



Technical Master Plan Update Public Meeting # 3



Agenda

- Public Involvement / Engagement
- Technical Master Plan Team
- Plymouth Airport Highlights
- Purpose of a Master Plan
- Master Planning Process
- Forecast
- Runway Length Analysis
- Typical Runway Lengths
- Alternatives
- Timeline
- Questions

Public Involvement / Engagement



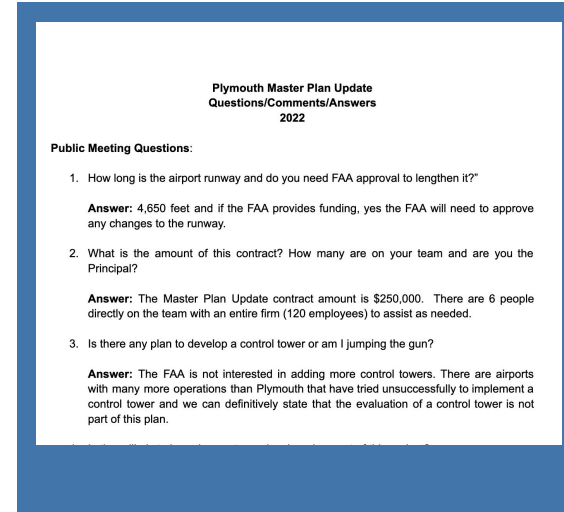
PAC Meetings

Held Monthly at Airport
TMPU on every agenda
Open to Public



Public Meetings

Meeting #1 - Overview
Meeting #2 - Alternatives



Public Comments and Responses

23 Total Questions & Comments
Posted on Airport Website
Common Themes

1. Aircraft Traffic Patterns
2. Public Impacts
3. Safety



Final Meeting Prior to Preferred Alternative

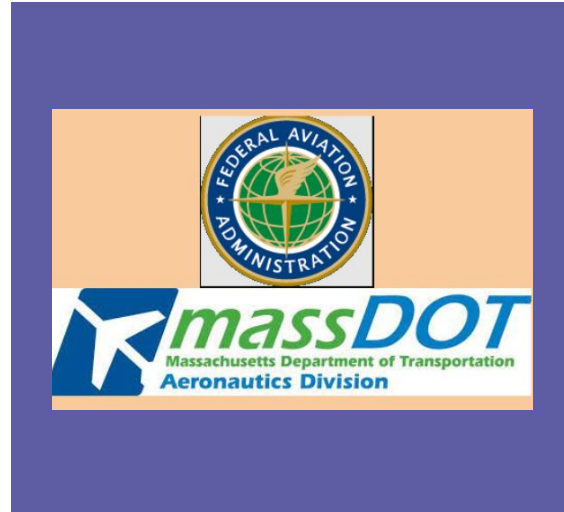
Tonight's Discussion

Technical Master Plan Team



Airport/ PAC

The Airport, overseen by the Plymouth Airport Commission, has undertaken a Technical Master Plan Update.



FAA/ MASSDOT

The Plan is 90% funded by the Federal Aviation Administration. 5% funded by the MASSDOT Bureau of Aeronautics with the remainder, a local match.



You

Input from the Public is crucial to ensuring the Master Plan reflects the needs of the local community.



D&K

DuBois and King has over 30 years of experience serving Plymouth Municipal Airport and its community.

Plymouth Airport Highlights....



GOOD FOR THE ENVIRONMENT

- 150 preserved acres of Natural Habitat
- DEP standards
- Compatible Wildlife Program
- State wildlife approval for construction
- 800 acres of rural legacy



HUB OF PUBLIC SERVICE

- State Police Air Wing
- Boston Medflight
- Cape Cod Community College
- Local Pilot Humanitarian Missions
- Civil Air Patrol



GOOD NEIGHBOR

- Administration Building open to Public
- Public interaction with Airport activity- Patio and Play Area
- Public tours
- Precinct 11 voting location
- Noise Briefings



GOOD FOR THE ECONOMY

- Municipal Enterprise Account
- \$450,000+ real estate tax revenue on ~60 Buildings
- \$62 million in Total Annual Economic Output

Plymouth Airport Highlights Continued



Plymouth Airport Non-Aeronautical Development Area

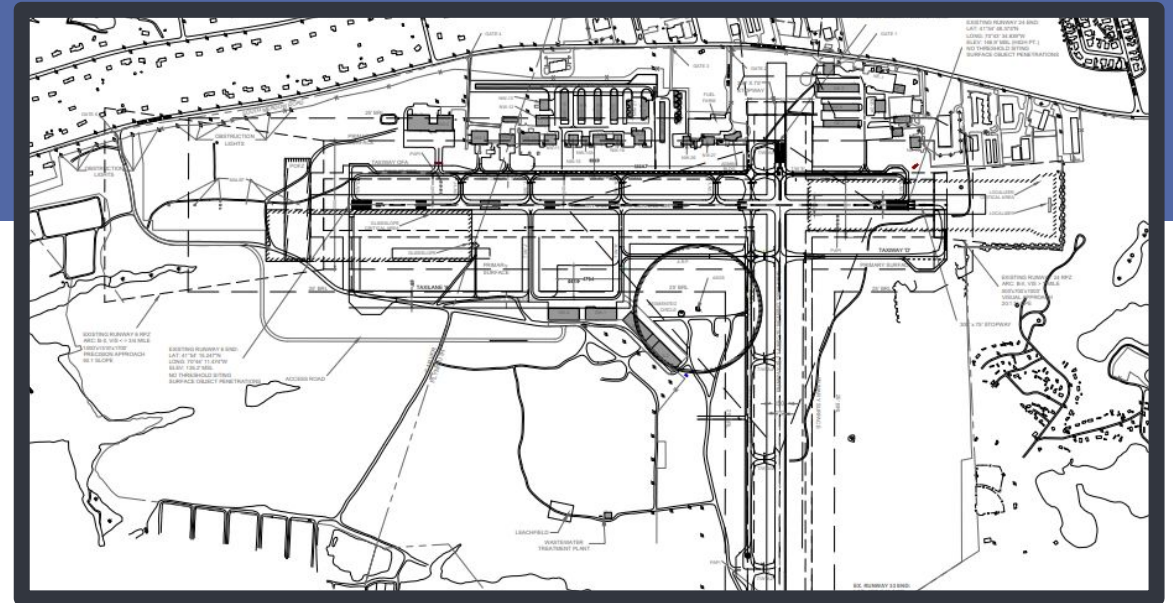
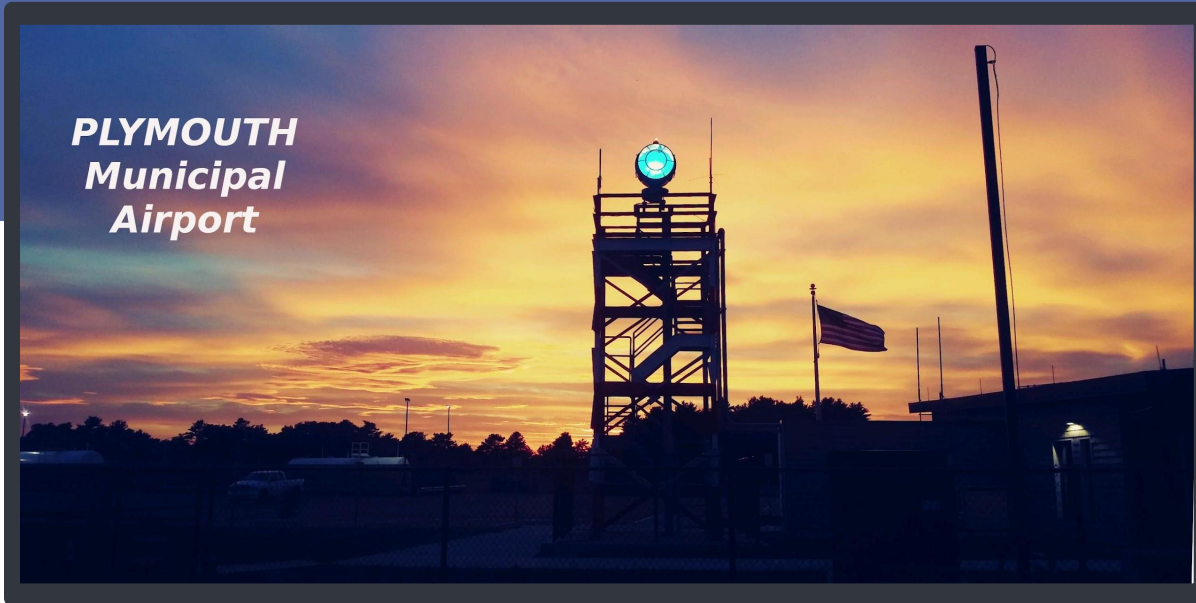
- Infrastructure mostly complete
- Opportunities for Plymouth Based Businesses
- Job Creation
- Lease Revenue for the Airport
- Tax Revenue for the Towns of Plymouth and Carver

