.

Relocating the road appears to create a potential visual traffic hazard at Harbor Drive due to the curvature of the road and presence of the mangroves. In addition to the road, the RSA impacts the golf bag drop off driveway loop by approximately 10 feet x 10 feet. Bringing the fence into the 10 foot by 10 foot area will avoid having to relocate the bag drop off driveway loop.

Improving the RSA to 840 feet in length where possible will provide a standard 600 foot approach RSA to Runway 4. However, to achieve a standard 1,000 foot long departure RSA for Runway 22, declared distances must be applied. A 526 foot displacement for approaches to Runway 22 is expected to be incorporated into the future runway improvements due to the height of Circus Bridge when open. Total published length of Runway 4-22 would remain 5,000 feet and the resulting declared distances are shown in **Table 3-23**.

Table 3-23
Runway 4-22 Declared Distances

(in feet)	Runway 4	Runway 22
TORA	5,000	5,000
TODA	5,000	5,000
ASDA	5,000	4,840
LDA	5,000	4,314

Any declared distances less than what has been discussed would not be beneficial to the City's overall objective of providing a secondary runway for noise abatement purposes. It would be possible to add 160 feet to the 22 end and provide a new taxiway configuration to improve the ASDA; however this does not improve LDA and as the secondary runway may not be necessary.

For planning purposes, a preliminary order of magnitude cost estimate to improve the RSA on the Runway 4 end to 840 feet x 400 feet and use declared distances was developed as part of this RSA analysis in February 2011. The initial estimate was $623,000 however more accurate cost figures are being determined as part of the Runway 4-22 design process. The preliminary costs include relocating the driving range, cart path, parking and slight modification of the entrance road, as well as fence relocation and replacement. The design process will provide a more accurate cost based on the reconfiguration of the access road and extent of impact to mangroves/wetlands.

RSA grade requirements (AC 150/5300-13) state that the maximum negative grade within the first 200 feet is 3 percent and 5 percent for the remaining 800 feet. Therefore, when applying these numbers, the difference in elevation between the end of the runway and the end of the RSA can be 46 feet. The Runway 4 threshold elevation is 12.30 feet above mean sea level (AMSL). Therefore meeting the grade requirements will not be difficult or expensive since little or no fill will need to be brought in.

Runway 4-22 will meet the RSA standards by relocating the golf course driving range, cart path and slight modification to the entrance road as well as properly grading 840 feet out from the existing Runway 4 pavement end and applying declared distances as previously described.

It is recommended that the RSA determination for Runway 4 be the following:

> "The existing RSA does not meet standards but it is practicable to improve the RSA so that it will meet current standards by lengthening it to 840 feet where possible and applying declared distances."

As depicted in **Figure 3-17** it is also recommended that FAA consider the NW corner of the RSA be kept inside the VGA entrance road to avoid relocating the road and subsequent impacts to wetlands/mangroves and possible line-of-sight issues with Harbor Drive. This will need to be addressed and determined during the Runway 4-22 design process.

In addition to the RSA, the fence presently located within the ROFA will be relocated to be in compliance with the modifications to standards (MOS) approved by the FAA on April 26, 2011 and presented on the 2011 Proposed ALP. The City is presently reviewing various concepts to relocate golf course Hole 19, the driving range, and cart path as part of the Runway 4-22 design process. Preliminary order of magnitude costs to include ROFA improvements developed as part of this RSA analysis in February 2011 are provided in **Table 3-24**. More detailed cost estimates will be obtained during the Runway 5-23 design process.

OPTION 3

SOURCE: AMERICAN INFRASTRUCTURE DEVELOPMENT, INC. MAY 2011

VENICE MUNICIPAL AIRPORT
CITY OF VENICE, FLORIDA

GOLF COURSE ACCESS ROAD

DRAWN:	CHKD:	DATE:	PROJECT NO.
RRC	LJM	07-29-2011	401.00

DY CONSULTANTS
PLANNERS & ENGINEERS
OFFICES IN NEW YORK AND FLORIDA

FIGURE NO.
3-17

C:\Documents and Settings\Renee\Desktop\Venice\ALP SET FINAL SUBMITTAL JUNE 28 2011\FIGURES\ Figure 3-17 Golf Course.dwg Jul 28, 2011 - 3:45pm Renee

Table 3-24 - RSA and ROFA Summary and Magnitude of Cost Estimates

Criteria Evaluated to Date	Golf Course Modifications (RSA Only)	RSA	Declared Distances on Runway 22	ROFA Improvements	Preliminary Order of Magnitude Cost
Existing Conditions	none	Nonstandard on 4 end - request mods	Yes – future LDA on 22 will be further reduced due to displacement from bridge to 4,034' ASDA – will be 4,500'	none	$0
Standard RSA	Relocate driving range, cart path, significant portion of VGA entrance road, parking facilities and impacts to wetland area near Harbor Drive	Standard	Yes – Due to bridge – LDA will be 4,474'.	Relocate tee on hole 19, Relocate fence	$1.4m
Declared Distances	Relocate driving range, cart path and slight mod to VGA entrance road. Possible impact to nw corner due to road realignment and impact to wetlands/mangroves.	Extend Runway 4 end RSA to 400' x 840' and apply declared distances. Relocate Fence in ne corner of 22 end RSA limit.	YES LDA – 4,314' ASDA – 4,840'	Relocate tee on hole 19, relocate fence	$683k
EMAS	Relocate driving range, cart path and slight mod to VGA entrance road	EMAS on 4 end	NO 5,000' for takeoffs both directions LDA 22 – 4,474' due to displaced threshold for bridge	Relocate tee on hole 19, relocate fence,	$10.41m

Note: Costs do not include rehabilitation of Runway 4-22, or Taxiway E improvements

Runway 13-31 RSA

The City of Venice conducted a pavement rehabilitation of the entire length of Runway 13-31 under an Airport Improvement Program Grant for federal fiscal year 2006. As part of the grant agreement, the City was required to improve the Runway 13-31 RSA to meet C-II standards. The City is currently in the process of completing that obligation on the Runway 31 end by relocating a fence outside the ROFA. The property fence is located in the very northwest corner of the RSA and FAA has considered it improved to the extent practicable. The following **Table 3-25** inventories existing runway safety area (RSA) applicable standards, and future RSA improvements for Runway 13-3.

Table 3-25
Venice Municipal Airport Runway 13-31 RSA

Runway Data	Existing Conditions	Applicable Standards	Future RSA Improvements
ARC	C-II		Not Applicable
Approach Vis	1 SM		Not Applicable
Runway Length	5,000		Same
Runway Width	150	100	Same
Dspld Thr RWY 13	0		Not Applicable
Dspld Thr RWY 31	0		Not Applicable
RSA Beyond RWY 13	1,000’	1,000’	Fence in NW corner Meets Standards to the extent practicable.
RSA Beyond RWY31	1,000’	1,000’	Meets Standards
RSA Width	400’	400’	Meets Standards
RSA Obstructions	None	N/A	Fence in NW corner beyond Runway 13 end. No Relocation or Removal Required.
Estimated Costs to Remedy			No future RSA Costs to improve present condition.

4.0 Preferred Plan – Airport Layout Plan (ALP)

4.1 Introduction and Background

The City of Venice conducted a total of nine public meetings during this study to afford the community the opportunity to understand the airport options that were being brought forth by the consultant team and the community. Every effort was made to address the concerns of the City Council, airport tenants, pilots and the community at large. All meetings were voice recorded by the City and therefore each meeting was fully documented by DY in Meeting Summary Reports provided to the City for their records and are contained in **Volume III Public Consensus Process**.

The Preferred Plan for Venice evolved from the community's desire to resolve two main issues:

- Remove the Runway 13 runway protection zone (RPZ) limits from the Gulf Shores residential neighborhood directly northwest of the airport.
- To the greatest extent possible prevent runway safety area (RSA) and runway object free area (ROFA) impacts to the Lake Venice Golf Course and lease.

Several alternatives were evaluated and fully discussed with the City and the community at large and the implications that went along with each. The alternatives ranged from keeping the airport reference code (ARC) a "C" under various scenarios to reducing the ARC to a "B" airport.

A Special Airport Meeting was held in November 24, 2009 to discuss which of the alternatives to bring forward to the Federal Aviation Administration (FAA) for their review and comment. The City asked DY to continue and move forward with preparing the forecast data and information as well as the "B" ARC alternative. DY would then return to present the forecast findings and further implications of the "B" alternative on December 10th. In addition, the City requested that a meeting be set up with the FAA in December to discuss the Preferred Plan which would be agreed upon at the next scheduled meeting.

On December 10, 2009 DY presented the forecasts of demand which were based upon the existing data gathered as a result of the aircraft counting system over an eight month period as well as other data and use of FAA accepted methodologies. DY also reviewed again the "C" alternatives that could possibly resolve the concerns of the community and the "B" alternative. At the conclusion of the meeting, DY and the City Manager were directed to present the "B" option as the City's Preferred Alternative for the Airport Layout Plan.

City representatives and DY Consultants met with the FAA in Orlando on December 11, 2009 to present the results of the study process to date and to request feedback on the City's Preferred "B-II" Plan. FAA provided technical feedback and indicated that they would review the materials provided and respond in writing to the City with their comments.

FAA responded on January 8, 2010 in writing to the City's request for concurrence to reduce the ARC from a C-II to B-II. The FAA indicated that the request would be denied for several reasons including:

- It is not appropriate to downgrade an airport from a C to a B based upon the "500 annual operations" criteria. This application is used for planning purposes for future development when facilities are necessary for larger aircraft.
- When reducing the ARC, a sponsor must consider all airport users and tenants. Since there are and have been existing C-II based aircraft as well as itinerant users it is not acceptable to downgrade the airport and cause potential impacts to users and tenants.
- The forecasts indicate that VNC may exceed the 500 annual C operations within the 20 year planning period of the Master Plan/ALP. Therefore the ALP should make plans to accommodate the C-II aircraft.
- The City accepted federal funds in 2006 to rehabilitate Runway 13-31 to C-II standards. Therefore the City is obligated to maintain the utility of the airport to C-II standards.
- It is not appropriate to downgrade the airport on an official record for the airport such as the ALP even though the City proposes to maintain the majority of the airfield standards that exist today.
- The FAA is not mandating the City to acquire the homes located within the Runway 13 RPZ. The RPZ and its predecessor the Clear Zone have existed on record (1969 ALP) as extending into the neighborhood. FAA acknowledges that the RPZ was depicted incorrectly on the 2000 ALP, however the ALP and Master Plan indicate that the airport is a C-II facility.
- FAA will not consider any modifications to RSA but will consider other standards such as the ROFA and taxiway separation standards where it is not practicable to meet the standard.
- FAA is open to considering other alternatives the City may have.

DY met with the City at an open public meeting on January 28, 2010 to discuss the Preferred Plan and receive direction from Council on how to proceed with the Airport Layout Plan given the FAA's response to the proposal. At the meeting DY reviewed the "C-II" alternative which used displaced thresholds on Runway 13-31 along with an extension to the 31 end as a means to relocate the Runway 13 end RPZ onto airport property.

There was a great deal of discussion amongst the Council, citizens and DY. The concept evaluation approach which was completed during the process sought to reach the best combination of meeting FAA design standards to the greatest extent possible while considering community impact and a desire to minimize impact to the built environment.

At the close of the meeting a vote was taken to continue to move forward with the "B-II" Airport Layout Plan and submit it as a full document to the FAA once again for their consideration.

In the interim and while DY was preparing the B-II ALP and report, the City met with FAA representatives in Washington D.C. to discuss the City's preferred plan. The FAA provided feedback indicating that they would not support a B-II plan, but would work with the City to try and resolve the Runway 13 RPZ and Runway 4-22 RSA issues to the greatest extent possible.

DY completed the B-II Airport Layout Plan and Draft Report March 31, 2010 and presented the information to the City Council and Public on April 13, 2010. Comments from the public and discussion among the Council members centered on whether to send the B-II ALP and documentation to the FAA or take the FAA's offer to work with them to identify additional alternatives to resolve the issues as a C airport. Council voted to continue to work with the FAA to resolve the issues.

Following the April 13th workshop, DY, the City and FAA representatives from Washington D.C. and the Orlando ADO met on three occasions. These hands-on working sessions were held on May 6th, June 9th, and June 30th 2010. Each working session was a productive assessment of various alternatives that could possible resolve the RPZ and RSA issues. DY Consultants provided documentation, graphical representations and additional data requested to assist in the overall evaluation of the alternatives. At the June 30th meeting it was determined that a viable alternative did exist that could be brought forth to the City Council and public with the understanding that further modifications could be required once the formal FAA ALP review process was undertaken.

The City met with the FAA in September 2010 to review the proposed alternative and drawings one last time prior to submitting the entire ALP set for a full review and comment by a number of FAA divisions including the airspace group.

The Draft ALP was formally submitted to the FAA and FDOT for a full review in October 2010. Comments were received in May 2011 and the FAA provided their conditional approval on July 11, 201.

The resulting future plan for Venice Municipal Airport is presented on the ALP and associated sheets with all FAA comments incorporated.

4.2 Description of the Airport Layout Plan (ALP)

The aviation industry is characterized by change and therefore, one of the keys to a successful airport plan is the ability to accommodate the projected facility needs in a flexible manner. The plan for VNC does lay the foundation for the next 20 years predicated upon the future aviation demand while at the same time allowing the City the flexibility to alter the development strategy should a change in demand occur.

The ALP is one in a series of drawings that comprise the Airport Layout Plan set depicted on the following pages and represents the 20 year plan for the City as required by the Federal Aviation Administration. Any future development for which the City of Venice wishes to undertake must be shown on an approved ALP.

FAA approval of the Proposed ALP is not approval of any one particular project, but of the overall development concept and is always subject to conditions including study environmental of certain projects.

The Proposed ALP for Venice Municipal Airport depicts a C-II airport plan. It meets most C-II airfield design standards with the exception of nine Modifications to Standards (MOS) approved April 26, 2011 by the FAA. The MOS are presented in Table 4-1 and are depicted on the ALP.

Those aircraft that currently use the airport will be able to continue to operate as they do today. As such jets operating today to and from Venice will continue to operate with weight restrictions if they require more runway than is available. The airport is presently landlocked with little opportunity for any increase in runway length in the future.

The plan includes shifting Runway 13-31 to the south, adding an EMAS bed to the Runway 31 end, use of declared distances on each runway, future parallel taxiways, and reserves specific land areas for future aeronautical development such as apron and hangars. In addition, land on the east side of a future aeronautical land use area has been reserved for the City's future commerce business park development. A conceptual access road has been depicted to provide a main entry to both areas.

Table 4-1 - Approved Modification to Standards

No.	Description	FAA standards	Existing Condition	Proposed Action	Date Approved	Conditions
MOS-1	Runway 13 ROFA west 1of the runway centerline	ROFA - 400'	290'	Relocate existing fence 50' and adjust golf course hole #21 to achieve 340 feet west of Runway 13 centerline	4/26/11 ASN 2011-ASO-102-NRA	Remaining fenceline located 290' directly perpendicular to the centerline of Runway13 penetrates the transitional surface by ~ 1'. Sponsor will install obstruction lighting once verified by survey.
MOS-2	Runway 5 ROFA northwest of the runway centerline	ROFA - 400'	320'	Relocate existing fence 50' to 60' and adjust golf course holes 19 and 20 to achieve 385.5' on either side of the extended Runway 5 RSA area that tapers in to meet and follow the RSA.	4/26/11 ASN 2011-ASO-103-NRA	Where the portion of fence tapers in to meet the RSA, the fence must remain below the transitional surface and still meet GA security requirements. If there are any penetrations where the fence cannot be lowered, obstruction lighting in accordance with AC 70/7460-1 is required.
MOS-3	Runway 5 ROFA southwest of the runway centerline	ROFA - 800' x 1,000	500' x 400'	Relocate existing fence 50' to 60' in area southwest of Runway 5 and adjust golf course holes 19 and 20 to achieving an 385.5' ROFA that tapers to 210.8' and ends840' from the Runway 5 threshold..	4/26/11 ASN 2011-ASO-104-NRA	Fence relocation and golf course modifications may not create a permanent IFR effect or Part 77 penetration. Fence height should be at or below 20' AMSL where the perpendicular distance from centerline is more than 280'. Where less than 280' fence should be lwoered or obstruction lighted in accordance with AC 70/7460-1.
MOS-4	Runway 5 ROFA southeast of centerline from the interesection with Runway 13-31 to the end of Runway 5 pavement.	ROFA - 400'	279'	Leave fence in place.	4/26/11 ASN 2011-ASO-105-NRA	Fence will not create a permanent IFR effect or any permanent Part 77 penetration. Fence should be at or below 20' AMSL where the perpendicular distance from the Runway 5 centerline is 279'.Where distance is less than 279' fence should be lowered to precent penetration to transitional surface. If it cannot be lowered due to GA security fencing requirements it should be lighted as per AC 70/7460-1
MOS-5	of centerline from the intersection of Runway 5-23 to the end of Runway 31 pavement.	ROFA - 400'	284'	Leave fence in place.	4/26/11 ASN 2011-ASO-106-NRA	Fence penetrates transitional surface by ~ 2'. Mitigate by installing obstruction lighting on fence in accordance with AC 7460-1 where penetrations occur. Or lower fence and still meet GA security requirements.
MOS-6	ODAL spacing	300'	232'	Maintain existing spacing.	APPROVED 4/26/11 ASN 2011-ASO-107-NRA	NOT APPROVED. Remove ODALS, there is no benefit to visibility minimums. Recommend installation of unidirectional REILs for runway indentification especially at night.
MOS-7	ROFA - northeast corner of Runway 31 needs 133.5' modification due to walkway	400'	266.5	Leave fence in place at this location.	4/26/11 ASN 2011-ASO-108-NRA	Fence will not create a permanent IFR effect or any permanent Part 77 penetration.
MOS-8	ROFA Runway 23 - northeast side of extended centerline.	400'	access road,fence and non-airport	Taper from 400' to 200' to accommodate small portion of access road.	4/26/11 ASN 2011-ASO-118-NRA	Fence will not create a permanent IFR effect or any permanent Part 77 penetration. Where the fence tapers in, it must remain below the transitional surface.
MOS-9	ROFA Runway 23 - northwest side of extended centerline.	400'	fence are located within these limits	Taper from 400' to 200' to accommodate small portion of access road.	4/26/11 ASN 2011-ASO-119-NRA	Fence will not create a permanent IFR effect or any permanent Part 77 penetration. Where the fence tapers in, it must remain below the transitional surface.

July 29, 2011
FINAL REPORT

4.3 Airport Layout Plan Set

The ALP set for Venice Municipal Airport contains 15 drawings that graphically depict the airport and it various key elements that are considered essential for the FAA review process. In addition to the title sheet, the complete set of drawings consists of the following:

- Title Sheet
- Existing Facilities
- Data Sheet
- Airport Layout Plan
- Terminal Area Plan
- Approach Profiles
- Runway 5 End – Inner Portion of the Approach and Departure Surfaces
- Runway 23 – Inner Portion of the Approach and Departure Surfaces
- Runway 13 – Inner Portion of the Approach and Departure Surfaces
- Runway 31 – Inner Portion of the Approach and Departure Surfaces
- Airspace Plan (FAR Part 77 Surfaces)
- Existing Land Use Plan
- Future Land Use Plan
- Property Map
- Flood Zones

Terminal Area Plan

The Terminal Area Plan provides a depiction of the airport areas that are slated for future aeronautical development. It is presented at a larger scale than the ALP so that greater detail of the terminal area can be discerned. It is the intent of the City to eventually begin to relocate the existing Terminal Area to the midfield area of the airport and then across to the east side in the long-term.

FAR Part 77 Approach and Inner Surfaces

The FAR Part 77 Approach Surfaces graphically depict physical objects that exist in the navigable airspace surrounding the Airport. The criteria used to define objects that constitute obstructions to the safety of approaching and departing aircraft are contained in FAR Part 77, Objects Affecting Navigable Airspace. To help plan for potential future airport development, ultimate design levels were utilized during the airspace analysis. The specific imaginary surfaces, which should be protected from obstructions, include:

Primary Surface – is a rectangular area symmetrically located about each runway centerline and extending a distance of 200 feet beyond each runway threshold. Width of the Primary Surface is based on the type of approach a particular runway has, while the elevation is the same as that of the runway centerline at all points. The primary surface width for the existing and proposed runways is 500 feet, however 1,000 feet has been reserved on the ALP for future planning.

Approach Surface - This surface begins at each end of the Primary Surface (200 feet beyond the runway threshold) and slope upward at a ratio determined by the runway category and type of approach available to the runway. The width and elevation of the inner end conforms to that of the Primary Surface while approach surface length and width of the outer end are governed by the runway category and approach procedure available. The approach to Runway 31 is greater than ¾ mile minima. Therefore the approach surface length is 10,000 feet with a width at the outer end of 3,500 feet and an inner width of 500 feet. Visual runway approach surfaces are 5,000 feet in length, outer width 1,500 feet and inner width 500 feet.

Transitional Surface - A sloping area beginning at the sides of the Primary and Approach Surfaces and sloping upward and outward at a ratio of 7:1 until it intersects the Horizontal Surface.

Horizontal Surface - A level oval-shaped area situated 150 feet above the airport elevation, extending 5,000 feet for visual runways or 10,000 feet outward for all other runway approach procedures available. The horizontal surface elevation at Venice is 168 feet because the elevation at the airport is 18 feet above mean sea level.

Conical Surface - Extends outward for a distance of 4,000 feet beginning at the outer edge of the Horizontal Surface, and sloping upward at a ratio of 20:1. The top of the conical surface is 386 feet above the airport elevation.

Runway Protection Zone and Approach Zone Profiles

RPZ's for the existing runways are provided in four separate sheets. Each runway end approach is depicted and identified. Obstructions are shown in a profile view.

Existing and Proposed Land Use Plans

The land use plans have been included to illustrate the City of Venice land uses in close proximity to the airport as well as the noise contours developed for the planning period. The contours do not extend off airport property at this time. Several studies prior to this one did show the contours extending into a residential area to the northwest of the airport. However, the operations measured during this past year by the Vector aircraft counting system provided a very accurate number and type of aircraft for use in the modeling effort. In addition, the yearly activity used in prior studies was more than twice the number of operations.

The shifting of Runway 13-31 and implementation of EMAS on the Runway 31 end allows residential areas that currently exist within the Runway 13 RPZ to be removed from that airport planning design guideline. There are 26 homes presently located within the Runway 13 end Runway Protection Zone. Shifting the RPZ toward the airport to the furthest extent possible removes all but two homes from the RPZ.

The City of Venice Comprehensive Plan adopted on June 8, 2010 includes a requirement to amend the Future Land Use Element by June 30, 2012 to include criteria which addresses

compatible land use planning of lands adjacent, or in close proximity, to the airport. As part of that effort airport management and the City will review the FDOT's Airport Compatible Land Use Guidebook and determine how to incorporate these best practices and guidelines for Venice Municipal Airport.

