Airport Master Plan Update

City of Sanford, Maine

October 2015

Prepared By:

Hoyle, Tanner & Associates, Inc.

Airport Master Plan Update

SANFORD SEACOAST REGIONAL AIRPORT
SANFORD, MAINE

167 Airport Rd, Suite D
Sanford, Maine 04073

AIRPORT IMPROVEMENT PROGRAM
AIP No. 3-23-0044-030-2014

Hoyle, Tanner Project No. 060233

October 2015

Prepared by

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The contents of this Airport Master Plan reflect the views of the City of Sanford, Maine, which is responsible for the facts and accuracy of the data presented. The FAA acceptance of this Master Plan does not represent a commitment to provide federal financial assistance to implement any development or air navigation facility shown on the plan, nor does it mean that FAA funding of the proposed airport development is justified. The approval is subject to the condition that the proposed airport development requires environmental processing and may not be undertaken without FAA's prior written environmental approval.

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A - EXECUTIVE SUMMARY

A.1 PROPOSED DEVELOPMENT

The primary proposed development at the Sanford Seacoast Regional Airport (SFM) over the next 20 years consists of maintaining the existing runway and taxiway infrastructure for safe and efficient use by private and corporate aircraft operators while improving safety, managing and planning for future growth, and expanding aircraft storage capacity as demand warrants. A cost savings without losses in efficiency can occur if Runway 14/32 is redesigned and constructed within the next 10-15 years as a 75 foot wide B-II instead of 100 foot wide C-II runway with instrument approach minimum remaining at the current 1 statute mile. By reducing the runway standards to the dimensions consistent with a 4114 foot landing distance available runway on 14 and limiting the takeoff run available on 32 to the same 4114 feet the airport will almost eliminate all of the incompatible land uses currently existing in the 14 approach Runway Protection Zone (RPZ). An aeronautical survey of the 14/32 runway could improve the current GPS approach by allowing a vertically guided GPS approach to be developed. The airport will maintain an overall C-II designation with the capacity to support occasional itinerant C-III and larger aircraft on its primary 7/25 runway. A snow removal equipment and office building needs to be constructed to protect snow removal equipment (SRE) acquired with AIP funds. Wildlife fencing should be installed in phases as time and funding permits in accordance with the 2014 Wildlife Hazard Assessment recommendations. In addition, parcels of land have been identified that could be considered excess to the current or future aeronautical needs of the airport. These parcels could be released from the surplus property and grant assurance obligations so they could be leased for concurrent solar farm development or sold for non-aeronautical revenue generation. Additional drainage and utility infrastructure design and installation will provide incentives in the future for development on the west side of the airfield. The development on the west side of the field will be triggered primarily by demand for additional aircraft tiedowns or hangar storage. Improving the drainage and utility systems prior to the developers seeking space to build will make the Sanford Seacoast Regional Airport more efficient and more competitive.

A.2 PROPOSED PROJECTS AND TIMELINE FOR DEVELOPMENT

0-5 YEARS – SHORT TERM

Proposed Projects with Capital Improvement Costs			
ALP Legend	**Timeframe**	**Proposed Development**	**Estimated Cost**
a1	1 - 5	Wildlife Fencing - approx 9 ft - Phase 1	$ 150,000.00
a2	1 - 5	Wildlife Fencing - approx 9 ft - Phase 2	$ 150,000.00
b	1 - 5	SRE Building	$ 1,000,000.00[1]
c	1 - 5	Taxiway C Rehabilitation	$ 2,000,000.00
d	1 - 5	West Side Drainage Study	$ 60,000.00
e	1 - 5	Seek Land Release for Non-Aeronautical Use - Solar Farm Compatible Concurrent Use and Excess Land Sale	$ 45,000.00[2]
j	1 - 5	Permit, Grub, Grade & Seed North of TW E	$ 150,000.00
m	1 - 5	NEPA, Permit, Design, Construct Paved Perimeter RD on 14 End	$ 300,000.00

5-10 YEARS – MID TERM

Proposed Projects with Capital Improvement Costs			
Legend	**Timeframe**	**Proposed Development**	**Estimated Cost**
a3	5 - 10	Wildlife Fencing - approx 9 ft - Phase 3	$ 150,000.00
a4	5 - 10	Wildlife Fencing - approx 9 ft - Phase 4	$ 150,000.00
d1	5 - 10	Permit, Design, Install West Side Drainage Improvements	$ 800,000.00
h	5 - 10	West Side Utilities Upgrade Study	$ 50,000.00
i	5 - 10	Acquire Land & Building when available	$ 750,000.00
l	5 - 10	NEPA, Permit, Design, Construct 2 Holding Areas on TW E	$ 1,300,000.00
r	5 - 10	Reconstruct and Narrow Runway 14/32	$ 5,000,000.00
s	5 - 10	Complete a Vertically Guided Approach Survey to Runway 32	$ 100,000.00

[1] Proration of funding required due to ineligible portions.
[2] Not eligible for AIP funding

10 - 20 YEARS – LONG TERM

Proposed Projects with Capital Improvement Costs			
Legend	**Timeframe**	**Proposed Development**	**Estimated Cost**
f	10 - 20	NEPA, Permit Design & Expand GA Terminal BLDG	$ 2,000,000.00[3]
g	10 - 20	NEPA, Permit, Design, Terminal Parking Lot Expansion with Drainage	$ 300,000.00
k	10 - 20	Permit, Grub, Grade & Seed 07 Approach Area	$ 700,000.00[4]
n	10 - 20	NEPA, Permit, Design, Construct Box Hangars (typical)	$ 600,000.00[5]
o	10 - 20	NEPA, Permit, Design, Construct Nested T - Hangars (typical)	$ 1,000,000.00[5]
p	10 - 20	NEPA, Permit, construct Alternate Airport Access	$ 750,000.00
q	10 - 20	Taxilane H Reconstruction	$ 1,250,000.00
t	10 - 20	NEPA, Permit, Design, Construct GA Terminal Annex	$ 150,000.00
u	10 - 20	NEPA, Permit, Design, Expand West Itinerant Apron	$ 600,000.00

A. 3 ACTION ITEMS AND NEXT STEPS

In the next five years the priority for projects should be determined by the airport in consultation with MaineDOT and FAA. The release of excess land or seeking FAA concurrence to allow non-aeronautical compatible use of excess land for a solar farm would provide an additional annual funding source for the airport to use to augment AIP eligible funding requirements. This will be needed if the proposed SRE building is designed with additional office and meeting space beyond that considered to be AIP eligible. The construction of a paved perimeter road around the north end of the 14 approach end will eliminate vehicle traffic crossing the runway and reduce an incursion potential. Charlie Taxiway will require a rehabilitation within the next five years to maintain a safe surface condition. The drainage study will lead to a drainage improvement project to eliminate flooding issues common on the west side of the airfield during significant storm events. Grubbing, grading and seeding of the land north of Echo will reduce the personnel costs needed to manage the vegetation. The wildlife hazard assessment observed more than 70 deer on the airport during 24 night spotlight searches conducted over a 12 month period. Additional airport wildlife fencing is needed to reduce the potential for wildlife strikes. The aircraft operating area needs to be protected by fencing to protect the flying public.

[3] Proration of funding required due to ineligible portions.
[4] Area previously cut with AIP funding. Additional cutting ineligible.
[5] By Sponsor or others.

A. 4 FUNDING PLAN

As a non-primary entitled General Aviation (GA) airport Sanford Seacoast Regional Airport can plan to receive approximately $150,000.00 each year to complete AIP eligible projects under the current FAA and State of Maine funding formulas. The annual sum can also be carried forward for up to four years to "build-up" available funds for more costly projects. In addition, the State of Maine and FAA may provide discretionary funds for major projects deemed to be in the best interest of the flying public and beyond the funding capabilities of the non-primary entitlement program. The projects and the order of magnitude cost is shown in the previous tables. Projects with anticipated portions ineligible for AIP funding or to be considered for private funding have been identified with footnotes.

B - AERONAUTICAL FORECAST

B.1 BASIC AERONAUTICAL FORECAST

The FAA Terminal Area Forecast (TAF) was evaluated for possible use in the development of a forecast of aviation activity. The TAF is a detailed FAA forecast planning database that the FAA Office of Aviation Policy and Plans (APO) produces each year covering airports in the National Plan of Integrated Airport Systems (NPIAS). The TAF contains both historical and forecast data and is prepared to assist the FAA in meeting its planning, budgeting, and staffing requirements. The TAF forecasts are made at the individual airport level and are based in part on the national FAA Aviation Forecast. The TAF assumes a demand driven forecast for aviation services based upon local and national economic conditions as well as conditions within the aviation industry. In other words, an airport's forecast is developed independently of the airport and the air traffic control system ability to furnish the capacity required to meet demand. However, if the airport historically functions under constrained conditions, the FAA forecast may reflect those constraints since they are embedded in historical data. In statistical terms, the relationships between economic growth data and data representing growth in aviation activity reflect those constraints.

Although updated and published each year to reflect annual changes in levels of aircraft operations and based aircraft counts, generally the TAF does not reflect accurate forecasts of future activity levels for many public use general aviation airports and airparks. In the TAF, forecasts of itinerant and local general aviation operations are based on time series analysis of historical aviation activity at the airport. However, for general aviation airports, historical data is derived from the Form 5010 data, due to the fact that small general aviation airports generally do not have an air traffic control tower or other standardized system for collecting and reporting operational data. Therefore, in the TAF, operations levels are held constant for the forecast unless specified by a local or regional FAA official. As shown in **Table B-1 and B-2**, the published TAF for Sanford Seacoast Regional Airport was found to reflect constant projections of aviation activity growth through the year 2040. This constant projection assumption based on the historical and forecasted data presented in the TAF was determined to be too high based on local knowledge and confirmed by recently installed Unicom monitoring and quantification software. The TAF is therefore considered unsuitable for the adoption or development of an aviation activity forecast for SFM.

TABLE B-1
TERMINAL AREA FORECAST (TAF) – HISTORICAL DATA

	Itinerant					Local				
Year	Air Carrier	Air Taxi/ Commuter	General Aviation	Military	Total	Civil	Military	Total	TOTAL	Based Aircraft
2004	0	2,900	23,500	0	26,400	39,400	0	39,400	65,800	67
2005	0	2,900	23,500	0	26,400	39,400	0	39,400	65,800	67
2006	0	3,350	27,140	20	30,510	45,500	0	45,500	76,010	78
2007	0	3,350	27,140	20	30,510	45,500	0	45,500	76,010	78
2008	0	3,800	28,050	50	31,900	47,200	0	47,200	79,100	88
2009	0	3,800	28,050	50	31,900	47,200	0	47,200	79,100	88
2010	0	3,800	28,050	50	31,900	47,200	0	47,200	79,100	86
2011	0	3,800	28,050	50	31,900	47,200	0	47,200	79,100	83
2012	0	3,800	28,050	50	31,900	47,200	0	47,200	79,100	86

Source: Terminal Area Forecast Fiscal Years 2012-2040

TABLE B-2
TERMINAL AREA FORECAST (TAF) – FORECAST DATA

	Itinerant					Local				
Year	Air Carrier	Air Taxi/ Commuter	General Aviation	Military	Total	Civil	Military	Total	TOTAL	Based Aircraft
2013	0	3,800	28,050	50	31,900	47,200	0	47,200	79,100	86
2014	0	3,800	28,050	50	31,900	47,200	0	47,200	79,100	86
2019	0	3,800	28,050	50	31,900	47,200	0	47,200	79,100	86
2024	0	3,800	28,050	50	31,900	47,200	0	47,200	79,100	86
2034	0	3,800	28,050	50	31,900	47,200	0	47,200	79,100	86
2040	0	3,800	28,050	50	31,900	47,200	0	47,200	79,100	86

Source: Terminal Area Forecast Fiscal Years 2012-2040

According to FAA Order 5090.3C *Field Formulation of the National Plan of Integrated Airport Systems (NPIAS)* indicates that when forecast data of aircraft operations is not available, a satisfactory procedure is to forecast based aircraft using the statewide growth rate from the TAF and to develop activity statistics by estimating annual operations per based aircraft. As a general guideline, the annual aircraft operations can be estimated as follows:

- 250 operations per based aircraft for rural general aviation airports with little itinerant traffic

- 350 operations per based aircraft for busier general aviation airports with more itinerant traffic
- 450 operations per based aircraft for busy reliever airports
- Up to 750 operations per based aircraft for busy reliever airport with large number of based aircraft

The statewide growth for all of Maine for the 20 years between fiscal years 2014 and 2034 was derived from TAF historical aviation activity data and results in an estimated Compound Annual Growth Rate (CAGR) of approximately 0.23%. It is a very low growth rate and results in minimal impacts to operations or based aircraft. Based on professional judgment and local knowledge, it was decided that applying 350 operations per based aircraft is reasonable for deriving aircraft operations at SFM. Subsequently two forecast scenarios, low and high were developed. The low scenario represents a pessimistic or slow growth of based aircraft, where the high scenario represents aggressive or optimistic growth of based aircraft. The preferred forecast was derived by, initially taking the middle point between the low and high scenarios, then adjusting based on local knowledge and professional judgment. Sanford has a very active and robust GA community and currently has the more based aircraft than any other airport in Maine. The summary of the preferred derived Aviation Activity Forecast is depicted in **TABLE B-9**

The FAA approved the preferred forecast in a letter dated 1/15/2015. This approval is provided in Appendix A.

TABLE B-3
SUMMARY OF AVIATION ACTIVITY FORECAST

Forecast Levels and Growth Rates											
Aviation Activity	Years						Average Annual Compound Growth Rates (%)				
	2014	2015	2019	2024	2029	2034	2014 to 2015	2014 to 2019	2014 to 2024	2014 to 2029	2014 to 2034
Passenger Enplanements											
Air Carrier	0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
Commuter	0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
Total Enplanements	0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
Cargo											
Cargo/Mail (Enplaned + Deplaned Tons)	0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
Itinerant											
Air Carrier/Commuter (Part 121)	0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
Air Taxi (Part 135)	1,732	1,799	1,934	2,119	2,337	2,522	3.88	2.23	2.04	2.02	1.90
Total Commercial Operations	1,732	1,799	2,068	2,404	2,741	3,077	3.88	2.23	2.04	2.02	1.90
General Aviation	12,784	13,280	14,273	15,638	17,252	18,617	3.88	2.23	2.04	2.02	1.90
Military	23	24	25	28	31	33	3.88	2.23	2.04	2.02	1.90
Local											
General Aviation	21,512	22,347	24,018	26,315	29,030	31,327	3.88	2.23	2.04	2.02	1.90
Military (Local Traffic Pattern)	0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00
Total											
Total Operations	36,050	37,450	40,250	44,100	48,650	52,500	3.88	2.23	2.04	2.02	1.90
Instrument Operations	5,408	5,618	6,038	6,615	7,298	7,875	3.88	2.23	2.04	2.02	1.90
Peak Hour Operations	12	12	13	15	16	18	3.88	2.23	2.04	2.02	1.90

TABLE B-4
SUMMARY OF BASED AIRCRAFT FORECAST

Based Aircraft Forecast											
	Years						Average Annual Compound Growth Rates (%)				
	2014	2015	2019	2024	2029	2034	2014 to 2015	2014 to 2019	2014 to 2024	2014 to 2029	2014 to 2034
Single-Engine (Non-jet)	85	86	88	91	94	97	1.18	0.70	0.68	0.67	0.66
Multi-Engine (Non-jet)	13	14	16	18	21	24	7.69	4.24	3.31	3.25	3.11
Rotorcraft	3	4	6	8	11	13	33.33	14.87	10.31	9.05	7.61
Turboprops and Jets	0	0	1*	2*	3*	4*	*	*	*	*	*
Other (Ultralights and Gliders)	2	3	4	7	10	12	50	14.87	13.35	11.33	9.37
Total Based Aircraft	103	107	115	126	139	150	3.88	2.23	2.04	2.02	1.90

* Hoyle, Tanner & Association. Local Knowledge and Professional Judgment.

TABLE B-5
SUMMARY OF OPERATIONAL FACTORS FORECAST

Operational Factors						
	2014	**2015**	**2019**	**2024**	**2029**	**2034**
GA Operations Per Based Aircraft (OPBA)	350	350	350	350	350	350

TABLE B-6
COMPARISON OF DERIVED AND FAA TAF FORECASTS

Year	Derived Forecast	FAA TAF	Derived Forecast vs. FAA TAF (%)
Passenger Enplanements			
2014	0	0	0.0%
2019	0	0	0.0%
2024	0	0	0.0%
2029	0	0	0.0%
2034	0	0	0.0%
Commercial Operations			
2014	0	0	0.0%
2019	0	0	0.0%
2024	0	0	0.0%
2029	0	0	0.0%
2034	0	0	0.0%
Total Operations			
2014	36,050	79,100	-54%
2019	40,259	79,100	-49%
2024	44,100	79,100	-44%
2029	48,650	79,100	-38%
2034	52,500	79,100	-34%

Note: FAA TAF data is on a U.S. Government FY basis (October through September).

The forecast scenarios as well as the preferred forecast is depicted in the tables and graphics that follow.

TABLE B-7
LOW FORECAST

Low Forecast							
Year	**Single Engine Low**	**Multi-Engine Low**	**Jet Low**	**Helicopter**	**Other Low**	**Total Low**	**Operations Low**
2014	85	13	0	3	2	103	36,050
2015	85	13	0	3	2	103	36,051
2019	86	13	1	3	2	105	36,748
2024	87	13	1	3	2	106	37,101
2029	88	13	1	3	2	107	37,450
2034	89	14	2	3	2	110	38,500

TABLE B-8
HIGH FORECAST

High Forecast							
Year	**Single Engine High**	**Multi-Engine High**	**Jet High**	**Helicopter**	**Other High**	**Total High**	**Operations High**
2014	85	13	0	3	2	103	36,050
2015	86	14	0	4	3	107	37,450
2019	90	18	1	8	7	124	43,400
2024	95	23	3	13	12	146	51,100
2029	100	28	5	18	17	168	58,800
2034	105	33	8	23	22	191	66,850

TABLE B-9
PREFERRED FORECAST

Preferred Forecast							
Year	Single Engine Preferred	Multi-Engine Preferred	Jet Preferred	Helicopter Preferred	Other Preferred	Total Preferred	Operations Preferred
2014	85	13	0	3	2	103	36,050
2015	86	14	0	4	3	107	37,450
2019	88	16	1	6	4	115	40,249
2024	91	18	2	8	7	126	44,100
2029	94	21	3	11	10	139	48,650
2034	97	24	4	13	12	150	52,500