Purpose of a Technical Master Plan Update



- Incorporate Public Involvement
- Aligning Airport future with the Town / Community
- Evaluate Safety Needs to include a Runway Length Analysis
- Determine Sustainable Infrastructure Needs
- Identify Economic Development Opportunities
- Develop an Efficient Timeline for the Airport's future

Master Planning Process



- Multiple Monthly Meetings with PAC
- First Public Meeting - Overview
 - Introduction, Existing Conditions, and Forecast
 - Submit Forecast to Plymouth Airport Commission, FAA and MASSDOT for approval
- Second Public Meeting (Draft Alternatives review)
 - Facility Needs and refine Draft Alternatives (based on public comment)
- Third Public Meeting - Final Review of Process and Alternatives

Next steps

- Selection of Preferred Alternative
- Airport Layout Plan Update, Financial and Implementation Considerations
- FAA Review and Approval of the ALP
- Distribution of the Final Document
- Final Public Meeting - Presentation of TMPU

Forecast

Table 3-9 - Summary of Baseline Data			
Based Aircraft (Table 3-3)	105		
Local Itinerant Split (Table 3-4)	Local	Itinerant	Total
	33,103	27,918	61,021
Operations by Aircraft Type (Table 3-6)	Operations	% Total Operations	
Single-Engine	41,494	68.00%	
Multi-Engine	5,492	9.00%	
Turbo-Prop	7,323	12.00%	
Turbo-Jet	4,271	7.00%	
Rotorcraft	2,441	4.00%	
Glider	0	0.00%	
Light Sport	0	0.00%	
Military	0	0.00%	
Operations by FAA Grouping (Table 3-7)			
AAC/ADG	Operations	% Total Operations	
A-I	58,595	96.00%	
A-II	697	1.10%	
A-III	3	0.00%	
B-I	384	0.60%	
B-II	1,122	1.80%	
B-III	3	0.00%	
C-I	90	0.10%	
C-II	96	0.20%	
C-III	2	0.00%	

Source: DuBois & King

Findings

- 8% Increase in Total Operations
- 8% Decrease in Based Aircraft

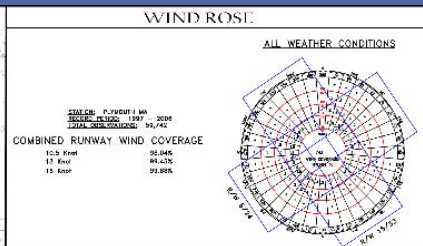
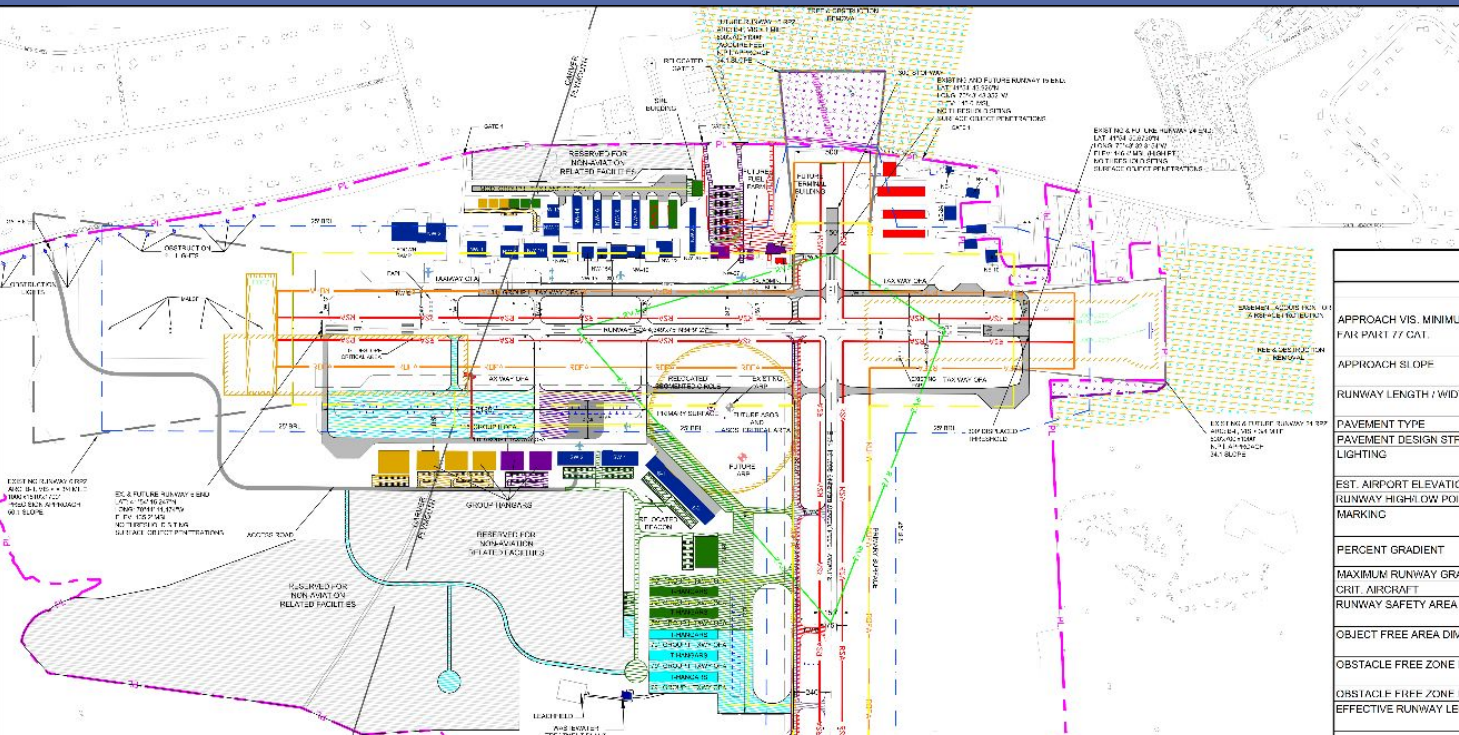
Summary

- Modest changes. On track with National Average.