Property Map

The Property Map is intended to accurately show the airport property line and all current lease boundaries. The property map is intended to provide details concerning the way various parcels were acquired. The City has completed a comprehensive boundary survey and leasehold document and is working with the city attorney on the next steps. Once the survey is accepted by the City, the information will be submitted to the FAA for their further review and consideration as part of a condition of their July 11, 2011 approval of the ALP.

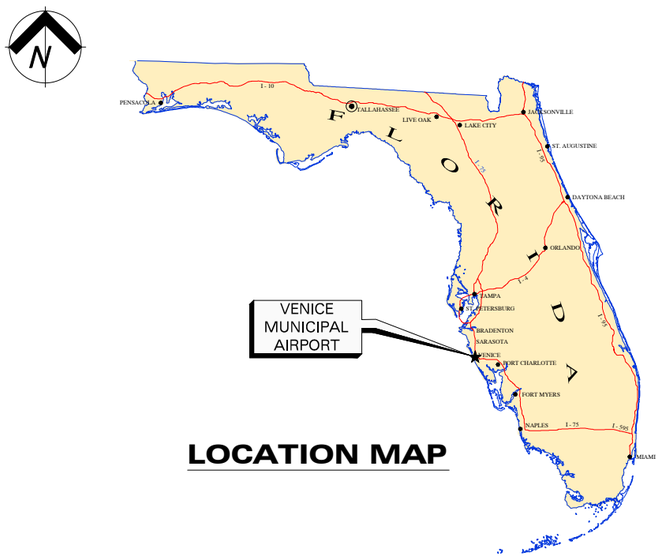
VENICE MUNICIPAL AIRPORT

CITY OF VENICE, FLORIDA

AIRPORT LAYOUT PLANS

JUNE 28, 2011

FINAL



LOCATION MAP

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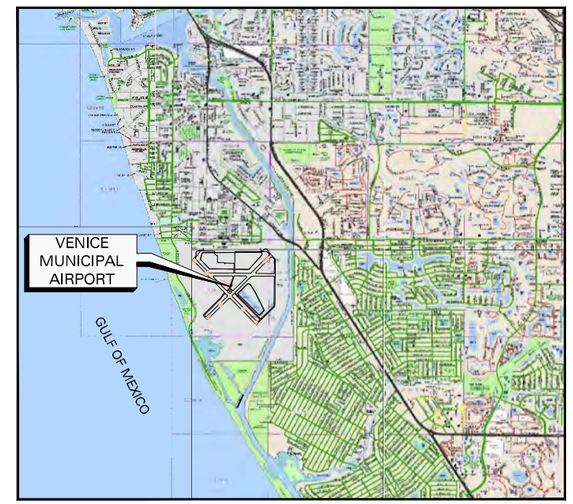


VICINITY MAP

Prepared for

"City on the Gulf"

CITY OF VENICE

by

DY Consultants

DY CONSULTANTS
PLANNERS & ENGINEERS
NEW YORK — FLORIDA

MAYOR & CITY COUNCIL

JOHN HOLIC	MAYOR
KIT McKEON	VICE MAYOR
BOB DANIELS	COUNCIL MEMBER
JIM BENNETT	COUNCIL MEMBER
EMILIO CARLESIMO	COUNCIL MEMBER
JEANETTE GATES	COUNCIL MEMBER
JOHN K. MOORE	COUNCIL MEMBER

CHARTER OFFICERS

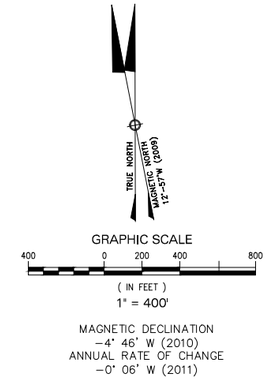
NANCY K. WOODLEY Ph.D, P.E.	ACTING CITY MANAGER
ROBERT ANDERSON	CITY ATTORNEY
LORI STELZER	CITY CLERK

AIRPORT

CHRISTOPHER ROZANSKY, C.M.	ADMINISTRATOR

LEGEND

EXISTING	DESCRIPTION
	AIRPORT REFERENCE POINT (ARP)
	PROPERTY LINE
	VGA GOLF COURSE
23	GOLF COURSE HOLE
	EXISTING RUNWAY MARKING



MAGNETIC DECLINATION
−4° 46' W (2010)
ANNUAL RATE OF CHANGE
−0° 06' W (2011)

AIRPORT DATA

ITEM	EXISTING
AIRPORT ELEVATION (MSL) (NGVD 88)	18'
AIRPORT REFERENCE POINT (ARP) (NAD 83/99):	
LATITUDE	27°04'17.83" N.
LONGITUDE	82°26'25.14" W.
AIRPORT AND TERMINAL NAVAIDS	NDB
LATITUDE	27°04'35.54" N.
LONGITUDE	82°26'21.96" W.
MEAN MAXIMUM TEMPERATURE	91.0° F
AIRPORT REFERENCE CODE (ARC):	
RUNWAY 13–31	C–II
RUNWAY 4–22	C–II
DESIGN AIRCRAFT CATEGORY:	
RUNWAY 13–31	C–II
RUNWAY 4–22	C–II
AIRPORT GPS	RW 31 & 13
AIRPORT ACREAGE:	
FEE SIMPLE	835± AC.
EASEMENTS	

RUNWAY DATA

ITEM	RUNWAY 13-31		RUNWAY 4-22	
	EXISTING		EXISTING	
PERCENT EFFECTIVE GRADIENT	0.034%		0.140%	
% WIND COVERAGE (10.5 KT.=12 MPH)	85.13		82.60	
% WIND COVERAGE (13 KT.=15 MPH)	92.61		89.84	
% WIND COVERAGE (16 KT.=18.4 MPH)	97.47		95.19	
% WIND COVERAGE (20 KT.=23 MPH)	99.35		98.50	
MAXIMUM ELEVATION ABOVE MSL	16.31'		17.62'	
RUNWAY LENGTH AND WIDTH	5,000' X 150'		5,000' X 150'	
RUNWAY SURFACE TYPE	ASPHALT		ASPHALT	
RUNWAY STRENGTH	SWG–45, DWG–80, DTWG–140		SWG–17, DWG–30, DTWG–NOT ALLOWED(NA)	
	RW 13	RW 31	RW 4	RW 22
FAR PART 77 APPROACH CATEGORY	NPI	NPI	VISUAL	VISUAL
TYPE INSTRUMENT APPROACH	GPS	GPS	NONE	NONE
APPROACH SLOPE	34:1	34:1	20:1	20:1
RUNWAY LIGHTING	MIRL	MIRL	MIRL	MIRL
RUNWAY MARKING	NPI	NPI	BCS	BCS
NAVIGATIONAL & VISUAL AIDS	PAPI, REIL, ODAL MINIMA > 1 MI.	PAPI, REIL, ODAL MINIMA > 1 MI.	PAPI, REIL	PAPI, REIL
RUNWAY SAFETY AREA DIMENSIONS	400' X 1000'	400' X 1000'	400' X 398'	400'x600' APP.
				400'x1000' DEP.
RUNWAY END COORDINATES (NAD 1983)	LAT 27°04'34.18"N	LAT 27°03'59.03"N	LAT 27°04'01.62"N	LAT 27°04'36.50"N
	LON 82°26'48.82"W	LON 82°26'09.85"W	LON 82°26'40.70"W	LON 82°26'01.44"W
DISPLACED THRESHOLD COORDINATES (NAD 88/99)	NONE	NONE	NONE	294'
				LAT 27°04'34.45"N
				LON 82°26'03.77"W
DECLARED DISTANCE:				
TORA	NONE	NONE	NONE	NONE
TODA	NONE	NONE	NONE	NONE
ASDA	NONE	NONE	NONE	NONE
LDA	NONE	NONE	NONE	NONE

BUILDING DATA TABLE

EXISTING	FUTURE	BUILDINGS	ELEVATION
1		CITY OF VENICE AIRCRAFT STORAGE	33.70
2		CITY OF VENICE AIRCRAFT STORAGE	32.00
3		CITY OF VENICE AIRCRAFT STORAGE	34.80
4		CITY OF VENICE AIRCRAFT STORAGE	34.30
5		CITY OF VENICE AIRCRAFT STORAGE	34.30
6		CITY OF VENICE AIRCRAFT STORAGE	35.30
7		CITY OF VENICE AIRCRAFT STORAGE	34.50
8		SWIFT GROUP, INC.	34.80
9		CITY OF VENICE AIRCRAFT STORAGE	34.20
10		CITY OF VENICE AIRCRAFT STORAGE	34.20
11–13		CITY OF VENICE AIRCRAFT STORAGE	34.20
14		AIRPORT MAINTENANCE	34.20
15		MARTIN H. ZACHRICH	40.00
16a		SUNCOAST BUILDING	36.00
16b		SUNCOAST AIR CENTER HANGARS	34.00
16c		SUNCOAST FBO BUILDING	43.00
17		VENICE AVIATION SERVICES, INC.	55.50
18		PURDY, INC LEASE	40.00
		(HONOLUANA ISLAND GRILL & TIKI BAR)	
19		FLORIDA FLIGHT MAINTENANCE	43.70
20		AIRPORT ADMINISTRATION BUILDING	37.00
21		FAITH LIFE CURCH, INC.	42.40
22		AGAPE FLIGHTS INC.	39.60
23		BVK, INC.	39.30
24		BVK, INC.	37.80
25		SHERIFF'S DEPARTMENT HANGAR	38.45
26		ROTATING BEACON	N/A
27		ELECTRICAL VAULT	N/A
28		FAA RCGS	N/A

AERIAL PHOTOGRAMMETRY WAS CONDUCTED BY AERIAL CARTOGRAPHICS OF AMERICA, 10/05/05 GROUND CONTROL SURVEY WAS CONDUCTED BY MEA GROUP, INC. 10/05/05

FINAL

NO.	REVISION	BY	APP.	DATE

VENICE MUNICIPAL AIRPORT

CITY OF VENICE, FLORIDA

EXISTING FACILITIES

DRAWN:	CHKD:	DATE:	PROJECT NO.
WA/KA	LM/MG	06/28/2011	DY401.00

DY Consultants
DY CONSULTANTS
PLANNERS & ENGINEERS
401 FRANKLIN AVENUE, SUITE 318, GARDEN CITY, NY 11530
Tel No. (516) 625-9800 Fax No. (516)625-9816

RUNWAY DATA

ITEM	RUNWAY 13-31				RUNWAY 4-22 (ULTIMATE 5-23)			
	EXISTING		ULTIMATE		EXISTING		ULTIMATE	
PERCENT EFFECTIVE GRADIENT	0.034%		SAME		0.140%		SAME	
% WIND COVERAGE (10.5 KT.=12 MPH)	89.25		SAME		84.98		SAME	
% WIND COVERAGE (13 KT.=15 MPH)	94.12		SAME		90.09		SAME	
% WIND COVERAGE (16 KT.=18.4 MPH)	98.20		SAME		94.99		SAME	
% WIND COVERAGE (20 KT.=23 MPH)	99.39		SAME		97.70		SAME	
MAXIMUM ELEVATION ABOVE MSL	16.31'		SAME		17.62'		SAME	
RUNWAY LENGTH AND WIDTH	5,000' X 150'		5,727' X 150'		5,000' X 150'		SAME	
RUNWAY SURFACE TYPE	ASPHALT		SAME		ASPHALT		SAME	
RUNWAY STRENGTH	SWG-45, DWG-80, DTWG-140		SAME		SWG-17, DWG-30, DTWG-NOT ALLOWED (NA)		SWG-45, DWG-80, DTWG-140	
	RW 13	RW 31	RW 13	RW 31	RW 4	RW 22	RW 5	RW 23
FAR PART 77 APPROACH CATEGORY	NPI	NPI	NPI	NPI	VISUAL	VISUAL	NPI	VISUAL
TYPE INSTRUMENT APPROACH	GPS	GPS	SAME	SAME	NONE	NONE	GPS	NONE
APPROACH SLOPE	34:1	34:1	SAME	SAME	20:1	20:1	34:1	20:1
RUNWAY LIGHTING	MIRL	MIRL	SAME	SAME	MIRL	MIRL	SAME	SAME
RUNWAY MARKING	NPI	NPI	SAME	SAME	VISUAL	VISUAL	NPI	VISUAL
NAVIGATIONAL & VISUAL AIDS	PAPI, REIL MINIMA ≥ 1 Mi.	PAPI, REIL MINIMA ≥ 1 Mi.	PAPI, REIL MINIMA ≥ 1 Mi.	PAPI, REIL MINIMA ≥ 1 Mi.	PAPI, REIL	PAPI, REIL	PAPI, REIL MINIMA ≥ 1 Mi.	SAME
RUNWAY SAFETY AREA DIMENSIONS	400' X 1000'	400' X 1000'	SAME	SAME	400' X 398'	400'x600' APP.	400'x600' APP.	SAME
						400'x1000' DEP.	400'x840' DEP.	SAME
RUNWAY OBJECT FREE ZONE	250' X 200'	250' X 200'	250' X 200'	250' X 200'	250' X 200'	250' X 200'	250' X 200'	250' X 200'
RUNWAY END COORDINATES (NAD 1983)	LAT 27°04'34.18"N	LAT 27°03'59.03"N	SAME	LAT 27°03'53.92"N	LAT 27°04'01.62"N	LAT 27°04'36.50"N	SAME	SAME
	LON 82°26'48.82"W	LON 82°26'09.85"W	SAME	LON 82°26'04.17"W	LON 82°26'40.70"W	LON 82°26'01.44"W	SAME	SAME
DISPLACED THRESHOLD COORDINATES (NAD 88/99)	NONE	NONE	727'	727'	NONE	294'	SAME	526'
			LAT 27°04'29.07"N	LAT 27°03'59.03"N		LAT 27°04'34.45"N		LAT 27°04'32.86"N
			LON 82°26'43.12""W	LON 82°26'09.85"W		LON 82°26'03.77"W		LON 82°26'05.54"W
DECLARED DISTANCE:								
TORA	NONE	NONE	5,000'	5,000'	NONE	NONE	5,000'	5,000'
TODA	NONE	NONE	5,000'	5,000'	NONE	NONE	5,000'	5,000'
ASDA	NONE	NONE	5,000'	5,000'	NONE	NONE	5,000'	4,840'
LDA	NONE	NONE	5,000'	5,000'	NONE	NONE	5,000'	4,314'

AIRPORT DATA

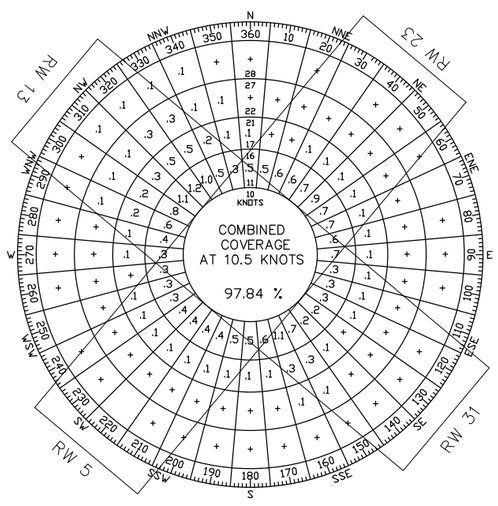
ITEM	EXISTING	ULTIMATE
AIRPORT ELEVATION (MSL) (NGVD 88)	18'	SAME
AIRPORT REFERENCE POINT (ARP) (NAD 83/99):		
LATITUDE	27°04'17.83" N.	27°04'17.83" N.
LONGITUDE	82°26'25.14" W.	82°26'25.14" W.
AIRPORT AND TERMINAL NAVAIDS	NDB	NDB
LATITUDE	27°04'35.54" N.	27°04'35.54" N.
LONGITUDE	82°26'21.96" W.	82°26'21.96" W.
MEAN MAXIMUM TEMPERATURE	91.0° F	91.0° F
AIRPORT REFERENCE CODE (ARC):		
RUNWAY 13–31	C–II	C–II
RUNWAY 5–23	C–II	C–II
DESIGN AIRCRAFT CATEGORY:		
RUNWAY 13–31	C–II	C–II
RUNWAY 5–23	C–II	C–II
AIRPORT GPS	RW 13, 31	RW 5, 13, 31
AIRPORT ACREAGE:		
FEE SIMPLE	835 AC. ±	835 AC. ±
EASEMENTS	16.80 AC. ±	16.88 AC. ±

VNC RUNWAY PROTECTION ZONE (RPZ) DIMENSIONS

APPROACH VISIBILITY MINIMUMS	LENGTH (FEET)	INNER WIDTH (FEET)	OUTER WIDTH (FEET)
VISUAL AND NOT LOWER THAN 1–MILE	1,700	500'	1,010'

BUILDING DATA TABLE

EXISTING	FUTURE	BUILDINGS	ELEVATION
1		CITY OF VENICE AIRCRAFT STORAGE	33.70
2		CITY OF VENICE AIRCRAFT STORAGE	32.00
3		CITY OF VENICE AIRCRAFT STORAGE	34.80
4		CITY OF VENICE AIRCRAFT STORAGE	34.30
5		CITY OF VENICE AIRCRAFT STORAGE	34.30
6		CITY OF VENICE AIRCRAFT STORAGE	35.30
7		CITY OF VENICE AIRCRAFT STORAGE	34.50
8		SWIFT GROUP, INC.	34.80
9		CITY OF VENICE AIRCRAFT STORAGE	34.20
10		CITY OF VENICE AIRCRAFT STORAGE	34.20
11–13		CITY OF VENICE AIRCRAFT STORAGE	34.20
14	30	AIRPORT MAINTENANCE	34.20
15		MARTIN H. ZACHRICH	40.00
16e		SUNCOAST BUILDING	36.00
16b		SUNCOAST AIR CENTER HANGARS	34.00
16c		SUNCOAST FBO BUILDING	43.00
	16d	SUNCOAST AIR CENTER	N/A
17		VENICE AVIATION SERVICES, INC.	55.50
18		PURDY, INC LEASE	40.00
		(HONOLUANA ISLAND GRILL & TIKI BAR)	
19		FLORIDA FLIGHT MAINTENANCE	43.70
20		AIRPORT ADMINISTRATION BUILDING	37.00
21		FAITH LIFE CURCH, INC.	42.40
22		AGAPE FLIGHTS INC.	39.60
23		BVK, INC.	39.30
24		BVK, INC.	37.80
25		SHERIFF'S DEPARTMENT HANGAR	38.45
26		ROTATING BEACON	N/A
27		ELECTRICAL VAULT	N/A
28		FAA RCGS	N/A
	W-1 - W-4	WEST T–HANGARS	N/A
	W-5	WEST HANGARS	N/A



ALL WEATHER WIND COVERAGE (PERCENT)

RUNWAY	10.5 KTS=12 MPH	13 KTS=15 MPH	16 KTS=18.4 MPH	20 KTS=23 MPH
RUNWAY 13–31	89.25	94.12	98.20	99.39
RUNWAY 5–23	84.98	90.09	94.99	97.70
COMBINED	97.84	99.22	99.74	99.92

SOURCE: NATIONAL CLIMATIC CENTER, ASHEVILLE, N.C.
STATION: VENICE PIER – VENICE, FL
PERIOD: 2002–2009

MODIFICATION OF DESIGN STANDARDS

No.	DESCRIPTION	FAA STANDARDS	EXISTING CONDITIONS	PROPOSED ACTION	DATE APPROVED	CONDITIONS
MOS-1	Runway 13 ROFA west 1of the runway centerline	ROFA - 400'	290'	Relocate existing fence 50' and adjust golf course hole #21 to achieve 340 feet west of Runway 13 centerline	4/26/11 ASN 2011-ASO-102-NRA	Remaining fenceline located 290' directly perpendicular to the centerline of Runway13 penetrates the transitional surface by ~ 1'. Sponsor will install obstruction lighting once verified by survey, or lower fence.
MOS-2	Runway 5 ROFA northwest of the runway centerline	ROFA - 400'	320'	Relocate existing fence 50' to 65' and adjust golf course holes 19 and 20 to achieve 385.5' on either side of the extended Runway 5 RSA area that tapers in to meet and follow the RSA.	4/26/11 ASN 2011-ASO-103-NRA	Where the portion of fence tapers in to meet the RSA, the fence must remain below the transitional surface and still meet GA security requirements, If there are any penetrations where the fence cannot be lowered, obstruction lighting in accordance with AC 70/7460-1 is required.
MOS-3	Runway 5 ROFA southwest of the runway centerline	ROFA - 800' x 1,000	500' x 400'	Relocate existing fence 50' to 65' in area southwest of Runway 5 and adjust golf course holes 19 and 20 to achieving an 385.5' ROFA that tapers to 210.8' and ends840' from the Runway 5 threshold..	4/26/11 ASN 2011-ASO-104-NRA	Fence relocation and golf course modifications may not create a permanent IFR effect or Part 77 penetration. Fence height should be at or below 20' AMSL where the perpendicular distance from centerline is more than 280'. Where less than 280' fence should be lwoered or obstruction lighted in accordance with AC 70/7460-1.
MOS-4	Runway 5 ROFA southeast of centerline from the interesection with Runway 13-31 to the end of Runway 5 pavement.	ROFA - 400'	279'	Leave fence in place.	4/26/11 ASN 2011-ASO-105-NRA	Fence will not create a permanent IFR effect or any permanent Part 77 penetration. Fence should be at or below 20' AMSL where the perpendicular distance from the Runway 5 centerline is 279'.Where distance is less than 279' fence should be lowered to precent penetration to transitional surface. If it cannot be lowered due to GA security fencing requirements it should be lighted as per AC 70/7460-1
MOS-5	Runway 31 ROFA southwest of centerline from the intersection of Runway 5-23 to the end of Runway 31 pavement.	ROFA - 400'	284'	Leave fence in place.	4/26/11 ASN 2011-ASO-106-NRA	Fence penetrates transitional surface by ~ 2'. Mitigate by installing obstruction lighting on fence in accordance with AC 7460-1 where penetrations occur or lower fence and still meet GA security requirements.
MOS-6	ODAL spacing	300'	232'	Maintain existing spacing.	NOT APPROVED 4/26/11 ASN 2011-ASO-107-NRA	Remove ODALS, there is no benefit to visibility minimums. Recommend installation of unidirectional REILs for runway indentification especially at night.
MOS-7	ROFA - northeast corner of Runway 31 needs 133.5' modification due to walkway along intracoastal waterway	400'	266.5	Leave fence in place at this location.	4/26/11 ASN 2011-ASO-108-NRA	Fence will not create a permanent IFR effect or any permanent Part 77 penetration.
MOS-8	ROFA Runway 23 - northeast side of extended centerline.	400'	Access road,fence and non-airport property exist in this area	Taper from 400' to 200' to accommodate small portion of access road.	4/26/11 ASN 2011-ASO-118-NRA	Fence will not create a permanent IFR effect or any permanent Part 77 penetration. Where the fence tapers in, it must remain below the transitional surface.
MOS-9	ROFA Runway 23 - northwest side of extended centerline.	400'	Access road and fence are located within these limits	Taper from 400' to 200' to accommodate small portion of access road.	4/26/11 ASN 2011-ASO-119-NRA	Fence will not create a permanent IFR effect or any permanent Part 77 penetration. Where the fence tapers in, it must remain below the transitional surface.