FIGURE B-1
BASED SINGLE ENGINE FORECAST

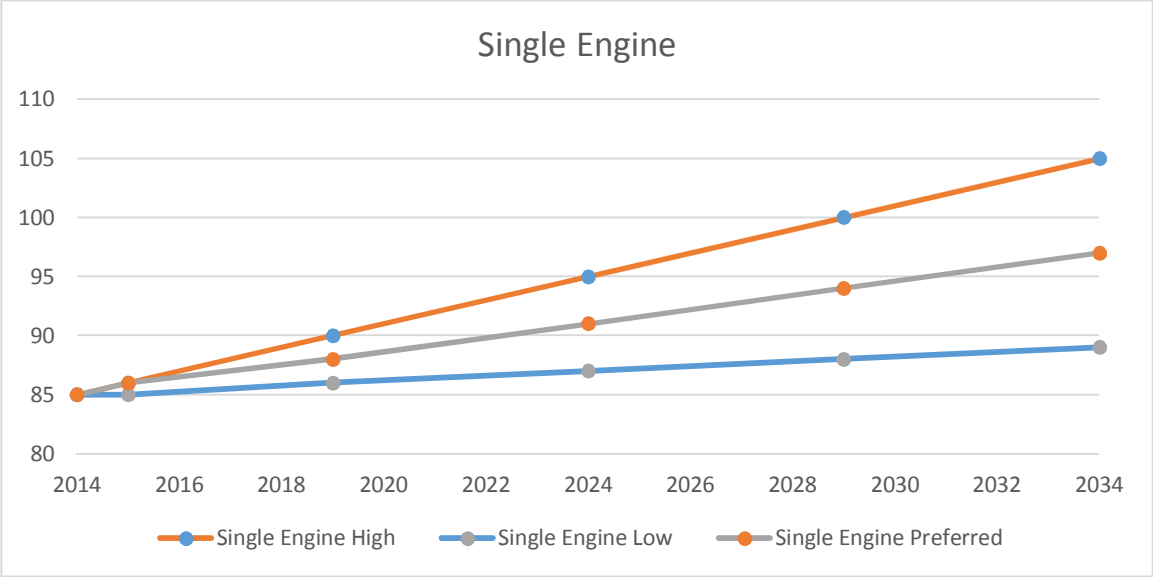


FIGURE B-2
BASED MULTI-ENGINE FORECAST

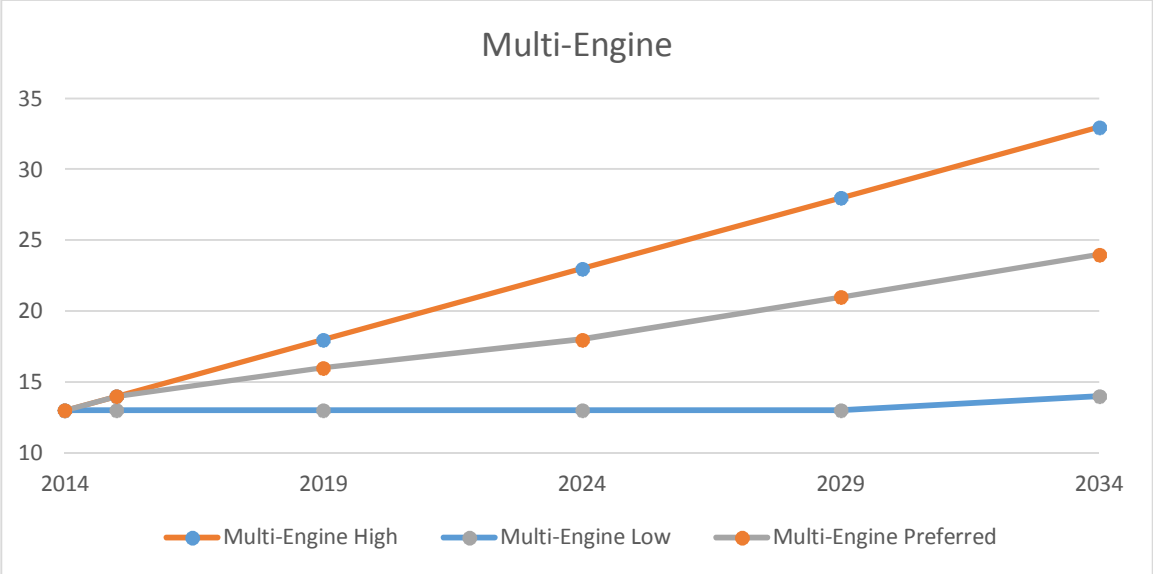


FIGURE B-3
BASED JET FORECAST

FIGURE B-4
BASED HELICOPTER FORECAST

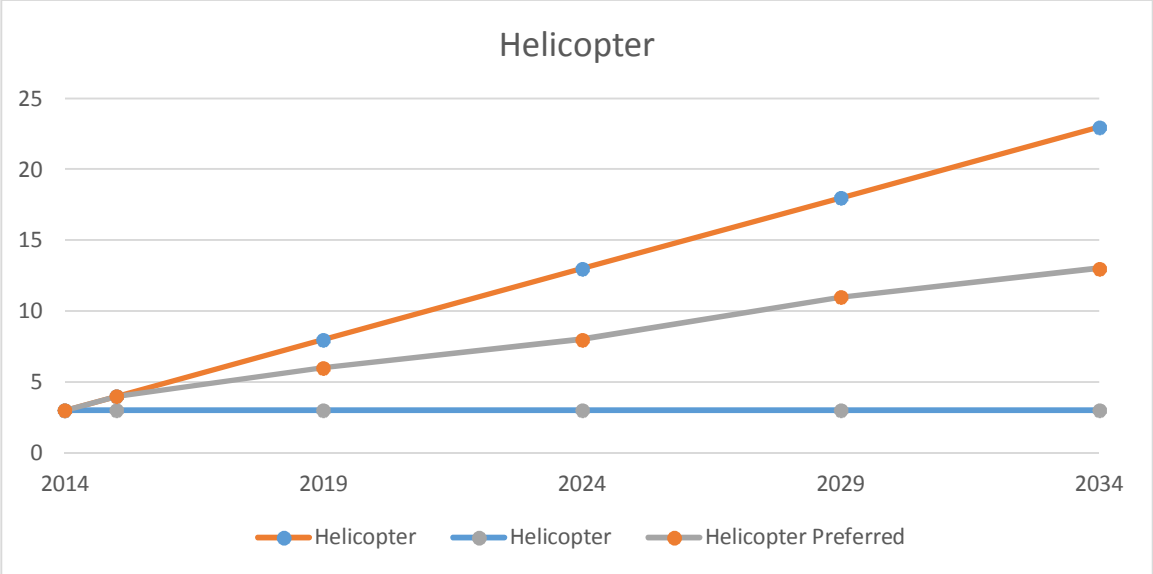


FIGURE B-5
BASED OTHER FORECAST

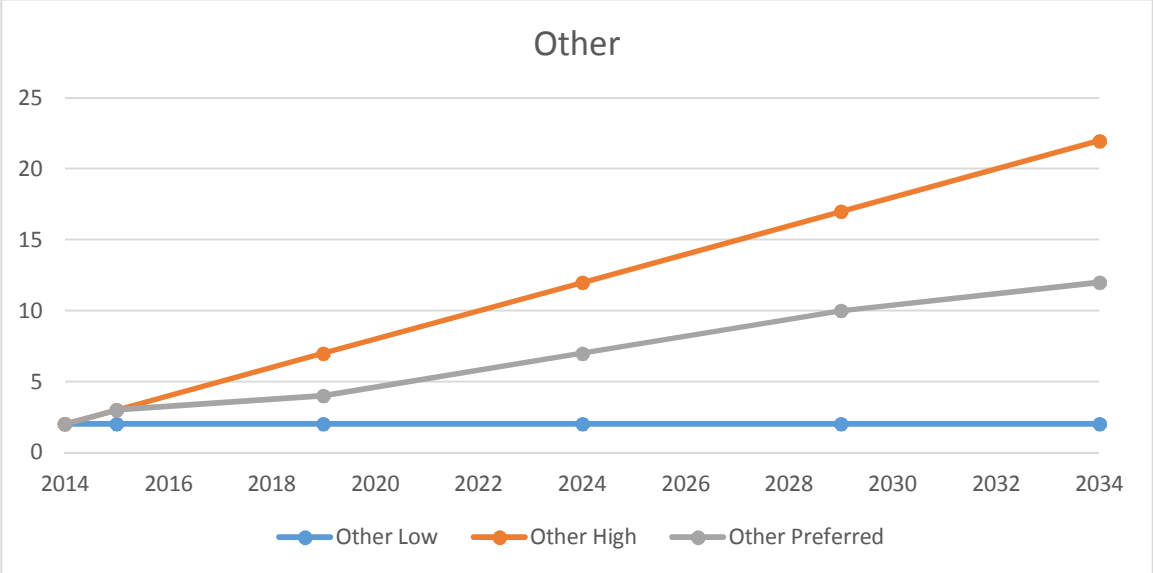


FIGURE B-6
TOTAL BASED AIRCRAFT FORECAST

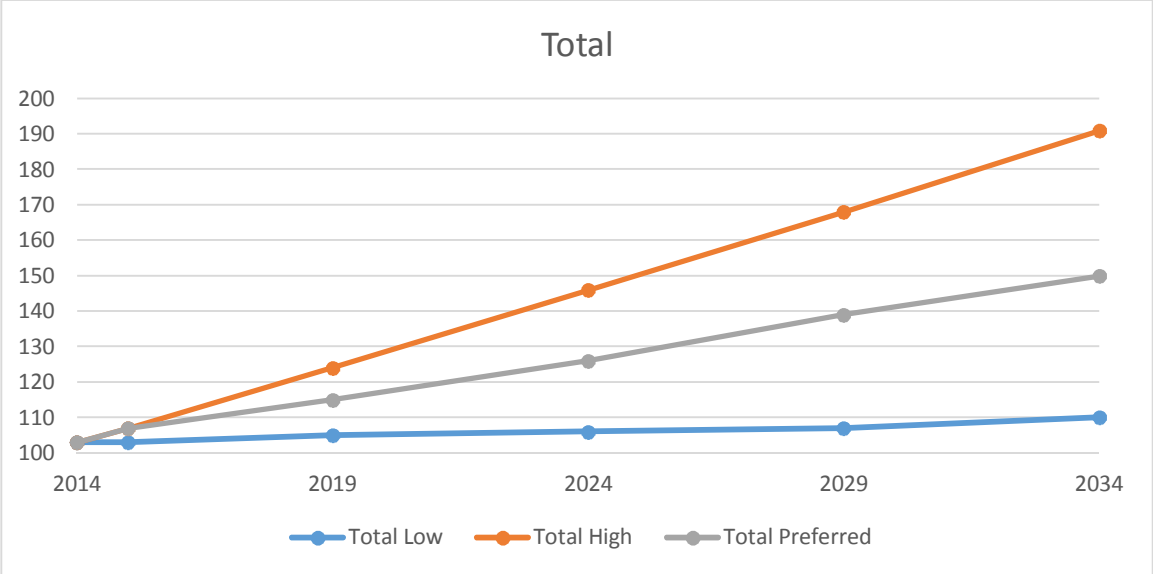
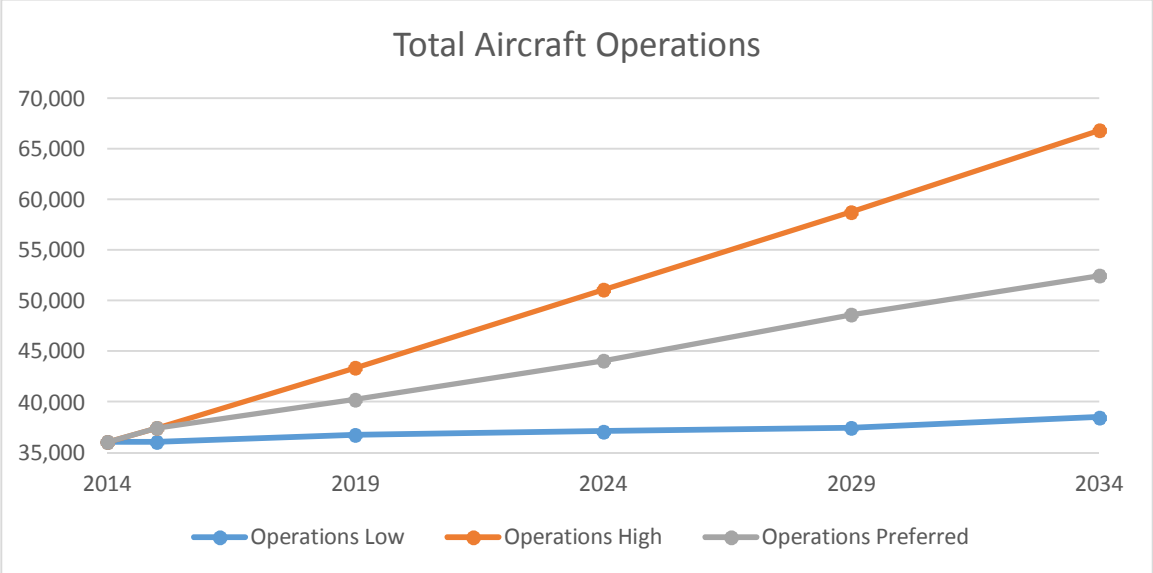


FIGURE B-7
TOTAL OPERATIONS FORECAST



B.2 CRITICAL AIRCRAFT

Planning improvements to an existing airport requires the selection of one or more "design aircraft" or "critical aircraft". It is often difficult to quantify the critical aircraft at a non-towered airport as there is no accurate record of arriving and departing itinerant aircraft. Currently SFM has the runway length and support facilities to service the growing family

of larger corporate jets, primarily on runway 7-25, and based on feedback from the airport manager and FBO, continues to do that.

The critical aircraft is the most demanding aircraft that will make substantial use of the airport in the planning period. Substantial use means either 500 or more annual itinerant operations, or scheduled commercial service.[6] The critical aircraft may be a single aircraft or a composite of the most demanding characteristics of several aircraft. The critical aircraft (or composite aircraft) is used to identify the appropriate Airport Reference Code for airport design criteria.

In most cases, the critical aircraft for the purposes of airport geometric design is a composite aircraft representing a collection of aircraft classified by three parameters: Aircraft Approach Category (AAC), Airplane Design Group (ADG), and Taxiway Design Group (TDG).

The existing Airport Layout Plan (ALP) drawing (i.e., official ALP of record on file at the FAA) conditionally approved in 2004 lists the Gulfstream GIV as the critical aircraft for Runway 7/25 and the Gulfstream GIII as the critical aircraft for Runway 14/32. The GIV with an approach speed of 145 knots is a D-II aircraft and the GIII with a 136 knot approach speed is a C-II. The modern replacement of the GIV is the G-450. The G-450 can be either a C-II if limited to a 58,500 lb landing weight or a D-II if authorized to land at more than 58,500 lbs. The pilot can also determine that depending upon payload and climactic conditions there may a need to fly faster than 140 knots on the approach and utilize D-II approach minima. For purposes of this master plan we will assume that the G-450 with the landing weight limitation is the critical aircraft for Runway 7/25 with an ARC of C-II.[7]

Runway 14/32 with the displaced threshold limiting the Landing Distance Available (LDA) length in 4114 feet when landing Runway 14 and 4915 when landing runway 32 is more suited to B-II aircraft with lower than 121 knot approach speeds. The Beechcraft King Air 250 turboprop is representative of an Airport Reference Code (ARC) B-II and is typical of the type of aircraft that does regularly use Runway 14/32 for arrivals and departures. Almost all of the Cessna Citation jet models are also B-II. For this master plan we will assume that the King Air 250 is the critical aircraft for Runway 14/32 with an ARC of B-II. B-II design does not prohibit C or even D aircraft from landing or departing from the shorter runway. Pilot discretion prevails.

The reason for the B-II ARC change on 14-32 is straightforward. The higher takeoff, approach, and accelerate/stop speeds commonly used with larger and faster C-II aircraft typically require runway lengths exceeding 5000 feet for operations to be conducted safely and with a load that is financially viable. In other words, unless the C-II aircraft is

[6] Order 5080.3C *Field Formulation of the National Plan of Integrated Airport Systems*, Section 3-4

[7] Note: There is only one aircraft designated D-II in AC 150/5300-13A. Most aircraft with Aircraft Approach Category (AAC) D approach speeds above141 knots are larger aircraft with Airplane Design Group III. The runway design for ADG III is 150 feet wide. SFM runway was designed and rebuilt in 2012 to C-II 100 foot wide standards. D-II airport design dimension criteria are the same as C-II.

lightly loaded and the wind is coming right down the runway the C-II pilot will always plan to use the longer primary runway whereas the B-II pilot's takeoff and landing performance planning charts will show few restrictions to using the shorter runway. Another simpler way to understand this is that after a takeoff or landing incident, no C-II jet pilot would want to explain to the company chief pilot, the NTSB, or the insurance company why they chose to the shorter runway when a 6389 foot long runway was also available. The table below shows a typical runway lengths needed for larger, heavier GA jet aircraft usually associated with the bigger B-II and C-II aircraft. It is obvious that the larger aircraft at their maximum gross takeoff weights need a runway longer than 4114 feet.

Runway Length Requirements for Aircraft between 12,500 and 60,000 lbs.

Balanced Field Length (Ft)	
75 Percent of Fleet	
60% Useful Load	4,650
90% Useful Load	6,700
100 Percent of the Fleet	
60% Useful Load	5,400
90% Useful Load	8,300

The B-II design standard applied to Runway 14/32 will reduce the size of the required runway protection zones and eliminate the incompatible residential uses that exist if the more expansive C-II design standard is used.

B.3 RUNWAY DESIGN CODE (RDC)

The Runway Design Code consists of the AAC, the ADG, and the approach visibility minimums. The RDC is not based on substantial use by the critical aircraft but rather reflects what design standards were used to build the runway. Each runway will have an RDC.

Runway 7/25 has an RDC of C-II-4000 which indicates that it is designed to support aircraft with approach speeds of 121-140 knots, wingspans of 49-79 feet, flying approaches with lower than one (1) but more than ¾ statute mile visibility. The future RDC should remain the same.

Within the past 5 years Runway 07/25 was reconstructed and narrowed from the previous 150 feet to 100 feet. Also construction of the partial parallel Taxiway Foxtrot from Charlie taxiway to the approach end of Runway 7 was completed. A deliberate decision was made to keep taxiway Charlie at C-III design or 50 foot width and to make sure the pavement turning points or fillets from Charlie to the 35 foot wide Foxtrot and from Charlie to Runway 07/25 were able to support occasional use by C-III Aircraft with a Taxiway Design Group 3 undercarriage. This is intended to allow the continued occasional use of the airport by itinerant Boeing 737 type aircraft and allow them to enter and exit a taxiway from the approach end of Runway 07. The intent was to avoid requiring locked brake turns at the approach end of 07 in order for the occasional C-III aircraft to reverse direction

upon landing or when preparing for takeoff on 07.

Runway 14/32 has a current RDC of C-II- 5000 which indicates that it is designed to support aircraft with approach speeds of 121-140 knots, wingspans of 49-79 feet, flying approaches with not lower than one (1) statute mile visibility. Based on the displaced threshold and the declared distances available on the runway it is recommended that at the next reconstruction the runway be designed with an RDC of B-II-5000 which would be designed for use by aircraft with slower approach and therefore landing speeds of 91-120 knots, wingspans of 49-79 feet, flying approaches with not lower than one (1) statute mile visibility. The runway could have 84 feet of pavement removed from the northern future B-II RSA without significantly effecting operational performance. It should be narrowed during its next reconstruction to 75 feet from its current 100 feet width which would in turn save on future maintenance and plowing costs.

With the runway/taxiway configuration improvements completed since the last Master Plan Update in 2003, the existing runway and taxiway configuration currently meets the design requirements of an overall Airport Reference Code (ARC) C-II. It is recommended that future development continues to support C-II standards.

B.4 APPROACH AND DEPARTURE REFERENCE CODE (APRC AND DPRC)

The Approach and Departure Reference Codes (APRC and DPRC) describe the current operational capabilities of a runway and adjacent taxiways where no special operating procedures are necessary. In contrast, the RDC is based on planned development and has no operational application. The APRC and DPRC may change over time as improvements are made to the runway, taxiways, and NAVAIDs. Table 3-7 and 3-8 in AC 150/1500-13A summarizes the relationship between runway and taxiway for APRC and DPRC.

a. Approach Reference Code (APRC). Like the RDC, the APRC is composed of three components: AAC, ADG, and visibility minimums. Visibility minimums are expressed as RVR values in feet of 1600, 2400, 4000, and 5000 (nominally corresponding to lower than 1/2 mile, lower than 3/4 mile but not lower than 1/2 mile, not lower than 3/4 mile, and not lower than one (1) mile, respectively). The third component for a runway operated under visual approach conditions (including circling approaches) only should read “VIS.”

i. The APRC for Runway 7 is D/IV/4000 since it has a taxiway to runway separation of 400 feet with a visibility minima on the ILS instrumented runway without a MALSR of not lower than ¾ mile.

ii. The APRC for Runway 25 is D/IV/5000 since it has a taxiway to runway separation of 400 feet with a visibility minima on the LPV runway of not lower than 1 mile.

iii. The APRC for Runway 14 is B/III/VIS since it has a taxiway to runway separation of 300 feet on a visual runway.

iv. The APRC for Runway 32 is B/III/5000 since it has a minimum taxiway to runway separation of 300 feet with a visibility minima on the LPV runway of not lower than 1 mile.

b. Departure Reference Code (DPRC). The DPRC represents those aircraft that can take off from a runway while any aircraft are present on adjacent taxiways, under particular meteorological conditions with no special operational procedures necessary. It is similar to the APRC, but is composed of two components, AAC and ADG.

i. The DPRC for Runway 7 and 25 is D/IV since it has a taxiway to runway separation of 400 feet.

ii. The DPRC for Runway 14 and 32 is B/III since it has a taxiway to runway separation of 400 feet

C - ALTERNATIVES AND PROPOSED DEVELOPMENT

C.1 PROPOSED DEVELOPMENT

Two public meetings were held with members of the Airport Staff and Airport Advisory Committee. In these meetings numerous development activities and alternatives were discussed. Following are descriptions of the proposed development items. A table with proposed construction timing and order of magnitude costs is provided later in this report.

Wildlife Fencing (**a1-a5**)[8] – A total of five or more phases of wildlife fencing may be necessary to completely enclose the airport to protect the flying public from animal incursions. Each phase length should be based on using available AIP funds to complete a length of fencing. More length is always less costly per foot than less length. The preferred alternative is for the fence to stay within the previously cleared property and not follow the airport property boundary through the adjacent woods. This will require limited additional clearing and grubbing in order to remain out of the woods. Future maintenance of the fence will also benefit if it is easier to access. The findings and recommendations outlined in the 2014 Wildlife Hazard Assessment must be considered as fencing is designed and installed. Construction phases should be planned to address primary incursion "hotspots" with less active access points being fenced later. The fence should avoid protected wetlands where possible to minimize environmental impacts. Two phases are anticipated to be completed within the 1-5 year timeframe with additional phases following as funding and incursion pressure dictate. Each phase is anticipated to cost $150,000.00. The proposed development of a solar farm will significantly shift the locations of the fencing as well as the financial burdens associated with permitting, mitigation, and construction. The ALP has been revised to show fencing that would be installed by the solar farm developer.

SRE Building (b) - The airport does not currently have a snow removal equipment storage building or any heated sand storage. The airport manager and staff have identified a preferred location on the west side of the airfield for the building. The manager proposes to construct a building larger than needed for SRE equipment and use a portion of the building for an Airport Manager's office and meeting space. It is understood the added space would be ineligible for AIP funding. Total building cost is estimated at $1,000,000.00. The AIP eligible portion of this project is estimated at $850,000.00. Alternatives to constructing a building is to use an existing unheated city owned hangar for SRE storage or possibly waiting until an existing fire station is no longer needed by the City and converting/expanding it for SRE storage. The existing hangar option reduces available aircraft storage and the fire station alternative has an unknown availability timeline.

Taxiway C Rehabilitation (c) – In the long term Taxiway C will need to be rehabilitated. It is expected to remain at its current 50 foot width with redesigned

[8] The letters following the proposed projects match the development legend on the Ultimate ALP. Sheet 3

fillets to accommodate TDG 3 aircraft occasionally operating on the airfield and avoiding the necessity to back taxi and complete a locked brake turn on the end of Runway 7. The "do nothing" alternative would result in Taxiway C deteriorating over time creating foreign object damage (FOD) to taxiing aircraft. The estimated cost to rehabilitate Taxiway C from the Runway14 end to Taxiway F is $2.0 million dollars.

West Side Drainage Study (d) – During the past 10 years the west side of the airport has flooded twice during heavy rain events. An in-depth study is needed to determine where and why the drainage is failing during these events. The cost of the study is estimated to be $60,000.00. The alternative is to not study the problem and acknowledge that this will result in future flooding.

Permit, Design, Install West Side Drainage Improvements (d1) – This project will make the corrective actions determined to be needed by the short term west side drainage study project. It is anticipated to involve replacing and installing new catch basins, culverts and outfalls. This project may exceed $500,000.00 but will correct drainage issues that left unchecked will impede future development on the west side of the field.