Table 3-16 - Summary of Forecast Data for 2041			
Based Aircraft (Table 3-11)	96		
Local Itinerant Split (Table 3-14)	Local	Itinerant	Total
	36,078	30,411	66,489
Operations by Aircraft Type (Table 3-14)	Operations	% Total Operations	
Single-Engine	44,932	67.6%	
Multi-Engine	5,835	8.8%	
Turbo-Prop	8,041	12.1%	
Turbo-Jet	4,847	7.3%	
Rotorcraft	2,834	4.3%	
Glider	0	0.0%	
Light Sport	0	0.0%	
Military	0	0.0%	
Forecasted Operations by FAA Grouping (Table 3-15)			
AAC/ADG	Operations	Operations	
A-I	63,845	96.0%	
A-II	759	1.1%	
A-III	3	0.0%	
B-I	419	0.6%	
B-II	1,222	1.8%	
B-III	3	0.0%	
C-I	98	0.1%	
C-II	105	0.2%	
C-III	3	0.0%	

Source: DuBois & King

Plymouth Municipal Airport 2016 Ultimate Airport Layout Plan



	EXISTING	FUTURE
APPROACH VIS. MINIMUMS FAIR PNT 77 CAT.	RW 6: ≥ 3/4 MI, RW 24: ≥ 3/4 MI RW 15-33: VISUAL RW 6: PRECISION	RW 6: ≥ 3/4 MI, RW 24: ≥ 3/4 MI RW 33: ≥ 3/4 MI, RW 15: ≥ 1 MI RW 6: PRECISION RW 33, 15, 24: NONPRECISION
APPROACH SLOPE	RW 6: 50:1 RW 24, 15 & 33: 20:1	(RW 6) 50:1, (RW 24) 34:1 (RW 33) 34:1, (RW 15) 34:1
RUNWAY LENGTH / WIDTH	RW 6: 24: 4,349' x 75' RW 15-33: 4,350' x 75'	RW 6: 24: 4,348' x 75' RW 15-33: 4,350' x 75'
PAVEMENT TYPE	BITUMINOUS CONCRETE	SAME
PAVEMENT DESIGN STRENGTH	12,500 LBS (SW)	12,500 LBS (SW)
LIGHTING	MIRL	RW 6-24: HIRL RW 15-33: MIRL
EST. AIRPORT ELEVATION	146.9' MSL	146.9' MSL
RUNWAY HIGH/LW POINTS	11: 146.9' MSL, L: 130.2' MSL	11: 146.9' MSL, L: 130.2' MSL
MARKING	RW 6: PRECISION	RW 33, 15, 24: NONPRECISION RW 6: PRECISION
PERCENT GRADIENT	RW 6-24: 0.3% RW 15-33: 0.44%	RW 6-24: 0.3% RW 15-33: 0.2%
MAXIMUM RUNWAY GRADE	1.5%	1.5%
CRIT. AIRCRAFT	HAWKER 850	HAWKER 850
RUNWAY SAFETY AREA DIMENSIONS	RW 6-24: 4,949' x 150' RW 15-33: 5,250' x 120'	RW 6-24: 5,249' x 150' RW 15-33: 5,250' x 150'
OBJECT FREE AREA DIMENSIONS	RW 6-24: 4,849' x 500' RW 15-33: 5,250' x 100'	RW 6-24: 5,249' x 600' RW 15-33: 5,250' x 500'
OBSTACLE FREE ZONE DIMENSIONS	RW 6-24: 4,749' x 400' RW 15-33: 4,750' x 250'	RW 6-24: 4,749' x 400' RW 15-33: 4,750' x 400'
OBSTACLE FREE ZONE PENETRATIONS	NONE	NONE
EFFECTIVE RUNWAY LENGTH	RW 15-33: 4,650' RW 6-24: 4,350'	RW 15-33: 4,650' RW 6-24: 4,350'

	EXISTING	FUTURE
AIRPORT REFERENCE POINT (NAD 83)	41°54'32.50"N 70°43'38.63"W	41°54'31.24"N 70°43'38.63"W
MEAN DAILY MAX TEMP	82.4°F	
WIND COVERAGE (VFR/IFR %)	99.4%	
AIRPORT MAG. VARIATION	10.2°W - July, 28, 2008	
AIRPORT REFERENCE CODE	B-II	B-II
NPAS SERVICE LEVEL	GENERAL AVIATION	
TAXIWAY LIGHTING	MILS	
RUNWAY 06 LONGITUDE	41°54'15.247"N NAD 83	41°54'15.247"N NAD 83
RUNWAY 06 LATITUDE	70°44'11.474"W NAD 83	70°44'11.474"W NAD 83
RUNWAY 24 LONGITUDE	41°54'50.673"N NAD 83	41°54'50.673"N NAD 83
RUNWAY 24 LATITUDE	70°43'32.315"W NAD 83	70°43'32.315"W NAD 83
RUNWAY 15 LONGITUDE	41°54'43.928"N NAD 83	41°54'43.928"N NAD 83
RUNWAY 15 LATITUDE	70°43'48.352"W NAD 83	70°43'48.352"W NAD 83
RUNWAY 33 LONGITUDE	41°54'16.558"N NAD 83	41°54'16.558"N NAD 83
RUNWAY 33 LATITUDE	70°43'04.000"W NAD 83	70°43'04.000"W NAD 83
VISUAL APPROACH AIDS	RW 06: PAPI-4; RW 24: PAPI-4; RW 15: PAPI-4; RW 33: PAPI-4; ALL: WINDCONES, ROTATING BEACON	RW 06: SAME; RW 24: SAME; RW 15: PAPI-4; RW 33: PAPI-4
OTHER NAVAIDS	RW 6: GLIDESLOPE & LOCALIZER, ASOS	RW 6: GLIDESLOPE & LOCALIZER, ASOS
RUNWAY 06 ELEVATION	135.2' MSL	135.2' MSL
RUNWAY 24 ELEVATION	146.9' MSL	146.9' MSL
RUNWAY 15 ELEVATION	145.0' MSL	145.0' MSL
RUNWAY 33 ELEVATION	133.4' MSL	133.4' MSL

	EXISTING				FUTURE			
	RW 6	RW 24	RW 15	RW 33	RW 6	RW 24	RW 15	RW 33
TORA	4,650'	4,350'	4,350'	4,650'	4,650'	4,350'	4,350'	4,650'
TODA	4,850'	4,850'	4,350'	4,850'	4,850'	4,350'	4,350'	4,850'
ASDA	4,850'	4,850'	4,350'	4,850'	4,850'	4,350'	4,350'	4,850'
LDA	4,650'	4,650'	4,350'	4,650'	4,650'	4,350'	4,350'	4,650'