FINAL

NO.	REVISION	BY	APP.	DATE

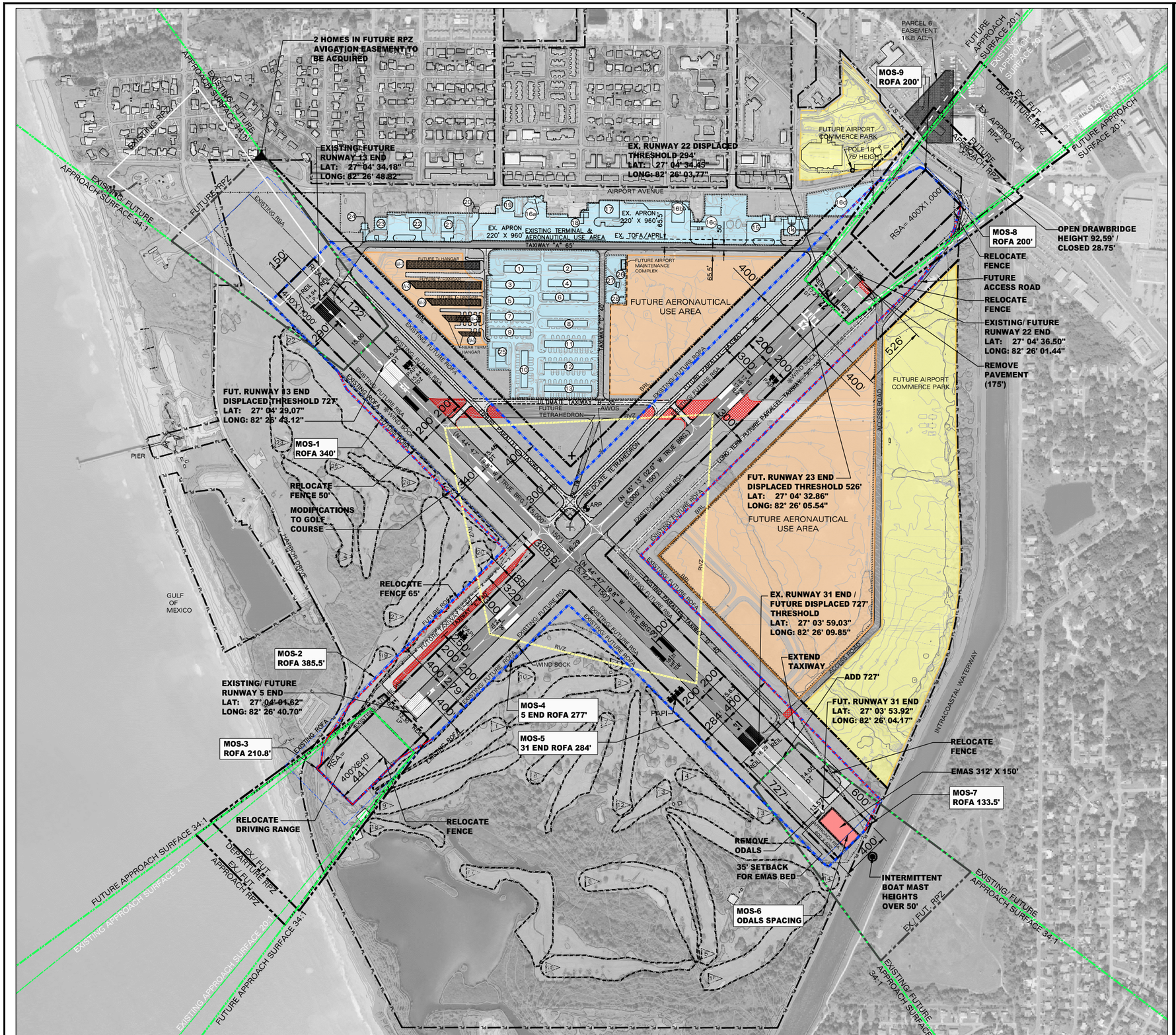
VENICE MUNICIPAL AIRPORT

CITY OF VENICE, FLORIDA

DATA SHEET

DRAWN:	CHKD:	DATE:	PROJECT NO.
WA/KA	LM/MG	06/28/2011	DY401.00

DY Consultants
DY CONSULTANTS
PLANNERS & ENGINEERS
401 FRANKLIN AVENUE, SUITE 318, GARDEN CITY, NY 11530
Tel No. (516) 625–9800 Fax No. (516)625–9816



CONSTRUCTION NOTICE REQUIREMENT

TO PROTECT OPERATIONAL SAFETY AND ULTIMATE DEVELOPMENT, ALL PROPOSED CONSTRUCTION ON THE AIRPORT MUST BE COORDINATED BY THE AIRPORT OWNER WITH THE FAA AIRPORTS DISTRICT OFFICE PRIOR TO CONSTRUCTION.
(FAA'S REVIEW TAKES APPROXIMATELY 60 DAYS)

NOTES:

1. THIS DOCUMENT WAS PREPARED FOR PLANNING PURPOSES ONLY AND TO DOCUMENT DEVELOPMENT FOR THE VENICE MUNICIPAL AIRPORT.
2. BUILDING RESTRICTION LINES (BRL) ARE BASED ON FAA AC 150/5300-13, PARAGRAPH 210.
3. AERIAL PHOTOGRAMMETRY WAS CONDUCTED BY AERIAL CARTOGRAPHICS OF AMERICA, 10/05/05 GROUND CONTROL SURVEY WAS CONDUCTED BY MEA GROUP, INC. 10/05/05.
4. RVZ VEGETATION MUST REMAIN CLEAR.
5. THE EXISTING RUNWAY 13 RPZ LIMITS AS DEPICTED WILL BE SHIFTED TOWARD THE AIRPORT UPON COMPLETION OF ALL FUTURE RUNWAY 13-31 IMPROVEMENTS TO RELOCATE THE RUNWAY 13 RPZ.
6. A STANDARD RUNWAY SAFETY AREA IS NOT ACHIEVABLE ON RUNWAY 5-23, PER RSA DETERMINATION STUDY.
7. MODIFICATIONS OF DESIGN STANDARDS TABLE, SEE SHEET 3.

THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THESE DOCUMENTS BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED HEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS.

LEGEND

EXISTING	PROPOSED	DESCRIPTION
		AIRPORT REFERENCE POINT (ARP)
		PROPERTY LINE
		BUILDING RESTRICTION LINE
15	15	CONTOUR LINES
x 20.0	x 20.0	SURFACE ELEVATION
		FENCE
		RUNWAY PROTECTION ZONE (RPZ)
		RUNWAY SAFETY AREA (RSA)
		RUNWAY OBJECT FREE AREA (ROFA)
		RUNWAY OBJECT FREE ZONE (ROFZ)
		RUNWAY VISIBILITY ZONE (RVZ)
		BUILDING
		FUTURE AERONAUTICAL USE AREA
		NON-AERONAUTICAL LAND USE/ AIRPORT COMMERCE PARK
		GOLF COURSE
	SAME	THRESHOLD LIGHTS
		WINDSOCK
		REIL
		PAPI
	NONE	ODALS
23	23	GOLF COURSE HOLE
		AWOS
		TETRAHEDRON
		BOAT MAST
		POLE
		EMAS
		PAVEMENT
		EXISTING AERONAUTICAL USE AREA
		AVIGATION AREAS
		RUNWAY/TWY PAVEMENT REMOVAL
		RUNWAY MARKING

RUNWAY DECLARED DISTANCES

	EXISTING	ULTIMATE	EXISTING	ULTIMATE	
DECLARED DISTANCE:	RW 13-31	RW 13-31	RW 4-22	RW 5	RW 23
TORA	NONE	5,000'	NONE	5,000'	5,000'
TODA	NONE	5,000'	NONE	5,000'	5,000'
ASDA	NONE	5,000'	NONE	5,000'	4,840'
LDA	NONE	5,000'	NONE	5,000'	4,314'

VNC RUNWAY PROTECTION ZONE (RPZ) DIMENSIONS

APPROACH VISIBILITY MINIMUMS	LENGTH (FEET)	INNER WIDTH (FEET)	OUTER WIDTH (FEET)
VISUAL AND NOT LOWER THAN 1-MILE	1,700	500'	1,010'

FEDERAL AVIATION ADMINISTRATION
BY: _____
TITLE: _____ DATE: _____

FLORIDA DEPARTMENT OF TRANSPORTATION
BY: _____
TITLE: _____ DATE: _____

CITY OF VENICE
BY: _____
TITLE: _____ DATE: _____

TRUE NORTH
MAGNETIC NORTH (2010) 4°46'W

GRAPHIC SCALE
400 0 200 400 800
(IN FEET)
1" = 400'

MAGNETIC DECLINATION
-4° 46' W (2010)
ANNUAL RATE OF CHANGE
-0° 06' W (2011)

FINAL

NO.	REVISION	BY	APP.	DATE

VENICE MUNICIPAL AIRPORT

CITY OF VENICE, FLORIDA

AIRPORT LAYOUT PLAN

DRAWN:	CHKD:	DATE:	PROJECT NO.
WA/KA	LM/MG	06/28/2011	DY401.00

DY Consultants
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PLANNERS & ENGINEERS
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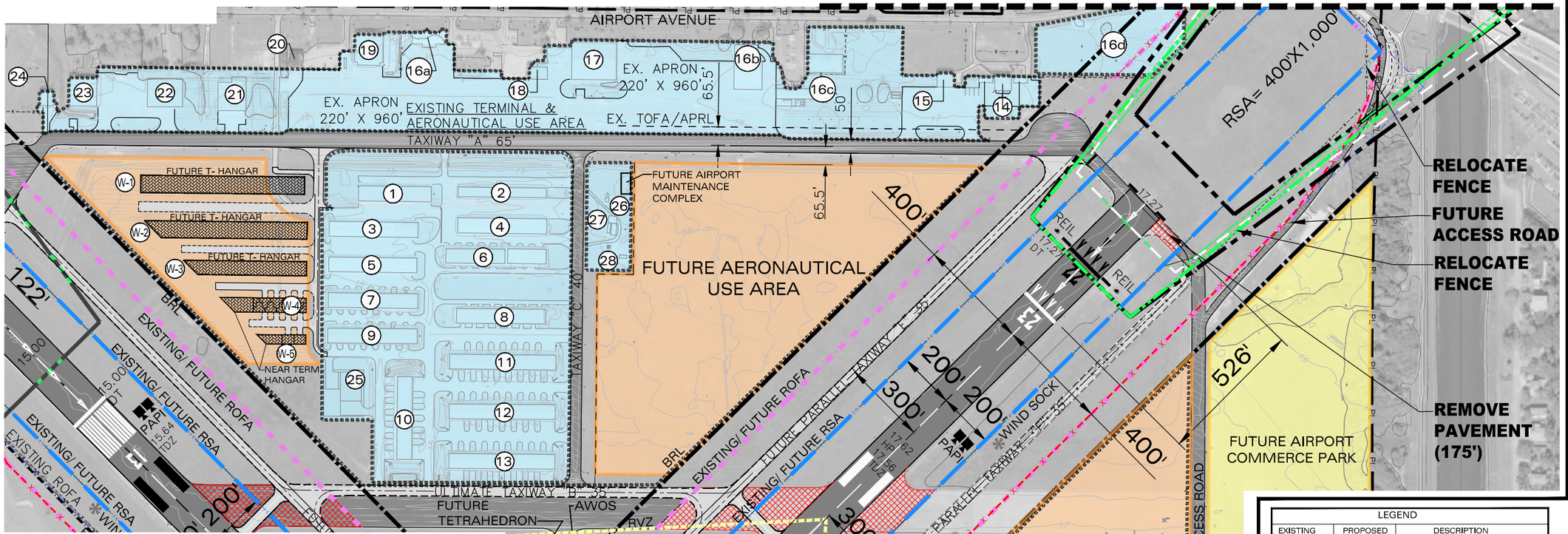
FOR CONTINUATION SEE INSET "A" BELOW



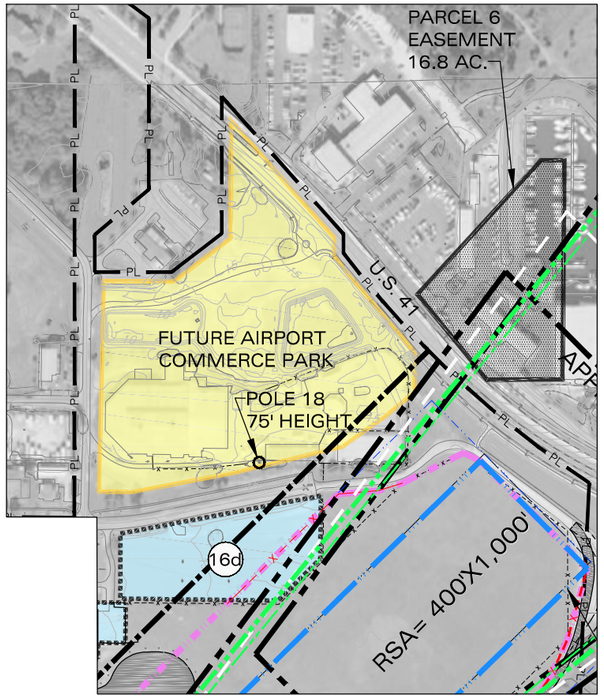
GRAPHIC SCALE

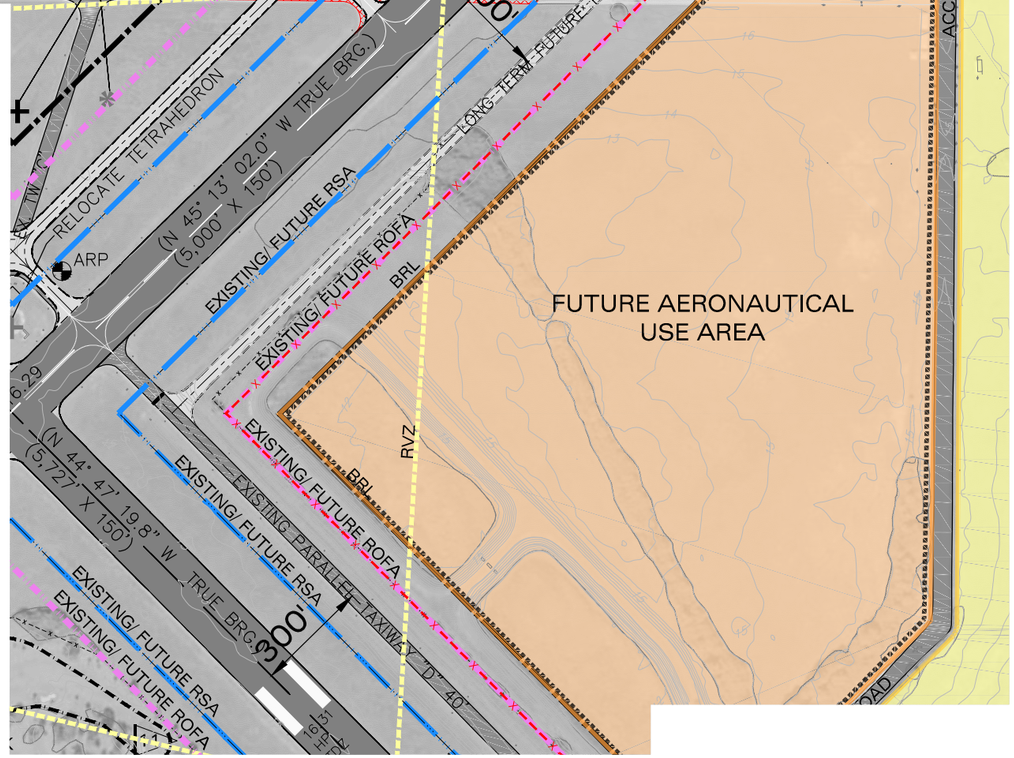
400 0 200 400 800

(IN FEET)
1" = 400'

MAGNETIC DECLINATION
-4° 46' W (2010)
ANNUAL RATE OF CHANGE
-0° 06' W (2011)

INSET "A"





LEGEND

EXISTING	PROPOSED	DESCRIPTION
		AIRPORT REFERENCE POINT (ARP)
		PROPERTY LINE
		BUILDING RESTRICTION LINE
15	15	CONTOUR LINES
× 20.0	× 20.0	SURFACE ELEVATION
		FENCE
		RUNWAY PROTECTION ZONE (RPZ)
		RUNWAY SAFETY AREA (RSA)
		RUNWAY OBJECT FREE AREA (ROFA)
		RUNWAY OBJECT FREE ZONE (ROFZ)
		RUNWAY VISIBILITY ZONE (RVZ)
		BUILDING
		FUTURE AERONAUTICAL USE AREA
		NON-AERONAUTICAL LAND USE/ AIRPORT COMMERCE PARK
		GOLF COURSE
	SAME	THRESHOLD LIGHTS
		WINDSOCK
		REIL
		PAPI
	NONE	ODALS
23	23	GOLF COURSE HOLE
		AWOS
		TETRAHEDRON
		BOAT MAST
		POLE
		EMAS
		PAVEMENT
		EXISTING AERONAUTICAL USE AREA
		AVIGATION AREAS
		EXISTING PAVEMENT TO BE REMOVED
22	22	RUNWAY MARKING

BUILDING DATA TABLE

EXISTING	FUTURE	BUILDINGS		ELEVATION
1		CITY OF VENICE	AIRCRAFT STORAGE	33.70
2		CITY OF VENICE	AIRCRAFT STORAGE	32.00
3		CITY OF VENICE	AIRCRAFT STORAGE	34.80
4		CITY OF VENICE	AIRCRAFT STORAGE	34.30
5		CITY OF VENICE	AIRCRAFT STORAGE	34.30
6		CITY OF VENICE	AIRCRAFT STORAGE	35.30
7		CITY OF VENICE	AIRCRAFT STORAGE	34.50
8		SWIFT GROUP, INC.		34.80
9		CITY OF VENICE	AIRCRAFT STORAGE	34.20
10		CITY OF VENICE	AIRCRAFT STORAGE	34.20
11-13		CITY OF VENICE	AIRCRAFT STORAGE	34.20
14	32	AIRPORT MAINTENANCE		34.20
15		MARTIN H. ZACHRICH		40.00
16		SUNCOAST BUILDING		38.00
16a		SUNCOAST AIR CENTER HANGARS		34.00
16b		SUNCOAST FBO BUILDING		43.00
	16b	SUNCOAST AIR CENTER		N/A
17		VENICE AVIATION SERVICES, INC.		55.50
18		PURDY, INC LEASE		40.00
		(HONOLUANA ISLAND GRILL & TIKI BAR)		
19		FLORIDA FLIGHT MAINTENANCE		43.70
20		AIRPORT ADMINISTRATION BUILDING		37.00
21		FAITH LIFE CURCH, INC.		42.40
22		AGAPE FLIGHTS INC.		39.60
23		BVK, INC.		39.30
24		BVK, INC.		37.80
25		SHERIFF'S DEPARTMENT HANGAR		38.45
26		ROTATING BEACON		N/A
27		FAA VAULT		N/A
28		RCGS		N/A
	W-1, W-2	WEST T-HANGARS		N/A
	W-3	WEST HANGARS		N/A

FINAL

NO.	REVISION	BY	APP.	DATE

VENICE MUNICIPAL AIRPORT

CITY OF VENICE, FLORIDA

TERMINAL AREA PLAN

DRAWN:	CHKD:	DATE:	PROJECT NO.
WA/KA	LM/MG	06/28/2011	DY401.00

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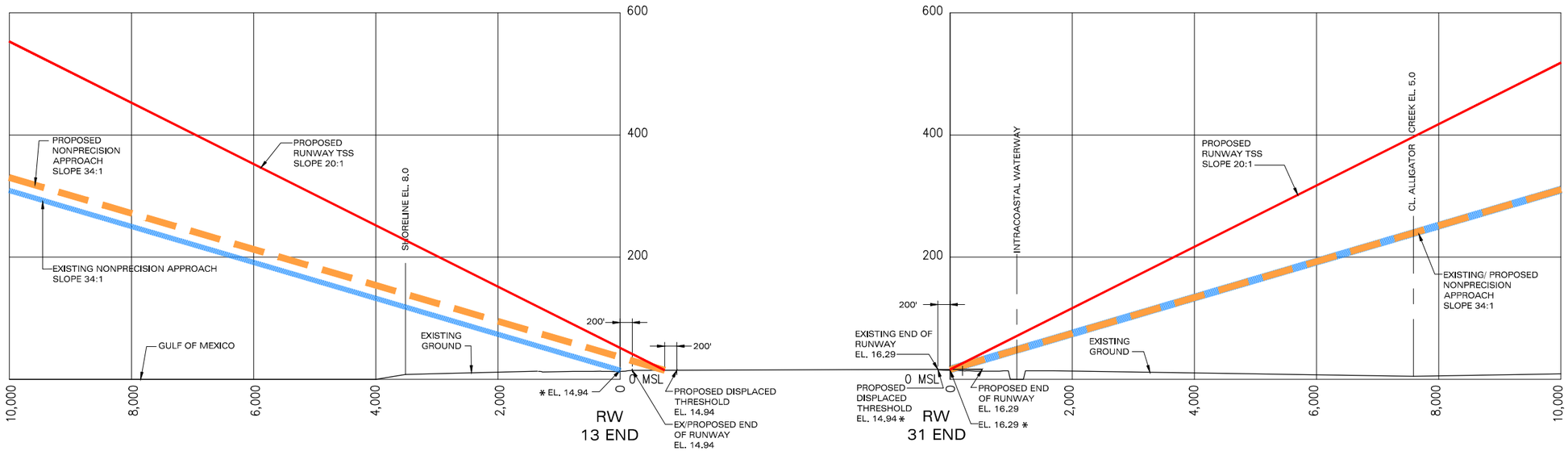
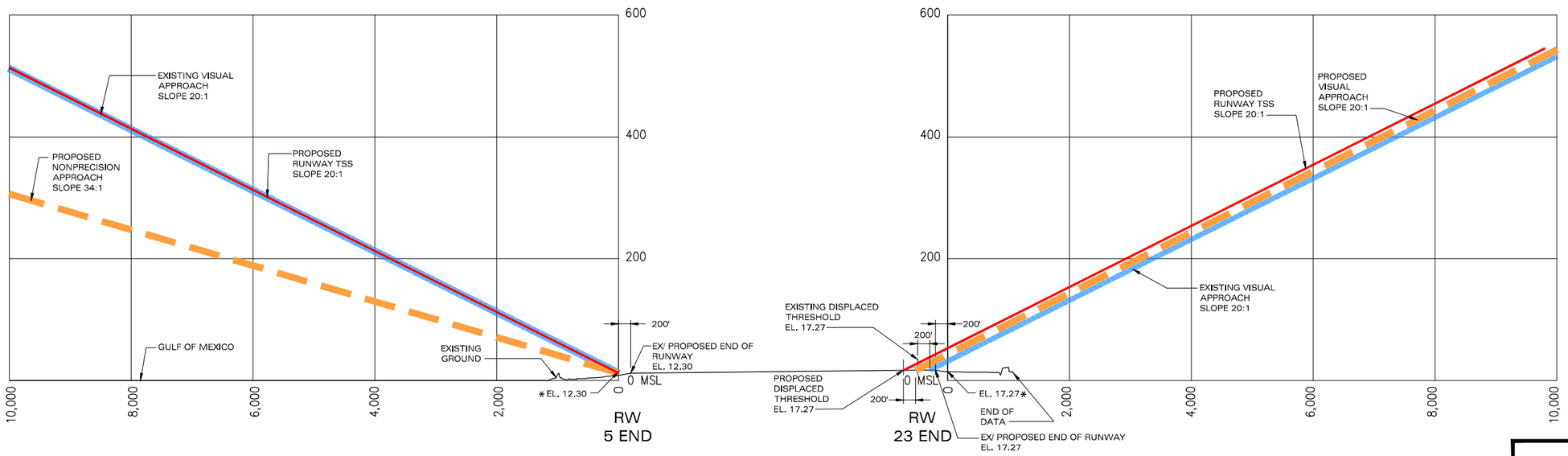
SHEET 5 OF 15





HORIZONTAL SCALE

1,000 0 500 1,000 2,000

(IN FEET)

1" = 1,00'

VERTICAL SCALE

100 0 50 100 200

(IN FEET)

1" = 100'

* BEGINNING OF SURFACES BASED ON EXTENDED RUNWAY END ELEVATION, FOR PLANNING PURPOSES ONLY.