Land Release for Non-Aeronautical Use (e) – The shifting of Runway 7-25 during its recent reconstruction has shifted the RPZ away from specific land parcels with public road frontage that is owned by the airport. That land along with additional parcels with frontage along Route 109 could be released from their deed or grant assurance obligations and be either sold or leased for airport compatible non-aeronautical use thereby creating revenue for the airport. The development of a solar farm is also possible as a concurrent compatible use and depicted on the ALP in areas not needed for aeronautical development. The solar farm development will require permitting and mitigation by the developer. Permanent avigation easements would be required to be in place prior to any transfer of the properties. The grant and deed release effort is estimated to cost $45,000.00 and is not AIP eligible. The alternative is to continue to own the existing property without taking advantage of the potential revenue generation. There is additional airport land to the west of Gatehouse Road at the end of Rubb Lane that is currently depicted in the Exhibit A Airport Property Map. This property could be considered for release from its surplus property and deed restrictions and lease or sale for revenue generation. Portions of this property includes the current firearms ranges shown in the City tax records as being owned by the Airport and by the Sanford-Springvale Fish and Game. There is no record to indicate release of the surplus property deed restrictions has occurred and it appears than no airport revenue is generated by the lease of airport property to the non-profit Fish and Game Association. FAA guidance regarding the future use of this property should be sought. There is additional land northwest of the approach end of Runway 7 that is unlikely to be needed for aeronautical use and could be released for non-aeronautical revenue generation.

Extinguished Easements – During the corrective action for a recent FAA land use inspection and while conducting additional research for this Master Plan update the Exhibit A Property Map was examined for accuracy. It was determined that two easements that have been depicted on ALP's in the past were no longer accurate or necessary. Key number 10 on the Exhibit A property map has been determined by the Sponsor to not be defined or recorded well enough to stand up as a legally binding easement. The conclusion is that the Sponsor never had adequate control of the parcel. (Extract from Sponsor Response to Aug 2009 FAA land use inspection is included as Appendix B1). It has been removed from the ALP, and a comment along with strike through has been added to the table on the Exhibit A table. Key number 9B easement on the Exhibit A was originally deeded in 1941 (Appendix B2) to allow the Sponsor to install and maintain a rotating beacon and associated power lines on non-owned Lion Hill. According to the Sponsor and the current landowner, the easement was not carried forward on subsequent deeds as the property changed hands and the beacon has subsequently been relocated to the airport. Therefore the Sponsor has determined that the easement no longer exists and it has been removed from the ALP and a strike through and comment has been added to the Exhibit A table to explain why the Sponsor no longer has control of the land. (Appendix B3)

NEPA, Permit Design & Expand GA Terminal BLDG (f) – The city owned GA terminal building is currently leased to the FBO and a restaurant. A future expansion to the east would allow for additional public terminal space and additional revenue generation capability. Non-public space would be prorated for AIP funding eligibility. Not completing a future expansion will not address crowding in the terminal or expanded concessions potential. The estimated cost to expand the building is $2.0 million dollars assuming a 150 by 40 foot expansion at $300 per square foot.

NEPA, Permit, and Design, Terminal Parking Lot Expansion with Drainage (g) – The existing Terminal area parking lot is only partially paved and is inadequate during peak seasons. Upgrading and expanding the parking lot will require additional stormwater permitting and treatment. Not completing an expansion, drainage, and paving project will limit future parking and result in substandard stormwater treatment of the available parking space. The estimated AIP eligible cost for a non-revenue generating parking lot expansion and associated stormwater improvement is $200,000.00.

West Side Utilities Upgrade Study (h) - The west side of the airfield is intended to primarily support larger corporate and business aircraft and hangars in the future. Many of these hangars will require power, data, potable water, sewer, and fire protection. This study is intended to inventory existing utilities and lay out a logical plan for future expansion of the necessary utilities where needed. The study is estimated to cost $50,000.00. The alternative is to approach each proposed development as a standalone project and require the first-in developer to fund the study of how to get the required utilities to the site. Lack of a

coordinated plan could result in utilities lacking capacity for future growth or not being easily accessible by the development that follows.

Acquire Land & Building if Available (i) - There is a privately owned 2.5 acre parcel that would benefit the airport and the flying public if it were re-purchased by the city and used for aeronautical revenue generation. It is the privately owned lot and 12,500 square foot corporate hangar on the west side of the field on lot R18A-16A. The parcel was part of the larger airport that was reacquired by the Sponsor through the surplus property deed when the Navy transferred the airport back to the City after WWII. A private corporation convinced the city to sell the parcel in 1980. Originally the Congoleum Corporation promised to create jobs but only if they were allowed to purchase instead of lease airport land upon which to build a hangar designed to house three corporate aircraft. The city sought and received an environmental Finding of No Significant Impact (FONSI) from FAA NER on 7/9/1980 prior to the FAA subsequently issuing a deed of release. The city sold the parcel based on the promises of the buyer. That original corporation is no longer in existence and multiple subsequent owners have contributed to compliance issues including economic discrimination, exclusive use and minimum standards infractions. Fortunately for the Sponsor, the current private owner is very supportive of aviation activities and is the airport's single most significant benefactor. The airport manager has a written right of first refusal agreement to purchase the parcel from the current owner should he desire to sell. The acquisition of the large hangar, if it came on the market, would provide the Sponsor with an additional resource to lease for aeronautical revenue generation and extinguish a potential future non-residential through the fence access point that abuts Taxiway C. The costs for this acquisition will be based on future appraisals and is expected to exceed $750,000.00 based on current tax assessments and professional judgment. The alternative is for the parcel to eventually be sold to a less supportive private aeronautical or non-aeronautical user. That future user may or may not desire access to the airport operating area.

Permit, Grub, Grade & Seed North of TW E (j) – The Airport cleared but did not grub, loam and seed an approximately eight acre parcel of land during a previous fence installation project north of Taxiway E. The management of the vegetation has become very labor intensive as the stumps that were left continually sprout new vegetation and airport staff have to manually cut each stem. This project is intended to seek permitting and then grub, grade and seed the parcel so that future vegetation management can be completed with a tractor mounted mower. The project is estimated to cost $150,000.00 depending on any wetlands mitigation that may be required. The alternative is to constantly struggle with trying to keep the volunteer vegetation under control by manual or herbicide control measures.

Permit, Grub, Grade & Seed 07 Approach Area (k) – The vegetation under the approach surface to Runway 07 was cleared with FAA funding in the past. The terrain is rough and rocky and the airport staff have not been able to keep up with the vegetation management. The areas that are not delineated as wetlands should

be permitted to allow clearing, grubbing, and grading so that future vegetation management can be completed with a tractor and mower. The alternative to completing this project includes repetitive partial clearing projects solely with sponsor funds to eliminate penetrations to the precision approach surfaces. An estimated cost to permit, clear, grade, grub and seed the area within the current Threshold Siting Surface inside of the airport property boundary is estimated to cost $700,000.00.

NEPA, Permit, Design, Construct 2 Holding Areas on TW E (l) – Airport users have requested two holding or run-up bays to be installed along Taxiway Echo. The first would be prior to the Runway 25 end and allow an aircraft going to 25 or 32 to pass an aircraft waiting for an IFR clearance or release on Runway 25. The second holding area would be after the Runway 25 intersection and allow aircraft taxiing to 32 to pass aircraft performing run-ups prior to departing on 32. The alternative would be for one run-up area to be constructed prior to where aircraft could perform run-ups or wait for departure clearances. The estimated cost for two run-up areas permitted and constructed at the same time is $ 1.3 million. One run-up area prior to Runway 25 is estimated to cost $600,000.00.

NEPA, Permit, Design, and Construct Paved Perimeter RD on 14 End (m) – The airport has numerous hangars and aircraft on the west side of the airfield. The FBO and fuel farm is on the east side of the field and fuel trucks are commonly called to fuel aircraft that have shut down on the west side. These fuel trucks are not registered to operate on public streets so they are required to be driven across the approach end of Runway 14 from Taxiway B to C. Constructing a one lane paved perimeter road along an existing gravel road would allow the fuel truck and other authorized vehicles to avoid crossing the runway and eliminate a potentially explosive incursion issue. The estimated total cost for the paved road is $300,000.00. An alternative is for the fuel trucks to be registered and require them to be driven out of the airport fencing, around to the west side of the field via public roads and back in to the field via a west side gate. This alternative should be explored as a short term safety solution until an access road is constructed.

NEPA, Permit, Design, Construct Box Hangars (n) – These box hangars may be built by private developers or the airport as demand warrants. Costs of the smaller hangars are assumed to be a minimum of $350K with larger hangars exceeding $3 million dollars depending upon fire suppression, fit, and finish.

NEPA, Permit, Design, Construct Nested T – Hangars (o) - These nested T - hangars may be built by private developers or the airport as demand warrants. Estimated costs including permitting, paving and a 10 unit conventional nested T structure approaches $1 million dollars each.

Alternate Airport Access (p) – Should a number of additional T hangars be constructed on the east side of the airfield an alternate access road should be considered for ease of access by tenants and emergency responders. The

estimated cost with NEPA, permitting, and construction exceeds $750,000.00.

Permit, Design, Rehabilitate Taxilane H (q) – If and when demand warrants Taxiway H will require rehabilitation to make it suitable for accessing west side hangars. Potential cost to rehabilitate the taxilane to 35 foot width is estimated at $1.25 million dollars.

Runway 14/32 Reconstruction (r) – Runway 14/32 was last reconstructed in 1985 and had a Pavement Condition Index (PCI) of 77 in 2012. Typical pavement is considered approaching the end of its useful life after 20 years and Runway 14/32 is 10 years beyond that. The State of Maine prefers that all runway PCI's be above a 55 index to remain in the "good" classification. Assuming PCI index drops by 2 points per year Runway 14/32 may last until 2023 or another 8 years from now. At that time it will require reconstruction. Due to its displaced threshold limiting landing length to just over 4000 feet it is appropriate to plan to change the runway design to B-II from its current C-II design. This would allow the runway to be reconstructed at 4915 feet (84 feet of paved RSA could be removed on the north end) and with a width of 75 feet instead of the current 100 feet. Narrowing the runway to B-II design standards will save the city money in future maintenance and snow removal costs and still allow aircraft up to C-III to use Taxiway C and Runway 14/32 to taxi to both ends of Runway 7/25. The alternative is to rehabilitate instead of reconstruct Runway 14/32 at its current 100 foot width. The estimated cost to narrow and reconstruct at B-II design standards is $5 million dollars.

Complete a Vertically Guide Approach Survey for Runway 32 (s) – Currently Runway 32 has a GPS based RNAV approach that allows a trained pilot in instrument weather conditions with the winds favoring a 32 landing to descend safely to within 421 feet of the ground. It is likely that with an LPV or vertically guided approach properly equipped and trained pilots could descend to within 250 to 300 feet of the ground thereby increasing the probability of seeing the runway threshold environment at the conclusion of the approach and transitioning to a safe straight-in visual landing. The alternative is for pilots to either fly an instrument approach to 07 or 25 and circle to land, or accept a crosswind landing on 07 or 35. Circling to land can be a risky maneuver with a ragged cloud deck or ceiling in poor visibility and pilots have been known to become spatially disoriented when circling in those conditions. Using Table 3-4 from AC 150.5300-13A and assuming one statute mile or more visibility minimums on the approach, the estimated cost to complete the required aeronautical survey and upload the data in the FAA format for instrument procedures development is $100,000.00.

C.2 APPROACH PROCEDURE REQUIREMENTS

Sanford Seacoast Regional Airport has adequate instrument approach procedures to allow all users access to the field in all weather conditions. The FAA owned ground based ILS should be maintained as long as the FAA is willing to support the equipment. When and if the FAA determines that the equipment is not economically viable to maintain the

airport should anticipate having only GPS based instrument approach procedures as the FAA is reluctant to fund new ground based instrument approach equipment. An aeronautical survey should be completed for Runway 14/32 so that a vertically guided GPS approach could be developed as described in the preceding paragraph.

Continued vigilance and dedication to obstruction identification and removal within the 20:1 visual approach surfaces, the 30:1 glidepath qualification surface required for vertically guided approaches, and the 40:1 departure surfaces, will be necessary to maintain the existing approaches with the current DA and visibility minima.

C.3 NAVIGATIONAL AIDS

Although a MALSR approach light system to Runway 07 has been considered and depicted in the past, a cursory benefit cost analysis along with significant wetland impacts indicate that the cost to install and maintain would not justify the additional ¼ mile reduction in visibility minimums the MALSR might allow. No additional navigation aids are warranted.

C.4 WIND COVERAGE

A factor influencing runway orientation and the number of runways is the direction and intensity of the prevailing wind. Wind conditions affect all aircraft in varying degrees. Generally, the smaller the aircraft, the more it is affected by wind, particularly crosswind components.

Runway wind coverage is that percent of time that crosswind components are below an acceptable velocity. The FAA identifies the desirable wind coverage for an airport as 95 percent. The 95 percent wind coverage is computed on the basis of the crosswind components not exceeding the values shown in the following table.

RDC	Allowable Crosswind Component
A-I and B-I (including small aircraft)	10.5 knots
A-II and B-II	13 knots
A-III, B-III C-I through D-III D-I through D-III	16 knots

The best source of wind information is the National Oceanic and Atmospheric Administration (NOAA), National Climatic Data Center (NCDC). A 10-year hourly surface meteorological data was downloaded and processed as described in Appendix 2 Section *A2-6. Data Source* of *AC 150/5300-13A Airport Design*. Utilizing the 10-year surface meteorological observation data for Sanford Regional Airport (726064) the runway wind coverage was calculated using the tools available on the FAA Airport Surveying – Geographic Information System (GIS) Program website: https://airports-gis.faa.gov/airportsgis/publicToolbox/windroseForm.jsp As shown in the following table, the current runway layout meets the required runway wind coverage of 95%.

Meteorological Condition	Observations	Runway	Wind Coverage Crosswind Component (Knots)		
			10.5	13	16
All-Weather	268,041	07/25	95.93%	98.36%	99.66%
		14/32	95.09%	97.34%	99.34%
		Combined	98.82%	99.63%	99.92%
Visual Meteorological Conditions (VMC)	226,482	07/25	95.86%	98.36%	99.68%
		14/32	96.03%	98.00%	99.59%
		Combined	99.08%	99.74%	99.96%
Instrument Meteorological Conditions (IMC)	41,559	07/25	96.31%	98.34%	99.54%
		14/32	89.97%	93.76%	97.98%
		Combined	97.42%	99.03%	99.71%

Source: Downloaded from National Climatic Data Center. Sanford Regional Airport (726064), years 2004 to 2014. FAA Airports GIS Program, Airport Design Tools, Standard Wind Analysis

Note: year 2014 includes full observations dataset up to October 2014 and partial dataset for November 2014.

D - MODIFICATION TO STANDARDS

The existing airfield configuration does not meet Runway Protection Zone (RPZ) standards on the 14 and 25 Runway ends. However, Section 322.a.(1) of *AC 150/5300-13A Airport Design,* states declared distances may be used to:

- Obtain additional RSA and/or ROFA prior to the runway's threshold (the start of the LDA) and/or beyond the stop end of the LDA and ASDA
- Mitigate unacceptable incompatible land uses in the RPZs
- Meet runway approach and/or departure surface clearance requirements
- Mitigate environmental impacts

Therefore, since both runways are designed for turbine aircraft declared distances will be identified and published for pilots to use during mission planning.

In addition, a recommended change of Runway 14/32 from C-II to B-II design during the next scheduled reconstruction effort will reduce the Runway 14 approach RPZ and will eliminate the existing incompatible residential land use currently in the Runway 32 departure C-II RPZ. Old Airport Road will continue to be an incursion but only on the outermost corner of the controlled activity area of the B-II RPZ.

Routes 109 and 99 are existing public roads that transit within the Runway 25 RPZ. There are no plans to relocate these existing incompatible land uses.

An additional Modification of Standards was sought by the Airport in 2010 to allow photocell control of Taxiway lighting to reduce energy costs. The Manager of AAS-100 in FAA HQ approved this modification on 9/9/2010. A copy of the signature page is included as Appendix C.

E - OBSTRUCTION SURFACES AND THRESHOLD SITING SURFACES

Numerous surfaces are depicted on the ALP on various sheets. The surfaces are based on CFR Part 77 as well as instrument approach development procedures found in FAA Order 8260.3 (TERPS). Table 3-2 in AC 150/5300-13A describes the dimensions of the obstacle clearance approach and departure surfaces based on the expected type of aircraft operation each runway end is intended to serve. The table also includes the slope/obstacle clearance surface required to be maintained depending on the intended use. An edited portion of the table is reproduced below with the applicable runway approach ends preceding the intended current and future use. A graphic depicting the dimensions is on the next page.

Approach/departure standards table

Runway Approach End and Type		DIMENSIONAL STANDARDS* Feet					Slope / OCS
		A	B	C	D	E	
14	Approach end of runways expected to serve large airplanes (Visual day/night);	0	400	1000	1,500	8,500	20:1
32	Approach end of runways expected to support instrument night operations serving greater than approach Category B aircraft. [1]	200	800	3,800	10,000 [2]	0	20:1
07	Approach end of runways expected to accommodate instrument approaches having visibility minimums □□3/4 but <1 statute mile,	200	800	3,800	10,000 [2]	0	20:1
07 & 25 existing & 32 Future[3,5,6,7]	Approach end of runways expected to accommodate approaches with vertical guidance (Glide Path Qualification Surface [GQS]).	0	Runway width + 200	1520	10,000 [2]	0	30:1
07, 14, and 25 meet standard	Departure runway ends for all instrument operations.	[4] 0	See Figure on page 31				40:1

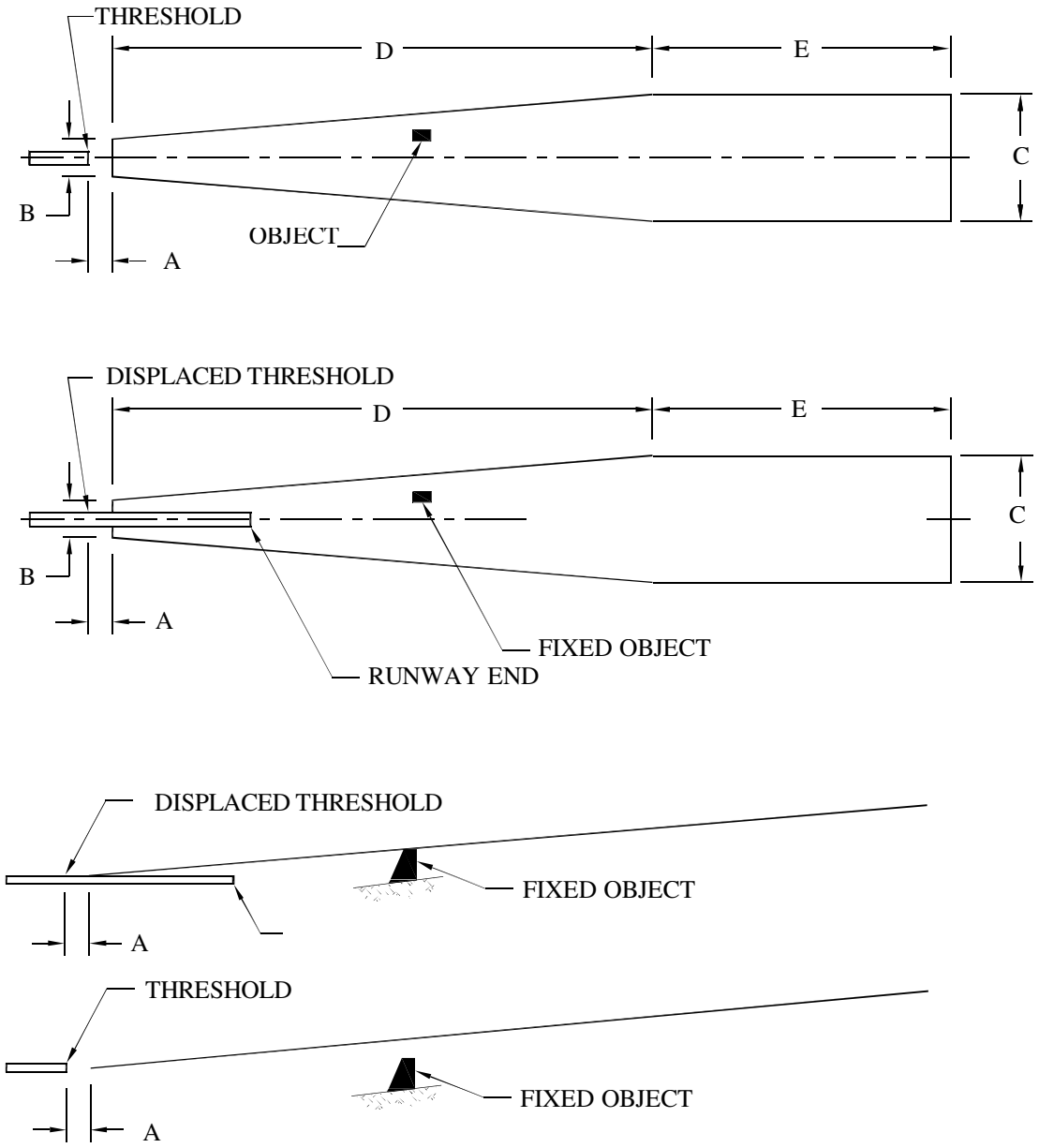
* The letters are keyed to those shown on the next two pages.

Notes:

1. Marking and lighting of obstacle penetrations to this surface or the use of a Visual Guidance Slope Indicator (VGSI), as defined by Order 8260.3, may avoid displacing the threshold.
2. 10,000 feet (3048 m) is a nominal value for planning purposes. The actual length of these areas is dependent upon the visual descent point position for 20:1 and 34:1, and DA point for the 30:1.
3. When objects exceed the height of the GQS, an approach with vertical guidance is not authorized. Refer to Table 3-4 and its footnote 4 for further information on GQS.
4. Dimension A is measured relative to TODA (to include clearway).
5. Surface dimensions / OCS slope represent a nominal approach with 3 degree Glide Path Angle (GPA), 50 feet (15 m) TCH, < 500 feet (152 m) HATh. For specific cases, refer to Order 8260.3. The OCS slope (30:1) supports a nominal approach of 3 degrees (also known as the GPA). This assumes a TCH of 50 feet (15 m). Three degrees is commonly used for ILS systems and VGSI aiming angles. This approximates a 30:1 approach slope that is between the 34:1 and the 20:1 approach surfaces of Part 77. Surfaces cleared to

34:1 should accommodate a 30:1 approach without any obstacle clearance problems.

6. For runways with vertically guided approaches the criteria in row 8 is in addition to the basic criteria established within the table, to ensure the protection of the GQS.
7. For planning purposes, determine a tentative DA based on a 3 degree GPA and a 50-foot (15 m) TCH.