PLYMOUTH MUNICIPAL AIRPORT	
MASSACHUSETTS DOT	
FEDERAL AVIATION ADMINISTRATION	

NO.	DESCRIPTION	NO.	DESCRIPTION
NW-1	ROXTON BLDG	NW-24	SOMMER AVIATION
NW-2	PROFESSIONAL PILOTS	NW-25	PORT-A-PORT HANGARS
NW-3	IGS CORP	NW-26	ROBERT TRINCHIP
NW-4	IGS CORP	NW-27	TOWN HANGAR
NW-5	SIATEL POLICE	NW-28	AIRPORT STORAGE
NW-11	RYAN RESIDENCE	NE-1	TOWN OF PLYMOUTH
NW-12	AMERICAN VELDUR	NE-2A	MALLY AIR WING (BASKY)
NW-13	BENDIX CORP	NE-3	PAC TRUST
NW-14	PAC TRUST	NE-4	TOWN HANGAR
NW-15	RUNS ELECTRIC	NE-5	POWRIK HANGAR
NW-16	RYAN RESIDENCE	NE-6	CYNNI ELECTRIC
NW-17	PAC TRUST	NE-7	PAC TRUST
NW-18	ALPHA CORP	NE-8	POSSUCK
NW-19	PAC TRUST	NE-10	FRANZ LISA COMMERCIAL
NW-20	ALPHA CORP	SE-1	EAST COAST TELEVISION
NW-21	PAC TRUST	SW-1	CS AERODYNAMICS
NW-21	PORT-A-PORTS	SW-2	PI AVIATION
NW-22	YANKEE SERVICE CORP	SE-1	BENDIX CORP
NW-23	PORT-A-PORTS	SE-2	BENDIX CORP

DESCRIPTION	EXISTING SYMBOL	FUTURE SYMBOL
RUNWAY SAFETY AREA	[Symbol]	[Symbol]
RUNWAY OBJECT FREE AREA	[Symbol]	[Symbol]
RUNWAY PROTECTION ZONE	[Symbol]	[Symbol]
BUILDING RESTRICTION LINE	[Symbol]	[Symbol]
TAXIWAY - TAXILANE OFA	[Symbol]	[Symbol]
TAXIWAY - TAXILANE CENTERLINE	[Symbol]	[Symbol]
SPOIL PILE ELEVATIONS	[Symbol]	[Symbol]
AIRPORT REFERENCE POINT	[Symbol]	[Symbol]
AIRPORT PROPERTY LINE	[Symbol]	[Symbol]
RUNWAY VISIBILITY ZONE	[Symbol]	[Symbol]
TREE LINE	[Symbol]	[Symbol]
ROADWAYS TO CONTOURS	[Symbol]	[Symbol]
FENCE LINE	[Symbol]	[Symbol]
NON-AERONAUTICAL AREAS	[Symbol]	[Symbol]
HOLD LINES	[Symbol]	[Symbol]
ON AIRPORT BUILDINGS	[Symbol]	[Symbol]
OFF AIRPORT BUILDINGS	[Symbol]	[Symbol]
ROADS WITHIN RPZ	[Symbol]	[Symbol]
FUTURE PROPERTY (FEE)	[Symbol]	[Symbol]
FUTURE PROPERTY EASEMENT	[Symbol]	[Symbol]
TREES TO BE REMOVED	[Symbol]	[Symbol]
MALSIF	[Symbol]	[Symbol]
OBSTRUCTION LIGHT TOWERS	[Symbol]	[Symbol]
TOWN BOUNDARY	[Symbol]	[Symbol]

PHASE	SYMBOL
TO BE REMOVED	[Symbol]
COMPLETED BY 2011	[Symbol]
I 2008-2013	[Symbol]
II 2013-2018	[Symbol]
III 2018-2028	[Symbol]
IV BEYOND 2028	[Symbol]

DUBOIS & KING INC.

RECORDED BY: [Name] DATE: [Date]

APPROVED BY: [Name] DATE: [Date]

SCALE: [Scale]

PROJECT NO. [Number]

SHEET NO. [Number]

TITLE: [Title]

Runway Length Analysis



Falcon 2000

B-II Jet Composite		
Aircraft Type	Operations	% of Composite
Cessna CJ3/4	4	0.8%
Cessna Citation Bravo	4	0.8%
Cessna Citation Encore	7	1.4%
Cessna Citation Excel	68	13.3%
Cessna Citation Sovereign	13	2.5%
Cessna Citation Latitude	69	13.5%
Cessna Citation X	2	0.4%
Embrear Legacy 450	15	2.9%
Embrear Phenom 300	45	8.8%
Dassault Falcon 2000	149	29.0%
Dassault Falcon 900	75	14.6%
Dassault Falcon 50	7	1.4%
Hawker 4000	55	10.7%
Total Operations	513	

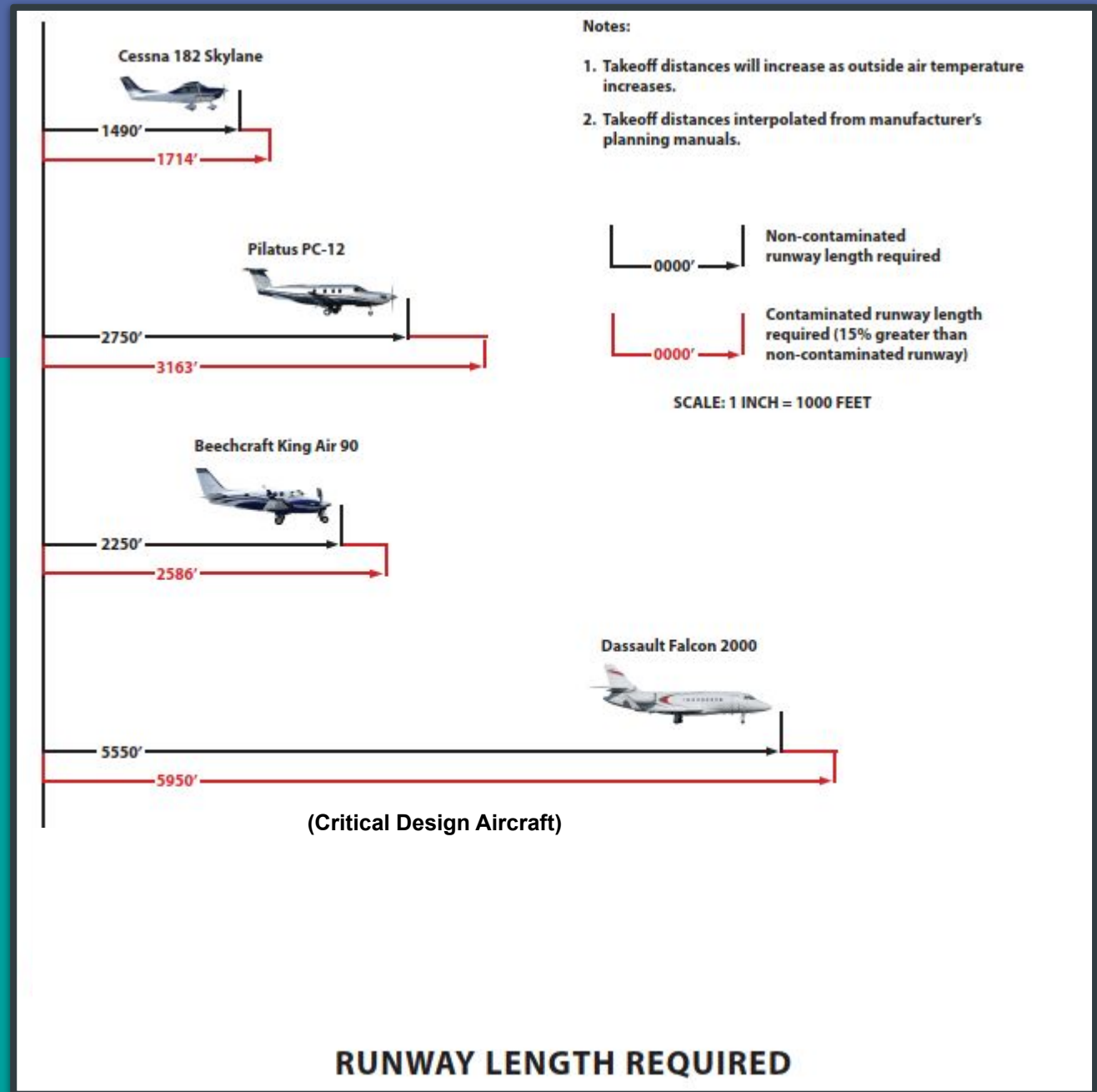
The Falcon 2000 is the most demanding aircraft (critical design) in the composite of aircraft with more than 500 annual operations.