FINAL

NO.	REVISION	BY	APP.	DATE

VENICE MUNICIPAL AIRPORT

CITY OF VENICE, FLORIDA

APPROACH PROFILES

DRAWN:	CHKD:	DATE:	PROJECT NO.
WA/KA	LM/MG	06/28/2011	DY401.00

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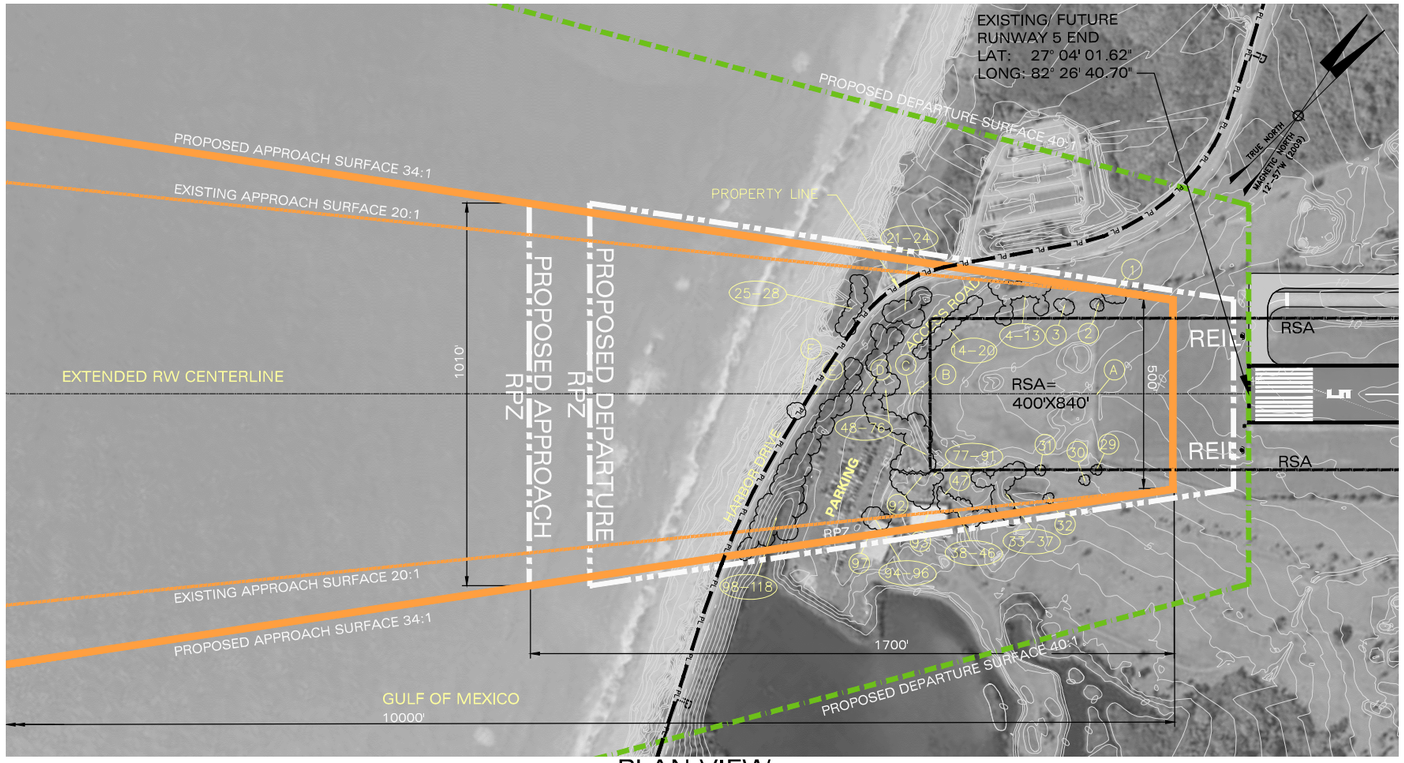
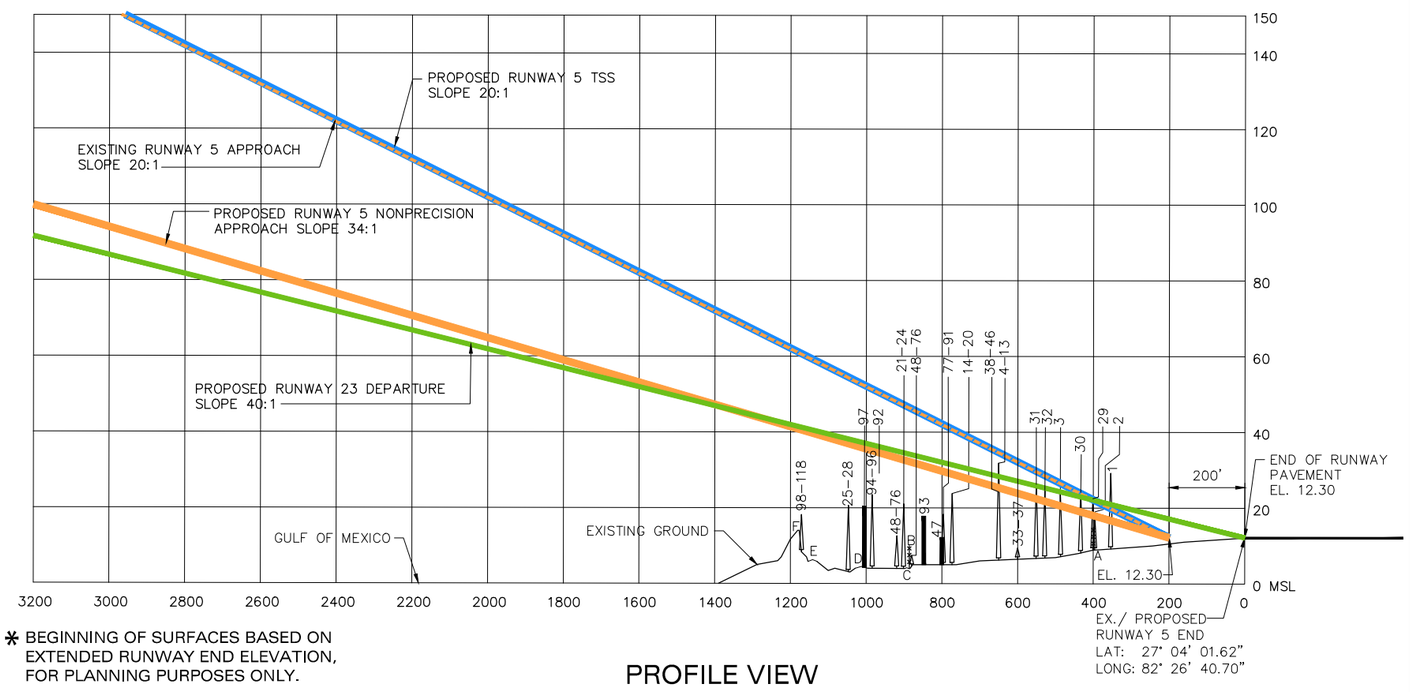


PLAN VIEW



* BEGINNING OF SURFACES BASED ON EXTENDED RUNWAY END ELEVATION, FOR PLANNING PURPOSES ONLY.

PROFILE VIEW

APPROACH TABLE		
RUNWAY 5	EXISTING	ULTIMATE
TYPE OF APPROACH	VISUAL	NONPRECISION
APPROACH SLOPE	20:1	34:1

OBSTRUCTION TABLE

OBS. NO.	DESCRIPTION	TOP ELEV. (MSL)	FAR PART 77 (MSL)	APPR. SURF. PENET. (FT)	PROPOSED MITIGATION
A	FENCE	14.9	18.1	(–) 3.2	REMOVE
B	FENCE	10.0	32.4	(–) 22.4	REMOVE
C	ROAD	4.2	22.5	(–) 18.3	RELOCATE
D	ROAD	4.5	21.0	(–) 16.5	RELOCATE
E	ROAD	6.3	24.8	(–) 18.5	NONE
F	BERM	14.0	42.9	(–) 26.9	NONE
1	2–TREES	29.3	17.0	(+) 12.3	REMOVE
2	TREE	17.0	18.1	(–) 1.1	TRIM
3	TREE	24.3	20.7	(+) 3.6	REMOVE
4	TREE	21.2	22.5	(–) 1.3	TRIM
5	TREE	9.9	22.3	(–) 12.4	NONE
6	TREE	9.4	22.8	(–) 13.4	NONE
7	TREE	8.8	23.3	(–) 14.5	NONE
8	TREE	9.1	23.6	(–) 14.5	NONE
9	TREE	11.0	24.1	(–) 13.1	NONE
10	TREE	9.8	24.5	(–) 14.7	NONE
11	TREE	24.8	25.2	(–) 1.4	TRIM
12	TREE	7.1	26.5	(–) 19.4	NONE
13	TREE	24.4	25.6	(–) 1.2	REMOVE (RSA)
14	TREE	10.0	27.8	(–) 17.8	NONE
15	TREE	20.9	28.5	(–) 7.6	NONE
16	TREE	21.4	29.2	(–) 7.8	NONE
17	TREE	21.6	29.7	(–) 8.1	REMOVE (RSA)
18	TREE	17.0	30.5	(–) 13.5	REMOVE (RSA)
19	TREE	18.2	31.1	(–) 12.9	REMOVE (RSA)
20	TREE	20.5	32.1	(–) 11.6	REMOVE (RSA)
21	TREE	19.7	31.8	(–) 12.1	NONE
22	TREE	20.5	32.4	(–) 11.9	NONE
23	TREE	20.4	33.1	(–) 12.7	NONE
24	TREE	24.3	34.4	(–) 10.1	NONE
25	TREE	19.4	36.7	(–) 17.3	NONE
26	TREE	20.1	37.0	(–) 16.9	NONE
27	TREE	21.7	37.4	(–) 15.7	NONE
28	TREE	18.4	37.9	(–) 12.1	NONE
29	TREE	22.6	18.2	(+) 4.4	REMOVE (RSA)
30	TREE	24.3	19.2	(+) 5.1	REMOVE
31	TREE	26.4	22.6	(+) 3.8	REMOVE (RSA)
32	TREE	24.9	22.0	(+) 2.9	REMOVE
33	TREE	23.2	24.4	(–) 1.2	REMOVE (RSA)
34	TREE	31.8	25.5	(+) 6.3	REMOVE
35	TREE	25.0	25.6	(–) 0.6	TRIM
36	TREE	23.5	25.0	(–) 1.5	TRIM
37	TREE	34.0	27.4	(–) 6.6	NONE
38	TREE	21.4	27.0	(–) 5.6	NONE
39	TREE	24.8	28.2	(–) 3.4	NONE
40	TREE	23.7	28.5	(–) 4.8	NONE
41	TREE	27.6	28.7	(–) 1.1	TRIM
42	TREE	26.1	29.0	(–) 2.9	NONE
43	TREE	22.7	29.9	(–) 7.2	NONE
44	TREE	23.3	30.2	(–) 6.9	NONE
45	TREE	22.1	30.5	(–) 8.4	NONE
46	TREE	23.9	30.4	(–) 6.5	NONE
47	BUILDING	12.4	30.0	(–) 17.6	NONE
48	TREE	11.8	31.5	(–) 19.7	REMOVE (RSA)
49	TREE	9.8	31.7	(–) 21.9	REMOVE (RSA)
50	TREE	8.0	31.6	(–) 23.6	REMOVE (RSA)
51	TREE	17.8	31.8	(–) 14.0	REMOVE (RSA)
52	TREE	8.9	36.1	(–) 23.2	REMOVE (RSA)
53	TREE	8.9	32.3	(–) 23.4	REMOVE (RSA)
54	TREE	8.6	32.4	(–) 23.8	REMOVE (RSA)
55	TREE	9.7	32.2	(–) 22.5	REMOVE (RSA)
56	TREE	19.7	32.3	(–) 12.6	REMOVE (RSA)
57	TREE	11.1	32.5	(–) 21.4	REMOVE (RSA)
58	TREE	8.6	32.6	(–) 24.0	REMOVE (RSA)
59	TREE	8.7	32.7	(–) 24.0	REMOVE (RSA)
60	TREE	9.4	32.9	(–) 23.5	REMOVE (RSA)
61	TREE	9.7	33.0	(–) 23.3	REMOVE (RSA)
62	TREE	9.8	33.0	(–) 23.2	REMOVE (RSA)
63	TREE	9.9	33.2	(–) 23.3	REMOVE (RSA)
64	TREE	9.9	33.2	(–) 23.3	REMOVE (RSA)
65	TREE	9.4	33.7	(–) 24.3	REMOVE (RSA)
66	TREE	14.8	33.9	(–) 19.1	REMOVE (RSA)
67	TREE	14.8	34.9	(–) 20.1	REMOVE (RSA)
68	TREE	17.5	35.7	(–) 18.2	REMOVE (RSA)
69	TREE	11.9	35.8	(–) 23.8	REMOVE (RSA)
70	TREE	7.1	34.3	(–) 27.2	REMOVE (RSA)

APPROACH TABLE		
RUNWAY 5	EXISTING	ULTIMATE
TYPE OF APPROACH	VISUAL	NONPRECISION
APPROACH SLOPE	20:1	34:1

OBSTRUCTION TABLE

OBS. NO.	DESCRIPTION	TOP ELEV. (MSL)	FAR PART 77 (MSL)	APPR. SURF. PENET. (FT)	PROPOSED MITIGATION
71	TREE	17.2	34.9	(–) 17.7	REMOVE (RSA)
72	TREE	21.9	35.4	(–) 13.5	REMOVE (RSA)
73	TREE	18.4	35.9	(–) 17.5	REMOVE (RSA)
74	TREE	19.6	34.0	(–) 14.4	REMOVE (RSA)
75	TREE	19.4	34.8	(–) 15.4	REMOVE (RSA)
76	TREE	19.4	35.4	(–) 16.0	REMOVE (RSA)
77	TREE	9.4	30.6	(–) 21.2	NONE
78	TREE	9.5	31.3	(–) 21.8	NONE
79	TREE	9.9	31.5	(–) 21.6	NONE
80	TREE	17.1	31.5	(–) 14.4	NONE
81	TREE	21.8	31.7	(–) 5.9	NONE
82	TREE	10.1	31.6	(–) 21.5	NONE
83	TREE	10.1	31.9	(–) 21.8	NONE
84	TREE	8.9	32.4	(–) 23.5	NONE
85	TREE	8.5	32.4	(–) 23.9	NONE
86	TREE	10.3	32.6	(–) 22.3	NONE
87	TREE	8.9	32.8	(–) 23.9	NONE
88	TREE	10.0	33.3	(–) 23.3	NONE
89	TREE	10.1	33.5	(–) 23.4	NONE
90	TREE	9.7	33.8	(–) 24.1	NONE
91	TREE	10.0	33.9	(–) 23.9	NONE
92	POLE	29.8	34.8	(–) 5.0	NONE
93	BUILDING	17.8	31.4	(–) 13.6	NONE
94	TREE	25.6	35.2	(–) 9.6	NONE
95	TREE	20.5	35.5	(–) 15.0	NONE
96	TREE	25.0	35.5	(–) 10.5	NONE
97	BUILDING	20.4	36.0	(–) 15.0	NONE
98	TREE	18.3	37.0	(–) 18.7	NONE
99	TREE	22.2	37.5	(–) 15.3	NONE
100	TREE	21.8	37.2	(–) 15.4	NONE
101	TREE	22.6	38.1	(–) 15.5	NONE
102	TREE	23.3	38.7	(–) 15.6	NONE
103	TREE	21.6	39.3	(–) 17.7	NONE
104	TREE	20.4	39.5	(–) 19.1	NONE
105	TREE	16.2	40.4	(–) 24.2	NONE
106	TREE	17.0	41.0	(–) 24.0	NONE
107	TREE	19.2	41.3	(–) 22.1	NONE
108	TREE	19.7	42.3	(–) 22.6	NONE
109	TREE	19.0	41.9	(–) 22.9	NONE
110	TREE	19.3	41.6	(–) 22.3	NONE
111	TREE	23.3	42.7	(–) 19.4	NONE
112	TREE	20.6	41.5	(–) 21.0	NONE
113	TREE	17.5	42.2	(–) 24.7	NONE
114	TREE	18.9	43.6	(–) 24.7	NONE
115	TREE	18.6	44.2	(–) 25.6	NONE
116	TREE	17.3	44.1	(–) 26.8	NONE
117	TREE	16.3	45.7	(–) 29.4	NONE
118	TREE	18.6	41.7	(–) 23.1	NONE

HORIZONTAL SCALE

200 0 100 200 400

(IN FEET)
1" = 200'

VERTICAL SCALE

20 0 10 20 40

(IN FEET)
1" = 20'

FINAL

NO.	REVISION	BY	APP.	DATE

VENICE MUNICIPAL AIRPORT
CITY OF VENICE, FLORIDA

RUNWAY 5 END
INNER APPROACH AND DEPARTURE SURFACES

DRAWN:	CHKD:	DATE:	PROJECT NO.
WA/KA	LM/MG	06/28/2011	DY401.00

DY Consultants
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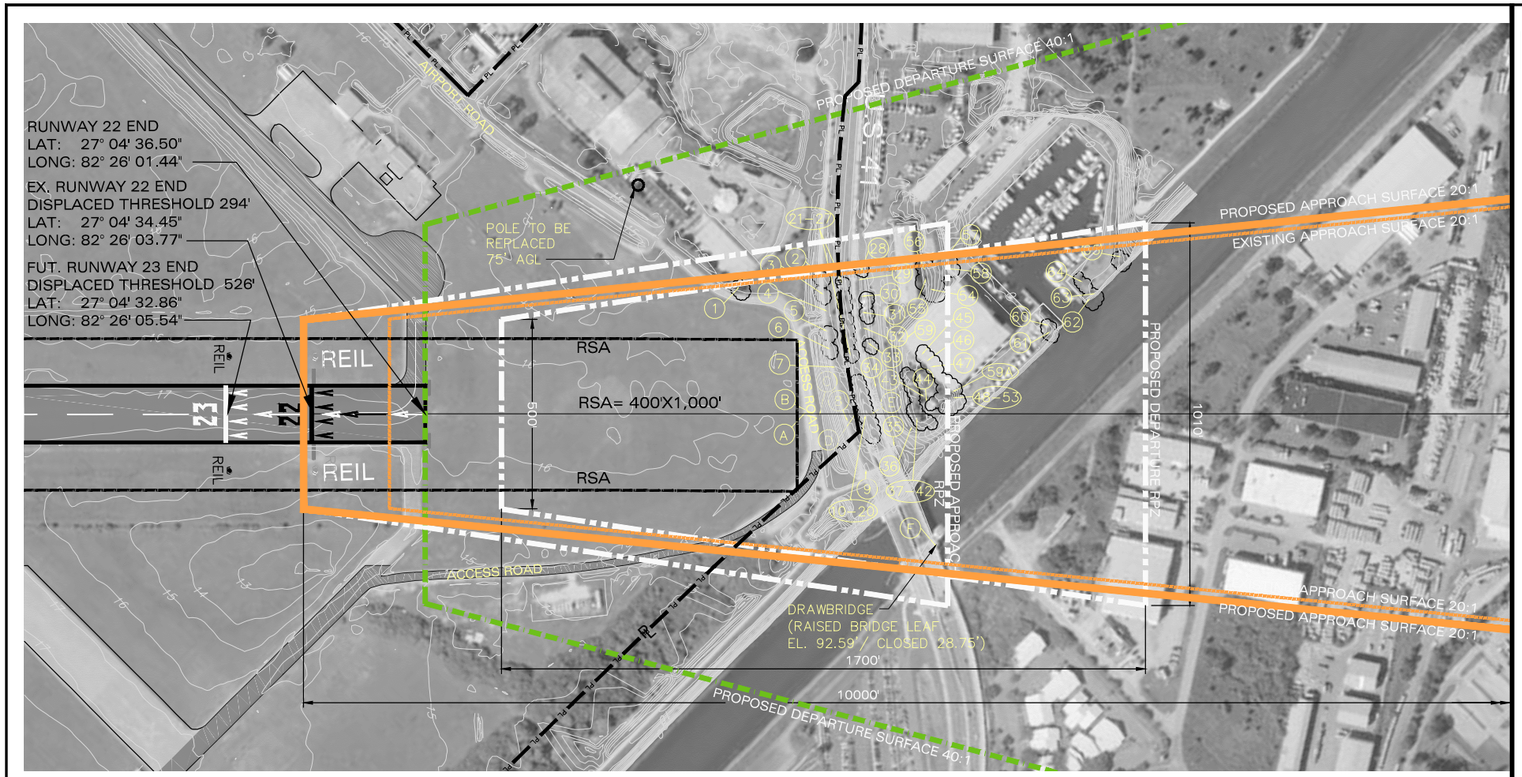
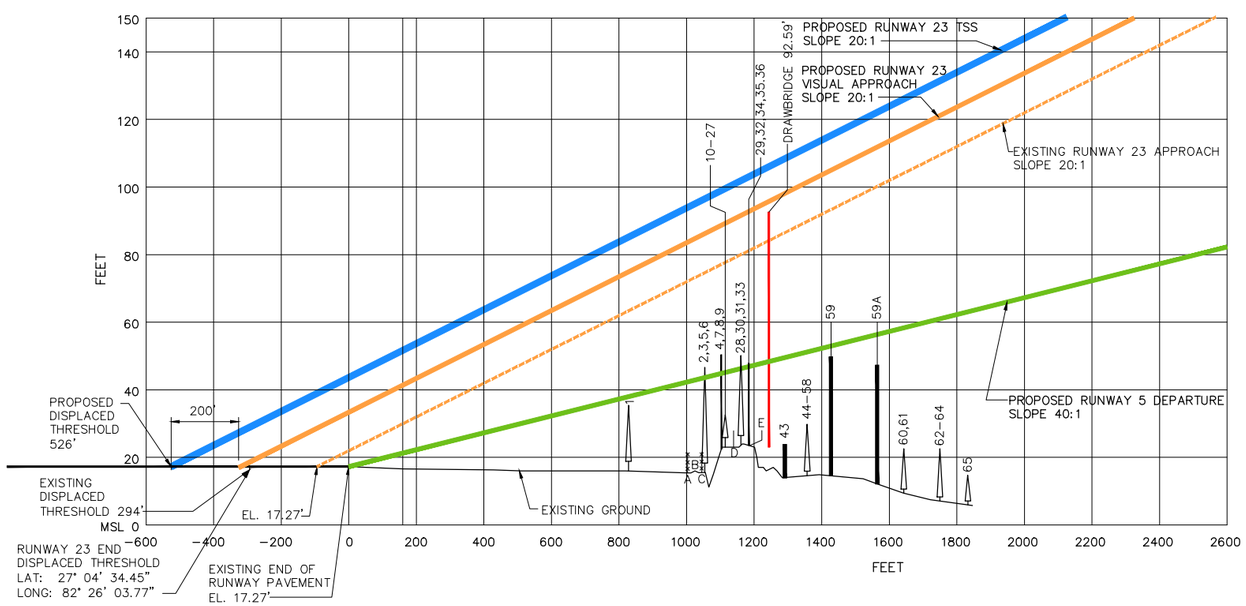


PLAN VIEW



PROFILE VIEW

* BEGINNING OF SURFACES BASED ON EXTENDED RUNWAY END ELEVATION, FOR PLANNING PURPOSES ONLY.