Approach Threshold Siting Based on Approach Slope

Departure surfaces, when clear, allow pilots to follow standard departure procedures. Where declared distances are not being reported, the departure surface elevation starts at the Departure End of Runway (DER) elevation. DER is also referred to as the stop end of runway. Except for runways that have a designated clearway, the departure surface is a trapezoidal shape that begins at the end of the Takeoff Distance Available (TODA) and extends along the extended runway centerline and with a slope, starting at the elevation of the end of the TODA, of one (1) unit vertically for every 40 units horizontally (40:1). For runways that have a clearway, the departure surface begins at the far end of the clearway at the elevation of the clearway at that point.

Obstacles frequently penetrate the departure surface. These procedures may require:

- Non-standard climb rates, and/or
- Non-standard (higher) departure minimums. Therefore, it is important for airports to identify and remove these obstacles whenever possible when takeoff procedures can be enhanced, and also to prevent new obstacles.
- Reduction in the length of the TODA.

Sanford has terrain and vegetation penetrations to the Runway 32 departure surface and non-standard climb rates and non-standard departure minimums are published so that pilots are aware of the potential obstacles and can plan their departures accordingly.

F - RUNWAY PROTECTION ZONE

The function of the Runway Protection Zone (RPZ) is to enhance the protection of people and property on the ground. This function is best achieved through airport owner control over RPZs. Control is preferably exercised through the acquisition of sufficient property interest in the RPZ and includes clearing RPZ areas (and maintaining them clear) of incompatible objects and activities.

The RPZ is a trapezoidal in shape and centered about the extended runway centerline. The RPZ is divided into two areas: the central portion of the RPZ and the controlled activity area. The central portion of the RPZ extends from the beginning to the end of the RPZ. Its width is equal to the width of the runway obstacle free area (ROFA). The controlled activity area is the remaining area of the RPZ on either side of the central portion of the RPZ.

The approach RPZ extends from a point 200 feet from the runway threshold. Its dimensions are a function of the aircraft approach category and approach visibility minimums. The departure RPZ begins 200 feet beyond the runway end or, if the Takeoff Run Available (TORA) and the runway end are not the same, 200 feet beyond the far end of the TORA. The departure RPZ is a function of the aircraft approach category and the departure procedures associated with that runway.

Runway 14 approach RPZ and Runway 32 departure RPZ have incompatible residential land uses. In order to reduce the amount of residential and commercial buildings within these RPZs, Runway 14 threshold has been displaced. This displacement restricts Runway 14 landing distance available (LDA) to 4,114 feet. Runway 32 departure RPZ has been collocated with the Runway 14 approach RPZ by declaring the Takeoff Runway Available (TORA) to 4,114 feet while maintaining LDA, ASDA, and TODA at 4915 feet. A change of Runway 14/32 from C-II to B-II design during the next scheduled reconstruction effort will reduce the Runway 14 approach RPZ dimensions and will eliminate the existing incompatible land use currently in the 32 departure C-II RPZ. Old Airport road will continue to be an incursion on the outermost corner of the controlled activity area of the B-II RPZ.

Incompatible residential land uses and structures are located within Runway 7 departure RPZ and Runway 25 approach RPZ. Runway 25 threshold has been displaced 388 feet to achieve the necessary 1000 foot Runway Safety Area. This displacement reduces Runway 25 LDA to 6,001 feet. In addition, Runway 7 TORA has been reduced to 6,001 feet. With these adjustments, both the departure and approach RPZs are contained within airport property without incompatible residential land uses. However, public roads Route 109 and Route 99 remain within the RPZ.

G – DEVELOPMENT SUMMARY

G.1 PROJECTS COMPLETED SINCE LAST ALP

Sanford has been very active since the last ALP update in 2003. Numerous projects have been undertaken by the Sponsor with FAA, MaineDOT, EDA, FEMA/MEMA, EPA/DEP as well as private developer partners. A list of the completed projects and who completed them is shown below:

Improvement	Primary Funding
RWY 7 Partial Parallel TWY	AIP 3-23-0044-25-2009
RWY 7/25 Rehab/Shift West to get compliant RSA on 25 End	AIP 3-23-0044-26-2010
RWY 7 construct bypass entrance TWY for holding area	AIP 3-23-0044-25-2009
RWY 7/25 Narrow and Groove	AIP 3-23-0044-26-2010
RWY 7/25 upgrade HIRLS	AIP 3-23-0044-26-2010
RWY 7/25 upgrade VASI's to PAPI's	AIP 3-23-0044-26-2010
Install new Electric Vault and regulators	AIP 3-23-0044-26-2010
TWY C and D – Install Medium Intensity Taxiway Lights	AIP 3-23-0044-25-2009
TWY C and D – Update and Power Airport Signage	AIP 3-23-0044-25-2009
Relocate Airport Beacon to the airport from non-owned land	AIP 3-23-0044-25-2009
Rehab and Expand East Terminal Apron	AIP 3-23-0044-19-2006
Acquire and demolish former Aerofab hangar and Sullivan home	AIP 3-23-0044-20-2006
Acquire parcels R18A-1,-3, and 3A and old Navy Hangar	AIP 3-23-0044-20-2006
Demolish old Navy Hangar	EDA/Sponsor/EPA -2007
Construct Southwest Apron	EDA/Sponsor 2010
Demolish 8 wooden non-compliant hangars	Sponsor 2005
Construct 2 taxilanes with utilities for hangar development	Sponsor 2007
Demolish old Navy control Tower	Private 2007
Traded Equal Value of lot R18-5A for R18A-71	2008
Installed 4 security cameras with DVDR's	MEMA/Sponsor 2005
Installed new West Side controlled access gate	MEMA/Sponsor 2005
Removed UST Fuel Tanks and replaced with AST's	Sponsor 2008
Upgraded East Side drainage system to include Water Qual Unit	3-23-0044-19-2006
Constructed 28 new nested T hangars in 3 buildings on the west side	MAS Hangars 2007 & 2012
Constructed 4 Hangar/Office Complex	Sanford Hangar Grp 2011
Constructed 7 Box Hangars	2004 - 2010
Upgraded Terminal building and FBO Hangars	Southern Maine Aviation 2008
Relocated West AST fuel tanks to East FBO area	Southern Maine Aviation 2014
Repaved and upgraded Terminal Area Auto Parking Lot	Sponsor 2005
Cleared, and installed fence adjacent to E TWY	Sponsor 2006

Reconstructed Seacoast I Taxilanes	AIP 3-23-0044-028-2013
Vegetation Management	Sponsor - Continuous
Solid Waste Receptacle Enclosures (2)	Sponsor 2010
New Airport Terminal Parking Lot Sign	Sponsor 2014

G.2 PROPOSED PROJECTS –

Refer to Section C., Alternatives and Proposed Development for additional project details.

0-5 YEARS – SHORT TERM

Proposed Projects with Capital Improvement Costs			
Legend	**Timeframe**	**Proposed Development**	**Estimated Cost**
a1	1 - 5	Wildlife Fencing - approx 9 ft - Phase 1	$ 150,000.00
a2	1 - 5	Wildlife Fencing - approx 9 ft - Phase 2	$ 150,000.00
b	1 - 5	SRE Building	$ 1,000,000.00
c	1 - 5	Taxiway C Rehabilitation	$ 2,000,000.00
d	1 - 5	West Side Drainage Study	$ 60,000.00
e	1 - 5	Land Release for Non-Aeronautical Use	$ 45,000.00
j	1 - 5	Permit, Grub, Grade & Seed North of TW E	$ 150,000.00
m	1 - 5	NEPA, Permit, Design, Construct Paved Perimeter RD on 14 End	$ 300,000.00

5-10 YEARS – MID TERM

Proposed Projects with Capital Improvement Costs			
Legend	**Timeframe**	**Proposed Development**	**Estimated Cost**
a3	5 - 10	Wildlife Fencing - approx 9 ft - Phase 3	$ 150,000.00
a4	5 - 10	Wildlife Fencing - approx 9 ft - Phase 4	$ 150,000.00
d1	5 - 10	Permit, Design, Install West Side Drainage Improvements	$ 800,000.00
h	5 - 10	West Side Utilities Upgrade Study	$ 50,000.00
i	5 - 10	Acquire Land & Building when available	$ 750,000.00
l	5 - 10	NEPA, Permit, Design, Construct 2 Holding Areas on TW E	$ 1,300,000.00
r	5 - 10	Reconstruct and Narrow Runway 14/32	$ 3,500,000.00
s	5 - 10	Complete a Vertically Guided Approach Survey to Runway 32	$ 100,000.00

10 - 20 YEARS – LONG TERM

Proposed Projects with Capital Improvement Costs			
Legend	**Timeframe**	**Proposed Development**	**Estimated Cost**
a5	10 - 20	Wildlife Fencing - approx 9 ft - Phase 5	$ 150,000.00
f	10 - 20	NEPA, Permit Design & Expand GA Terminal BLDG	$ 2,000,000.00[9]
g	10 - 20	NEPA, Permit, Design, Terminal Parking Lot Expansion with Drainage	$ 300,000.00
k	10 - 20	Permit, Grub, Grade & Seed 07 Approach Area	$ 700,000.00[10]
n	10 - 20	NEPA, Permit, Design, Construct Box Hangars (typical)	$ 600,000.00[11]
o	10 - 20	NEPA, Permit, Design, Construct Nested T - Hangars (typical)	$ 1,000,000.00[5]
p	10 - 20	NEPA, Permit, construct Alternate Airport Access	$ 750,000.00
q	10 - 20	Taxilane H Reconstruction	$ 1,250,000.00
t	10 - 20	NEPA, Permit, Design, Construct GA Terminal Annex	$ 150,000.00
u	10 - 20	NEPA, Permit, Design, Expand West Itinerant Apron	$ 600,000.00

[9] Proration of funding required due to ineligible portions.
[10] Area previously cut with AIP funding. Additional cutting ineligible.
[11] By Sponsor or others.

H - SHADOW OR TOWER LINE OF SIGHT STUDY

Not Applicable

I - COORDINATION LETTERS

Not Applicable

J - WILDLIFE HAZARD MANAGEMENT ISSUES REVIEW

A yearlong Wildlife Hazard Assessment (WHA) was conducted at SFM from September 2013 until August 2014 by the US Department of Agriculture (USDA), Animal and Plant Health Service (APHIS), Wildlife Services. An extract from the Executive Summary of the assessment report is reproduced here for convenience.

EXECUTIVE SUMMARY

Pursuant to 14 CFR Part 139.337(b), the U.S. Department of Agriculture's Wildlife Services program (WS) developed a Wildlife Hazard Assessment (WHA) in cooperation with Sanford Seacoast Regional Airport (SFM) and Hoyle, Tanner & Associates, Inc. to provide initial data in regard to wildlife hazards to aircraft and human safety. The assessment provides information and wildlife management recommendations to minimize wildlife hazards to aircraft operations at SFM. The WHA also serves as a foundation for the development of a Wildlife Hazard Management Plan.

This WHA had four main objectives. The first objective was to identify on-site and off-site wildlife attractants and land-use practices that may contribute to wildlife hazards at SFM. The second objective was to determine wildlife population parameters such as abundance and periods of activity with a particular emphasis on the species most threatening to aircraft and human safety. The third objective was to review available wildlife strike records to determine if any significant species or patterns exist in the records, and use this information for management recommendations. The fourth objective was to provide management recommendations for reducing observed and potential wildlife hazards.

The WHA places a particular emphasis on identification and abatement of wildlife hazards within the airfield environment. Additional wildlife attractants within five-miles of the airfield are also addressed, as they potentially attract wildlife in a manner that jeopardizes safety of air traffic operating into and out of this area.

There are several habitat features that presently attract wildlife to the airfield and surrounding areas at SFM. The nature of the airport environment itself is attractive to many species of mammals and birds due to the fact that airports contain large expanses of grassland. Throughout the duration of the survey period for this WHA, we observed a habitat management regime that involved mowing of areas that were required for aviation lights and instruments. Vegetative manipulation other than mowing was minimal with many of the ditches in the infield having small shrubs growing in them. The center infield has been left unmowed until September or October in the past to accommodate grasshopper sparrows (a state endangered bird species) that were last documented at SFM in 1992. No grasshopper sparrows were documented at SFM in the 2014 WHA. The delineated wetland habitats in the infield are attractive habitat for many species. Wild cranberry and blueberry were found in large patches within the infield. Both of these plant species are attractive to birds and mammals during the time period when they produce fruit. The stream and drainage ditches that run throughout SFM are also attractive as a

food and water source to many species such as great blue herons and waterfowl species. Great blue herons are attracted to these wetland areas for loafing purposes and to feed on the white suckers and amphibious species that were observed in Branch Brook and airfield drainage systems. Woodland habitat surrounds the airport on two sides and is lacking a fence to prevent wildlife entry onto the airfield. Species that present the greatest threats to aviation safety at SFM include wild turkeys, deer, mallards, Canada geese, great blue herons, herring gulls, coyotes and American kestrels. Finally, a few other species, namely swallows, mourning doves and American crows also present a threat to aircraft due to their localized abundance, size and/or behavior.

Locations outside of the airport that are attractive to birds include the Sanford Waste Water Treatment Plant which is located a half mile to the northeast of Runway 14. The four large lagoons located on the treatment plant facility is a major attractant to various waterfowl and wading bird species, especially during migration where over 100 birds were seen on just two lagoons. Other attractive locations included Lavigne strawberry farm and the Number One pond. Observed activities at SFM that may increase wildlife hazards include:

- Carcass dumping near the airfield perimeter
- Lack of routine mowing of the infield
- Feeding of birds on, or adjacent to the airfield

Wildlife Hazard Management Recommendations:

General Recommendations

- Develop a Wildlife Hazard Management Plan
- Increase bird monitoring and control Activities
- Use lethal control (shooting) for unusually persistent wildlife
- Perform specific species management techniques
- Continue training personnel on species identification and wildlife hazard management techniques
- Adopt a zero tolerance policy towards all hazardous wildlife
- Maintain relationship with USDA WS, USFWS, and MDIFW to gain expertise in managing wildlife issues
- Increase outreach efforts to educate pilots and maintenance workers on how to report wildlife strikes
- Continue to update database of wildlife hazard abatement activities (harassment, lethal removal, runway sweeps) through use of wildlife log.
- Adopt a no feeding policy for all wildlife species on and near the airport
- Complete, improve and maintain the perimeter fence
- Discontinue animal carcass disposal on-airport property
- Continue to alert pilots during periods of heightened wildlife activity (NOTAM or similar)
- Continue monitoring wildlife activity and use patterns on the airfield
- Integrate a variety of non-lethal methods and deterrents

Habitat Management

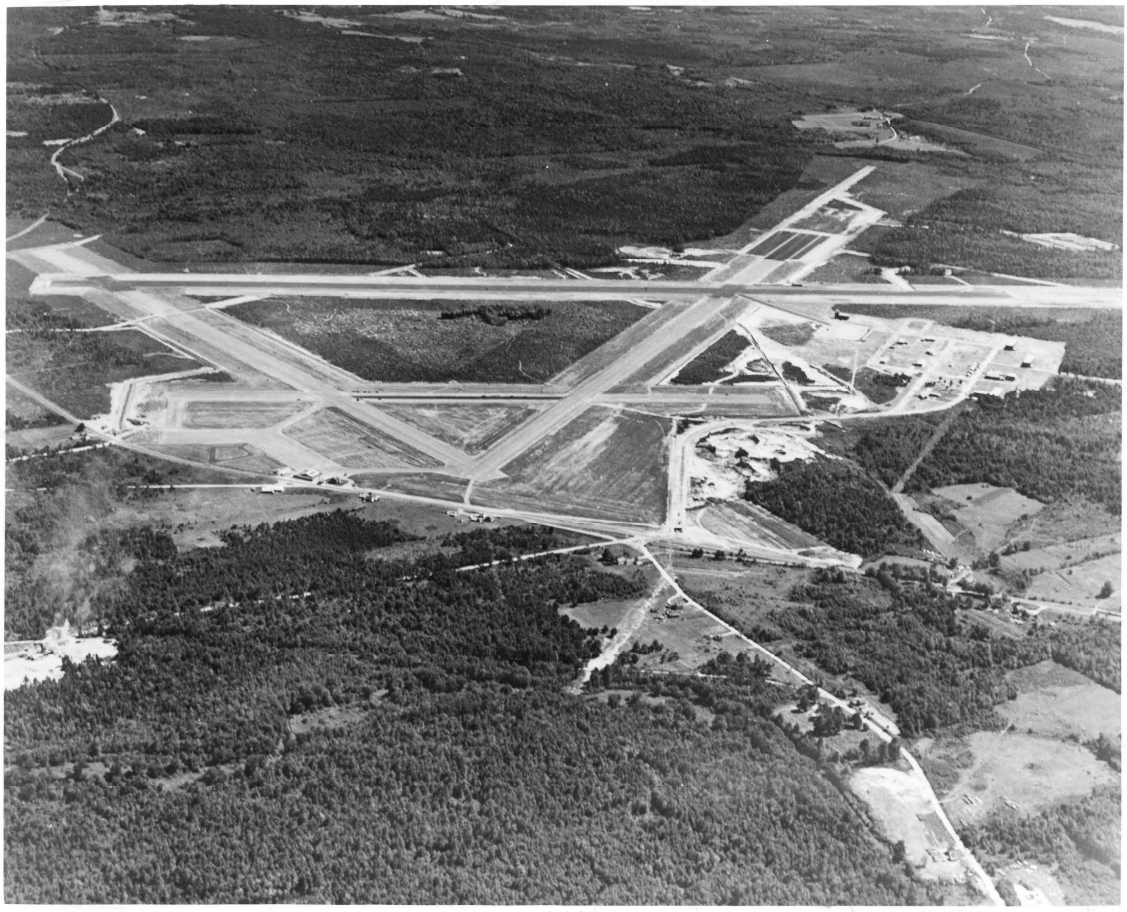
- Manage grass habitat to decrease habitat availability for mammals and birds
- Manage scrub-shrub habitat inside the airport
- Monitor/Modify standing water on the airport
- Remediate/Remove any abandoned drainage ditches

Table 6.3 in the WHA contains a summary to the guilds, wildlife deterrent techniques, and permit requirements at SFM

K - PRELIMINARY IDENTIFICATION OF ENVIRONMENTAL FEATURES

K.1 MAJOR AIRPORT DRAINAGE DITCHES

Sanford Seacoast airport is similar to many airports originally developed by private industry and then taken over and improved by the Department of Defense during WWII. The original airstrip was developed on land owned by Lela Goodall Thornburg. The Goodall Worsted Company improved the grass strip in the early 1930's and based their corporate aircraft and pilot there. The Navy took over the field in the early 1940's and commenced a major fill and leveling effort to create two 6000 foot and one 5000 ft runway. A short parallel runway was also built. The graphic below shows the airport as the Navy was completing the full build-out.



All the original Navy runways were built with "W-section" which means the runway was pitched from the centerline to a catch basin built into the edge of the runway. The runway edge was also pitched towards the catch basin. The runway catch basin was connected via underground culvert to another catch basin in the grass adjacent to the runway which then fed stormwater via culverts into open drainage swales. Most of the old brick catch basins along the two runways have been removed during runway reconstruction but the old system remains along Taxiways C and D. Stormwater is now treated primarily by infiltrating after running off the crowned paved areas into grass. The old Navy catch basins that remain have been registered with Maine DEP as "infiltration wells" because

many of them are bottomless and do not have liquid integrity to move stormwater. The groundwater table rises and falls in the basins and only the excess stormwater and groundwater is carried via pipes to drainage swales.

There are many open swales and closed culverts and two outfalls for all the water flowing through the airport. The drainage swales are easily seen by examining the contours on the ALP. The primary outfall is Branch Brook which travels through the airport and under the current Taxilane H, Taxiway C, and Runway 7/25. It is evident from the previous graphic that the Navy relocated the channel to make it a straight line from where it enters the airport on the west side by Gatehouse Road, across the approach end of what was a short parallel 07/25 runway (the remains of which are existing as taxiway D) and then traveling through culverts under the former Runway 1/19 (now C taxiway) to the infield and then again through culverts under Runway 7/25. Branch Brook is the primary water supply for the Kennebunk, Kennebunkport, and Wells (KKW) Water District and is a protected water source. The City of Sanford has worked diligently to rezone around the airport to ensure compatible industries and uses that protect the water quality in Branch Brook. The KKKW Water District provides an annual payment to the City of Sanford in part to support continued water quality improvement efforts at the airport. A much smaller quantity of water travels through open swales and culverts and daylights south of the airport into a minor tributary of the Merriland River. A drainage study is proposed for the west side of the field to evaluate storm event flooding and propose design alternatives to eliminate future flooding.

K.2 WETLANDS

Like all airports SFM is by necessity, flat. Fortunately the soil is primarily loamy sand and water drains well except in areas where the groundwater is very close to the surface and during heavy rain events. Freshwater forested/shrub and emergent wetlands from the USFWS NWI website are depicted on the ALP.

K.3 FLOOD ZONES

Sanford is not in any FEMA identified Flood Zone.

K.4 HISTORIC OR CULTURAL RESOURCES

SFM has a rich aviation history. Two old WWII era ammunition bunkers remain on the south side of Runway 7/25. All remaining vestiges of the Navy occupation remain only in photos and files. No additional known historic or cultural resources exist within the airport boundaries.

K.5 SECTION 4(F) FEATURES

There are two softball fields on airport property as well as a fish and wildlife shooting range on the west side of the field. The ball fields were constructed in the 1980's and according to long time members of the Airport Advisory Committee there is a signed agreement that the ball fields will be vacated when the parcel is needed for aeronautical use. No FAA approval of the non-aeronautical use has been found.

The Springvale Fish and Wildlife range has been used for many years by local police and

county sheriff's departments for training. No FAA approval of the non-aeronautical use has been found.

