



Nantucket Memorial Airport Master Plan Update

Chapter 7– Alternative Improvement Concepts and Proposed Priorities



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Prepared for:
Nantucket Memorial Airport Commission

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Chapter 7 – Alternative Improvement Concepts and Proposed Priorities

7.0 Introduction

There are several key areas at ACK that can be improved to meet FAA's safety standards and address the aviation facility needs identified in Chapter 6, Facility Requirements. These improvement concepts will meet the Airport's needs in a safe, efficient, cost-effective, sustainable manner, while increasing the operational efficiency and safety of the airfield.

Improvements are required in two areas of the airport: airside and landside. Airside improvements address the runways, taxiways, aircraft parking aprons, and protected airspace. Landside improvements address hangars, terminal buildings, automobile parking and airport support facilities. The alternatives that address the existing deficiencies and needs have been grouped into the same five categories established in Chapter 6, Facility Requirements:

- Safety and Security
- Capacity
- Efficiency
- Revenue Enhancement
- Environmental/Sustainability

The alternative improvement concepts are described in more detail in the following sections, grouped into each of the five categories. Where applicable, a graphic representation of each proposed concept is included, plus a brief narrative summary and an order-of-magnitude estimated cost for comparative purposes. Each summary includes a bulleted list of pros and cons for the particular concept to assist in the evaluation process.

The final sections included the Evaluation Matrix used to review and rank the alternatives. This evaluation process was developed with the Airport staff and Commission members and brought to the Airport's Master Plan Advisory Group, which is made up of neighborhood groups, environmental organizations and representatives of Town Agencies. The resulting Priority Projects List (see **Section 7.6.3**) was used as the basis for finalizing and balancing the capital costs in the proposed 5, 10 and 20-Year Capital Improvements Plan (CIP). That CIP, and specifically the short term 5-Year CIP presented in Chapter 8, is the basis of the ALP in Chapter 9, the Financial Feasibility Plan in Chapter 10, and is the focus of the Airport's Environmental Notification Form (ENF) which is included in Chapter 11.

The following sections deal with the alternatives that were considered to address the deficiencies identified in the five categories in Chapter 6, noted above. The first set of alternatives is grouped under the category of Safety and Security.



7.1 Safety and Security

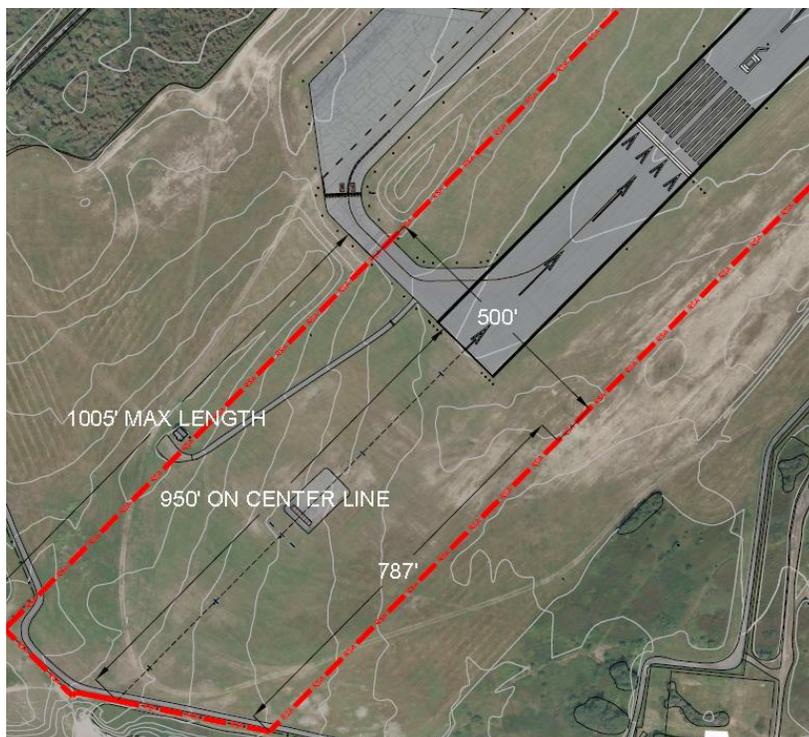
A basic objective of the Master Plan is to identify areas where the Airport needs to be brought into compliance with FAA’s Design Standards to enhance the safety and security of airfield operations. Safety and Security deficiencies were identified in Chapter 6.1 and alternative concepts to address those deficiencies are presented below. The alternatives are sequenced in the order of FAA’s priority for investment in airport improvements, beginning with the runways, proceeding out to the taxiways, then out to aircraft parking aprons, the passenger terminal and finally to hangars and other landside facilities.

7.1.1 Safety and Security - RW 6 RSA (Runway Safety Area)

7.1.1.1 Alternative 1– Existing- Irregular RSA of Maximum Practicable Area

RW 6 RSA Alternative 1- Existing – (Recommended: Approved by FAA)	
<p>Summary: The existing RSA does not meet FAA standard, but does meet FAA Order 5200.8 by providing the maximum practicable area within existing constraints. The FAA issued an RSA Determination in 2000 (see Appendix 1) which found that extending the existing Runway 6 RSA would be impractical and that the costs of adding EMAS or shifting the runway were not justified for the small deficiency that exists.</p>	
<p>Trigger: FAA RSA Determination 9/31/2000</p>	<p>Preliminary Cost: None</p>
<p>Pro:</p> <ul style="list-style-type: none"> • Continues existing level of safety • Complies with FAA Order 5200.8 • Maintains existing runway length • No adverse operational impacts • No community concerns • No environmental impacts • No construction costs 	<p>Con:</p> <ul style="list-style-type: none"> • Does not meet full FAA RSA standard, but does comply with FAA Order 5200.8.