APPROACH TABLE		
RUNWAY 23	EXISTING	ULTIMATE
TYPE OF APPROACH	VISUAL	VISUAL
APPROACH SLOPE	20:1	20:1

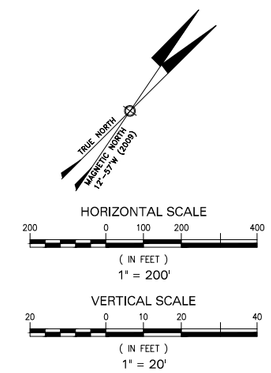
OBSTRUCTION TABLE

OBS. NO.	DESCRIPTION	TOP ELEV. (MSL)	FAR PART 77 (MSL)	APPR. SURF. PENET. (FT)	PROPOSED MITIGATION
A	FENCE	21.4	57.3	(–) 35.9	NONE
B	ACCESS ROAD	15.9	58.3	(–) 42.4	NONE
C	FENCE	21.5	59.3	(–) 37.8	NONE
D	US 41 SO. LANE	23.0	64.3	(–) 41.3	NONE
E	US 41 NO. LANE	23.4	66.3	(–) 42.9	NONE
F	DRAWBRIDGE (OPEN/ CLOSED)	92.59/ 28.75	69.5	(+) 23.09/ (–) 40.75	NONE: SURVEYED 5/4/11
1	TREE	35.7	48.7	(–) 13.0	NONE
2	TREE	46.5	59.6	(–) 13.1	NONE
3	TREE	46.5	59.7	(–) 13.2	NONE
4	POLE	45.1	60.1	(–) 15.0	NONE
5	TREE	49.3	60.1	(–) 10.8	NONE
6	TREE	45.2	60.5	(–) 15.3	NONE
7	POLE	47.7	61.2	(–) 13.5	NONE
8	POLE	51.6	63.0	(–) 11.4	NONE
9	POLE	58.0	65.4	(–) 7.4	NONE
10	TREE	35.0	66.1	(–) 31.1	NONE
11	TREE	30.5	65.8	(–) 35.3	NONE
12	TREE	30.2	65.6	(–) 35.4	NONE
13	TREE	29.6	65.4	(–) 35.8	NONE
14	TREE	30.0	65.2	(–) 35.2	NONE
15	TREE	29.7	65.0	(–) 35.3	NONE
16	TREE	29.7	64.7	(–) 35.0	NONE
17	TREE	29.7	64.6	(–) 34.9	NONE
18	TREE	29.0	64.4	(–) 35.4	NONE
19	TREE	28.2	64.2	(–) 36.0	NONE
20	TREE	27.5	64.0	(–) 36.5	NONE
21	TREE	26.3	63.3	(–) 37.0	NONE
22	TREE	34.7	63.0	(–) 28.3	NONE
23	TREE	34.2	62.8	(–) 28.6	NONE
24	TREE	33.8	62.6	(–) 28.8	NONE
25	TREE	33.5	62.5	(–) 29.0	NONE
26	TREE	33.4	62.4	(–) 29.0	NONE
27	TREE	34.1	62.2	(–) 28.1	NONE
28	TREE	47.3	64.9	(–) 17.6	NONE
29	POLE	42.4	64.7	(–) 22.3	NONE
30	TREE	53.8	65.2	(–) 11.4	NONE
31	TREE	49.4	65.2	(–) 15.8	NONE
32	POLE	42.8	65.3	(–) 22.5	NONE
33	TREE	51.1	65.9	(–) 14.8	NONE
34	POLE	52.4	66.7	(–) 14.3	NONE
35	POLE	54.9	69.2	(–) 14.3	NONE
36	POLE	33.1	71.4	(–) 38.3	NONE
37	TREE	30.0	73.5	(–) 43.5	NONE
38	TREE	25.5	72.2	(–) 46.7	NONE
39	TREE	31.2	71.6	(–) 40.4	NONE
40	TREE	33.3	71.7	(–) 38.4	NONE
41	TREE	25.4	71.0	(–) 45.6	NONE
42	TREE	30.1	70.8	(–) 40.7	NONE
43	BUILDING	25.3	73.0	(–) 47.7	NONE
44	TREE	30.9	73.4	(–) 42.5	NONE
45	TREE	25.0	73.0	(–) 48.0	NONE
46	TREE	25.6	73.7	(–) 48.1	NONE
47	TREE	24.9	74.3	(–) 49.4	NONE
48	TREE	35.6	75.8	(–) 40.2	NONE
49	TREE	23.9	76.7	(–) 52.8	NONE
50	TREE	25.2	77.2	(–) 52.0	NONE
51	TREE	26.5	76.2	(–) 49.7	NONE
52	TREE	36.1	75.7	(–) 39.6	NONE

APPROACH TABLE		
RUNWAY 23	EXISTING	ULTIMATE
TYPE OF APPROACH	VISUAL	VISUAL
APPROACH SLOPE	20:1	20:1

OBSTRUCTION TABLE (CONTINUATION)

OBS. NO.	DESCRIPTION	TOP ELEV. (MSL)	FAR PART 77 (MSL)	APPR. SURF. PENET. (FT)	PROPOSED MITIGATION
53	TREE	29.8	75.1	(–) 45.3	NONE
54	TREE	28.7	74.2	(–) 45.5	NONE
55	TREE	33.0	73.3	(–) 40.3	NONE
56	TREE	33.0	73.2	(–) 40.2	NONE
57	TREE	42.2	76.0	(–) 33.8	NONE
58	TREE	20.1	76.4	(–) 56.3	NONE
59	BUILDING	49.7	80.2	(–) 30.5	NONE
59A	BUILDING	49.7	80.2	(–) 30.5	NONE
60	TREE	21.8	89.3	(–) 67.5	NONE
61	TREE	24.0	89.6	(–) 65.6	NONE
62	TREE	7.2	94.9	(–) 87.7	NONE
63	TREE	15.9	95.5	(–) 79.6	NONE
64	TREE	20.3	93.8	(–) 73.5	NONE
65	TREE	15.0	98.9	(–) 83.9	NONE



NOTE:

1. NEGATIVE (–) NUMBERS REPRESENT ELEVATIONS BELOW APPROACH SLOPE SURFACE. POSITIVE (+) NUMBERS REPRESENT ELEVATIONS ABOVE APPROACH SLOPE SURFACE.
2. PENETRATION TO THE FAR PART 77 APPROACH SURFACE WERE COMPUTED BASED ON THE START OF THE APPROACH SURFACE DISTANCE OF 200 FEET FROM THE EXISTING EDGE OF PAVEMENT.

FINAL

NO.	REVISION	BY	APP.	DATE

VENICE MUNICIPAL AIRPORT
CITY OF VENICE, FLORIDA

RUNWAY 23 END
INNER APPROACH AND DEPARTURE SURFACES

DRAWN:	CHKD:	DATE:	PROJECT NO.
WA/KA	LM/MG	06/28/2011	DY401.00

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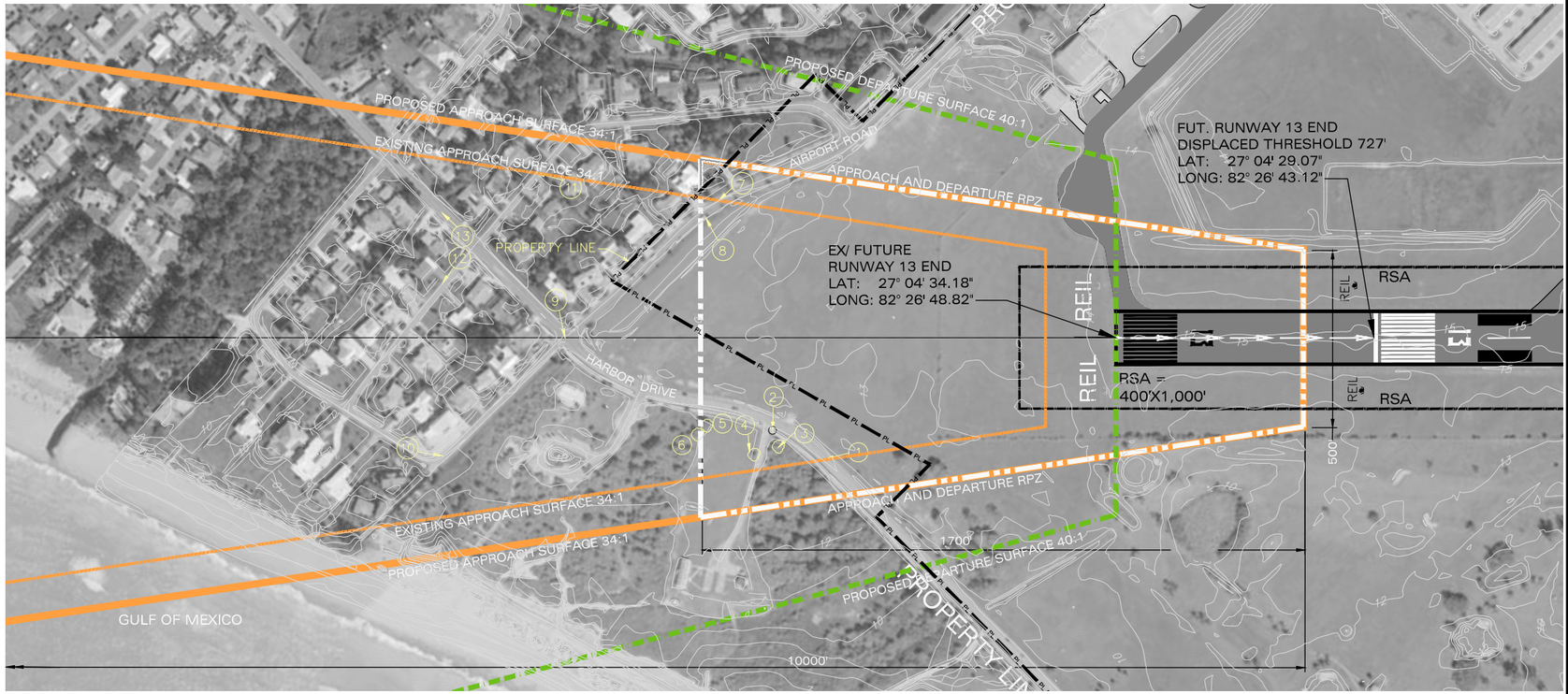
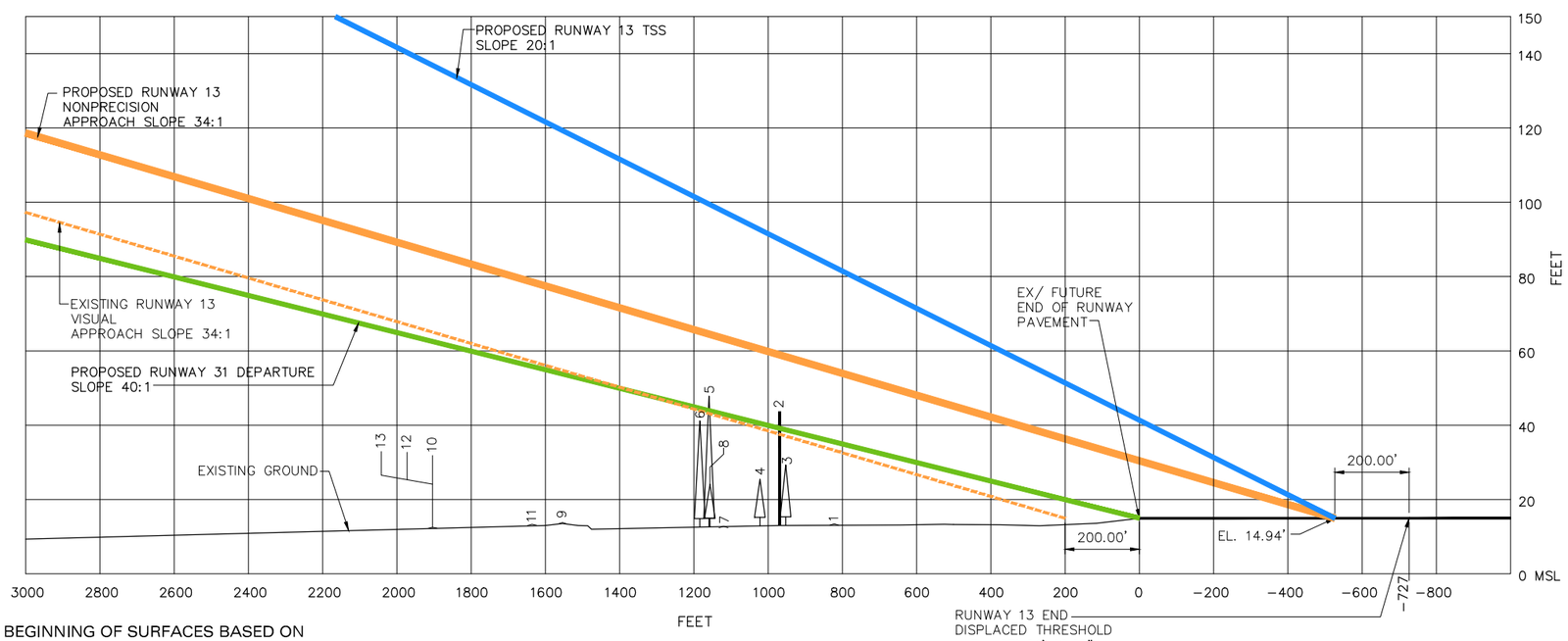


PLAN VIEW



* BEGINNING OF SURFACES BASED ON EXTENDED RUNWAY END ELEVATION, FOR PLANNING PURPOSES ONLY.

PROFILE VIEW

APPROACH TABLE

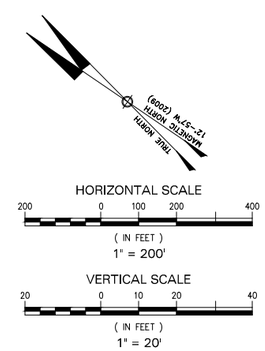
RUNWAY 13	EXISTING	ULTIMATE
TYPE OF APPROACH	NONPRECISION	NONPRECISION
APPROACH SLOPE	34:1	34:1

OBSTRUCTION TABLE

OBS. NO.	DESCRIPTION	TOP ELEV. (MSL)	FAR PART 77 (MSL)	APPR. SURF. PENET. (FT)	PROPOSED MITIGATION
1	CL. HARBOR DRIVE	12.2	46.0	(–) 33.8	NONE
2	POLE	43.6	53.4	(–) 9.8	NONE
3	TREE	29.3	52.6	(–) 23.3	NONE
4	TREE	25.4	56.0	(–) 30.6	NONE
5	TREE	47.9	62.9	(–) 15.0	NONE
6	TREE	41.2	64.1	(–) 22.9	NONE
7	CL. AIRPORT RD.	12.8	60.9	(–) 48.1	NONE
8	TREE	24.1	62.8	(–) 38.7	NONE
9	CL. INTERSECTION ROAD	13.8	82.6	(–) 68.8	NONE
10	CL. ROAD	12.5	100.1	(–) 87.6	NONE
11	CL. ROAD	13.3	86.7	(–) 73.4	NONE
12	CL. ROAD	12.4	100.1	(–) 87.7	NONE
13	CL. ROAD	13.6	100.1	(–) 86.5	NONE

NOTES:

1. NEGATIVE (–) NUMBERS REPRESENT ELEVATIONS BELOW APPROACH SLOPE SURFACE. POSITIVE (+) NUMBERS REPRESENT ELEVATIONS ABOVE APPROACH SLOPE SURFACE.
2. ALL TREES AND ANY OTHER OBJECTS WITHIN THE RUNWAY SAFETY AREA SHALL BE REMOVED.
3. BUILDINGS WITHIN THE RPZ LIMITS DO NOT PENETRATE FAR PART 77 (APPROACH SURFACE) BASED UPON AERIAL SURVEY.



FINAL

NO.	REVISION	BY	APP.	DATE

VENICE MUNICIPAL AIRPORT

CITY OF VENICE, FLORIDA

RUNWAY 13 END
INNER APPROACH AND DEPARTURE SURFACES

DRAWN:	CHKD:	DATE:	PROJECT NO.
WA/KA	LM/MG	06/28/2011	DY401.00

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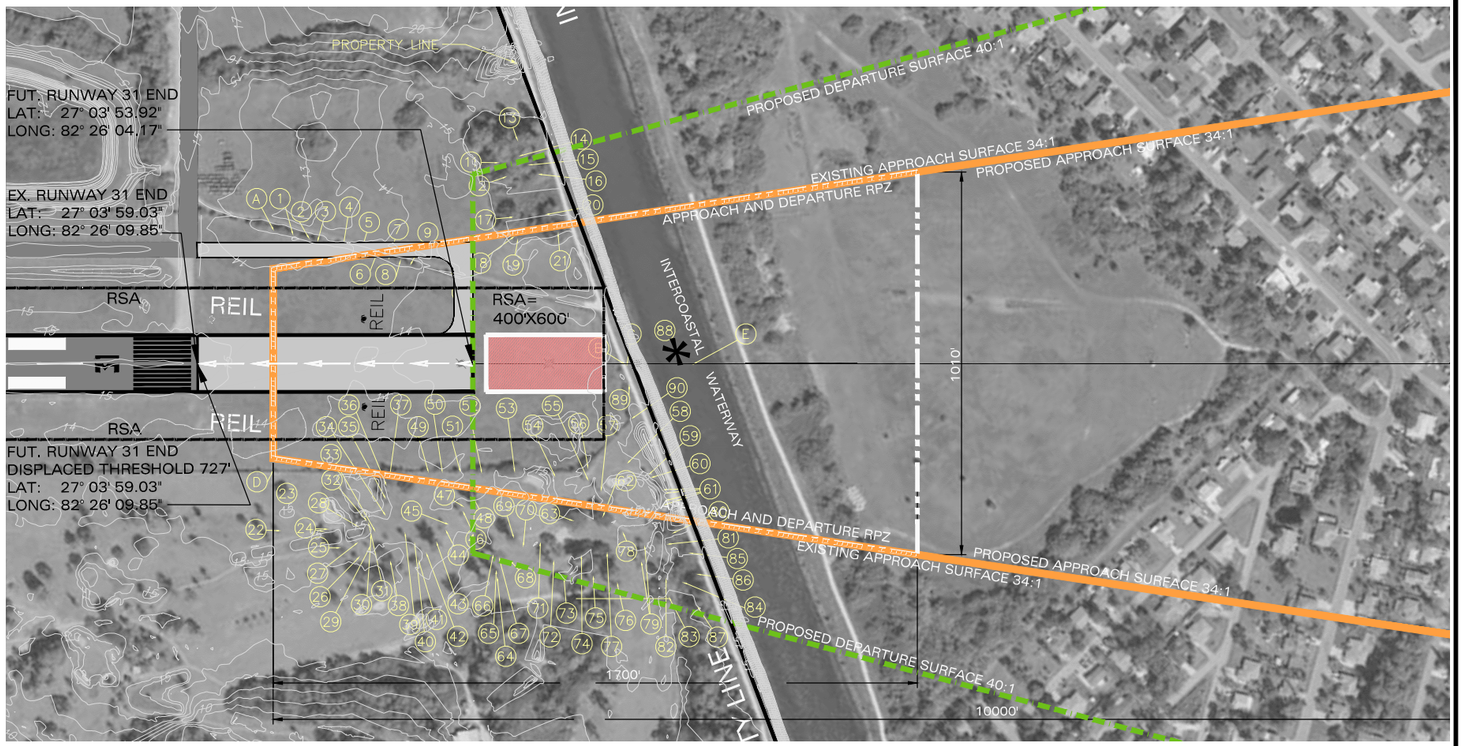
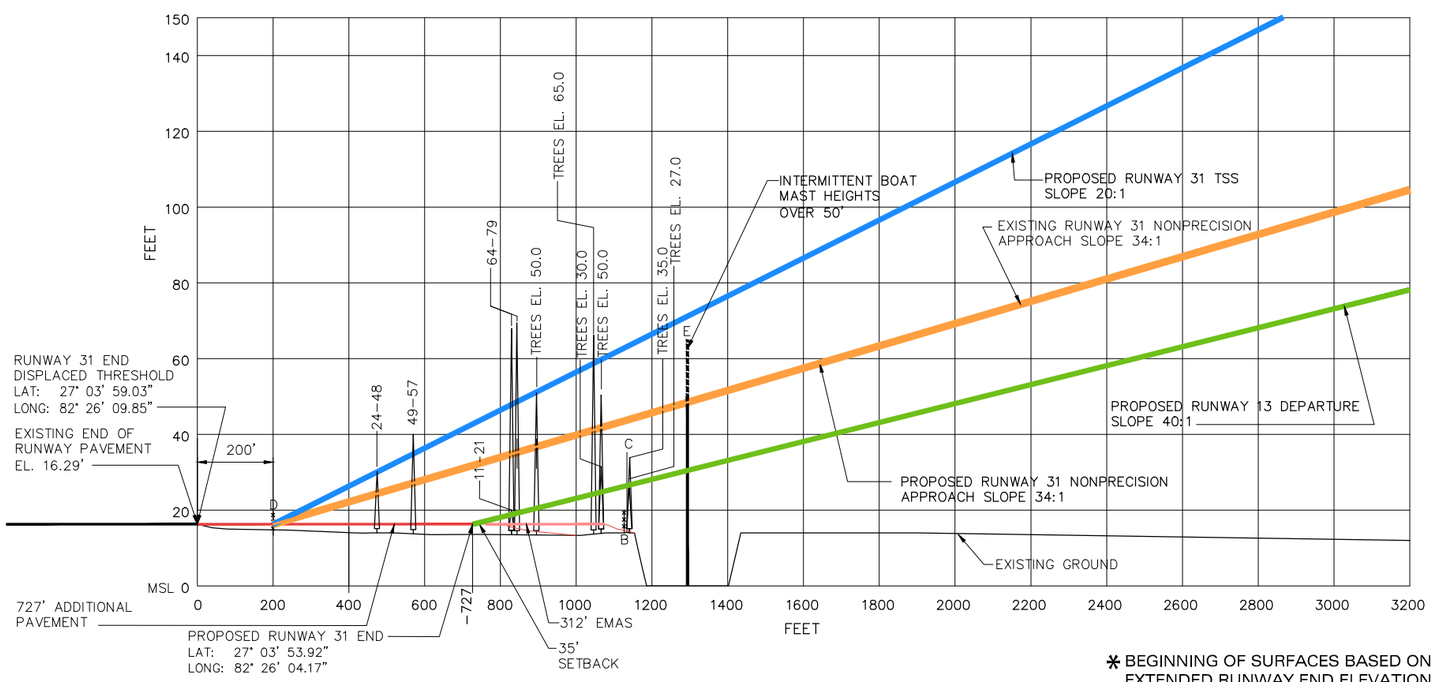


PLAN VIEW



PROFILE VIEW

* BEGINNING OF SURFACES BASED ON EXTENDED RUNWAY END ELEVATION, FOR PLANNING PURPOSES ONLY.