K.6 FLORA AND FAUNA

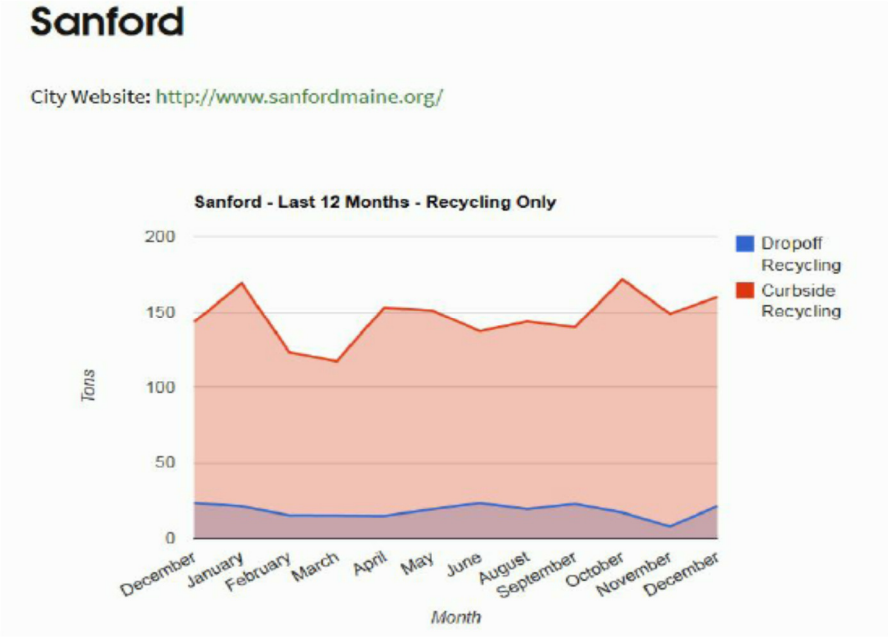
Sanford Airport manages grassland habitat to support the nesting habits of the endangered and threatened grasshopper sparrow and upland sandpiper.

K.7 NATURAL RESOURCES

There are no known natural resources other than water underlying the glacial sand plains that make up the airport.

K.8 SOLID WASTE

The Sanford Seacoast Regional Airport participates in the City of Sanford's mandatory recycling program. The City contracts with ecomaine, http://www.ecomaine.org to recycle paper, plastics # 1-7, metal, and glass via a single sort pickup and at the City transfer station drop-off location. In addition, petroleum waste from aircraft oil changes and other sources is recycled in a waste oil furnace at the airport. The most recent calendar year recycling totals are shown below:



L - RUNWAY SAFETY PROGRAM ACTION ITEMS

Not Applicable

M - DECLARED DISTANCES

Declared distances represent the maximum distances available and suitable for meeting takeoff, rejected takeoff, and landing distances performance requirements for turbine powered aircraft. Takeoff Run Available (TORA) and Takeoff Distance Available (TODA) are the distances that apply to takeoff operations. The Accelerate Stop Distance (ASDA) applies to a rejected takeoff, and the Landing Distance Available (LDA) applies to landing operations.

According to AC 150/5300-13A Airport Design Section 322.a(1) declared distances may be used to obtain additional RSA and/or ROFA prior to the landing threshold and beyond the departing end of the runway, and mitigate incompatible land uses in the RPZs. In addition, declared distances may also be established to mitigate penetrations of the approach and departure surfaces.

At SFM the proposed future declared distances have been established as shown in the following table, for the following reasons:

Declared Distances				
Runway	**TORA**	**TODA**	**ASDA**	**LDA**
7	6,001	6,389	6,001	6,001
25	6,389	6,389	6,389	6,001
14	4,999	4,999	4,999	4,114
14 Ult.	4,915	4,915	4,915	4,114
32	4,114	4,999	4,999	4,999
32 Ult.	4,114	4,915	4,915	4,915

- Incremental improvements of the RSA and ROFA. The departure end of Runway 7 and Runway 32 do not meet RSA requirements. Therefore, as an incremental improvement of the RSA and ROFA, the landing distances available (LDA) have been reduced.
- Incompatible land uses within the RPZs. Runway 7 and Runway 32 takeoff runway available (TORA) has been reduced to minimize incompatible land uses and activities within the departure RPZs. In addition, Runway 14 and Runway 25 landing thresholds have been displaced and landing distances available has been reduced to reduce incompatible residential land uses within the approach RPZ.
- Penetrations of the Approach Surfaces. There are two utility poles penetrating the Runway 25 34:1 CFR PART 77 approach surface. These existing non-standard shortened poles are below the approach 20:1 threshold siting surface and the 30:1 glidepath qualification surface for the 25 approach. No additional action to remove them is being considered. There are numerous off airport penetrations to the CFR Part 77 20:1 approach surface to Runway 14. The 20:1 displaced threshold approach surface is clear. There is no additional action being proposed to remove

obstructions to the off airport 34:1 surface.

- Penetrations of the Departure Surfaces. Special instrument departure takeoff minimums for Runway 32 have been published to accommodate penetrations to the departure surfaces.

According to *FAA Order 5190.6B FAA Airport Compliance Manual*, the application of declared distances may not be appropriate at some general aviation airports. Pilots of small general aviation aircraft do not have a requirement to use declared distances to calculate allowable operating weights; therefore, use of declared distances would not be appropriate at general aviation airports serving only small general aviation aircraft. However, SFM serves turbine powered corporate general aviation aircraft, particularly during the spring and summer season. Therefore, the use of declared distances is appropriate at SFM.

As described in the *FAA Order 5190.6B FAA Airport Compliance Manual,* because aircraft pilots generally do not see the ALP, declared distances presented in this ALP update should be published in the National Flight Data Center (NFDC) Airport Facility Directory.

Appendix A

FAA Forecast Approval

Review of Sanford Municipal Airport Forecasts

Annual Operations

The New England Airports Division accepts the master plan operational forecasts as being within the TAF. In this instance, local information indicates operations are currently 54% below the TAF. Please continue to update the 5010 data which will assist the TAF model in converging upon the qactual level of activity being observed at Sanford. The current discrepancy has no impact on any facility investment decisions and requires no further effort at this time. The preferred forecast of 2034 annual operations approaching 66,850 is accepted as it does not exceed the TAF forecast of 79,100 for that year.

The master plan total of 103 based aircraft exceeds the current 5010 record report of 93 fixed wing plus 3 helicopter and one ultra-light aircraft. It is important that based aircraft data is kept up to date on the 5010 master record in order to support national planning and programming of funding resources.

The 2034 forecast of 150 based aircraft in 2034 is accepted as an appropriate basis for developing the layout of appropriate storage facilities.

Ralph Nicosia-Rusin
Airport Capacity Program Manager

1/15/2015

Appendix B

Easement Documentation

EXTRACT from Sponsor Response to FAA Aug 2009 Land Use Inspection

Finding No. 6: Newhouse Easement – 1942

Initial Response: We located the original Lewis Newhouse easement, dated February 20, 1942, which grants in perpetuity the right of the Town of Sanford to enter the Newhouse property for the purpose of removing growth that may obstruct approaches to the airport and repair or alter electric power lines. Unfortunately, the easement does not describe the property, other than it is "contiguous to the Sanford Airport". Further research located a deed to Lewis Newhouse which identifies three properties in Sanford granted him in 1937; however the description of these properties does not correspond to current routes, streets or addresses. Research is continuing to determine an accurate description of the Newhouse property and if the Newhouse property could in fact be unknown parcel 10 on Exhibit "A".

Additional Information – February 2010: The FAA asked the Town of Sanford to add the Newhouse easement to Exhibit "A". While researching the Newhouse easement, we located six additional easements, all granted between February and October 1942, and all identical in terms of granting easements to the Town of Sanford to remove growth that may "come within the glide angle of the approach zones of said Sanford Airport". Unfortunately, the only description of the property in each of the seven easements, to include the Newhouse easement, is "contiguous to Sanford Airport".

These easements do not, in any binding or acceptable terms, describe the associated properties, other than owned by the individuals named and "contiguous to Sanford Airport". Researching these easements would require professional help that would be costly and would not guarantee that easement descriptions could be determined with absolute accuracy. Many of these owners, including Newhouse, owned several properties in the vicinity of the airport. We therefore believe it would be inappropriate to add the Newhouse easement to Exhibit "A" at this time.

Know all Men by these Presents, That

Sanford Airport Corporation, a corporation organized and existing under the laws of the State of Maine and located at Sanford in the County of York and State of Maine

In consideration of one dollar and other valuable considerations, paid by Inhabitants of the Town of Sanford, a municipal corporation duly organized by law and having a place of business at said Sanford, the receipt whereof it do es hereby acknowledge, do es hereby give, grant, bargain, sell and convey unto the said Inhabitants of the Town of Sanford, its successors and assigns forever, the right and privilege in connection with the operation of the Sanford Airport and so long as it is so operated, of entering upon the adjacent land of the grantor, Sanford Airport Corporation, to construct, erect, install and maintain a lighting system as proposed and described in plan on file at the U. S. Engineering Office, Boston, Massachusetts, being File #X100-24/1, dated May, 1941; and granting also on the same terms and conditions and for the same term, the right to enter upon said land of the grantor, to install, construct and maintain obstruction lights on buildings of the grantor.

And the grantee, in consideration of the above, hereby covenants and agrees by the acceptance of this deed to idemnify, protect and hold harmless the said Corporation and its officers and agents of and from any damages or claims for damages in any way connected with the installing or maintaining of said lighting system or any part thereof resulting to or made against the said grantor corporation by any person or corporations whatever. And it is an express condition of this grant that if the Grantee shall fail to so protect, indemnify and hold harmless the Grantor as aforesaid then this deed shall become null and void and the right of the Grantee shall terminate.

To Have and to Hold, the aforegranted and bargained premises with all the privileges and appurtenances thereof to the said Inhabitants of the Town of Sanford, its successors ~~heirs~~ and assigns, to them and their use and behoof forever. And the said Grantor Corporation does ~~do~~ hereby covenant with the said Grantee, its successors ~~heirs~~ and assigns, that it is lawfully seized in fee of the premises, that they are free of all incumbrances; that it ~~have~~ has good right to sell and convey the same to the said Grantee to hold as aforesaid; and that it and its ~~heirs~~ successors shall and will warrant and defend the same to the said Grantee, its successors ~~heirs~~ and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, the said Sanford Airport Corporation has caused this instrument to be sealed with its corporate seal and signed in its corporate name by ~ , its Treasurer, thereunto duly authorized, ~~have hereunto set hand and seal~~ this tenth day of June in the year ~~of our Lord~~ one thousand nine hundred and forty one.

Signed, Sealed and Delivered in presence of

George S. Willard

SANFORD AIRPORT CORPORATION
(Corporate Seal)
by Walter E. Nutter
Treasurer

State of Maine. County of York ss. June tenth 1941 Then Personally appeared the above named Walter E. Nutter Treasurer of said Grantor Corporation as aforesaid, and acknowledged the ~~above~~ foregoing instrument to be his free act and deed in his said capacity, and the free act and deed of said Corporation.

Before me, George S. Willard *Justice of the Peace.*

Recorded according to the original received. August 14, 1941 at 1h. 20m. P. M.

From: Dana H. Parry
Sent: Thursday, September 16, 2010 1:33 PM
To: 'Southern Maine Communications'; Mark Green
Cc: Sherry A. Lord; 'Northern Plasma'
Subject: RE: Airport Beacon

Mark, Bill Kostis has offered the Town $1,200 (fair market value – see below) for the airport beacon. The original plan was for the runway project electrical contractor to remove and return the beacon to the airport for salvage value, then remove and haul away the beacon tower and utility poles so that the airport (Town) has no presence or liability for anything on Lion Hill. I believe Mr. Kostis' offer for the beacon is reasonable. With your approval I'd like to pursue whatever steps you deem necessary to effect the transfer of the beacon property from the Town to Bill.

Bill, would you still want the beacon, beacon tower and utility poles that cross Bob Curry's property to remain in place after the power is shut off? Bob has said okay to the utility poles staying. A WWII era easement gave the Town the right to enter property for the purpose of maintaining the beacon, so that will no longer be necessary.

Thanks.

Dana

Dana H. Parry
Manager, Sanford Regional Airport
207-432-0596

Appendix C

FAA Approval, Taxiway Photocell Control Modification of Standard

FAA EASTERN REGION
MODIFICATION OF AIRPORT DESIGN STANDARDS

MODIFICATION: Photocell Control of Taxiway Lighting	LOCATION: Sanford Regional Airport, Sanford, ME	PAGE 2 OF 2
14. SIGNATURE OF ORIGINATOR: Dana Pany. Airport Manager 1 Feb 2010	15. ORIGINATOR'S ORGANIZATION: Sanford Regional Airport	16. TELEPHONE: (207) 432-0596
17. DATE OF LATEST FAA SIGNED ALP: 3-16-2006		
18. ~~ADO~~ RECOMMENDATION: D, VFS, ANE Concur/ Approve	19. SIGNATURE: By R. Reilly	20. DATE: 6/2/10

21. FAA DIVISIONAL REVIEW (AT, AF, FS):
Circulated for comment via OEAAA NRA Case # 2010-ANE-53-NRA. No comments of objection were received.

ROUTING SYMBOL	SIGNATURE	DATE	CONCUR	NON-CONCUR
ANE-620 RS	Bob Riis	6/2/2010	✓	

COMMENTS:
Where this is a lighting modification, headquarters approval is needed.

22. AIRPORTS' ~~DIVISION~~ FINAL ACTION:
Headquarters

[✓] UNCONDITIONAL APPROVAL	[ ] CONDITIONAL APPROVAL	[ ] DISAPPROVAL

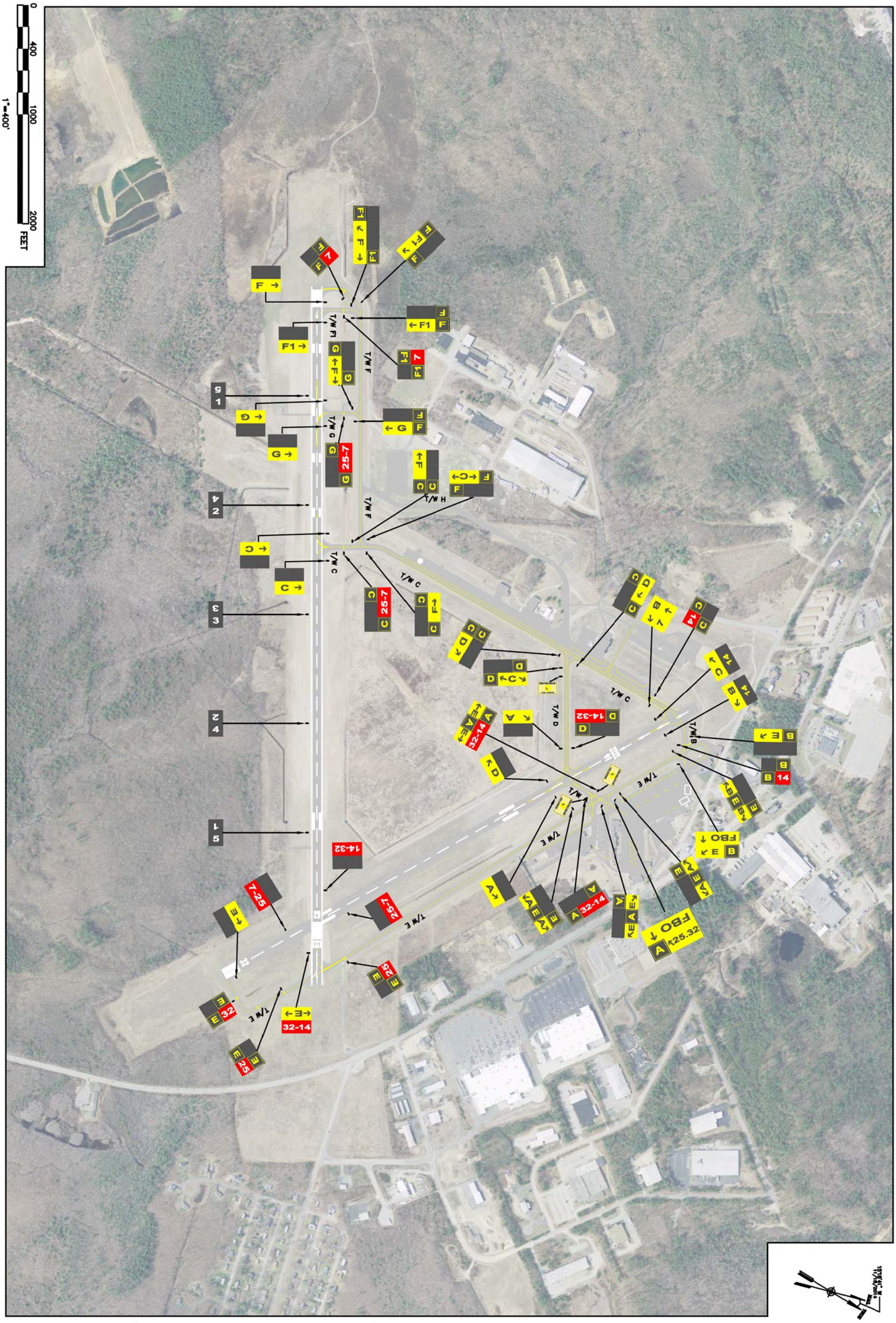
DATE: 9/9/10	SIGNATURE: R. Merrill	TITLE: MANAGER, AAS-100

CONDITIONS OF APPROVAL:

Appendix D

Sign Plan

Drawing name: H:\060233\dwg\Contract\00-SIGN-PLAN.dwg Sep 23, 2015 - 11:07am



Hoyle, Tanner & Associates, Inc.
150 Dow Street Manchester, NH 03101
tel: (603) 669-5555
fax: (603) 669-5168
www.hoyletanner.com

Sanford Seacoast Regional Airport

SIGN PLAN

REV. NO.	DATE	DESCRIPTION	BY

DO NOT SCALE DRAWING

AIP NO.:	3-23-0003-027-2013
PROJ. NO.:	060233
DRAWN:	-JLC
DESIGN:	-ERM
CHECKED:	-HMD
DATE:	MAY 2015
SHEET	1 CF 1

Appendix E

ALP Set

SANFORD SEACOAST REGIONAL AIRPORT
SANFORD, MAINE

AIRPORT LAYOUT PLAN SET

VICINITY MAP

Sanford™
Seacoast
Regional Airport

LOCATION MAP

AIRPORT OWNERSHIP AND MANAGEMENT

The SANFORD SEACOAST REGIONAL AIRPORT is owned by the City of Sanford Maine and operated under the management of the City of Sanford, Airport Manager, M. Allison Rogers

SANFORD SEACOAST REGIONAL AIRPORT

167 Airport Road, Suite D
Sanford, ME 04073

FAA AIP# 3-23-0044-30-2014
OCTOBER 2015

INDEX OF SHEETS

PLANS PREPARED BY:

Hoyle, Tanner & Associates, Inc.

150 Dow Street | Manchester, NH 03101
Office: (603) 669-5555 | Fax: (603) 669-4168

LEGEND

EXISTING	DESCRIPTION
	AIRPORT REFERENCE POINT
	PROPERTY LINE
RVZ	RUNWAY VISIBILITY ZONE
RSA	RUNWAY SAFETY AREA
ROFA	RUNWAY OBJECT FREE AREA
ROFZ	RUNWAY OBJECT FREE ZONE
TOFA	TAXIWAY OBJECT FREE AREA
(DS)	DEPARTURE SURFACE
(TSS)	THRESHOLD SITING SURFACE
	LAND RELEASE
	RUNWAY PROTECTION ZONES
20'	CONTOUR LINES
	PAVED AIRFIELD SURFACES
	8' FENCE
	ON-AIRPORT BUILDINGS
	THRESHOLD LIGHTS
	PAPI
	RUNWAY END IDENTIFIER LIGHT (REIL)
	WIND SOCK
	BUILDING IDENTIFICATION
	EASEMENT
	NAVAID CRITICAL AREA
32	RUNWAY IDENTIFIER
	WETLANDS
	APPROACH OBSTRUCTION LIGHT
	GATE IDENTIFICATION

Structures, Buildings & Facilities

Buildings	Description	AGL Peak El.	MSL Peak El.
1	Hangar	20	260
2	Hangar	23	262
3	Hangar	25	265
4	Airport Storage	11.8	249.8
5	Electric Vault	10.5	249.5
6	FBO	23	263.7
7	Hangar	20	253.8
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9	Hangar	19.5	253.5
9A	APRT Storage	12	246
10	Hangar	16	250.4
15	Hangar	22.5	258.5
16	Hangar	23	257.9
17	Hangar	23	257.9
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39	Hangar	18.1	236
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41	Hangar	17	258
42	Hangar	17	258
43	TTF FBO	36	276.1
44	FBO	17	257.8
45	Hangar	22	261
46	LOC/AWOS Bldg	9.8	243.8
47	GS Bldg	9.4	243.4

APPROXIMATE AIRPORT BOUNDARY LINE

R/W 14 END
EL. 244.0' (HIGH POINT)
LAT. 43° 24' 01" N
LONG. 70° 42' 52" W

R/W 14 (DISPLACED THRESHOLD)
EL. 241.8'
LAT. 43° 23' 57" N
LONG. 70° 42' 41 W

R/W 7 END
EL. 240.5' (HIGH)
LAT. 43° 23' 12" N
LONG. 70° 43' 11" W

R/W 7 TDZ
EL. 240.6'

R/W 14 TDZ
EL. 241.8

R/W 25 TDZ
EL. 234.7'

R/W 32 TDZ
EL. 238.9'

R/W 25 END
DISPLACED THRESHOLD
EL. 233.1' (LOW)
LAT. 43° 23' 43" N
LONG. 70° 42' 02" W

R/W 32 END
EL. 230.7' (LOW)
LAT. 43° 23' 37" N
LONG. 70° 41' 52" W

RUNWAY 25 END
LAT. 43° 23' 45"
LONG. 70° 41' 57"
EL. 232.1'

EXISTING AIRPORT REFERENCE POINT
LAT. 43°-23'-38" N
LONG. 70°-42'-29" W

EXISTING R/W 7–25 6389' X 100'

EXISTING R/W 14–32 4399' X 100'

N58° 44' 17"E

N15°16'41" W
11/18/2014
MAG TRUE

ROUTE 109

ROUTE 99

AIRPORT ROAD

GATE HOUSE RD

EAGLE DR

KOSTIS LN

BAKER RD

BRANCH BROOK

FUEL FARM

TERMINAL

FIRE STATION

WINDCONE AND SEGMENTED CIRCLE

WINDCONE

BEACON

COMPASS ROSE

SOUTHWEST RAMP

EXISTING BALL PARKS

GOLF COURSE EASEMENT

REILS

GLIDE SLOPE CRITICAL AREA

LOCALIZER CRITICAL AREA

RUNWAY VISIBILITY

LOCALIZER ANTENNA

ODALS (TYP.)