FAA Runway Length Analysis - Unconstrained Runway Length - 5,500-ft.

Typical Runway Length Requirements

Temperature = 30°C - Average Temperature Hottest Month
Flaps = 0
Max Gross Takeoff Weight
Zero Wind
Zero R/W Gradient
Pressure Altitude = Sea Level

Aircraft Planning Manual Vs FAA Runway Length Analysis



Alternatives - Overview



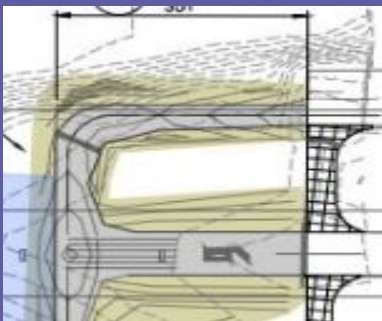
Alternative #1: No Build

- Everything remains the same, no changes are applied
- No Penetrations



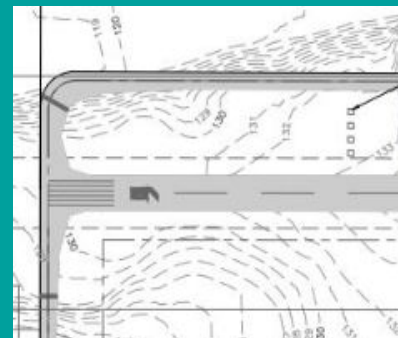
Alternative #3: 550-ft ext

- 5200 Feet
- Taxiway A and E extensions
- Relocation of Glideslope and MALS
- One penetration area



Alternative #2: 351-ft ext











- 5001 Feet
- Taxiway A and E extensions
- Relocation of Glideslope and MALS
- No penetrations



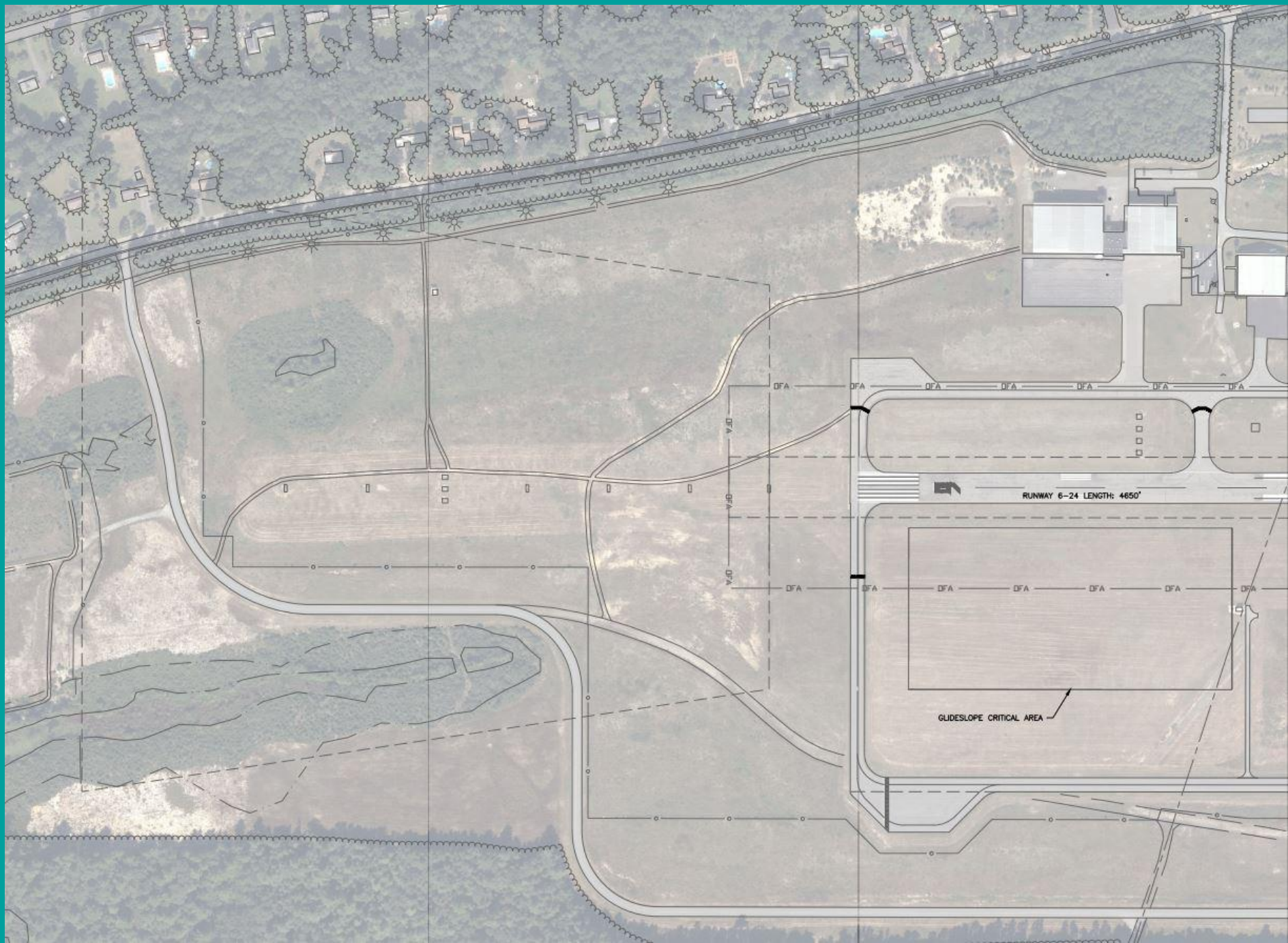
Alternative #4: 850-ft ext

- 5500 Feet
- Taxiway A and E extensions
- Relocation of Glideslope and MALS
- Multiple penetrations

Alternative #1 : No Build

LEGEND	
	AIRPORT PROPERTY LINE
	OFA OBJECT FREE AREA
	MARKING - TAXIWAY AND RUNWAY
	HOLDING POSITION MARKING
	RUNWAY SAFETY AREA
	RUNWAY OBJECT FREE ZONE AND RUNWAY PROTECTION ZONE
	GLIDESLOPE CRITICAL AREA
	EXISTING CHAIN-LINK FENCE
	WETLAND
	EXISTING ROADWAY