APPROACH TABLE		
RUNWAY 31	EXISTING	ULTIMATE
TYPE OF APPROACH	NONPRECISION	NONPRECISION
APPROACH SLOPE	34:1	34:1

OBSTRUCTION TABLE

OBS. NO.	DESCRIPTION	TOP ELEV. (MSL)	FAR PART 77 (MSL)	APPR. SURF. PENET. (FT)	PROPOSED MITIGATION
A	FENCE	19.4	16.3	(+) 3.1	REMOVE/RELOCATE
B	FENCE	20.0	43.5	(−) 23.5	REMOVE/RELOCATE
C	CL. ROAD	14.1	43.9	(−) 29.8	NONE
D	FENCE	20.2	16.3	(+) 3.9	REMAINS (MOS−3)
1	TREE	32.2	17.8	(+) 14.4	TRIM/REMOVE
2	TREE	29.3	19.0	(+) 10.3	TRIM/REMOVE
3	TREE	29.0	19.8	(+) 9.2	TRIM/REMOVE
4	TREE	29.4	21.7	(+) 7.7	TRIM/REMOVE
5	TREE	29.4	23.1	(+) 6.3	TRIM/REMOVE
6	TREE	25.5	24.3	(+) 1.2	TRIM
7	TREE	26.9	25.3	(+) 1.6	TRIM
8	TREE	26.9	26.1	(+)0.8	TRIM
9	TREE	28.2	27.0	(+) 1.2	TRIM
10	TREE	28.3	30.2	(−) 1.9	TRIM/REMOVE
11	TREE	60.8	33.7	(+) 27.1	TRIM/REMOVE
12	TREE	62.9	34.3	(+) 28.6	TRIM/REMOVE
13	TREE	79.1	35.2	(+) 43.9	TRIM/REMOVE
14	TREE	73.9	35.5	(+) 38.4	TRIM/REMOVE
15	TREE	68.3	36.3	(+) 32.0	TRIM/REMOVE
16	TREE	71.8	37.0	(+) 34.8	TRIM/REMOVE
17	TREE	53.9	34.8	(+) 19.1	TRIM/REMOVE
18	TREE	34.9	34.9	0	TRIM
19	TREE	26.3	35.3	(−) 9.0	NONE
20	TREE	44.4	37.6	(+) 6.8	TRIM/REMOVE
21	TREE	53.5	38.4	(+) 15.1	TRIM/REMOVE
22	TREE	34.6	16.7	(+) 17.9	TRIM/REMOVE
23	TREE	45.1	17.5	(+) 27.6	TRIM/REMOVE
24	2−TREES	30.7	20.1	(+) 10.6	TRIM/REMOVE
25	TREE	66.7	21.4	(+) 45.3	TRIM/REMOVE
26	TREE	32.9	22.9	(+) 10.0	TRIM/REMOVE
27	TREE	29.5	22.8	(+) 6.7	TRIM/REMOVE
28	TREE	33.1	22.8	(+) 10.3	TRIM/REMOVE
29	TREE	26.9	23.8	(+) 3.1	TRIM/REMOVE
30	TREE	40.0	23.9	(+) 16.1	TRIM/REMOVE
31	TREE	38.0	23.7	(+) 14.3	TRIM/REMOVE
32	TREE	46.1	23.5	(+) 23.6	TRIM/REMOVE
33	TREE	34.4	24.2	(+) 10.2	TRIM/REMOVE
34	TREE	22.0	24.9	(−) 2.9	TRIM
35	TREE	45.5	25.0	(+) 20.5	TRIM/REMOVE
36	TREE	47.0	25.1	(+) 21.9	TRIM/REMOVE
37	TREE	37.8	25.4	(+) 12.4	TRIM/REMOVE
38	TREE	43.3	25.4	(+) 17.9	TRIM/REMOVE
39	TREE	33.4	26.6	(+) 6.8	TRIM/REMOVE
40	TREE	33.4	27.3	(+) 6.1	TRIM/REMOVE
41	TREE	32.5	27.6	(+) 4.9	TRIM/REMOVE
42	TREE	39.1	28.2	(+) 10.9	TRIM/REMOVE
43	TREE	56.3	29.0	(+) 27.3	TRIM/REMOVE
44	TREE	30.9	29.8	(+) 1.1	TRIM
45	TREE	29.1	29.8	(−) 0.7	TRIM
46	TREE	37.0	31.1	(+) 5.9	TRIM/REMOVE
47	TREE	34.0	31.0	(+) 3.0	TRIM/REMOVE
48	TREE	54.0	31.9	(+) 22.1	TRIM/REMOVE
49	TREE	25.6	28.3	(−) 2.7	TRIM
50	TREE	30.8	29.4	(+) 1.4	TRIM
51	TREE	28.4	30.8	(−) 2.4	TRIM
52	TREE	33.6	32.5	(+) 1.1	TRIM
53	TREE	35.1	35.0	(+) 0.1	TRIM
54	TREE	38.5	38.1	(+)0.4	TRIM
55	TREE	28.0	40.7	(−) 12.7	NONE
56	TREE	32.2	40.7	(−) 8.5	NONE
57	TREE	38.2	41.8	(−) 3.6	TRIM
58	TREE	20.9	43.9	(−) 23.0	NONE
59	TREE	32.7	45.5	(−) 12.8	NONE
60	TREE	39.3	45.8	(−) 6.5	NONE
61	4−TREES	41.9	46.7	(−) 4.8	NONE
62	TREE	52.8	42.0	(+) 10.8	TRIM/REMOVE
63	TREE	54.2	39.5	(+) 14.7	TRIM/REMOVE
64	TREE	75.0	33.8	(+) 41.2	TRIM/REMOVE
65	TREE	80.3	33.6	(+) 46.7	TRIM/REMOVE
66	TREE	75.1	33.4	(+) 41.7	TRIM/REMOVE
67	TREE	85.2	33.9	(+) 51.3	TRIM/REMOVE
68	TREE	20.5	34.8	(−) 14.3	NONE
69	TREE	65.0	34.9	(+) 30.1	TRIM/REMOVE
70	TREE	19.4	35.7	(−) 16.3	NONE
71	TREE	19.9	37.0	(−) 17.1	NONE
72	TREE	58.1	38.1	(+) 20.0	TRIM/REMOVE
73	TREE	39.1	38.9	(+) 0.2	TRIM

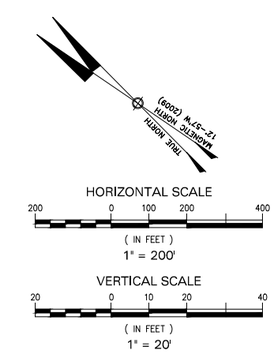
APPROACH TABLE		
RUNWAY 31	EXISTING	ULTIMATE
TYPE OF APPROACH	NONPRECISION	NONPRECISION
APPROACH SLOPE	34:1	34:1

OBSTRUCTION TABLE (CONTINUATION)

OBS. NO.	DESCRIPTION	TOP ELEV. (MSL)	FAR PART 77 (MSL)	APPR. SURF. PENET. (FT)	PROPOSED MITIGATION
74	TREE	62.2	40.2	(+) 22.0	TRIM/REMOVE
75	TREE	68.0	41.2	(+) 26.8	TRIM/REMOVE
76	TREE	69.1	43.0	(+) 26.1	TRIM/REMOVE
77	TREE	39.0	42.2	(−) 3.2	TRIM
78	TREE	21.7	43.5	(−) 21.8	NONE
79	3−TREES	39.5	44.9	(−) 5.4	NONE
80	TREE	59.6	47.4	(+) 12.2	TRIM/REMOVE
81	TREE	58.4	47.1	(+) 11.3	TRIM/REMOVE
82	TREE	66.9	46.8	(+) 20.1	TRIM/REMOVE
83	TREE	70.5	47.1	(+) 23.4	TRIM/REMOVE
84	TREE	39.1	48.2	(−) 9.1	NONE
85	TREE	58.7	48.7	(+) 10.0	TRIM/REMOVE
86	TREE	39.2	49.3	(−) 10.1	NONE
87	TREE	63.4	49.3	(+) 14.1	TRIM/REMOVE
88	TREE	25.8	43.5	(−) 17.7	REMOVE (RSA)
89	TREE	24.4	43.9	(−) 19.5	REMOVE (RSA)
90	TREE	29.0	44.2	(−) 15.2	REMOVE (RSA)
E	INTRACOASTAL WATERWAY	0	29.8	NONE	NONE

NOTES:

1. NEGATIVE (−) NUMBERS REPRESENT ELEVATIONS BELOW APPROACH SLOPE SURFACE. POSITIVE (+) NUMBERS REPRESENT ELEVATIONS ABOVE APPROACH SLOPE SURFACE.
2. ALL TREES AND ANY OTHER OBJECTS, EXCEPT NAVAIDS WITHIN THE RUNWAY SAFETY AREA SHALL BE REMOVED OR RELOCATED.



FINAL

NO.	REVISION	BY	APP.	DATE

VENICE MUNICIPAL AIRPORT
CITY OF VENICE, FLORIDA

RUNWAY 31 END
INNER APPROACH AND DEPARTURE SURFACES

DRAWN:	CHKD:	DATE:	PROJECT NO.
WA/KA	LM/MG	06/28/2011	DY401.00

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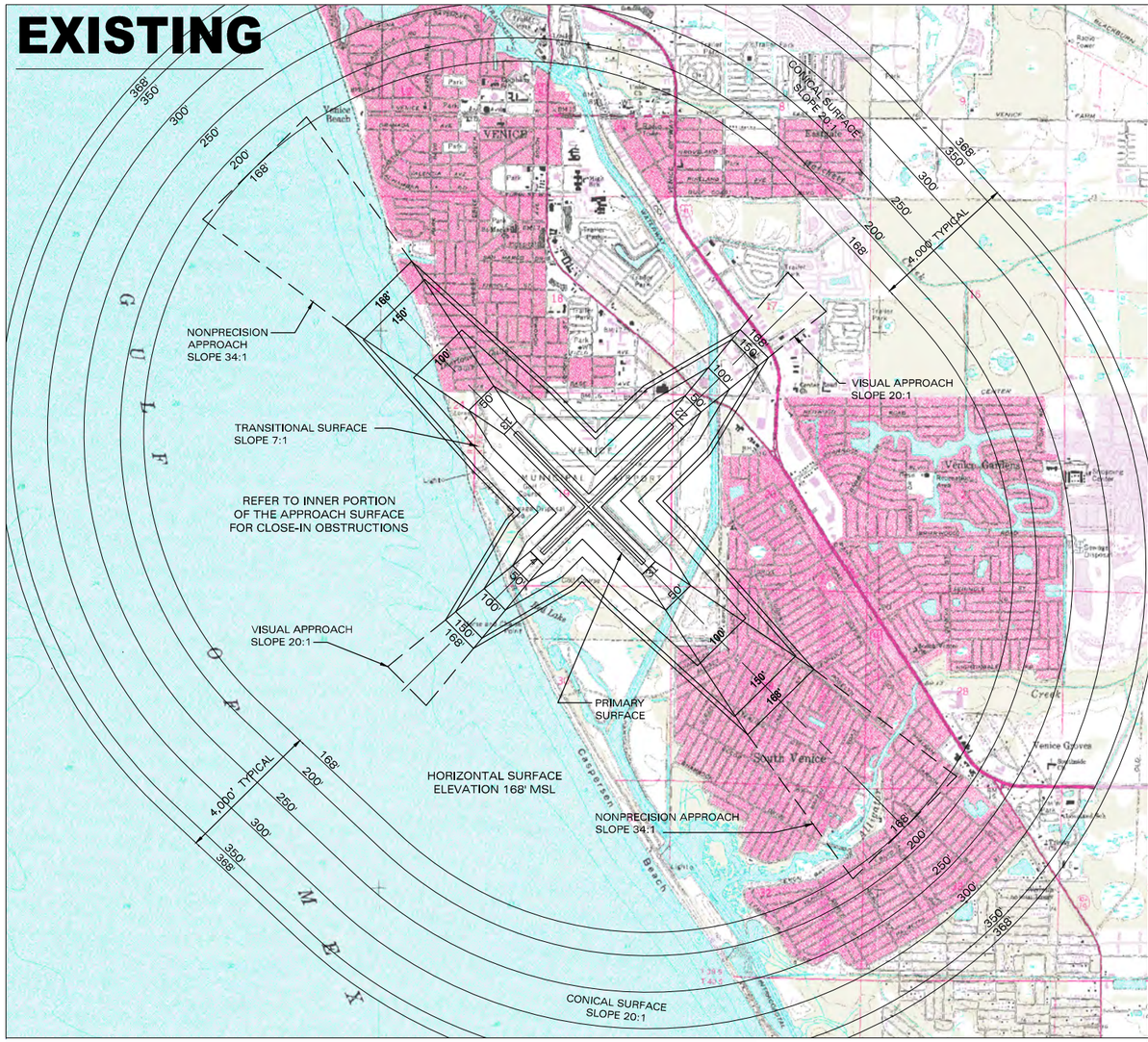
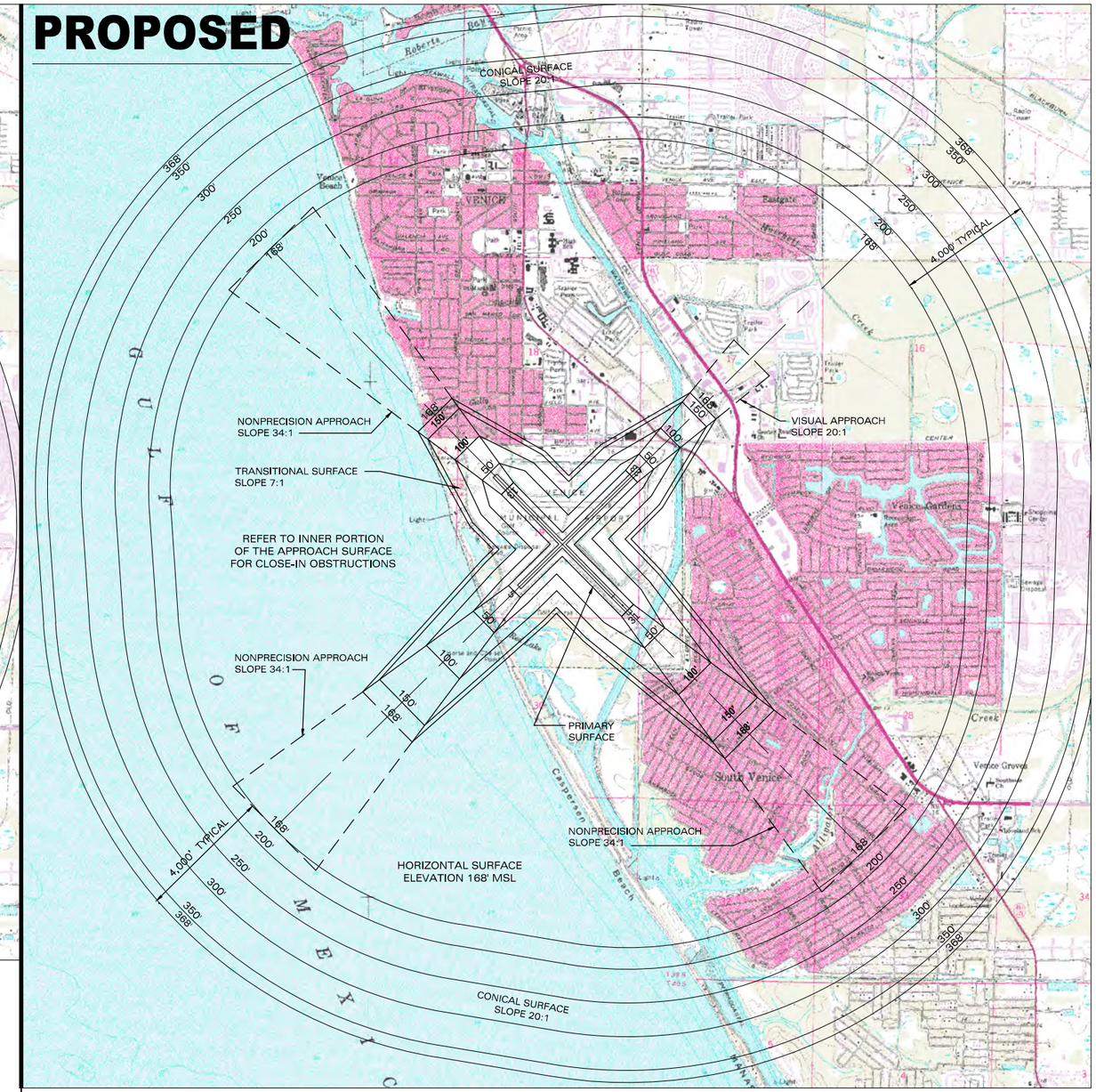
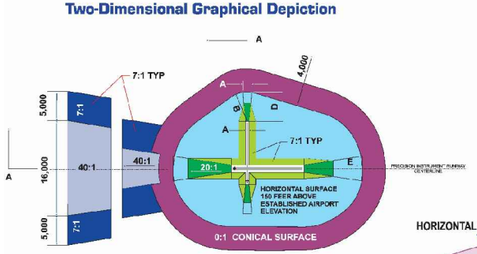
EXISTING



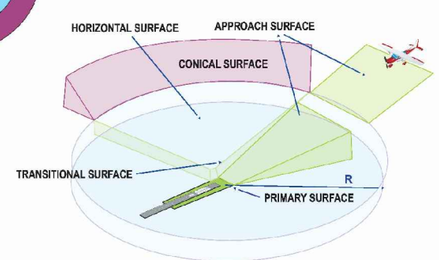
PROPOSED

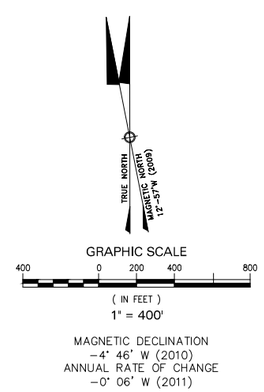


Two-Dimensional Graphical Depiction



Graphical Depiction





MAGNETIC DECLINATION
−4° 46' W (2010)
ANNUAL RATE OF CHANGE
−0° 06' W (2011)

SOURCE:
USGS (United States Geological Survey)

DATE:
SURVEY: 1973
PRINT & VERSION: 1987

NOTE:

FOR C-II AIRPORT REFERENCE CODE

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NO.	REVISION	BY	APP.	DATE

VENICE MUNICIPAL AIRPORT
CITY OF VENICE, FLORIDA

AIRSPACE PLAN
(FAR PART 77 SURFACES)

DRAWN:	CHKD:	DATE:	PROJECT NO.
WA/KA	LM/MG	06/28/2011	DY401.00

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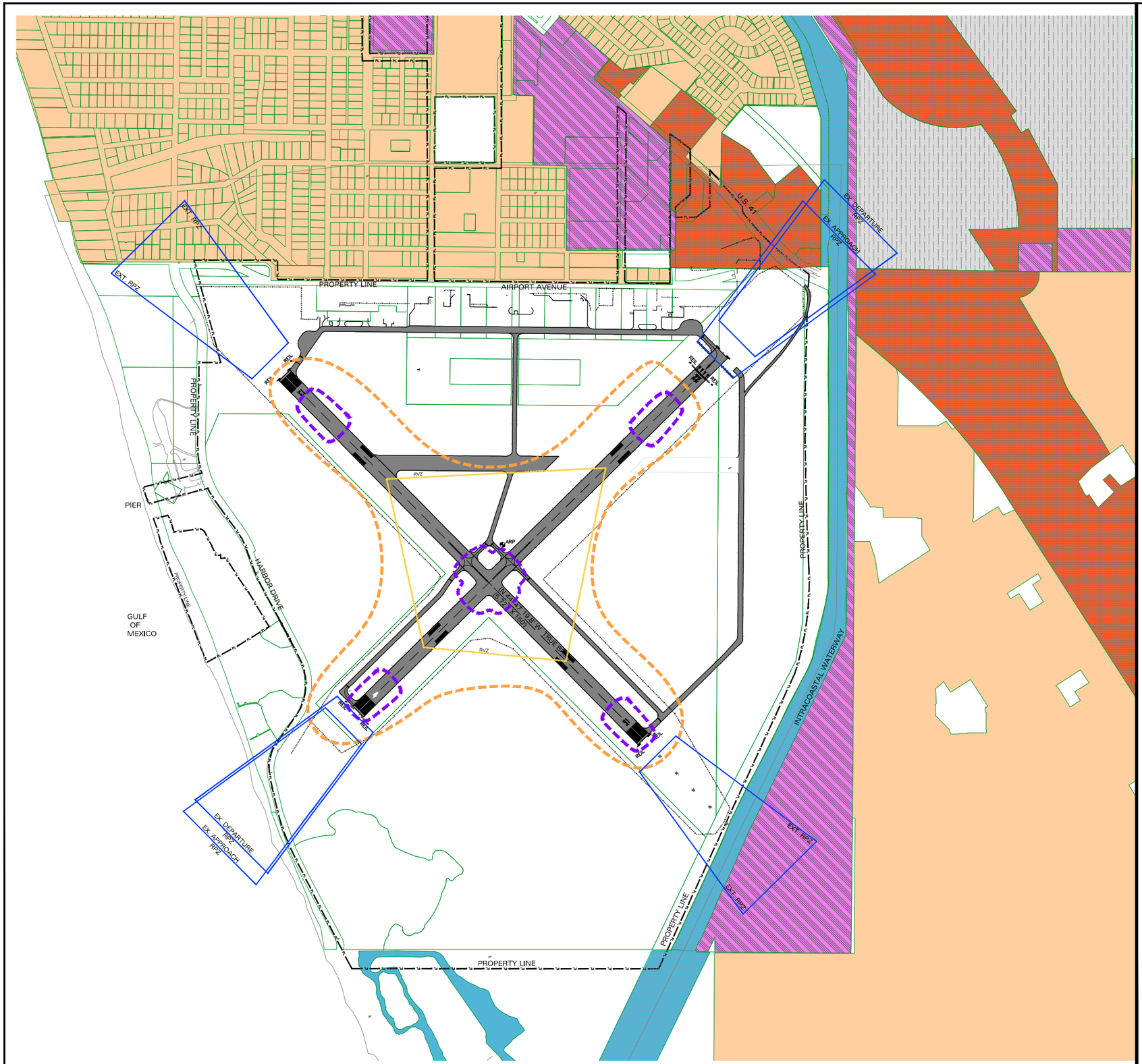
SHEET 11 OF 15



LEGEND

EXISTING	DESCRIPTION
	AIRPORT REFERENCE POINT (ARP)
	PROPERTY LINE
15	CONTOUR LINES
x 20.0	SURFACE ELEVATION
	PAVED SURFACES
x	FENCE
	BUILDING
	THRESHOLD LIGHTS
	WINDSOCK
	REIL
	PAPI
	ODALS
NONE	MODIFICATION TO STANDARDS
NONE	AVIGATION EASEMENT
	MEDIUM DENSITY RESIDENTIAL
	INDUSTRIAL
	COMMERCIAL
	INSTITUTIONAL – PROFESSIONAL
	WATERWAYS
	AIRPORT OPERATIONS
	60 DNL NOISE CONTOUR
	65 DNL NOISE CONTOUR
	RUNWAY VISIBILITY ZONE
	RUNWAY PROTECTION ZONE (RPZ)
22 / 4	EXISTING PAVEMENT & MARKINGS

TRUE NORTH
MAGNETIC NORTH (2009)
12°-25'-W

GRAPHIC SCALE

400 0 200 400 800

(IN FEET)
1" = 400'

MAGNETIC DECLINATION
–4° 46' W (2010)
ANNUAL RATE OF CHANGE
–0° 06' W (2011)

SOURCE: LAND USE INFORMATION - CITY OF VENICE, 2008;
NOISE CONTOURS - DY CONSULTANTS, 2010.