G.S. ANT.

AWOS

PAPI

243.6 MSL

238.5 MSL

230.0 MSL

229.0 MSL

NOTE:
ALL ELEVATIONS ARE MEAN SEA LEVEL (MSL), UNLESS OTHERWISE INDICATED.

0 400 1000 2000 FEET
1"=400'

DO NOT SCALE DRAWING

REV. NO.	DATE	DESCRIPTION	BY

AIP NO.: 3-23-0003-027-2013
PROJ. NO.: 060233
DRAWN: -JLC
DESIGN: -MTO
CHECKED: -ERM
DATE: OCTOBER 2015

SHEET 2 OF 12

SHEET TITLE

EXISTING AIRPORT CONDITIONS

Sanford Seacoast Regional Airport

Hoyle, Tanner & Associates, Inc.
150 Dow Street Manchester, NH 03101
tel: (603) 669-5555
fax: (603) 669-5168
www.hoyletanner.com

Drawing name: H:\060233\dwg\Contract\A 4.1 ExistingALP.dwg Sep 23, 2015 - 11:14am

Proposed Development

Legend	Timeframe	Proposed Development
a1	5	Wildlife Fencing - approx 9ft - Phase 1
a2	5	Wildlife Fencing - approx 9ft - Phase 2
a3	10	Wildlife Fencing - approx 9ft - Phase 3
a4	20	Wildlife Fencing - approx 9ft - Phase 4
b	5	SRE Building (2) Alternatives
c	5	Taxiway C Rehabilitation
d	5	West Side Drainage Study
d1	10	Permit, Design, Install West Side Drainage Improvements
e	5	Land Release for Non-Aeronautical Use
f	20	NEPA, Permit Design & Expand GA Terminal BLDG
g	20	NEPA, Permit, Design, Terminal Parking Lot Expansion with Drainage
h	10	West Side Utilities Upgrade Study
i	10	Acquire Land & Building when available
j	5	Permit, Grub, Grade & Seed North of TW E
k	20	Permit, Grub, Grade & Seed 07 Approach Area
l	10	NEPA, Permit, Design, Construct 2 Holding Areas on TW E
m	5	NEPA, Permit, Design, Construct Paved Perimeter RD on 14 End
n	20	NEPA, Permit, Design, Construct Box Hangars (typical)
o	20	NEPA, Permit, Design, Construct Nested T - Hangars (typical)
p	20	Alternate Airport Access
q	20	Taxilane H Reconstruction
r	10	Reconstruct and Narrow Runway 14/32
s	10	Complete a Vertically Guided Approach Survey to Runway 32
t	20	NEPA, Permit, Design, Construct GA Terminal Annex
u	20	NEPA, Permit, Design, Expand West Itinerant Apron

LEGEND

EXISTING	PROPOSED	DESCRIPTION
		AIRPORT REFERENCE POINT
		PROPERTY LINE
RVZ	(RVZ)	RUNWAY VISIBILITY ZONE
RSA	(RSA)	RUNWAY SAFETY AREA
ROFA	(ROFA)	RUNWAY OBJECT FREE AREA
ROFZ	(ROFZ)	RUNWAY OBJECT FREE ZONE
TOFA	(TOFA)	TAXIWAY OBJECT FREE AREA
(DS)	(DS)	DEPARTURE SURFACE
(TSS)	(TSS)	THRESHOLD SITING SURFACE
		LAND RELEASE
		RUNWAY PROTECTION ZONES
20'	N/A	CONTOUR LINES
		PAVED AIRFIELD SURFACES
	N/A	8' FENCE
		ON-AIRPORT BUILDINGS
	N/A	THRESHOLD LIGHTS
	N/A	PAPI
	N/A	RUNWAY END IDENTIFIER LIGHT (REIL)
	N/A	WIND SOCK
		BUILDING IDENTIFICATION
		EASEMENT
	N/A	NAVAID CRITICAL AREA
32	N/A	RUNWAY IDENTIFIER
	N/A	WETLANDS
	N/A	APPROACH/OBSTRUCTION LIGHT
		GATE IDENTIFICATION
N/A		PAVEMENT TO BE REMOVED
N/A		SOLAR FARM / NON-AERONAUTICAL DEVELOPMENT
		GATE LOCATION
N/A		APRON
N/A		PROPOSED DEVELOPMENT

Declared Distances

Runway	TORA	TODA	ASDA	LDA
7	6,001	6,389	6,001	6,001
25	6,389	6,389	6,389	6,001
14	4,999	4,999	4,999	4,114
14 Ult.	4,915	4,915	4,915	4,114
32	4,114	4,999	4,999	4,999
32 Ult.	4,114	4,915	4,915	4,915

Aprons

A1 - East Based	589	285	144,950
A2 - East Itinerant	305	202	61,852
A3 - West Itinerant	457	183	83,805
A4 - SW Ramp	376	175	65,220

Structures, Buildings & Facilities

Buildings	Description	AGL Peak El.	MSL Peak El.
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44	FBO	17	257.8
45	Hangar	22	261
46	LOC/AWOS Bldg	9.8	243.8
47	GS Bldg	9.4	243.4

Airport Data Table

Item	Existing	Future
Airport Reference Code (ARC)	D-II	C-II
Mean Max Temp of Hottest Month	82.8°F/July	Same
Airport Elevation (MSL)	244.1	Same
Airport Electronic NAVAIDS	Sponsor Owned - Beacon, ODALS, PAPIs on 7, 32, & 14 FAA owned - H-VOR/DME, ILS, GS & PAPI on 25	Same
Airport Reference Point (NAD 83)		
Latitude	43° 23' 37.70"	43° 23' 37.49"
Longitude	70° 42' 28.80"	70° 42' 28.65"
Miscellaneous Facilities	REILS on 7, MITL, Lighted Wind Cone, Supplemental Wind Cones, AWOS-3	Same
Critical Aircraft	Gulfstream G-IV	Gulfstream G450
Wingspan	77' 10"	77' 10"
Approach Speed	145 knots	less than 141 knots
Undercarriage	TDG 2	TDG 2
Magnetic Variation - 11/18/2014	15°18'41" W	4.2° E per year
NPIAS Service Level	Reliever	Same
State Service Level / Asset Category	Level 1 / Local	Same

Airport Sponsor Approval
This Airport Layout Plan Is Hereby Approved
Signature:_____ Date:_____
Name
Title

MaineDOT Approval
This Airport Layout Plan Is Hereby Approved
Signature:_____ Date:_____
Name
Title

FAA Approval
This Airport Layout Plan Is Hereby Conditionally Approved
Signature:_____ Date:_____
Name
Title

NOTE:
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0 400 1000 2000 FEET
1"=400'

REV. NO.	DATE	DESCRIPTION	BY

3-23-0003-027-2013
AIP NO.:
060233
PROJ. NO.:
-JLC
DRAWN:
-MTO
DESIGN:
-ERM
CHECKED:
OCTOBER 2015
DATE:
SHEET 3 OF 12

DO NOT SCALE DRAWING

SHEET TITLE
ULTIMATE AIRPORT LAYOUT PLAN

Sanford Seacoast Regional Airport

Hoyle, Tanner & Associates, Inc.
150 Dow Street Manchester, NH 03101
tel: (603) 669-5555
fax: (603) 669-5168
www.hoyletanner.com

Drawing name: H:\060233\dwg\Contract\A 4.2 ProposedALP.dwg Sep 23, 2015 - 11:16am

Proposed Development		
Legend	Timeframe	Proposed Development
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s	10	Complete a Vertically Guided Approach Survey to Runway 32
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u	20	NEPA, Permit, Design, Expand West Itinerant Apron

NOTE:
PROPOSED DEVELOPMENT TABLE
REFERS TO THE ENTIRE AIRPORT.

Structures, Buildings & Facilities			
Buildings	Description	AGL Peak El.	MSL Peak El.
1	Hangar	20	260
2	Hangar	23	262
3	Hangar	25	265
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7	Hangar	20	253.8
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9A	APRT Storage	12	246
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(DS)	(DS)	DEPARTURE SURFACE
(TSS)	(TSS)	THRESHOLD SITING SURFACE
		LAND RELEASE
		RUNWAY PROTECTION ZONES
20'	N/A	CONTOUR LINES
		PAVED AIRFIELD SURFACES
		8' FENCE
		ON-AIRPORT BUILDINGS
	N/A	THRESHOLD LIGHTS
	N/A	PAPI
	N/A	RUNWAY END IDENTIFIER LIGHT (REIL)
	N/A	WIND SOCK
		BUILDING IDENTIFICATION
		EASEMENT
	N/A	NAVAID CRITICAL AREA
14 32	N/A	RUNWAY IDENTIFIER
	N/A	WETLANDS
	N/A	APPROACH/OBSTRUCTION LIGHT
		GATE IDENTIFICATION
N/A		PAVEMENT TO BE REMOVED
N/A		SOLAR FARM / NON-AERONAUTICAL DEVELOPMENT
		GATE LOCATION
N/A		APRON
N/A		PROPOSED DEVELOPMENT

FUTURE AERONAUTICAL
GATE LOCATION (TYP.)
ROUTE 109
AIRPORT RD
FUEL FARM
TERMINAL BUILDING
T/W A
T/W B
T/W C
T/W D
T/W E
PAPI
14
32
ULT. R/W 14–32 4915' X 75'
EXISTING R/W 14–32 4999' X 100'
N60° 43' 13"W
15°18'41" W
11/18/2014
MAG TRUE

NOTE:
ALL ELEVATIONS ARE MEAN SEA LEVEL (MSL),
UNLESS OTHERWISE INDICATED.

0 100 250 500 FEET
1"=100'

REV. NO.	DATE	DESCRIPTION	BY

AIP NO.: 3-23-0003-027-2013
PROJ. NO.: 060233
DRAWN: -JLC
DESIGN: -MTO
CHECKED: -ERM
DATE: OCTOBER 2015

SHEET 4 OF 12

DO NOT SCALE DRAWING

SHEET TITLE

TERMINAL AREA PLAN -EAST

Sanford Seacoast Regional Airport

Hoyle, Tanner & Associates, Inc.
150 Dow Street Manchester, NH 03101
tel: (603) 669-5555
fax: (603) 669-5168
www.hoyletanner.com

Drawing name: H:\060233\dwg\Contract\A 8.1 Terminal Area -East.dwg Sep 23, 2015 - 11:18am

NOTE:
ALL ELEVATIONS ARE MEAN SEA LEVEL (MSL), UNLESS OTHERWISE INDICATED.

Proposed Development

Legend	Timeframe	Proposed Development
a1	5	Wildlife Fencing - approx 9 ft - Phase 1
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a4	20	Wildlife Fencing - approx 9 ft - Phase 4
b	5	SRE Building (2) Alternatives
c	5	Taxiway C Rehabilitation
d	5	West Side Drainage Study
d1	10	Permit, Design, Instal West Side Drainage Improvements
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q	20	Taxilane H Reconstruction
r	10	Reconstruct and Narrow Runway 14/32
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Structures, Buildings & Facilities

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46	LOC/AWOS Bldg	9.8	243.8
47	GS Bldg	9.4	243.4

15°18'41" W
11/18/2014
MAG
VAR

LEGEND

EXISTING	PROPOSED	DESCRIPTION
		AIRPORT REFERENCE POINT
		PROPERTY LINE
RVZ	(RVZ)	RUNWAY VISIBILITY ZONE
RSA	(RSA)	RUNWAY SAFETY AREA
ROFA	(ROFA)	RUNWAY OBJECT FREE AREA
ROFZ	(ROFZ)	RUNWAY OBJECT FREE ZONE
TOFA	(TOFA)	TAXIWAY OBJECT FREE AREA
(DS)	(DS)	DEPARTURE SURFACE
(TSS)	(TSS)	THRESHOLD SITING SURFACE
		LAND RELEASE
		RUNWAY PROTECTION ZONES
20'	N/A	CONTOUR LINES
		PAVED AIRFIELD SURFACES
		8' FENCE
		ON-AIRPORT BUILDINGS
	N/A	THRESHOLD LIGHTS
	N/A	PAPI
	N/A	RUNWAY END IDENTIFIER LIGHT (REIL)
	N/A	WIND SOCK
		BUILDING IDENTIFICATION
		EASEMENT
	N/A	NAVAID CRITICAL AREA
32	N/A	RUNWAY IDENTIFIER
	N/A	WETLANDS
	N/A	APPROACH/OBSTRUCTION LIGHT
		GATE IDENTIFICATION
N/A		PAVEMENT TO BE REMOVED
N/A		SOLAR FARM / NON-AERONAUTICAL DEVELOPMENT
		GATE LOCATION
N/A		APRON
N/A	P	PROPOSED DEVELOPMENT

GATE HOUSE RD
GATE LOCATION (TYP.)
AIRPORT ROAD
ROUTE 109
T/W C
T/W D
T/W B
BEACON
300'
50'
75'
0 100 250 500 FEET
1"=100'

NO.	DATE	DESCRIPTION	BY

AIP NO.: 3-23-0003-027-2013
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DRAWN: -JLC
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DATE: OCTOBER 2015

SHEET 5 OF 12

DO NOT SCALE DRAWING

TERMINAL AREA PLAN -WEST
SHEET 1

Sanford Seacoast Regional Airport

Hoyle, Tanner & Associates, Inc.
150 Dow Street Manchester, NH 03101
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Drawing name: H:\060233\dwg\Contract\A & 2 Terminal Area - NWest.dwg Sep 23, 2015 - 11:16am

NOTE:
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FUTURE AVIATION HANGAR

BAKER RD

KOSTIS LN

GATE LOCATION (TYP.)

GATE HOUSE RD

FUTURE AVIATION DEVELOPMENT

FUTURE AVIATION DEVELOPMENT

BRANCH BROOK

BRANCH BROOK

SOUTHWEST RAMP

BEACON

COMPASS ROSE

T/W C

T/W D

T/W F

T/W H

EXISTING

15°18'41" W
11/18/2014
MAG
7800'

LEGEND

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		LAND RELEASE
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	N/A	CONTOUR LINES
		PAVED AIRFIELD SURFACES
		8' FENCE
		ON-AIRPORT BUILDINGS
	N/A	THRESHOLD LIGHTS
	N/A	PAPI
	N/A	RUNWAY END IDENTIFIER LIGHT (REIL)
	N/A	WIND SOCK
		BUILDING IDENTIFICATION
		EASEMENT
	N/A	NAVAID CRITICAL AREA
	N/A	RUNWAY IDENTIFIER
	N/A	WETLANDS
	N/A	APPROACH/OBSTRUCTION LIGHT
		GATE IDENTIFICATION
N/A		PAVEMENT TO BE REMOVED
N/A		SOLAR FARM / NON-AERONAUTICAL DEVELOPMENT
		GATE LOCATION
N/A		APRON
N/A		PROPOSED DEVELOPMENT

Proposed Development

Legend	Timeframe	Proposed Development
a1	5	Wildlife Fencing - approx 9 ft - Phase 1
a2	5	Wildlife Fencing - approx 9 ft - Phase 2
a3	10	Wildlife Fencing - approx 9 ft - Phase 3
a4	20	Wildlife Fencing - approx 9 ft - Phase 4
b	5	SRE Building (2) Alternatives
c	5	Taxiway C Rehabilitation
d	5	West Side Drainage Study
d1	10	Permit, Design, Install West Side Drainage Improvements
e	5	Land Release for Non-Aeronautical Use
f	20	NEPA, Permit Design & Expand GA Terminal BLDG
g	20	NEPA, Permit, Design, Terminal Parking Lot Expansion with Drainage
h	10	West Side Utilities Upgrade Study
i	10	Acquire Land & Building when available
j	5	Permit, Grub, Grade & Seed North of TW E
k	20	Permit, Grub, Grade & Seed 07 Approach Area
l	10	NEPA, Permit, Design, Construct 2 Holding Areas on TW E
m	5	NEPA, Permit, Design, Construct Paved Perimeter RD on 14 End
n	20	NEPA, Permit, Design, Construct Box Hangars (typical)
o	20	NEPA, Permit, Design, Construct Nested T - Hangars (typical)
p	20	Alternate Airport Access
q	20	Taxilane H Reconstruction
r	10	Reconstruct and Narrow Runway 14/32
s	10	Complete a Vertically Guided Approach Survey to Runway 32
t	20	NEPA, Permit, Design, Construct GA Terminal Annex
u	20	NEPA, Permit, Design, Expand West Itinerant Apron

Structures, Buildings & Facilities

Buildings	Description	AGL Peak El	MSL Peak El
1	Hangar	20	260.1
2	Hangar	25	262
3	Hangar	25	265
4	Airport Storage	11.8	249.8
5	Electric Vault	10.5	249.5
6	FBO	23	263.7
7	Hangar	20	263.8
8	Fire Station	24	260.1
9	Hangar	18.5	263.5
9A	APRT Storage	12	249
10	Hangar	16	250.4
11	Hangar	22.5	256.5
12	Hangar	25	257.9
13	Hangar	23	257.9
14	Hangar	23	258.1
15	Hangar	23	258.2
16	Hangar	23	258.7
17	Hangar	23	258.7
18	Hangar	25	258.7
19	Hangar	25	258.3
20	Hangar	28.3	265.5
24	Hangar	22	237.4
25	Hangar	25	237.4
33	Hangar	17	263.8
34	Hangar	17	256.7
35	Hangar	31.3	258.2
36	Hangar	28.5	256.9
38	Hangar	18.1	236
40	Hangar	17	259
41	Hangar	17	258
42	Hangar	17	256
43	TIE FBO	36	276.1
44	FBO	17	267.8
45	Hangar	22	261
46	LOC/AWOS Bldg	9.8	243.8
47	GS Bldg	9.4	243.4

0 100 250 500 FEET
1"=100'

AIP NO.: 3-23-0003-027-2013
PROJ. NO.: 060233
DRAWN: -JLC
DESIGN: -MTO
CHECKED: -ERM
DATE: OCTOBER 2015

SHEET 6 OF 12

REV. NO.	DATE	DESCRIPTION	BY

DO NOT SCALE DRAWING

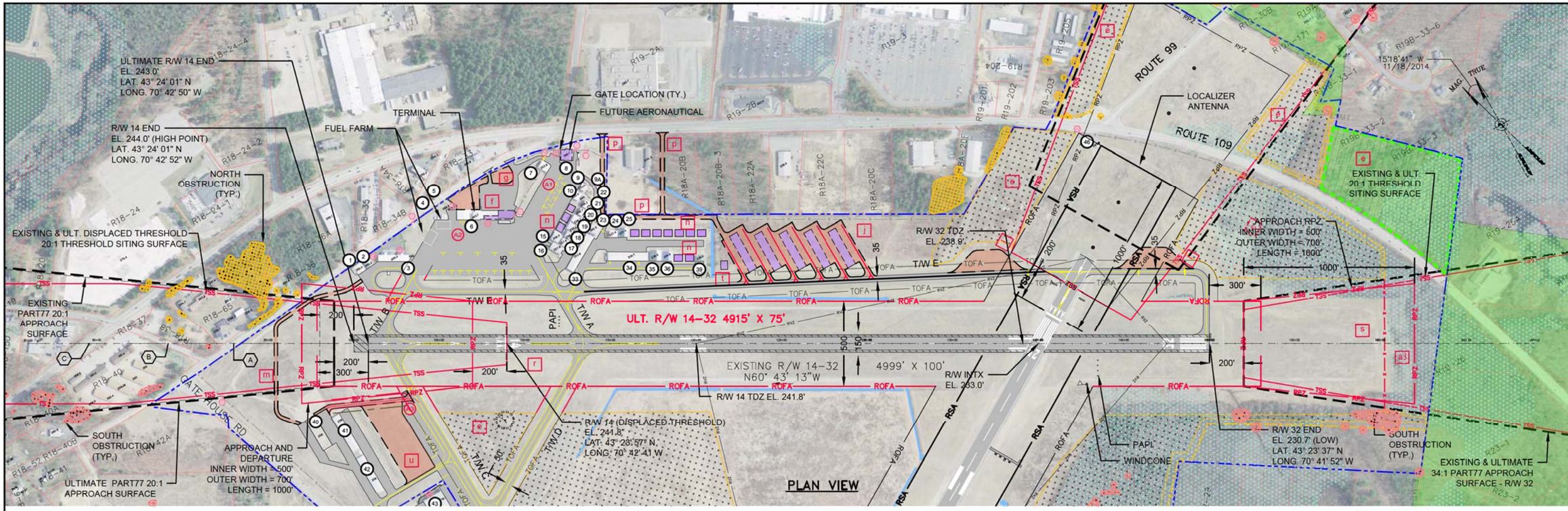
SHEET TITLE

TERMINAL AREA PLAN -WEST SHEET 2

Sanford Seacoast Regional Airport

Hoyle, Tanner & Associates, Inc.
150 Dow Street Manchester, NH 03101
tel: (603) 669-5555
fax: (603) 669-5168
www.hoyletanner.com

Drawing name: H:\060233\dwg\Contract\A.8.2 Terminal Area - SWest.dwg Sep 23, 2015 - 11:20am



LEGEND

EXISTING	PROPOSED	DESCRIPTION
		AIRPORT REFERENCE POINT
		PROPERTY LINE
RVZ	RVZ	RUNWAY VISIBILITY ZONE
RSA	RSA	RUNWAY SAFETY AREA
ROFA	ROFA	RUNWAY OBJECT FREE AREA
ROFZ	ROFZ	RUNWAY OBJECT FREE ZONE
TOFA	TOFA	TAXIWAY OBJECT FREE AREA
(DS)	(DS)	DEPARTURE SURFACE
(TSS)	(TSS)	THRESHOLD SITING SURFACE
		LAND RELEASE
		PAVED AIRFIELD SURFACES
		8' FENCE
		ON-AIRPORT BUILDINGS
	N/A	THRESHOLD LIGHTS
	N/A	PAPI

LEGEND

EXISTING	PROPOSED	DESCRIPTION
	N/A	RUNWAY END IDENTIFIER LIGHT (REIL)
	N/A	WIND SOCK
		BUILDING IDENTIFICATION
		EASEMENT
	N/A	WETLANDS
	N/A	APPROACH/OBSTRUCTION LIGHT
		GATE IDENTIFICATION
N/A		PAVEMENT TO BE REMOVED
N/A		SOLAR FARM / NON-AERONAUTICAL DEVELOPMENT
		GATE LOCATION
N/A		APRON
N/A		PROPOSED DEVELOPMENT

Proposed Development		
Legend	Timeframe	Proposed Development
a1	5	Wildlife Fencing - approx 9 ft - Phase 1
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s	10	Complete a Vertically Guided Approach Survey to Runway 32
t	20	NEPA, Permit, Design, Construct GA Terminal Annex
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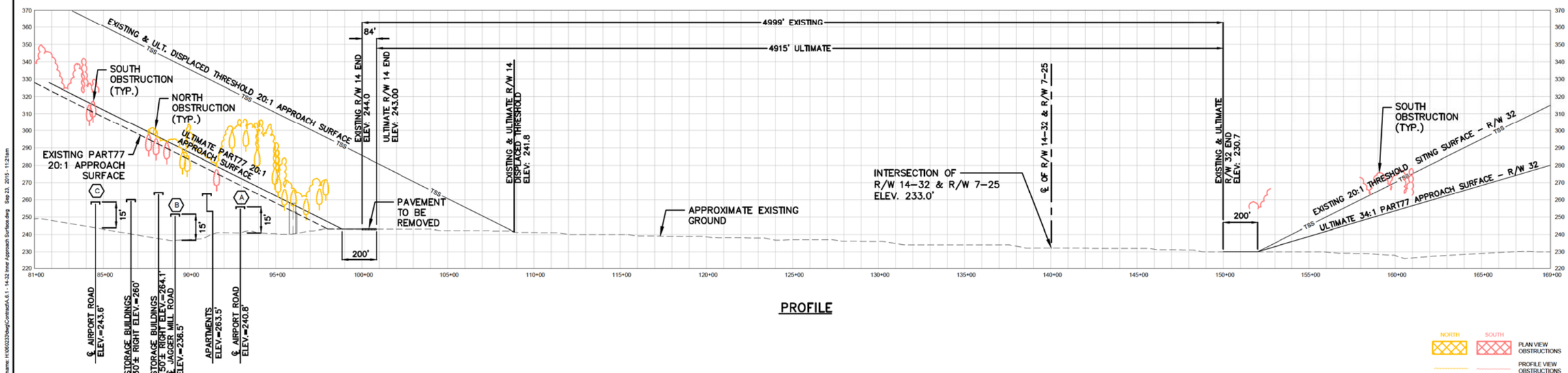
1"= 300' HORIZONTAL
0 300 750 1500 FEET
0 30 60 75 150
1"= 30' VERTICAL

OBSTRUCTION DATA SOURCE:
MAINE DOT AERIAL SURVEY (2001)

NOTE:
ALL ELEVATIONS ARE MEAN SEA LEVEL (MSL), UNLESS OTHERWISE INDICATED.