Cost: \$0



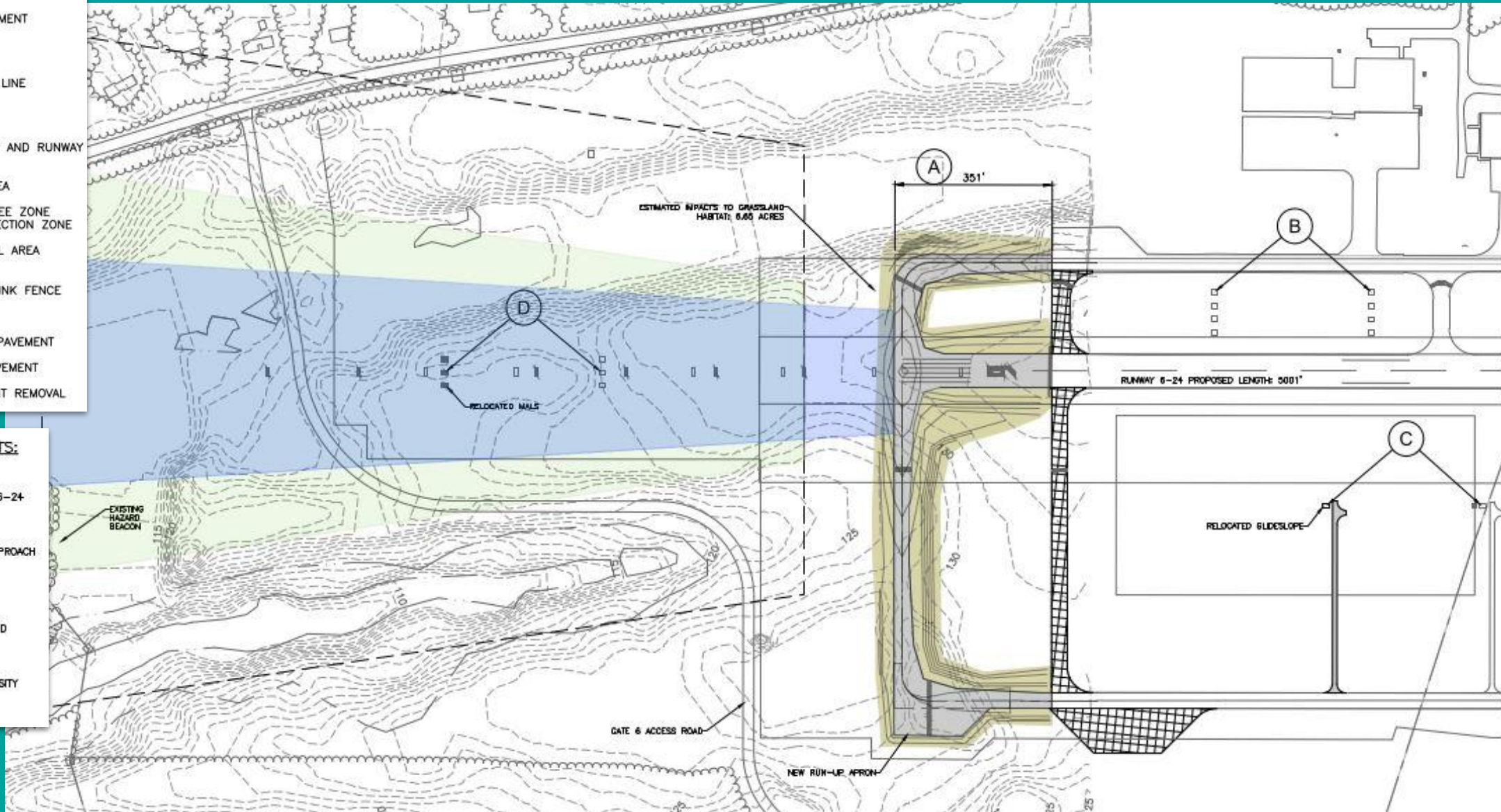
Alternative #2: 351-ft Extension

LEGEND

- (A)** PROJECT WORK ELEMENT
- AIRPORT PROPERTY LINE
- - - OFA OBJECT FREE AREA
- ||||| MARKING - TAXIWAY AND RUNWAY
- - - RUNWAY SAFETY AREA
- - - RUNWAY OBJECT FREE ZONE AND RUNWAY PROTECTION ZONE
- - - GLIDESLOPE CRITICAL AREA (RELOCATED)
- - - PROPOSED CHAIN-LINK FENCE
- - - WETLAND
- - - EXISTING EDGE OF PAVEMENT
- ▬ PROPOSED NEW PAVEMENT
- XXXXX PROPOSED PAVEMENT REMOVAL

PROJECT WORK ELEMENTS:

- (A)** 351' EXTENSION OF RUNWAY 6-24
- (B)** RELOCATION OF PRECISION APPROACH PATH INDICATOR.
- (C)** RELOCATION OF GLIDESLOPE, GLIDESLOPE ACCESS ROAD, AND CRITICAL AREA.
- (D)** RELOCATION OF MEDIUM INTENSITY APPROACH LIGHTING SYSTEM.






Estimated Cost: \$5,590,000



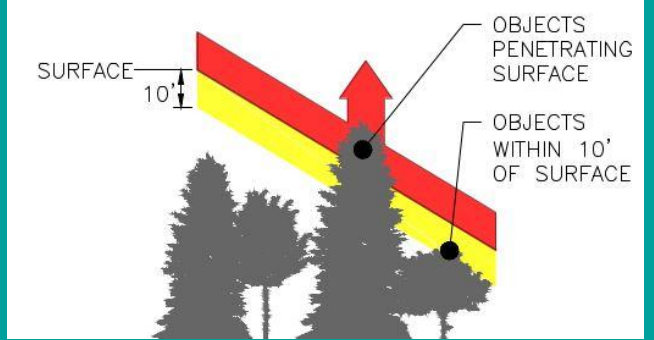
Alternative # 2 Obstruction Map: 351-ft Extension



SURFACE LEGEND

-  AC 150/5300-13A TABLE 3-2 ROW 4 OBSTACLE CLEARANCE SURFACE
-  AC 150/5300-13A TABLE 3-2 ROW 6 OBSTACLE CLEARANCE SURFACE
-  VEGETATIVE OBSTRUCTION (REFER TO PENETRATION KEY)