NOTE:

THIS DOCUMENT WAS PREPARED FOR PLANNING PURPOSES ONLY.

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NO.	REVISION	BY	APP.	DATE

VENICE MUNICIPAL AIRPORT

CITY OF VENICE, FLORIDA

EXISTING LAND USE PLAN

DRAWN:	CHKD:	DATE:	PROJECT NO.
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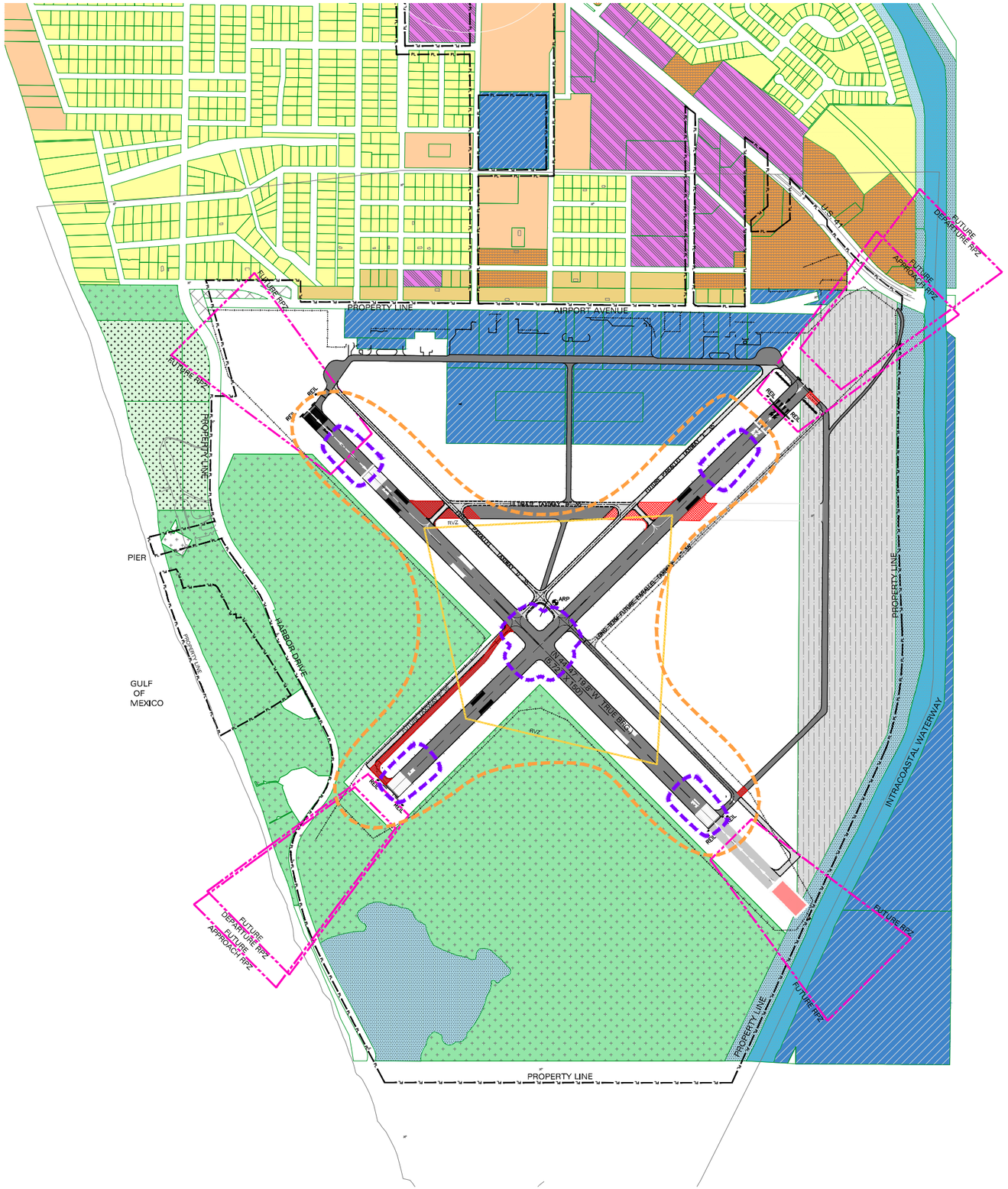

LEGEND

EXISTING	DESCRIPTION
	AIRPORT REFERENCE POINT (ARP)
	PROPERTY LINE
15	CONTOUR LINES
x 20.0	SURFACE ELEVATION
	PAVED SURFACES
x	FENCE
	BUILDING
	THRESHOLD LIGHTS
	WINDSOCK
	REIL
	PAPI
	ODALS
NONE	MODIFICATION TO STANDARDS
NONE	AVIGATION EASEMENT
	LOW DENSITY RESIDENTIAL
	MODERATE DENSITY RESIDENTIAL
	MEDIUM DENSITY RESIDENTIAL
	INDUSTRIAL
	COMMERCIAL
	INSTITUTIONAL – PROFESSIONAL
	PUBLIC BUILDINGS & FACILITIES
	RECREATION & OPEN SPACE
	CONSERVATION
	MARINE PARK
	WATERWAYS
	AIRPORT OPERATIONS
	65 DNL NOISE CONTOUR
	60 DNL NOISE CONTOUR
	RUNWAY VISIBILITY ZONE
	RUNWAY PROTECTION ZONE (RPZ)
	EXISTING PAVEMENT & MARKINGS
	FUTURE PAVEMENT & MARKINGS
	RUNWAY/TWY PAVEMENT REMOVAL

TRUE NORTH
MAGNETIC NORTH (2009)
12°-54'-W

GRAPHIC SCALE

400 0 200 400 800

(IN FEET)
1" = 400'

MAGNETIC DECLINATION
–4° 46' W (2010)
ANNUAL RATE OF CHANGE
–0° 06' W (2011)

SOURCE: LAND USE INFORMATION - CITY OF VENICE, 2008;
UNDER REVIEW BY DCA;
NOISE CONTOURS - DY CONSULTANTS, 2010.

NOTE:

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VENICE MUNICIPAL AIRPORT
CITY OF VENICE, FLORIDA

FUTURE LAND USE PLAN

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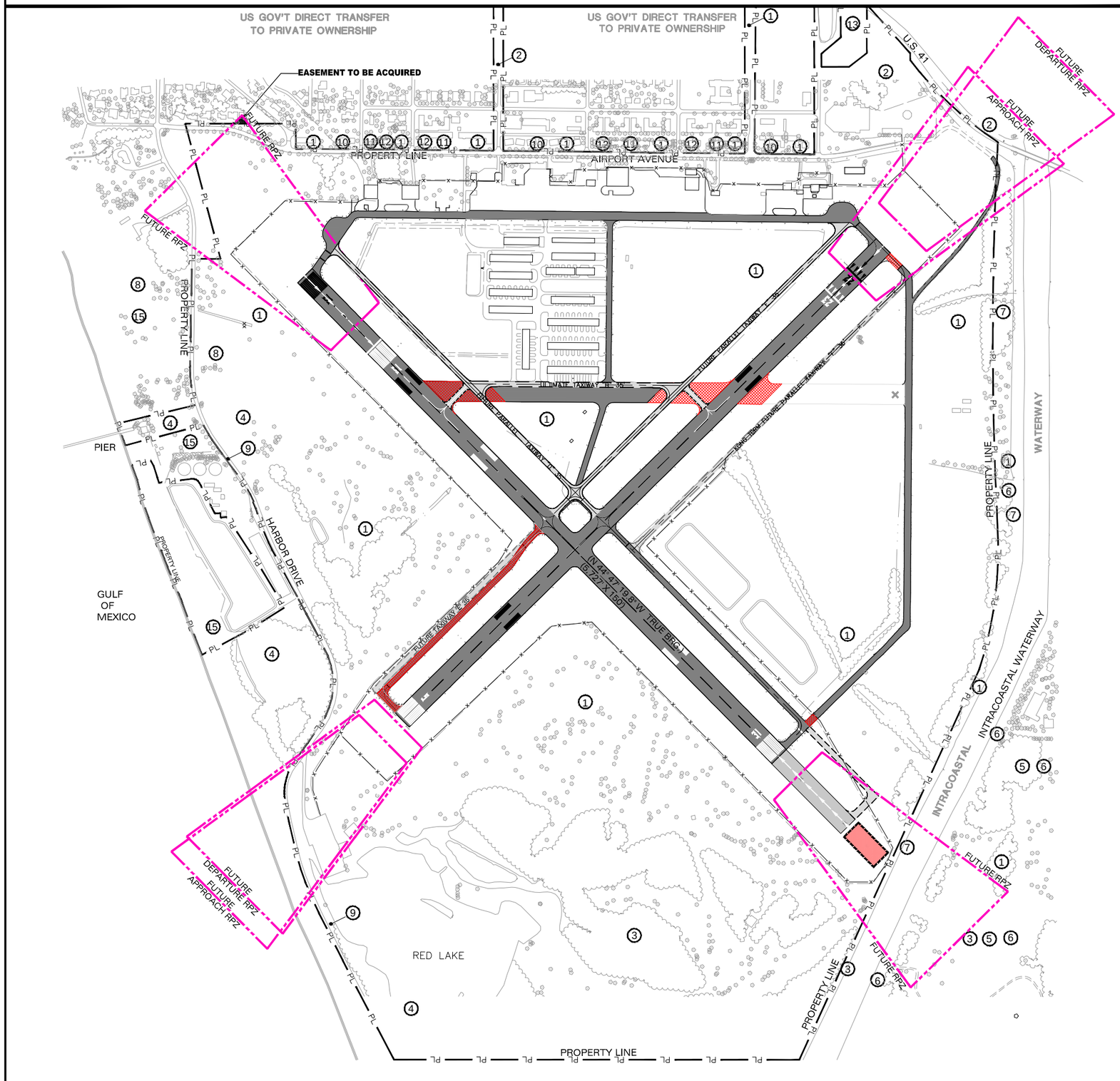
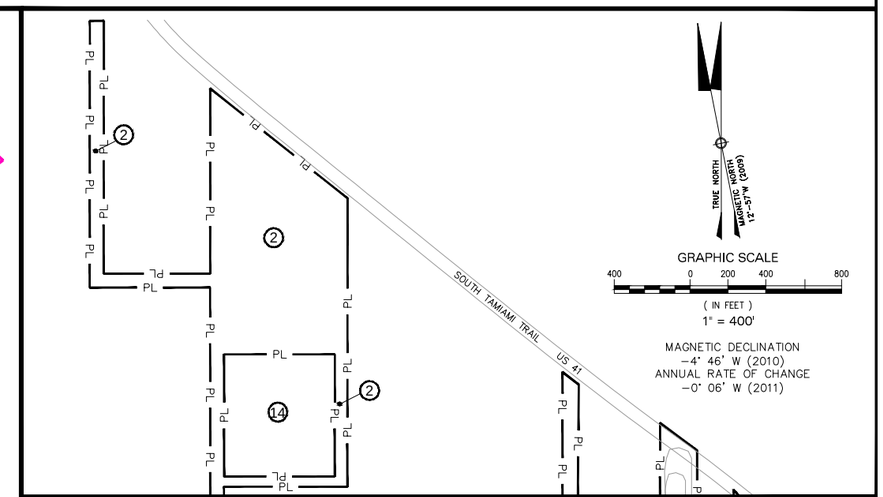
SEE INSET "A" THIS SHEET





INSET "A"

AIRPORT DEEDS						
KEY#	DATE	GRANTOR	GRANTEE	TYPE OF DEED	RECORDED	
1	6/10/47 7/31/59	UNITED STATES UNITED STATES	CITY OF VENICE CITY OF VENICE	QUITCLAIM RELEASE	BK 227 OR 177	PG 192 PG 612
2	7/07/48 12/20/67	UNITED STATES VENICE LAND CO.	CITY OF VENICE CITY OF VENICE	QUITCLAIM QUITCLAIM	BK 240 OR 715	PG 352 PG 22
3	8/21/57 10/29/59	UNITED STATES UNITED STATES	CITY OF VENICE CITY OF VENICE	QUITCLAIM RELEASE	OR 55 OR 193	PG 262 PG 439
4	5/25/59	UNITED STATES	CITY OF VENICE	QUITCLAIM	OR 165	PG 484
5	6/11/59 4/01/63 4/09/63	CITY OF VENICE WCIND CITY OF VENICE	WCIND CITY OF VENICE WCIND	QUITCLAIM QUITCLAIM QUITCLAIM	OR 206 OR 419 OR 419	PG 19 PG 716 PG 892
6	3/28/63	UNITED STATES	CITY OF VENICE	RELEASE	OR 419	PG 719
7	4/10/63	CITY OF VENICE	PUBLIC	RIGHT-OF-WAY	OR 419	PG 908
8	4/14/64	UNITED STATES	CITY OF VENICE	QUITCLAIM	OR 479	PG 495
9	10/29/64 12/02/64	CITY OF VENICE CITY OF VENICE	PUBLIC PUBLIC – CORRECTION	RIGHT-OF-WAY RIGHT-OF-WAY	OR 502 OR 507	PG 146 PG 551
10	5/14/71	UNITED STATES	CITY OF VENICE	RELEASE	OR 896	PG 871
11	6/08/72	UNITED STATES	CITY OF VENICE	RELEASE	OR 964	PG 5
12	11/21/72	UNITED STATES	CITY OF VENICE	RELEASE	OR 981	PG 366
13	7/25/96	CITY OF VENICE	ITALIAN AMERICAN	RELEASE	BK 2972	PG 371
14	2/10/98	CITY OF VENICE	CITY OF VENICE – CHUCK REITER PK.	RELEASE	BR 3073	PG 2752
15	6/15/98	CITY OF VENICE	CITY OF VENICE – BROHARD PK.	RELEASE	1998088086	

NOTE: RUNWAY 4-22 TO BE RE-MARKED TO 5-23 DURING RUNWAY REHABILITATION PROJECT.

SOURCE: 1999 ALP PROPERTY MAP. CITY IS PRESENTLY UPDATING PROPERTY MAP AND SURVEY INFORMATION.

THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THESE DOCUMENTS BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED HEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS.

FINAL

NO.	REVISION	BY	APP.	DATE

VENICE MUNICIPAL AIRPORT
CITY OF VENICE, FLORIDA

PROPERTY MAP

DRAWN:	CHKD:	DATE:	PROJECT NO.
WA/KA	LM/MG	06/28/2011	DY401.00

DY Consultants
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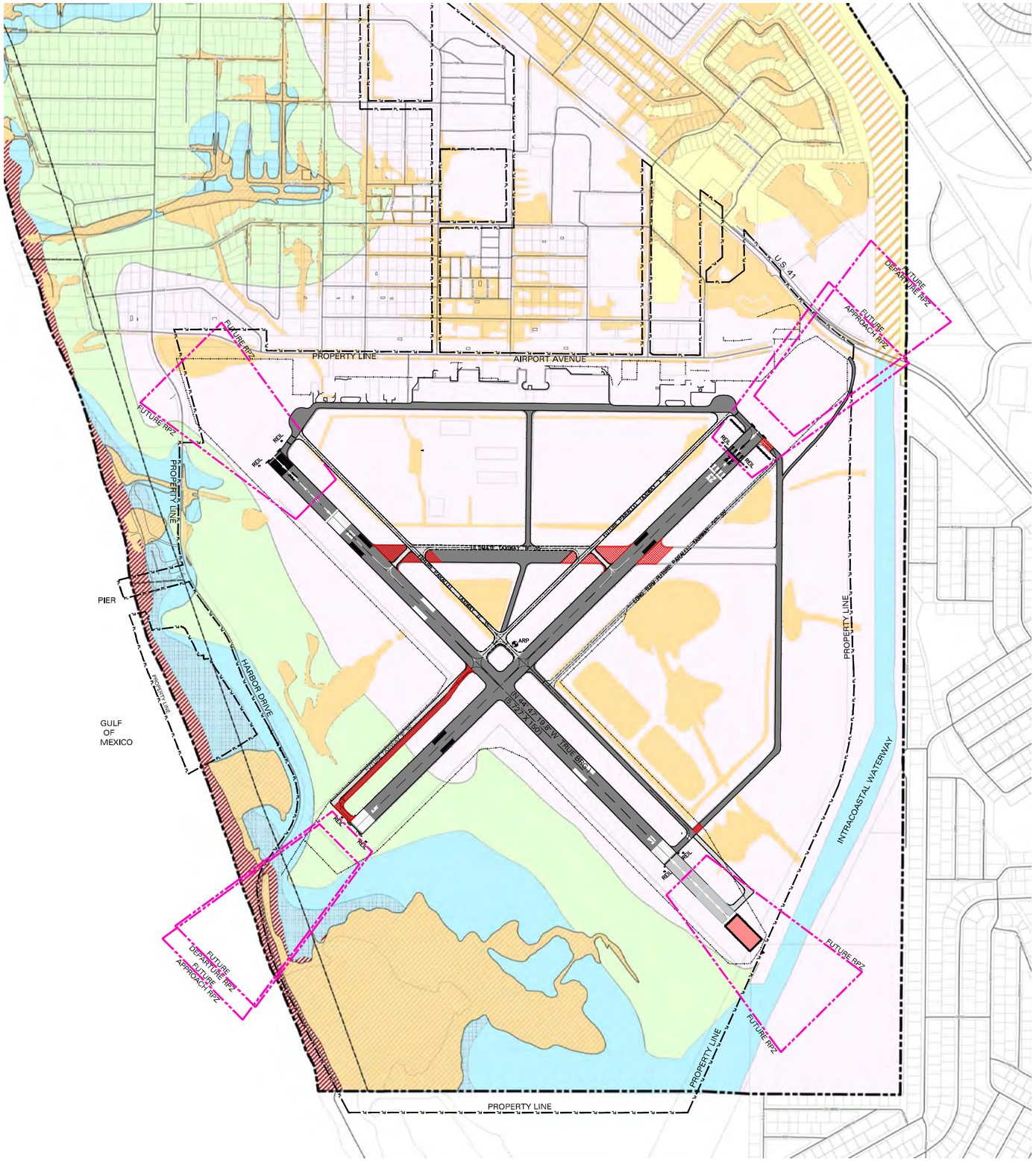
401 FRANKLIN AVENUE, SUITE 318, GARDEN CITY, NY 11530
Tel No. (516) 625-9800 Fax No. (516)625-9816



LEGEND	
EXISTING	DESCRIPTION
	AIRPORT REFERENCE POINT (ARP)
	PROPERTY LINE
15	CONTOUR LINES
x 20.0	SURFACE ELEVATION
	PAVED SURFACES
x	FENCE
	RUNWAY PROTECTION ZONE (RPZ)
	THRESHOLD LIGHTS
	WINDSOCK
	REIL
	PAPI
	ODALS
22	EXISTING PAVEMENT & MARKINGS
22	FUTURE PAVEMENT & MARKINGS
	EXISTING PAVEMENT TO BE REMOVED
	Zone A
	Zone A12 El. 11
	Zone A12 El. 12
	Zone AE
	Zone AE El. 11
	Zone AE El. 12
	AH
	Zone B
	Zone C
	Zone X
	Zone X Shaded
	Zone V16 El. 13
	Zone V16 El. 15
	Zone V16 El. 17
	Flood Zone To Be Determined By CFM

TRUE NORTH
MAGNETIC NORTH (2009) N.45-21

GRAPHIC SCALE
400 0 200 400 800
(IN FEET)
1" = 400'

MAGNETIC DECLINATION
-4° 46' W (2010)
ANNUAL RATE OF CHANGE
-0° 06' W (2011)

SOURCE: FLOOD ZONE INFORMATION - CITY OF VENICE, 2009.

NOTES:
FLOOD ZONES PRESENTLY BEING UPDATED BY FEMA AND AIRPORT MASTER DRAINAGE UPDATE .

FINAL

NO.	REVISION	BY	APP.	DATE

VENICE MUNICIPAL AIRPORT
CITY OF VENICE, FLORIDA

FLOOD ZONES

DRAWN:	CHKD:	DATE:	PROJECT NO.
WA/KA	LM/MG	06/28/2011	DY401.00

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5.0 Joint Automated Capital Improvement Program

5.1 Introduction

In general there are two grants-in-aid programs designed specifically for airport development subject to availability: the FAA's Airport Improvement Program (AIP) and the State's JACIP. Other funding sources are the revenues generated by the airport, City funds, loans, or private capital.

The Florida Department of Transportation (FDOT) Aviation Office has developed an automated system within the Florida Aviation Database (FAD) called the Joint Automated Capital Improvement Plan (JACIP). The JACIP was developed to provide a capital improvement program application that would work in partnership with the FAA's capital improvement programming process for funding airport projects in Florida. Data provided within the JACIP can be uploaded for use by the FAA Airports District Office (ADO) in their System of Airport Reporting (SOAR).