PROFILE

NORTH SOUTH
PLAN VIEW OBSTRUCTIONS
PROFILE VIEW OBSTRUCTIONS

Drawing name: H:\00233\dwg\Contract\A.6.1 - 14-32 Inner Approach Surface.dwg Sep 23, 2015 - 11:21am

AIP NO.:	3-23-0003-027-2013
PROJ. NO.:	060233
DRAWN:	-JLC
DESIGN:	-MTO
CHECKED:	-ERM
DATE:	MAY 2015

SHEET 7 OF 12

REV. NO.	DATE	DESCRIPTION	BY

DO NOT SCALE DRAWING

SHEET TITLE

PLAN AND PROFILE
RUNWAY 14-32

Sanford Seacoast Regional Airport

Hoyle, Tanner & Associates, Inc.
150 Dow Street Manchester, NH 03101
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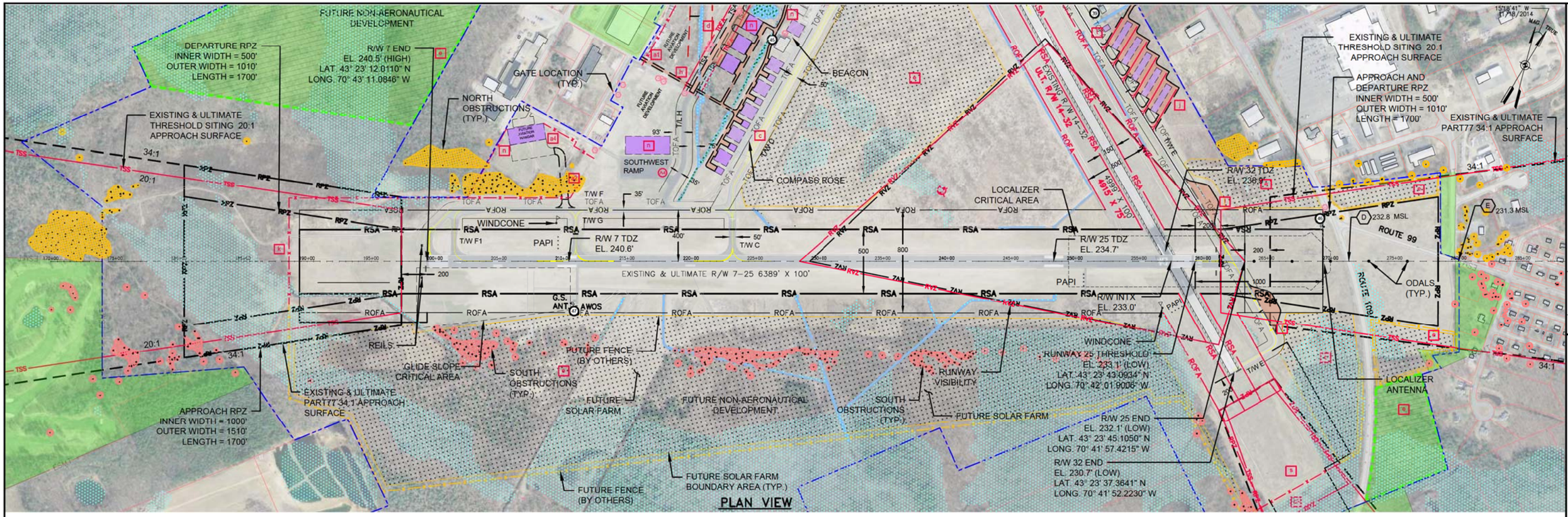
www.hoyletanner.com



LEGEND

EXISTING	PROPOSED	DESCRIPTION
		AIRPORT REFERENCE POINT
		PROPERTY LINE
RVZ	(RVZ)	RUNWAY VISIBILITY ZONE
RSA	(RSA)	RUNWAY SAFETY AREA
ROFA	(ROFA)	RUNWAY OBJECT FREE AREA
ROFZ	(ROFZ)	RUNWAY OBJECT FREE ZONE
TOFA	(TOFA)	TAXIWAY OBJECT FREE AREA
(DS)	(DS)	DEPARTURE SURFACE
(TSS)	(TSS)	THRESHOLD SITING SURFACE
		LAND RELEASE
		PAVED AIRFIELD SURFACES
		6' FENCE
		ON-AIRPORT BUILDINGS
0000 0000	N/A	THRESHOLD LIGHTS
0000	N/A	PAPI

LEGEND

EXISTING	PROPOSED	DESCRIPTION
	N/A	RUNWAY END IDENTIFIER LIGHT (REIL)
	N/A	WIND SOCK
		BUILDING IDENTIFICATION
		EASEMENT
	N/A	WETLANDS
	N/A	APPROACH/OBSTRUCTION LIGHT
		GATE IDENTIFICATION
N/A		PAVEMENT TO BE REMOVED
N/A		SOLAR FARM / NON-AERONAUTICAL DEVELOPMENT
		GATE LOCATION
N/A		APRON
N/A		PROPOSED DEVELOPMENT

Proposed Development		
Legend	Timeframe	Proposed Development
a1	5	Wildlife Fencing - approx 9 ft - Phase 1
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s	10	Complete a Vertically Guided Approach Survey to Runway 32
t	20	NEPA, Permit, Design, Construct GA Terminal Annex
u	20	NEPA, Permit, Design, Expand West Itinerant Apron

1"= 400' HORIZONTAL
0 400 1000 2000 FEET
0 40 80 100 200
1"= 4' VERTICAL

OBSTRUCTION DATA SOURCE:
LPV Obstruction Survey (06/20/2010)

NOTE:
ALL ELEVATIONS ARE MEAN SEA LEVEL (MSL), UNLESS OTHERWISE INDICATED.

NORTH SOUTH
PLAN VIEW OBSTRUCTIONS
PROFILE VIEW OBSTRUCTIONS

NOTE:
PART77 REQUIRES 50:1 APPROACH FOR PRECISION RUNWAYS SUCH AS RUNWAY 7. HOWEVER, 34:1 IS A WIDELY ACCEPTED PRACTICE IN NEW ENGLAND DUE TO THE TERRAIN.

PROFILE

SHEET TITLE
PLAN AND PROFILE
RUNWAY 7-25

REV. NO	DATE	DESCRIPTION	BY

AIP NO.: 3-23-0003-027-2013
PROJ. NO.: 060233
DRAWN: -JLC
DESIGN: -MTO
CHECKED: -ERM
DATE: MAY 2015

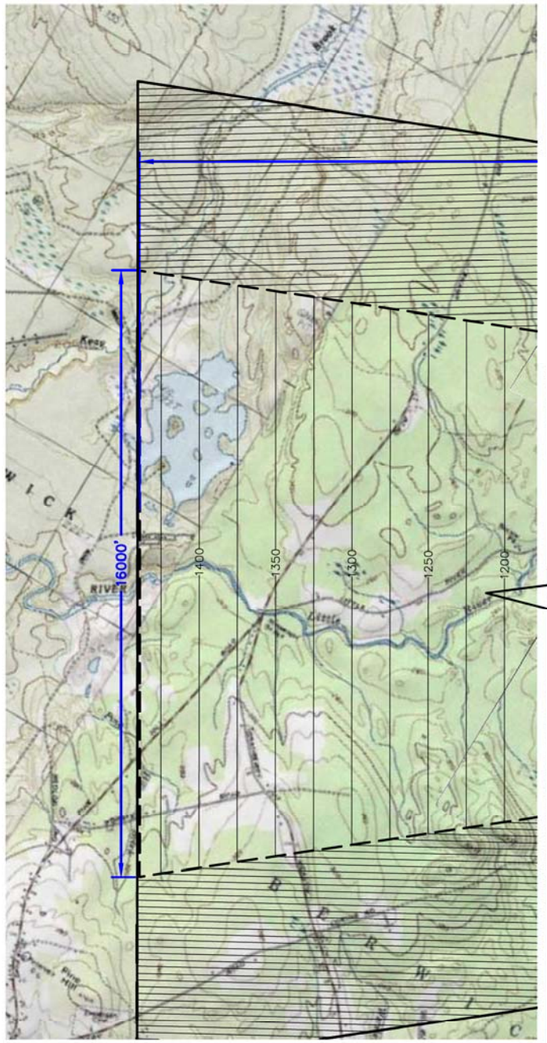
SHEET 8 OF 12

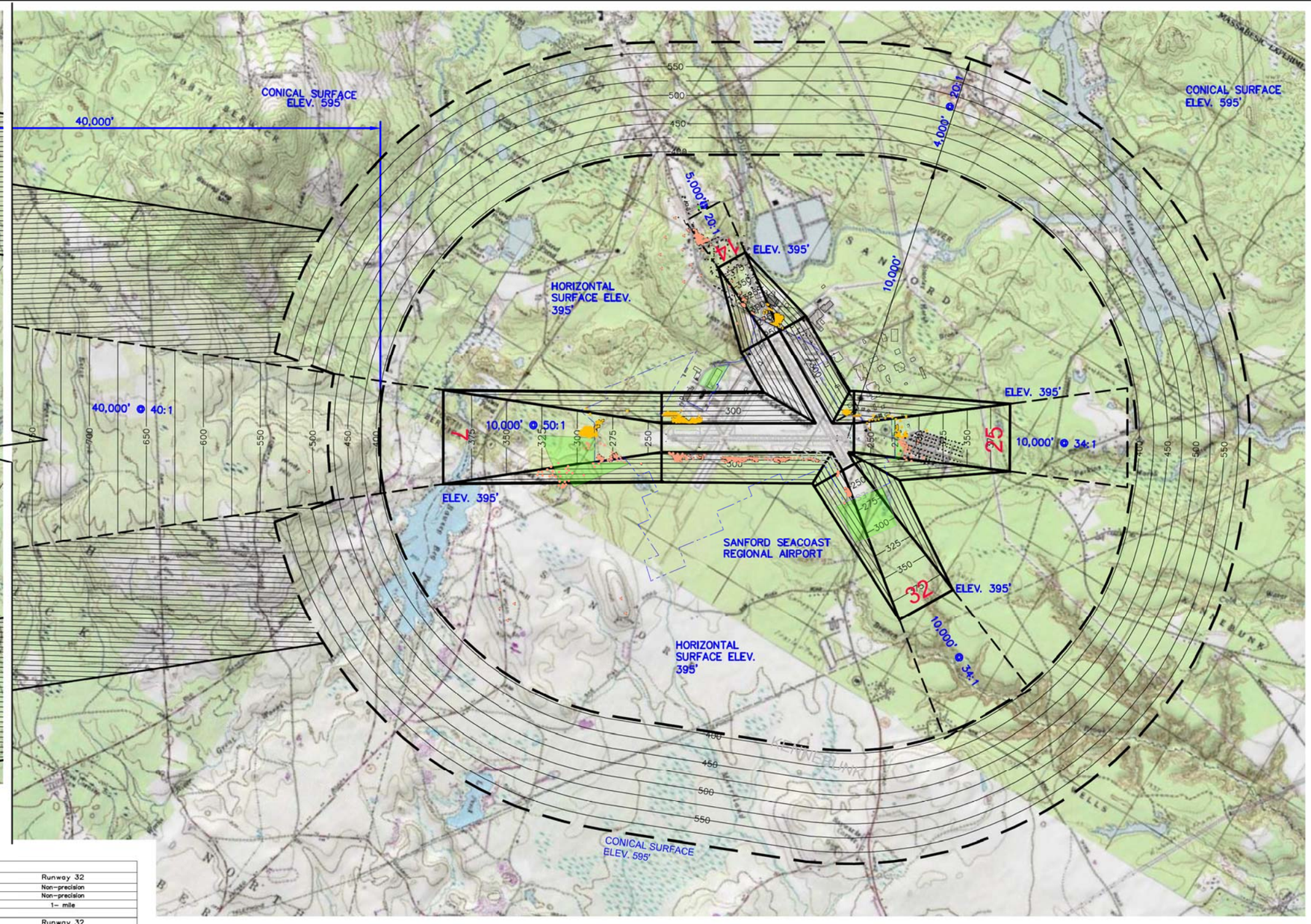
DO NOT SCALE DRAWING

Sanford Seacoast Regional Airport

Hoyle, Tanner & Associates, Inc.
150 Dow Street Manchester, NH 03101
tel: (603) 669-5555
fax: (603) 669-5168
www.hoyletanner.com

Drawing name: H:\060233\dwg\Contract\A.6.2 - 7-25 Inner Approach Surface.dwg Sep 23, 2015 - 11:28am





Sanford Regional Airport Part 77 Airspace Surfaces

Airport Data	Runway 07	Runway 25	Runway 14	Runway 32
Classification	Precision	Non-precision	Visual	Non-precision
Approach	Precision	Non-precision	Visual	Non-precision
Visibility Minimums	3/4- mile	1- mile	3 - miles	1- mile
Airport Elevation			245	
Airport Imaginary Surface	**Runway 07**	**Runway 25**	**Runway 14**	**Runway 32**
Horizontal Surface:				
Horizontal Surface Elevation			395	
Horizontal Surface Radius	10,000'	10,000'	5,000'	10,000'
Conical Surface:				
Horizontal Distance	4,000'	4,000'	4,000'	4,000'
Slope	20:1	20:1	20:1	20:1
Primary Surface:				
Length beyond runway end	200'	200'	200'	200'
Width	1,000 (2)	1,000'	500' (2)	500'
Approach Surface:				
Horizontal Distance	10,000' and 40,000' (3)	10,000'	5,000'	10,000'
Inner Edge Width	1,000'	1,000'	500'	500'
Outer Edge Width	16,000'	3,500'	1,500'	3,500'
Slope	50:1 and 40:1 (3) (4)	34:1	20:1	34:1
Transitional Surfaces:	7:1	7:1	7:1	7:1

Source: CFR Part 77, Objects Affecting Navigable Airspace

Notes:

1. Dimensions are in feet unless otherwise noted

2. The width of the primary surface of a runway is the width prescribed for the most precise approach for either end of that runway; therefore, the precision approach to Runway 07 determines the primary surface width of 1,000 feet for Runway 25, as well.

3. CFR Part 77's approach surface standards require a horizontal distance of 10,000 feet at a slope of 50 (horizontally) to 1 (vertically) with an additional 40,000 feet at a slope of 40 (horizontally) to 1 (vertically) for all precision instrument runways, such as Runway 07, a precision approach runway with 3/4 mile visibility minimums.

4. CFR Part 77's approach surface standards require a 50:1 slope for Runway 07, a precision approach runway with 3/4 mile visibility minimums. However, the FAA accepted a slope of 34:1 due to the surrounding mountainous terrain, a common phenomenon within the New England region. The horizontal distance of the precision approach surface for Runway 07 is 50,000 feet, not 10,000 feet, which is the standard distance required for a 34:1 slope. This is due to the imaginary surface requirements for a precision approach to Runway 07, which should be maintained even if the 50:1 slope cannot.

LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	CONICAL SURFACE		APPROACH SURFACE ABOVE HORIZONTAL SURFACE ELEVATION
	HORIZONTAL SURFACE		
395	SURFACE ELEVATION CONTOUR		APPROACH SURFACE
NORTH SOUTH	FAR PART 77 SURFACE PENETRATIONS	7	RUNWAY END DESIGNATION

NOTE:
ALL ELEVATIONS ARE MEAN SEA LEVEL (MSL), UNLESS OTHERWISE INDICATED.

0 2000 5000 10,000 FEET

1"=2000'

REV. NO	DATE	DESCRIPTION	BY

DO NOT SCALE DRAWING

AIP NO.: 3-23-0003-027-2013
PROJ. NO.: 060233
DRAWN: -JLC
DESIGN: -MTO
CHECKED: -ERM
DATE: OCTOBER 2015

SHEET 9 OF 12

SHEET TITLE

CFR PART 77
SURFACE DRAWING

Sanford Seacoast Regional Airport

Hoyle, Tanner & Associates, Inc.
150 Dow Street Manchester, NH 03101
tel: (603) 669-5555
fax: (603) 669-5168
www.hoyletanner.com

Drawing name: H:\060233\dwg\Contract\A.5 Airport Airspace Drawing.dwg Sep 23, 2015 - 11:24am

Runway Data

		Existing and Ultimate		Existing		Ultimate	
Runway Identification		Runway 7/25		Runway 14/32		Runway 14/32	
Runway Design Code (RDC)		C-II-4000		C-II-5000		B-II-5000	
Approach Reference Code (APRC)		D/IV/4000	D/IV/5000	B/III/VIS		B/III/5000	
Departure Reference Code (DPRC)		D/IV		B/III		B/III	
Pavement Strength & Material Type		Hot Mix Asphalt		Hot Mix Asphalt		Hot Mix Asphalt	
Pavement Strength (x 1,000 LBS Wheel Loading.)		Single Wheel 65.0 / Dual Wheel 100.0		Dual Wheel 72.0		Dual Wheel 72.0	
Pavement Strength (PCN)		38/F/A/X/U		38/F/A/X/U		38/F/A/X/U	
Pavement Strength Surface Treatment		Grooved		none		Grooved	
Effective Runway Gradient (%)		0.80%		0.27%		0.27%	
Percent (%) Wind Coverage		95.93% - 98.36% - 99.66%		95.09% - 97.34% - 99.34%		95.09% - 97.34% - 99.34%	
Runway Dimensions (L x W)		6,389 x 100		4,999 x 100		4,915 x 75	
		Runway 7	Runway 25	Runway 14	Runway 32	Runway 14	Runway 32
Displaced Threshold Elevation		--	232.52 msl	241.7 msl	N/A	241.7 msl	N/A
Runway Safety Area Dimensions		8,389 x 500	8,389 x 500	5,714 x 500	5,714 x 500	5,515 x 150	5,515 x 150
Runway End Coordinates	Latitude:	N 43° 23' 12.01"	N 43° 23' 45.10"	N 43° 24' 01.24"	N 43° 23' 37.37"	N 43° 24' 00.83"	N 43° 23' 37.37"
	Longitude:	W 070° 43' 11.07"	W 070° 41' 57.42"	W 070° 41' 51.51"	W 070° 41' 52.23"	W 070° 42' 50.50"	W 070° 41' 52.23"
	Elevation:	240.5	232.1	244.0	230.7	243.0	230.7
Displaced Threshold Coordinates	Latitude:	N/A	N 43° 23' 43.09"	N 43° 23' 57.00"	N/A	N 43° 23' 57.00"	N/A
	Longitude:	N/A	W 070° 42' 01.89"	W 070° 42' 41.00"	N/A	W 070° 42' 41.00"	N/A
	Elevation:	N/A	233.1	241.8	N/A	241.8	N/A
	Distance:	N/A	388	896	N/A	811	N/A
Runway Lighting Type		HIRL		MIRL		MIRL	
Runway Protection Zone (RPZ) Dimensions	Approach:	1,700 x 1,000 x 1,510	1,700 x 500 x 1,010	1,700 x 500 x 1,010	1,700 x 500 x 1,010	1,000 x 500 x 700	1,000 x 500 x 700
	Departure:	1,700 x 500 x 1,010	1,700 x 500 x 1,010	1,700 x 500 x 1,010	1,700 x 500 x 1,010	1,000 x 500 x 700	1,000 x 500 x 700
Runway Marking Type		Precision	Non-Precision	Visual	Non-Precision	Visual	Non-Precision
14 CFR Part 77 Approach Category		50:1 (34:1) & 40:1		20:1	34:1	20:1	34:1
Approach Type		Precision	Non-Precision	Visual	Non-Precision	Visual	Non-Precision
Visibility Minimums		4,000	5,000	Visual	5000	Visual	5,000
Type of Aeronautical Survey Required for Approach		Vertically Guided	Vertically Guided	Visual	NVGS	Visual	NVGS**
Runway Departure Surface		Yes	Yes	Yes	Yes	Yes	Yes
Runway Object Free Area		8,001 x 800		5,714 x 800		5,515 x 500	
Obstacle Free Zone		6,401 x 400		5,399 x 400		5,315 x 400	
Threshold Siting Surface (TSS)	Approach:	30:1 No TSS Penetrations	30:1 No TSS Penetrations	20:1 No TSS Penetrations	20:1 No TSS Penetrations	20:1 No TSS Penetrations	30:1 No TSS Penetrations
Threshold Siting Surface (TSS)	Departure:	40:1 No Penetrations	40:1 No Penetrations	40:1 No Penetrations	Numerous 40:1 Penetrations***	40:1 No Penetrations	Numerous 40:1 Penetrations***
Visual and Instrument NAVAIDS		ILS /GPS / VOR(DME) / PAPI-4	GPS / VOR(DME) / PAPI-4	PAPI-4	GPS / PAPI-4	PAPI-4	LPV /GPS / PAPI-4
Touchdown Zone Elevation		240.6	234.7	241.8	238.9	241.8	238.9
Taxiway and Taxilane Width		50' & 35	35	35		35	
Taxiway and Taxilane Safety Area Dimensions		118'	79	79		79	
Taxiway and Taxilane Object Free Area		186'	131 &115	131 & 115		131 &115	
Taxiway and Taxilane Separation		93'	65.5	65.5		65.5	
Taxiway / Taxilane Lighting		MITL	MITL	MITL		MITL	
Vertical and Horizontal Datum	Horizontal	NAD 83 / NAVD 88	NAD 83 / NAVD 88	NAD 83 / NAVD 88		NAD 83 / NAVD 88	
	Vertical	NAD 83	NAD 83	NAD 83		NAD 83	
		NAVD 88	NAVD 88	NAVD 88		NAVD 88	

* TWY C and F were designed and built to accommodate documented itinerant use by C-III aircraft taxiing to/from West Ramp parking to Runway 7-25
** for future APV the NVGS must be supplemented with the first 10,200 ft of the VGA surface.
*** Penetrations to DS are on the departure end of RWY 32.