VEGETATIVE PENETRATION KEY



Alternative #3: 550-ft Extension

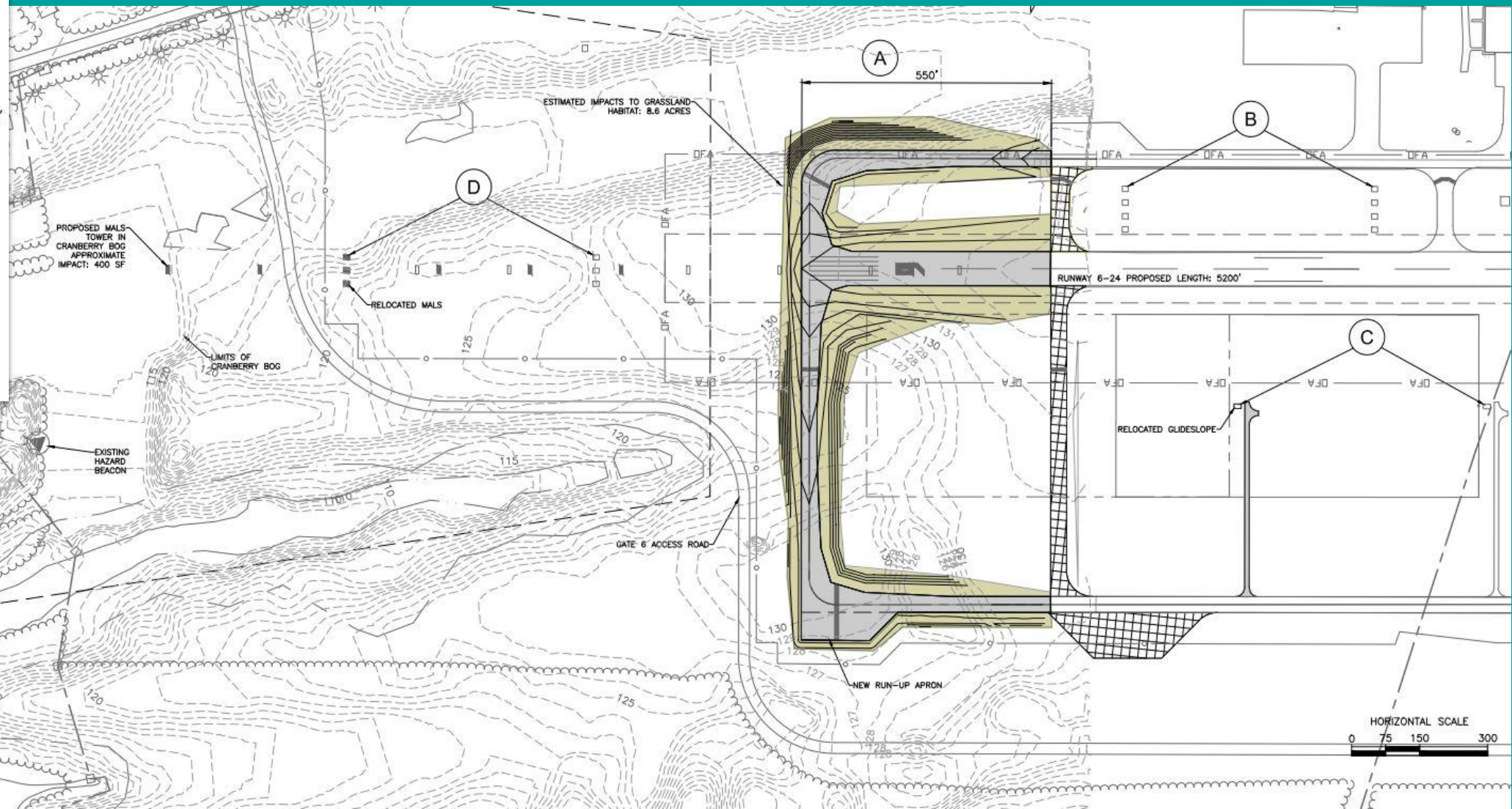
LEGEND

(A) PROJECT WORK ELEMENT

-  AIRPORT PROPERTY LINE
-  OFA OBJECT FREE AREA
-  MARKING - TAXIWAY AND RUNWAY
-  RUNWAY SAFETY AREA
-  RUNWAY OBJECT FREE ZONE AND RUNWAY PROTECTION ZONE
-  GLIDESLOPE CRITICAL AREA (RELOCATED)
-  PROPOSED CHAIN-LINK FENCE
-  WETLAND
-  EXISTING EDGE OF PAVEMENT
-  PROPOSED NEW PAVEMENT
-  PROPOSED PAVEMENT REMOVAL

PROJECT WORK ELEMENTS:

- (A)** 550' EXTENSION OF RUNWAY 6-24
- (B)** RELOCATION OF PRECISION APPROACH PATH INDICATOR.
- (C)** RELOCATION OF GLIDESLOPE, GLIDESLOPE ACCESS ROAD, AND CRITICAL AREA.
- (D)** RELOCATION OF MEDIUM INTENSITY APPROACH LIGHTING SYSTEM.


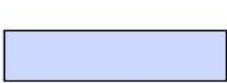



Estimated Cost: \$7,220,000

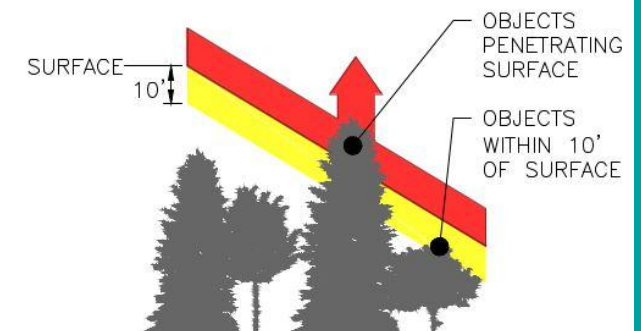
Alternative # 3 Obstruction Map: 550-ft Extension



SURFACE LEGEND

-  AC 150/5300-13A TABLE 3-2 ROW 4 OBSTACLE CLEARANCE SURFACE
-  AC 150/5300-13A TABLE 3-2 ROW 6 OBSTACLE CLEARANCE SURFACE
-  VEGETATIVE OBSTRUCTION (REFER TO PENETRATION KEY)