Florida airports should maintain an up-to-date JACIP to assist FDOT and FAA personnel with evaluating projects and assigning priorities for both FDOT and FAA grant funds. Close coordination should be maintained with the airport's local FAA and FDOT personnel. In the case of Venice, the local FAA office is located at the Orlando ADO and the FDOT's office is District 1 located in Bartow.

The AIP provides a maximum federal share of 90 percent for eligible projects on an approved airport layout plan. Eligible projects include: capital outlays for land acquisition;, site preparation; construction, alternation and repair of runways, taxiways, aircraft parking aprons and roads with airport boundaries (except for access to areas providing revenue such as parking lots and aviation commercial/industrial areas); construction and installation of lighting, some utilities, navigational aids and aviation-related weather reporting equipment and safety equipment. AIP grants may not be issued for the construction of terminal buildings, automobile parking facilities, buildings note related to the safety of persons at the airport, landscaping or art work, or routine maintenance and repair. Because of the large number of projects that compete for AIP funds, not all eligible projects can be funded. General aviation airports such as Venice receive $150,000 in entitlement funds.

If funds are available, the FDOT JACIP for general aviation airports can provide up to 80 percent of the cost of a project if federal funds are not available or 80 percent of the non-federal share of project costs. Economic development projects are eligible for up to 50 percent of its cost The State may also provide interest-free loans for up to ten years to fund up to 75 percent of the cost of land acquisition. As with the FAA, the FDOT does require that a current ALP be maintained to receive a joint participation agreement (JPA) grant from the State.

The airport generates revenue through leases both hangar rents and ground leases on and off the airport. To enhance cash flow the City may wish to undertake an Airport Business Plan to fully investigate the future rate increases, commerce park development and other sources of increased revenue. The following pages presents the projects that were approved by the Venice City Council on June 28, 2011 for inclusion in the JACIP and some that are shown on the ALP.

Proposed JACIP - June 28, 2011
APPROVED

Grant Accepted

Item	Project Description	Sponsor Year	Funding Breakdown				Narrative	Justification
			Federal $	State $	Local $	Total $		
1	Design and Construct new T-Hangars	2007	$0	$760,000	$190,000	$950,000	JPA #412238 1 Design and Construct T-Hangars	Capital improvement project which generates revenue for the airport provides a service to the local based aircraft owners/pilots.
		2007 TOTALS	$0	$760,000	$190,000	$950,000		
2	T-Hangars	2008	$0	$113,437	$28,359	$141,796	JPA #414307 1 Design and construct T-hangars	Capital improvement project which generates revenue for the airport provides a service to the local based aircraft owners/pilots.
		2008 TOTALS	$0	$113,437	$28,359	$141,796		
3	Airfield Markings - Replace Signage and Repaint Striping	2009	$0	$95,200	$23,800	$119,000	JPA #423659 1 Airfield Markings-Replace Signage & Repaint Striping - Provide a detailed set of plans for painting runways, taxiways, and aprons, which meet FAA design criteria. Provide detail plans for updating guidance signs and access signs to current FAA criteria.	Airfield marking is old and faded. These faded markings make it difficult for pilots to navigate the taxiways and aprons (especially at night). There are also no markings near the existing T-Hangar area. In addition, the current signs are not adequate to meet the needs of aircraft operators not familiar with the airport. Current signs are not located to meet requirements in the FAA circulars for a C-II airport.
4	Install Perimeter Fencing for Safety Wildlife Deterrent Outside Runway Safety Area/Runway Object Free Area	2009	$0	$100,000	$25,000	$125,000	JPA #423493 1 Remove existing safety fence and relocate outside ROFA. In addition, the new fence will include wildlife deterrent fabric.	This project will improve the safety for pilots by removing a potential obstruction, and reducing incursions from wildlife. This project will also meet FAA guidance for ROFA's.
		2009 TOTALS	$0	$195,200	$48,800	$244,000		

Proposed JACIP - June 28, 2011
APPROVED

Grant Accepted

Item	Project Description	Sponsor Year	Funding Breakdown				Narrative	Justification
			Federal $	State $	Local $	Total $		
5	Rehabilitation of Runway 4-22	2012	$4,845,000	$127,500	$127,500	$5,100,000	Design and rehabilitate Runway 4-22. After rehabilitation the runway will be redesignated as Runway 5-23.	The runway is generally known to be in poor condition, is weight restricted to 24,000 lb aircraft and is not fully utilized as the City's noise mitigation runway. The 2011 FDOT Statewide Pavement Condition Index was "very poor" (29) and indicates that Runway 4-22 requires rehabilitation.
6	Runway 4-22 RSA and ROFA Improvements	2012	$0	$1,680,000	$420,000	$2,100,000	Design and construct Runway 22 departure end RSA, ROFA and golf course modifications under the proposed ALP.	This project is required in order to meet current FAA standards and to receive federal funding for the rehabilitation of runway 4-22. This project should be completed concurrently with the Runway 4/22 Rehabilitation project.
7	Taxiway "E" Realignment	2012	$798,000	$21,000	$21,000	$840,000	Design and construct the realignment of Taxiway "E" to meet runway centerline to taxiway centerline standards.	This project is depicted on the proposed ALP and is required to meet current FAA standards. This project should be completed concurrently with the Runway 4/22 Rehabilitation project.
8	Relocate/Replace Wind Indicator Out of RSA	2012	$82,644	$2,175	$2,175	$86,994	Project consists of removal and replacement of the existing midfield wind direction indicator outside of the RSA.	Wind indicator is a large non-frangibly mounted object currently located within the RSA for both RWY 13-31 and 4-22. This project should be completed concurrently with the Runway 4/22 Rehabilitation project.

Proposed JACIP - June 28, 2011
APPROVED

Grant Accepted

Item	Project Description	Sponsor Year	Funding Breakdown				Narrative	Justification
			Federal $	State $	Local $	Total $		
9	Environmental Assessment - Runway 13-31	2012	$427,500	$11,250	$11,250	$450,000	Environmental Assessment for the proposed Runway 13-31 improvements and related projects . Study will evaluate the impact(s) of the proposed improvements and will include public participation.	Project is necessary for meeting federal law for implementing Runway 13-31 improvements as depicted on the proposed ALP.
10	Survey for GPS Approaches	2012	$475,000	$12,500	$12,500	$500,000	Survey for GPS approaches on Runway 5-23.	Required by FAA to establish non-precision GPS approaches for the airport's preferred noise mitigation runway.
11	Replace Airport Rotating Beacon	2012	$0	$160,000	$40,000	$200,000	Relocate and replace airport rotating beacon.	This project will update and relocate airport rotating beacon. The current structure is more than 25 years old and in poor condition.
12	T-Hangar Hurricane Improvements	2012	$0	$400,000	$100,000	$500,000	Rehabilitate and upgrade existing t-hangars to current hurricane standards based upon evaluation conducted by MEA Group. Projects could consist of new hydraulic doors, new paint, structural upgrades to the steel frame and electrical items.	This project will help upgrade existing T-Hangars and other airport buildings to current hurricane codes, or to the extent possible. This project would reduce the probability of large scale damage to the airport from hurricane-force winds. It will also improve the safety by limiting a potential source of debris on the runways.

Proposed JACIP - June 28, 2011
APPROVED

Grant Accepted

Item	Project Description	Sponsor Year	Funding Breakdown				Narrative	Justification
			Federal $	State $	Local $	Total $		
13	T-Hangar Hurricane Disaster Preparation Design Set	2012	$0	$160,000	$40,000	$200,000	A full set of construction drawings for t-hangars shall be prepared to provide faster response after damaging storm event.	This project will give the airport the ability to construct new t-hangars if the existing facilities incur damage from a hurricane. This would benefit the airport by restoring services and providing a critical revenue source.
14	Taxiway OFA Improvements	2012	$14,774	$389	$389	$15,552	Remove tie-down apron from Taxiway OFA located near the Runway 13 run-up area.	Portions of existing apron encroach upon the TOFA; therefore, the areas do not conform to FAA standards. Project will upgrade areas to standards and provide necessary wingtip clearance for taxiing aircraft.
15	Replace AWOS	2012	$166,250	$0	$8,750	$175,000	Replace and relocate AWOS to remove as a penetration of transitional surface for Runway 13-31.	AWOS I was removed from service in 2009 at FAA request. It was replaced by an AWOS III in FY11. This project is to submit a request for reimbursement of design and construction costs for that project.
		2012 TOTALS	$6,809,168	$2,574,814	$783,564	$10,167,546		

Proposed JACIP - June 28, 2011
APPROVED

Grant Accepted

Item	Project Description	Sponsor Year	Funding Breakdown				Narrative	Justification
			Federal $	State $	Local $	Total $		
16	Design Runway 31 Extension and Taxiway "D" Extension and Rehabilitation	2013	$342,000	$9,000	$9,000	$360,000	Runway 13-31 will be shifted 727-feet to the southwest to shift the RPZ onto airport property to the extent possible. Taxiway "D" will be rehabilitated and extended to provide access to the new runway end.	Runway 13-31 will be shifted 727-feet to the southwest to shift the RPZ onto airport property as shown on the proposed ALP. The 2011 FDOT Pavement Condition Index was "fair" (63) for Taxiway D and it was last rehabilitated in 1970.
17	Design EMAS	2013	$712,500	$18,750	$18,750	$750,000	Design and permit EMAS site and EMAS installation.	Install EMAS at the end of Runway 31 as part of the project to shift the RPZ onto airport property under the proposed ALP. Project required to meet current FAA standards.
18	Design Rehabilitation of Runway 13-31 Connector Taxiways	2013	$95,000	$2,500	$2,500	$100,000	Design rehabilitation of Runway 13-31 connector taxiways that are located within the RSA and remove a portion of closed Runway 9 27 that is located within the ROFA.	The 2011 FDOT Pavement Condition Indexes range from "poor" (45) to "serious" (25). Since the runway will have to be closed for this work to be completed, this project should run concurrently with the Runway 13-31 extension.
19	Obstruction Removal and Grading of FAR Part 77 Surfaces	2013	$570,000	$15,000	$15,000	$600,000	Many areas exist within the FAR Part 77 surfaces that have trees or other objects that are proposed to be removed under the proposed ALP.	This project is required in order to meet FAR Part 77 standards.
20	Design & Rehabilitate taxilanes within the existing T-Hangar Area	2013	$0	$1,600,000	$400,000	$2,000,000	Design, permit and rehabilitate the taxilanes within the T-Hangar area, install new signs, and paint to meet FAA criteria.	This project will help maintain the taxilanes within the T-Hangar area. This project should improve safety.

Proposed JACIP - June 28, 2011
APPROVED

Grant Accepted

Item	Project Description	Sponsor Year	Funding Breakdown				Narrative	Justification
			Federal $	State $	Local $	Total $		
21	Aircraft Wash Rack	2013	$0	$320,000	$80,000	$400,000	Design, permit and construct aircraft wash rack.	Provide aircraft owners the ability to wash aircraft on airport property without violating FDEP rules and regulations regarding to industrial waste runoff.
22	Property Appraisal Update	2013	$90,000	$5,000	$5,000	$100,000	Update appraisal of airport leased properties to determine fair market value.	This project is required to ensure that fair market value is being received for airport leases for FAA compliance.
		2013 TOTALS	$1,809,500	$1,970,250	$530,250	$4,310,000		

Proposed JACIP - June 28, 2011
APPROVED

Grant Accepted

Item	Project Description	Sponsor Year	Funding Breakdown				Narrative	Justification
			Federal $	State $	Local $	Total $		
23	Comprehensive Master Security Plan	2014	$0	$250,000	$0	$250,000	Develop a comprehensive master security plan for the airport. This plan will provide guidance and priorities for airfield security. Construction of improvements will contribute to overall airfield security.	The airport currently has minimal security provided by a perimeter chain link fence with no barbed wire. The airport has minimal lighting on ramps. The current Master Plan recommends adding lights to the t-hangar locations. In addition, the airport would like to look at replacing gates and additional items which may help airfield security. The security plan will evaluate current conditions and propose a preferred solution to maintain/attain a high level of security. Construction of the improvements will contribute to the overall security of the airfield and improve safety for aircraft.
24	Construct Runway 31 Extension and Taxiway "D" Extension and Rehabilitation	2014	$1,710,000	$45,000	$45,000	$1,800,000	Runway 13-31 will be shifted 727-feet to the southwest to shift the RPZ onto airport property to the extent possible. Taxiway "D" will be extended to provide access to the new runway end.	Runway 13-31 will be shifted 727-feet to the southwest to permanently remove 24 single-family residences from the Runway 13 RPZ as shown on the proposed ALP.
25	Construct EMAS	2014	$6,650,000	$175,000	$175,000	$7,000,000	Construct EMAS site and install EMAS.	Install EMAS at the end of Runway 31 as part of the project to shift the RPZ onto airport property under the proposed ALP. Project required to meet current FAA standards.

Proposed JACIP - June 28, 2011
APPROVED

Grant Accepted

Item	Project Description	Sponsor Year	Funding Breakdown				Narrative	Justification
			Federal $	State $	Local $	Total $		
26	Construct Rehabilitation of Runway 13-31 Connector Taxiways	2014	$427,500	$11,250	$11,250	$450,000	Construct rehabilitation of Runway 13-31 connector taxiways that are located within the RSA and remove a portion of closed Runway 9 27 that is located within the ROFA.	The 2011 FDOT Pavement Condition Indexes range from "poor" (45) to "serious" (25). Since the runway will have to be closed for this work to be completed, this project should run concurrently with the Runway 13-31 extension.
27	Design Apron Rehabilitation	2014	$171,000	$4,500	$4,500	$180,000	Design and permit apron rehabilitation and reconfiguration of the existing tie-down area.	The apron is in poor condition. The 2011 FDOT Pavement Condition Index was "serious" (23). This project will rehabilitate the pavement and reconfigure the existing tie-down area to meet current FAA criteria for ADG-II aircraft.
28	Design & Construct T-Hangars - Midfield	2014	$0	$1,200,000	$300,000	$1,500,000	Design, permit and construct T-Hangars.	Capital improvement project which generates revenue for the airport and provides a service to the local based aircraft owners/pilots.
29	Safety, Wildlife and Security Fencing	2014	$760,000	$20,000	$20,000	$800,000	Design, permit and construct safety, wildlife, and security fencing along the airport's perimeter.	This new perimeter fence is needed to reduce the incursion of wildlife onto runways and taxiways. A field evaluation found numerous holes burrowed under the existing perimeter fence, and scat found on the runways. This project will improve safety.
		2014 TOTALS	$9,718,500	$1,705,750	$555,750	$11,980,000		

Proposed JACIP - June 28, 2011
APPROVED

Grant Accepted

Item	Project Description	Sponsor Year	Funding Breakdown				Narrative	Justification
			Federal $	State $	Local $	Total $		
30	Construct Apron Rehabilitation	2015	$4,750,000	$125,000	$125,000	$5,000,000	Construct Apron rehabilitation and reconfiguration of the existing tie-down area.	The 2011 FDOT Pavement Condition Index was "serious" (23). This project will rehabilitate the pavement, increase aircraft parking and improve landside capacity. In addition, it will reconfigure the existing tie-down area, to meet current FAA criteria for ADG-II aircraft.
31	Design Rehabilitation of Taxiways A, B, and C	2015	$665,000	$17,500	$17,500	$700,000	Design and permit the rehabilitation of Taxiways A, B and C.	These taxiways have not been rehabilitated for 25 - 69 years. The 2011 FDOT Pavement Condition Indexes range from "fair" (59) to "poor" (51).
32	Design Rehabilitation of Electrical Vault and Generator Replacement	2015	$190,000	$5,000	$5,000	$200,000	Assess and evaluate electrical vault needs. Design rehabilitation of building, including a new generator.	The existing electrical lighting system is aging and failure is starting to occur. The system is currently more than 20 years old and rehabilitation is necessary to maintain existing infrastructure and aviation safety. Should be completed concurrently with taxiway lighting system improvements.

Proposed JACIP - June 28, 2011
APPROVED

Grant Accepted

Item	Project Description	Sponsor Year	Funding Breakdown				Narrative	Justification
			Federal $	State $	Local $	Total $		
33	Design Taxiway Lighting System Improvements	2015	$142,500	$3,750	$3,750	$150,000	Assess, evaluate and design updated electrical system. This will include removing all direct buried cable and replace with in-conduit cable, install new signs, and relocate to meet current FAA standards.	The existing electrical lighting system is aging and failure is starting to occur. The system is currently over 20-years old and replacement is anticipated. This project is necessary to maintain existing infrastructure and aviation safety. Project needs to run concurrent with Electrical Vault.
34	Circus Arena Demolition and Access Road	2015	$1,900,000	$50,000	$50,000	$2,000,000	Raze the Circus Arena Building and develop a connecting road from U.S. Business 41 to Airport Avenue.	This project is contingent upon a 5-year Letter of Intent currently being drafted. The existing buildings are in extremely poor condition and limited access to the site has reduced interest in the property.
35	Reconfigure Airport Administration Building	2015	$0	$320,000	$80,000	$400,000	Design, permit and construct reconfiguration of airport administration building.	Reconfiguration of the existing building will allow the Airport to better meet the demands for leased office space, establish an aviation history museum and provide a public meeting/conference room.

Proposed JACIP - June 28, 2011
APPROVED

Grant Accepted

Item	Project Description	Sponsor Year	Funding Breakdown				Narrative	Justification
			Federal $	State $	Local $	Total $		
36	New Airport Maintenance Facility Building	2015	$0	$520,000	$130,000	$650,000	Design, permit and construct a new airport maintenance facility.	This project will relocate the maintenance facility to the infield and provide building meeting the current building, health and hurricane codes. The current facility has deteriorated and has limited use. The existing facility could then be renovated and leased to generate additional revenue due to its location with public street frontage.
37	Acquire Pavement Rehabilitation Trailer with Equipment	2015	$0	$28,000	$7,000	$35,000	Purchase new trailer with equipment to allow airport staff to conduct minor repairs to asphalt surface pavements.	This project will help staff maintain the runways, taxiways and apron areas by sealing cracks. It will also help improve safety by reducing the amount of FOD found on the surface pavements.
		2015 TOTALS	$7,647,500	$1,069,250	$418,250	$9,135,000		

Proposed JACIP - June 28, 2011
APPROVED

Grant Accepted

Item	Project Description	Sponsor Year	Funding Breakdown				Narrative	Justification
			Federal $	State $	Local $	Total $		
38	Airport Master Plan and ALP Update	2016	$332,500	$8,750	$8,750	$350,000	Hire consultant to update the airport master plan and ALP.	MPU and ALP should be updated every 5 years.
39	Construct Rehabilitation of Taxiways A, B and C	2016	$2,660,000	$70,000	$70,000	$2,800,000	Construct taxiway rehabilitation.	These taxiways have not been rehabilitated for 25 - 69 years. The 2011 FDOT Pavement Condition Indexes range from "fair" (59) to "poor" (51).
40	Construct Rehabilitation of Electrical Vault and Generator Replacement	2016	$1,425,000	$37,500	$37,500	$1,500,000	Assess and evaluate electrical vault needs. Construct rehabilitation of building and replace generator.	The existing electrical lighting system is aging and failure is starting to occur. The system is currently more than 20 years old and rehabilitation is necessary to improve airport and aviation safety. Should be completed concurrently with taxiway lighting system improvements.
41	Construct Taxiway Lighting System Improvements	2016	$950,000	$25,000	$25,000	$1,000,000	Construct updated electrical system. This will include removing all direct buried cable and replace with in-conduit cable install new signs, and relocate to meet current FAA standards.	The existing electrical lighting system is aging and failure is starting to occur. The system is currently over 20-years old and replacement is anticipated. This will improve airport and aviation public safety. Project needs to run concurrent with Electrical Vault.

Proposed JACIP - June 28, 2011
APPROVED

Grant Accepted

Item	Project Description	Sponsor Year	Funding Breakdown				Narrative	Justification
			Federal $	State $	Local $	Total $		
42	Design of Rehabilitation and Reconfiguration of Abandoned Runway 9-27 into Taxiway and Tie-down Apron	2016	$285,000	$7,500	$7,500	$300,000	Design and permit the rehabilitation and reconfiguration of Runway 9-27, which has been abandoned and is currently used as a taxiway, aircraft tie-down parking and as the maintenance run-up area.	The pavement has not been rehabilitated since 1942 and the 2011 FDOT Pavement Condition Index was "very poor" (28). In order to improve safety, this pavement should be rehabilitated and reconfigured into a taxiway meeting FAA standards. The aircraft parking and maintenance run-up areas will also require reconfiguration.
43	Design Access Road for Commerce Park	2016	$380,000	$10,000	$10,000	$400,000	Design and permit access road to airport commerce park.	This project will improve revenue opportunities for the airport by providing access to areas that are currently undevelopable due to lack of road access.
44	Design and Construct T-Hangars - Midfield #2	2016	$0	$1,200,000	$300,000	$1,500,000	Design and construct T-Hangars.	Capital improvement project which generates revenue for the airport provides a service to the local based aircraft owners/pilots.
		2016 TOTALS	$6,032,500	$1,358,750	$458,750	$7,850,000		

Proposed JACIP - June 28, 2011
APPROVED

Grant Accepted

Item	Project Description	Sponsor Year	Funding Breakdown				Narrative	Justification
			Federal $	State $	Local $	Total $		
45	Construct Rehabilitation and Reconfiguration of Abandoned Runway 9-27 into Taxiway and Tie-down Apron	2017	$2,375,000	$62,500	$62,500	$2,500,000	Construct the rehabilitation and reconfiguration of Runway 9-27, which has been abandoned and is currently used as a taxiway, aircraft tie-down parking and as the maintenance run-up area.	The pavement has not been rehabilitated since 1942 and the 2011 FDOT Pavement Condition Index was "very poor" (28). In order to improve safety, this pavement should be rehabilitated and reconfigured into a taxiway meeting FAA standards. The aircraft parking and maintenance run-up areas will also require reconfiguration.
46	Construct Access Road for Commerce Park	2017	$3,420,000	$90,000	$90,000	$3,600,000	Construct access road to airport commerce park.	This project will improve revenue opportunities for the airport by providing access to areas that are currently undevelopable due to lack of road access.
47	Taxiway "E" Extension	2017	$0	$960,000	$240,000	$1,200,000	Design, permit and construct taxiway "E" extension.	This project will enhance safety as aircraft regularly back-taxi on runway 5-23 in order to reach the FBOs. It will also encourage use of the preferred noise mitigation runway, 5-23.
48	Airfield Mowing Equipment	2017	$0	$122,400	$30,600	$153,000	Purchase 2 large tractors with mowing attachments.	Replace aging equipment and maintain airport safety by keeping grass areas adequately mowed.
		2017 TOTALS	$5,795,000	$1,234,900	$423,100	$7,453,000		

GRAND TOTALS of ALL YEARS	**$37,812,168**	**$10,982,351**	**$3,436,823**	**$52,231,342**