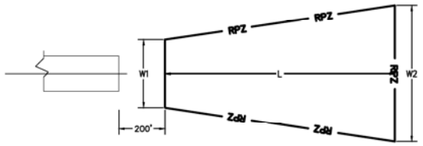
49 CFR Part 77 Imaginary Approach Surfaces - Existing and Future		
Runway End	Approach Category	Approach Slope
7	Precision	34:1 (a)
25	Non-precision	34:1
14	Visual	20:1
32	Non-precision	34:1

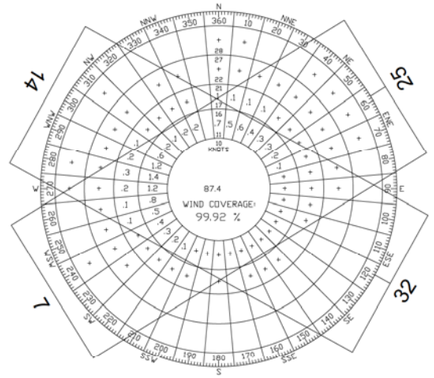
Note (a) 49 CFR PART 77 approach surface standards require an obstruction identification imaginary approach slope of 50:1 for a precision approach runway. Source: http://www.ngs.noaa.gov/AERO/oisspec.html. The FAA accepts a slope of 34:1 for obstruction identification. The horizontal distance of the precision approach surface for runway 07 is 50,000 feet. (the first 10,000 feet at 50:1 and the remaining 40,000 ft at 40:1) This is the standard distance for a precision approach imaginary surface, which should be maintained even if the obstruction slope

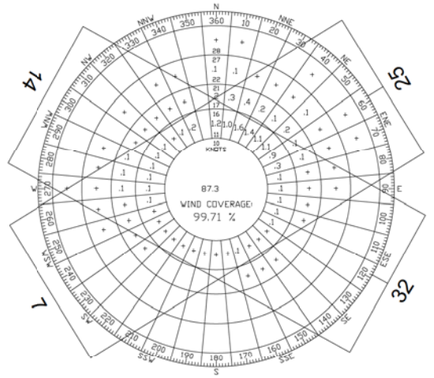
Approach Runway Protection Zone Dimensions							
Runway		Existing			Future		
End	Approach Category	L	W1	W2	L	W1	W2
07(a)	Precision NLT 3/4 Vis	1700	1000	1510	1700	1000	1510
25(a)	NPI 1 mile Vis	1700	500	1010	1700	500	1010
14(b)	Visual	1700	500	1010	1000	500	700
32(b)	NPI 1 mile Vis	1700	500	1010	1000	500	700

(a) Runway 07/25 is aircraft approach category C-II and will remain C-II
(b) Runway 14/32 is proposed to be changed from C-II to B-II aircraft approach category

Existing Pavement Dimensions			
Runway	Length	Width	Ft Sq
14/32	5000	100	500,000
07/25	6388	100	638,840
Taxiway			
A	256	50	23,883
B	390	35	24,350
C	3615	50	190,549
D	1086	35	58,655
E	5163	35	186,074
F	2565	35	103,521
F1	300	35	15,295
G	332	35	17,348
Taxilanes - H	931	35	34,131
East taxilanes (2)	1503	50	79,542
Aprons			
A1 - East Based	589	285	144,950
A2 - East Itinerant	305	202	61,852
A3 - West Itinerant	457	183	83,805
A4 - SW Ramp	376	175	65,220







AIRPORT REFERENCE CODE
ARC C–II

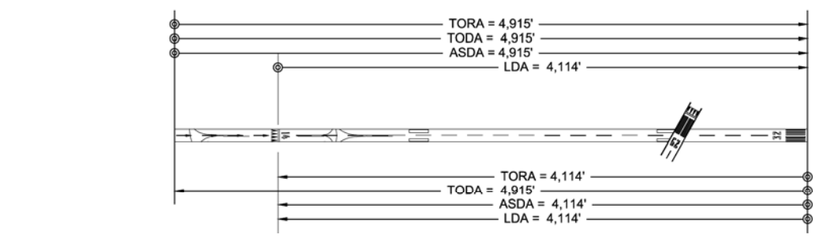
ALL WEATHER IMC WEATHER

Meteorological Condition	Observations	Runway	Wind Coverage Crosswind 10.5	13	16
All-Weather	268,041	07/25	95.93%	98.36%	99.66%
		14/32	95.09%	97.34%	99.34%
		Combined	98.82%	99.63%	99.92%
Visual Meteorological Conditions (VMC)	226,482	07/25	95.86%	98.36%	99.68%
		14/32	96.03%	98.00%	99.59%
		Combined	99.08%	99.74%	99.96%
Instrument Meteorological Conditions (IMC)	41,559	07/25	96.31%	98.34%	99.54%
		14/32	89.97%	93.76%	97.98%
		Combined	97.42%	99.03%	99.71%

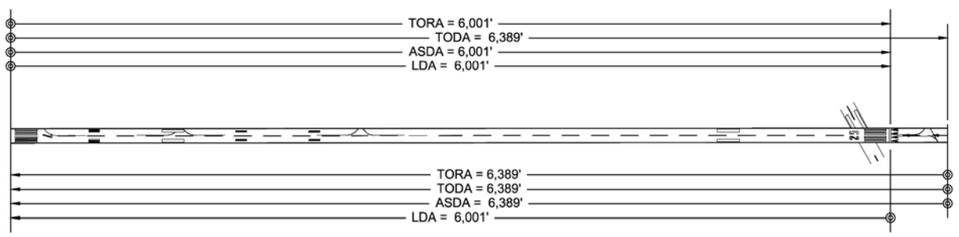
Source: NCDC SPM Airport (726054). 2004 to 2014. FAA Airports GIS , Airport Design Tools, Standard Wind Analysis

IFR Runway Minimums				
Runway End	Existing IFP	Existing Minimums	Future IFP	Future Minimums
14	None	N/A	N/A	N/A
32	GPS(LNAV)	660-1	GPS(LPV)	450-1*
7	ILS	441-3/4	SAME	SAME
	GPS(LPV)	441-3/4	SAME	SAME
	VOR	1240-1&1/4	SAME	SAME
25	GPS(LPV)	496-1	SAME	SAME
	VOR	640-1	SAME	SAME

* Actual Mins to be determined during future LPV IFP development



DECLARED DISTANCES RUNWAY 14–32



DECLARED DISTANCES RUNWAY 7–25

Drawing name: H:\060233\dwg\Contract\A3 Airport Data Sheet.dwg Sep 23, 2015 - 11:24am

REV. NO.	DATE	DESCRIPTION	BY

3-23-0003-027-2013
AIP NO.:
060233
PROJ. NO.:
-JLC
DRAWN:
-MTO
DESIGN:
-ERM
CHECKED:
OCTOBER 2015
DATE:

SHEET 10 OF 12

DO NOT SCALE DRAWING

SHEET TITLE

AIRPORT DATA SHEET

Sanford Seacoast Regional Airport

Hoyle, Tanner & Associates, Inc.
150 Dow Street Manchester, NH 03101
tel: (603) 669-5555
fax: (603) 669-5168
www.hoyletanner.com

LEGEND

- SINGLE FAMILY RESIDENTIAL
- INDUSTRIAL REUSE
- RURAL RESIDENTIAL
- RURAL MIXED USE
- RESIDENTIAL DEVELOPMENT
- AIRPORT DEVELOPMENT
- INDUSTRIAL BUSINESS
- URBAN
- SOLAR FARM / NON-AERONAUTICAL DEVELOPMENT
- EASEMENT EXISTING
- FUTURE NON-AERONAUTICAL DEVELOPMENT EASEMENT
- LAND RELEASE

NOTE:
AIRPORT BOUNDARY IS GRAPHICAL.

15°18'41" W
11/18/2014
MAG TRUE

AIRPORT ROAD
ROUTE 109
SEACOAST CAREER SCHOOLS
FUTURE NON-AERONAUTICAL DEVELOPMENT
DEVELOPMENT FUTURE AVIATION
THRU THE FENCE FBO
PUBLIC BALL FIELD
EXISTING R/W 14-32 4915 X 150'
EXISTING R/W 7-25 6389' X 100'
N58° 44' 18"E
ROUTE 99
ROUTE 109
FUTURE NON-AERONAUTICAL DEVELOPMENT

PROPERTY LINE
RUNWAY VISIBILITY ZONE — RVZ
RUNWAY SAFETY AREA — RSA
RUNWAY OBJECT FREE AREA — ROFA
RUNWAY PROTECTION ZONE — RPZ

0 600 1500 3000 FEET
1"=600'

The City of Sanford has established Airport Clear Zones and Airport Protection Overlay Zones for airport obstruction protection in the City Code sections 280-55 & 280-56. In addition, Chapter 280-53 of the Zoning Ordinance clearly defines the compatible land uses within the Airport Development Zone by North American Industry Classification System (NAICS).

§ 280-55 Airport Clear Zone

A. Clear zone defined. The Airport Clear Zone consists of those areas identified as clear zones or the inner approach surfaces of Runway 7-25 or 14-32 as depicted in the Airport Master Plan.

B. Clear zone standards. The following additional standards shall apply within the Airport Clear Zone:

(1) Objects shall be considered obstructions to air navigation and their construction or use shall be prohibited if they extend into any aviation easement within the Airport Clear Zone. The Code Enforcement Officer may waive this restriction upon receipt of written approval from the MaineDOT and the Federal Aviation Administration (FAA). Forms for requesting an exemption may be obtained from the Code Enforcement Office.

(2) No structure or tree shall be erected, altered, or allowed to grow above the airport referenced imaginary surface, unless found not objectionable by the MaineDOT or FAA.

§ 280-56 Airport Protection Overlay Zone.

A. The Airport Protection Overlay Zone consists of the area lying within the limit of the conical surface as shown on Drawing Number 5 of the Sanford Municipal Airport Master Plan Update (December 1987).

B. Overlay zone standards. The following additional standards shall apply to uses located within the Airport Protection Overlay Zone. All uses allowed in the underlying zones shall be allowed subject to the following:

(1) No use shall be permitted which creates electrical interference with radio aids or communications, or results in glare in the eyes of pilots using the airport, or impairs visibility in the vicinity of the airport by the creation and discharge of smoke, steam, dust, or other obstructions to visibility, or endangers the landing, taking off, or maneuvering of aircraft.

(2) (Reserved)[1]

[1] Editor's Note: Former Subsection B(2), regarding lot size, was repealed 4-3-2012.

(3) Construction standards which result in an outdoor-indoor noise level reduction of at least 25 decibels shall be encouraged.

Drawing name: H:\060233\dwg\Contract\A.9 Land Use Drawing.dwg Sep 23, 2016 - 11:25am

REV. NO.	DATE	DESCRIPTION	BY

DO NOT SCALE DRAWING

AIP NO.: 3-23-0003-027-2013
PROJ. NO.: 060233
DRAWN: -JLC
DESIGN: -MTO
CHECKED: -ERM
DATE: OCTOBER 2015

SHEET 11 OF 12

SHEET TITLE

LAND USE DRAWING

Sanford Seacoast Regional Airport

Hoyle, Tanner & Associates, Inc.
150 Dow Street Manchester, NH 03101
tel: (603) 669-5555
fax: (603) 669-5168
www.hoyletanner.com

SURPLUS PROPERTY DEED & GRANT OBLIGATION MODIFICATION

	KEY	LESSOR	LESSEE	INTERIM NON-AERONAUTICAL USE	ACREAGE
2	NA-1	CITY OF SANFORD	CITY OF SANFORD	9/17/2013 FAA LETTER	0.3256

	KEY	GRANTOR	GRANTEE	INST.	ACRES	YCRD K & PG	DATE	COMMENTS
1	1	U.S. GOVT U.S. GOVT	TOWN OF SANFORD	FEE	1027	1116/303	17531	AP-4 AND RELEASE OF TRACTS 1 & 2 AP-4 SUPPLEMENT
	2A 2B 2C	MODERN CONTINENTAL PRECAST CO.	TOWN OF SANFORD	FEE	4.35 6.46 4.81	14114/835	6/04	TAX LOT 1 TAX LOT 3 TAX LOT 3A ACQUIRED UNDER AIP 3-23-0044-20
	3	TOWN OF SANFORD	ANDRE TEMPE	FEE	8.6	424/166	12/14/59	RELEASE 7/10/59 (8.6 Ac) TWO LOTS
	4	TOWN OF SANFORD	INDUSTRIAL DEV. CORP.	FEE	3.6	1849/649	12/68	RELEASE 3/16/70 (3.6 Ac)
1	5	TOWN OF SANFORD STRUCTURES AND DESIGN	STRUCTURES AND DESIGN TOWN OF SANFORD	FEE EASEMENT	12.0 12.0	3182/322 UNKNOWN	10/18/83 1/14/87	RELEASE TWO LOTS 5/6/81
1	6	TOWN OF SANFORD	THURSTON ERLANDSEN CORPORATION	FEE	20.8	1582/313	12/31/63	RELEASE THREE LOTS 12/16/70
	7	TOWN OF SANFORD	INDUSTRIAL DEV. CORP.	FEE	16.7	1948/386	5/12/72	RELEASE LOTS 11 & 12 5/1/72 (LETTER OF INTENT)
	8	TOWN OF SANFORD	CONGOLEUM CORP.	FEE	2.5	2765/62	7/11/80	RELEASE (2.5 Ac) 7/10/80
	9A	ERNEST KOSTIS	TOWN OF SANFORD	FEE	4.43±	2736/148	8/5/80	EASEMENT TO MAINTAIN LIGHTING
	~~9B~~	~~SANFORD AIRPORT CORPORATION~~	~~TOWN OF SANFORD~~	~~EASEMENT~~	~~UNKNOWN~~	~~9521/597~~	~~6/10/41~~	EASEMENT TO AIRPORT BEACON EXTINGUISHED WHEN BEACON RELOCATED TO AIRPORT, SEP 2010
	~~10~~	~~UNKNOWN~~	~~TOWN OF SANFORD~~	~~EASEMENT~~	~~UNKNOWN~~	~~UNKNOWN~~	~~UNKNOWN~~	EASEMENTS NOT LEGALLY BINDING - EXTINGUISHED FEB 2010
	11A 11B	HARMONY HOMES TOWN OF SANFORD	TOWN OF SANFORD HARMONY HOMES	FEE FEE	5.4 5.4	1880/650 1880/650	3/19/70 3/19/70	ADAP 7-23-0044-01 LAND EXCHANGE
	12	GEORGE ADAMS	TOWN OF SANFORD	FEE	8.8	2354/104	5/24/78	ADAP 7-23-0044-03
	13	GEORGE ADAMS	TOWN OF SANFORD	AVIGATION EASEMENT	1.51	2354/104	5/24/78	ADAP 7-23-0044-03
	14	ROSENFIELD LAND CORPORATION	TOWN OF SANFORD	FEE	6.7±	3070/120	3/11/83	AIP 3-23-0044-01
	15	ROSENFIELD LAND CORPORATION	TOWN OF SANFORD	AVIGATION EASEMENT	4.3±	3070/120	3/11/83	ALSO PURCHASED WITH AIP 3-23-0044-01
	16	KARL P. HILTON	TOWN OF SANFORD	FEE	7.65±	1003/404	6/11/43	
	17	SANFORD MILLS	TOWN OF SANFORD	FEE	18.47±	992/156	6/25/42	
	18	ALTA WISE	TOWN OF SANFORD	FEE	15.31±	991/175	UNKNOWN	
	19	ALTA WISE	TOWN OF SANFORD	FEE	27.82±	991/443	2/16/42	
	20	ALBERT LAVALLY CORPORATION	TOWN OF SANFORD	AVIGATION EASEMENT	5.0±	1584/107	2/6/64	FAAP 9-17-026-6101
	21	G. DEVLAND REALTY TRUST	TOWN OF SANFORD	FEE	16.71±	6108/125	6/1/92	ACQUIRED UNDER AIP 3-23-0044-13 THROUGH CERTIFICATE OF TAKING
	22	G. DEVLAND REALTY TRUST	TOWN OF SANFORD	AVIGATION EASEMENT	63.60±	6108/127	6/1/92	ACQUIRED UNDER AIP 3-23-0044-13 THROUGH CERTIFICATE OF TAKING
	23	IVAN & PAULA FURBISH	TOWN OF SANFORD	FEE	0.57±	6116/160	5/11/92	ACQUIRED UNDER AIP 3-23-0044-13
	24	IVAN & PAULA FURBISH	TOWN OF SANFORD	AVIGATION EASEMENT	7.80±	6116/155	5/11/92	ACQUIRED UNDER AIP 3-23-0044-13
	25	AEROFAB) JOAN B. BUSSIERE	TOWN OF SANFORD	FEE	0.66±	10206/191	9/6/01	ACQUIRED UNDER AIP 3-23-0044-16
	26	JOSEPH P. SULLIVAN	TOWN OF SANFORD	FEE	0.63±	1427/308	11/1/04	ACQUIRED UNDER AIP 3-23-0044-20
	27A 27B	TOWN OF SANFORD FLEMISH MASTER WEAVERS INC,	FLEMISH MASTER WEAVERS INC, TOWN OF SANFORD	AVIGATION EASEMENT FEE	2.58 2.98	15372/270 15372/268	3/14/09 3/14/09	LAND SWAP

TRACT 1

TRACT 2

FUTURE NON-AERONAUTICAL DEVELOPMENT

LAND PART OF ORIG. TRANSFER FROM U.S.NAVY

FUTURE NON-AERONAUTICAL DEVELOPMENT FUTURE SOLAR FARM

TO BE ACQUIRED IF AVAILABLE

NON RESIDENTIAL TTF ACCESS FBO

GATEHOUSE ROAD

NA-1

R/W 14-32 4999' X 100'

R/W 7-25 6389' X 100'

A.R.P.

MATCH LINE DETAIL B BELOW

MATCH LINE DETAIL B ABOVE

DETAIL B
NOT TO SCALE

0 500 1250 2500 FEET
1"=500'

LEGEND

- AIRPORT BOUNDARY
- EASEMENT
- NON-AERONAUTICAL RELEASE
- PARCEL
- RPZ — RUNWAY PROTECTION ZONE
- (18) LOT KEY NUMBER
- SOLAR FARM / NON-AERONAUTICAL DEVELOPMENT

REVISIONS			
REV. NO.	DATE	JLC	DESCRIPTION
1	FEB. 2011	JLC	REVISED BOOK/PAGE DATES FOR KEYS 1, 5, 6
2	DEC. 2012	JLC	SURPLUS PROPERTY DEED TABLE
3	JUN. 2013	JLC	REVISED PROPERTY LINE FOR KEY 26
4	SEPT. 2013	JLC	INTERIM NON-AERONAUTICAL USE
5	NOV. 2014	JLC	RSA, ROFA,RPZ,RVZ,TOFA,ROFA
6	MAY 2015	JLC	FUTURE NON-AERONAUTICAL DEVELOPMENT FUTURE SOLAR FARM

REVISIONS

REV. NO.	DATE	BY	DESCRIPTION

STATE PROJECT NO.

FEDERAL PROJECT NO.

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Manchester, NH 03101-1227
Tel 603-669-5555
Fax 603-669-4168
Web Page: www.hoyletanner.com
Hoyle Tanner & Associates © 2015

DES. ERM | DR. BY JLC | CHKD. BY ERM

SCALE: AS SHOWN DATE: MAY 2015

SANFORD REGIONAL AIRPORT

EXHIBIT 'A'

HTA PROJ. No.: 0602Gen

FILE: SFMExhibit-A.DWG

DRAWING NO. 1

SHEET 1 OF 1 REV

H:\0602\33\dwg\Contract\SFMExhibit-A.dwg