VEGETATIVE PENETRATION KEY



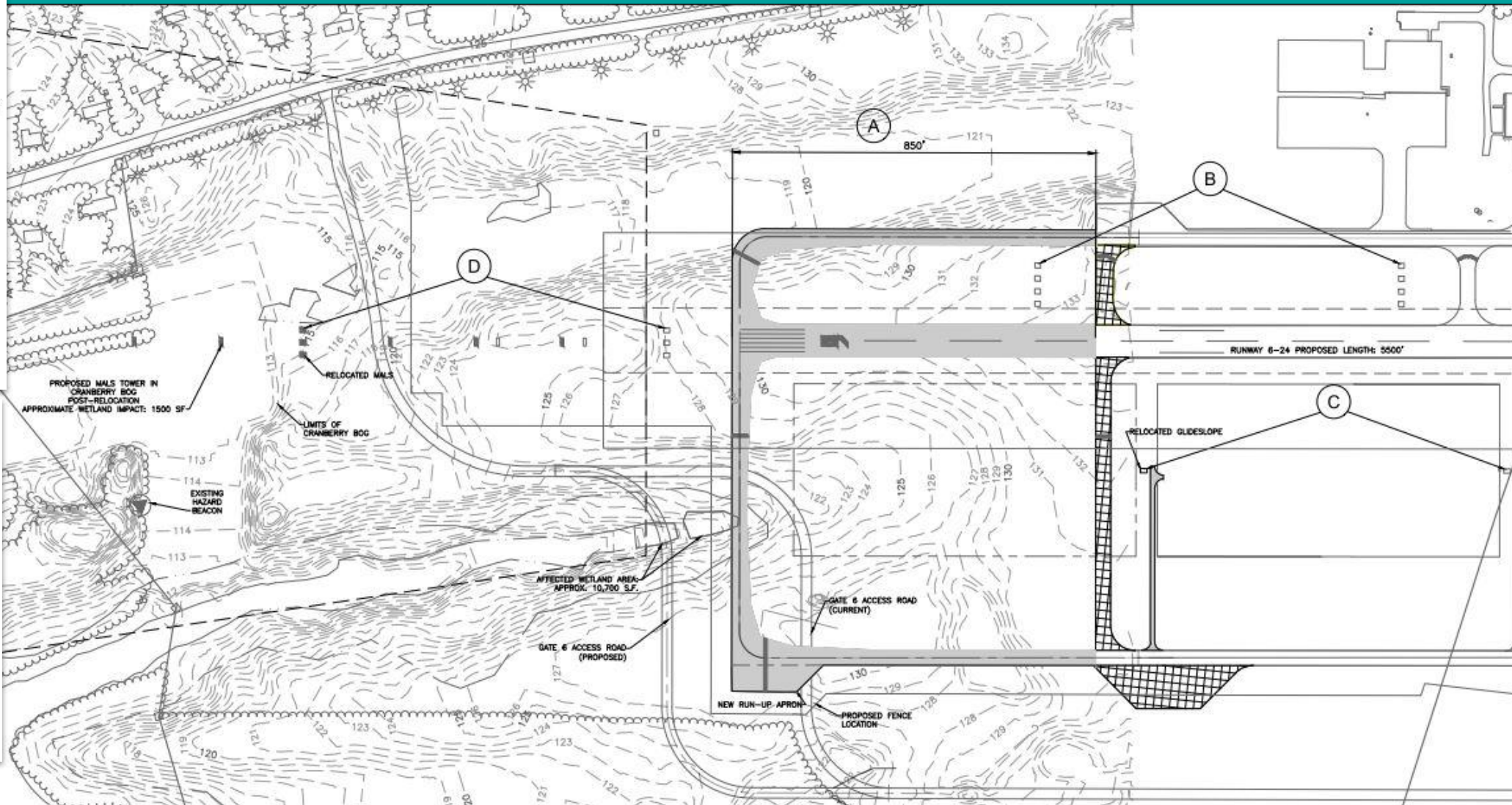
Alternative #4: 850-ft Extension

LEGEND

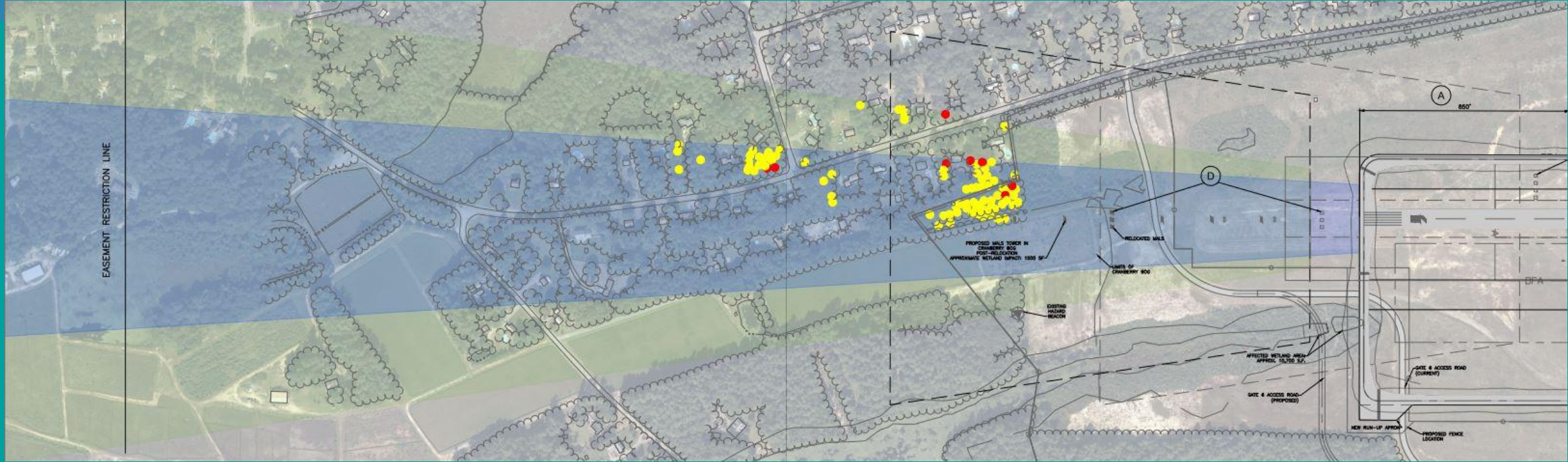
- (A)** PROJECT WORK ELEMENT
- AIRPORT PROPERTY LINE
- OFA --- OBJECT FREE AREA
- ▨ MARKING - TAXIWAY AND RUNWAY
- RUNWAY SAFETY AREA
- RUNWAY OBJECT FREE ZONE AND RUNWAY PROTECTION ZONE
- GLIDESLOPE CRITICAL AREA (RELOCATED)
- PROPOSED CHAIN-LINK FENCE
- WETLAND
- EXISTING EDGE OF PAVEMENT
- PROPOSED ACCESS ROAD
- ▨ PROPOSED NEW PAVEMENT
- ▨ PROPOSED PAVEMENT REMOVAL

PROJECT WORK ELEMENTS:




- (A)** 850' EXTENSION OF RUNWAY 6-24
- (B)** RELOCATION OF PRECISION APPROACH PATH INDICATOR.
- (C)** RELOCATION OF GLIDESLOPE, GLIDESLOPE ACCESS ROAD, AND CRITICAL AREA.
- (D)** RELOCATION OF MEDIUM INTENSITY APPROACH LIGHTING SYSTEM.



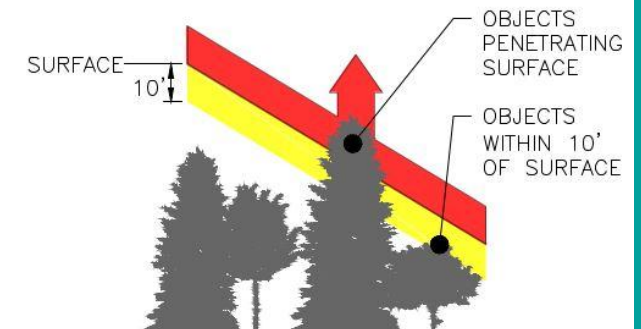
Alternative #4 Obstruction Map: 850-ft Extension



SURFACE LEGEND

-  AC 150/5300-13A TABLE 3-2 ROW 4 OBSTACLE CLEARANCE SURFACE
-  AC 150/5300-13A TABLE 3-2 ROW 6 OBSTACLE CLEARANCE SURFACE
-  VEGETATIVE OBSTRUCTION (REFER TO PENETRATION KEY)

VEGETATIVE PENETRATION KEY



Additional Initiatives

- Solar
- Water
 - Water collection gutters and cisterns for equipment cleaning
- Non Aeronautical Businesses
- Electric Aircraft/ Automobile Charging
- Additional Vehicle Parking



Timeline

JAN
2022

Background and First
Public Meeting

Development of
Facility Needs,
Alternatives and
Second Public Meeting

APR
2022

July
2022

Third Public Meeting

Implement Plan

TBD



**Questions
Comments**

PlymouthAirportMasterPlan@gmail.com



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