Figure 7-1 RSA Alternative 1- Existing - **RECOMMENDED**





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7.1.1.2 Alternative 2-EMAS

RW 6 RSA Alternative 2- EMAS with Irregular RSA (<i>Recommended: Second Choice</i>)	
<p>Summary: EMAS (Engineered Material Arresting System) would enhance safety within the RW 6 RSA by adding a soft-ground arrestor bed to decelerate any aircraft overrunning the end of the runway. Adding an EMAS was found not to be justifiable by FAA's 2000 RSA Determination. This concept is included, however, as a Master Plan reference.</p>	
<p>Trigger: Change in FAA Determination</p>	<p>Preliminary Cost: \$5.6 million</p>
<p>Pro:</p> <ul style="list-style-type: none"> Accepted FAA safety enhancement Avoids excessive cost of RW shift FAA AIP eligible Potential minor environmental effect Minor community concern (due to minor environmental impact) No operational impact on aircraft 	<p>Con:</p> <ul style="list-style-type: none"> FAA found costs were not justified. Maintenance costs NEPA/MEPA review required Permitting for impacts to habitat for listed species required

7.1.1.3 Alternative 3-200-foot RW Shift

RW 6 RSA Alternative 3-200FT RW Shift (<i>Not Recommended</i>)	
<p>Summary: A 200-foot runway shift would relocate the runway ends by 200 feet to the northeast along the existing centerline. This is the minimum amount to allow for a full RSA at the Runway 06 end. Existing runway edge lights and approach lights would be shifted using their existing spacing. Shifting the runway by 200 feet was found not to be justifiable by FAA's 2000 RSA Determination. This concept is included, however, as a Master Plan reference.</p>	
<p>Trigger: Change in FAA Determination</p>	<p>Preliminary Cost: \$7.5 million</p>
<p>Pro:</p> <ul style="list-style-type: none"> Long term Avoids coastal erosion issues Similar to MVY RW 6 200ft shift Increases landing distance available by 200ft Potential minor environmental effects Potential minor community concerns 	<p>Con:</p> <ul style="list-style-type: none"> Cost Construction time Adverse Operational impact Shortens runway to 6,103' NEPA/MEPA review required Permitting for impacts to habitat for listed species required RW 24 requires additional SSALR and TDZ lights

Figure 7-2 RSA Alternative 3- 200FT RW Shift - NOT RECOMMENDED





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7.1.1.4 Alternative 4 - 850-foot RW Shift

RW 6 RSA Alternative 4- 850FT RW Shift (Not Recommended)	
<p>Summary: A 850-foot runway shift would relocate the Runway 24 end by 850 feet to the northeast along the existing centerline. This would enable a full RSA at the Runway 6 end, with a set of ALSF-II Approach lights set in the pavement to a Displaced Threshold at the Runway 6 end. Existing runway edge lights and approach lights would be shifted using their existing spacing and the Runway 24 ALSF-II lights would be shifted 850 feet to the northeast. Shifting the runway by 850 feet was found not to be justifiable by FAA's 2000 RSA Determination. This concept is included, however, as a Master Plan reference.</p>	
<p>Trigger: Change in FAA Determination</p>	<p>Preliminary Cost: Not financially viable (\$25.5 million)</p>
<p>Pro:</p> <ul style="list-style-type: none"> • Long term • Avoids coastal erosion issues • Retains existing RW6 landing distance • Increases RW24 landing distance available by 850ft • C-402's start takeoff 850 ft. sooner • Potential minor community concerns 	<p>Con:</p> <ul style="list-style-type: none"> • Cost • Construction time • Adverse environmental impact. • NEPA/MEPA review required • Permitting required for impacts to rare species habitat

NOT RECOMMENDED

Figure 7-3 RSA Alternative 4- 850FT RW Shift

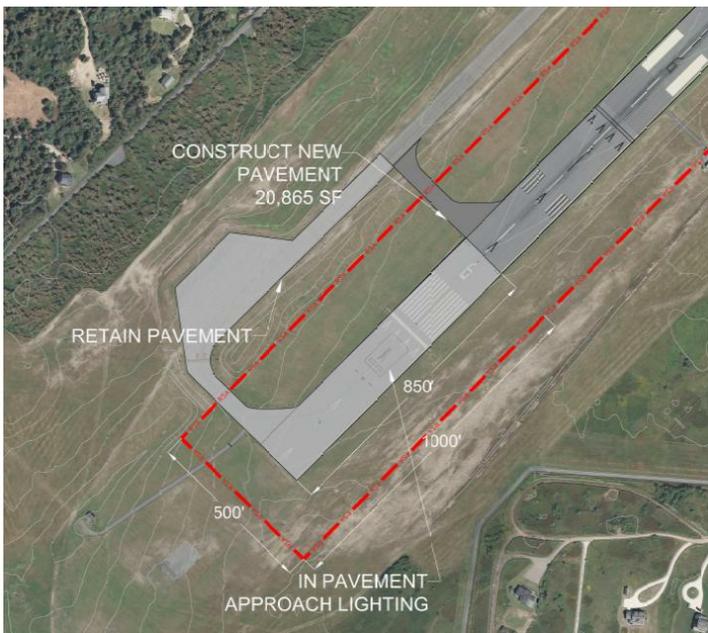
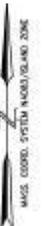
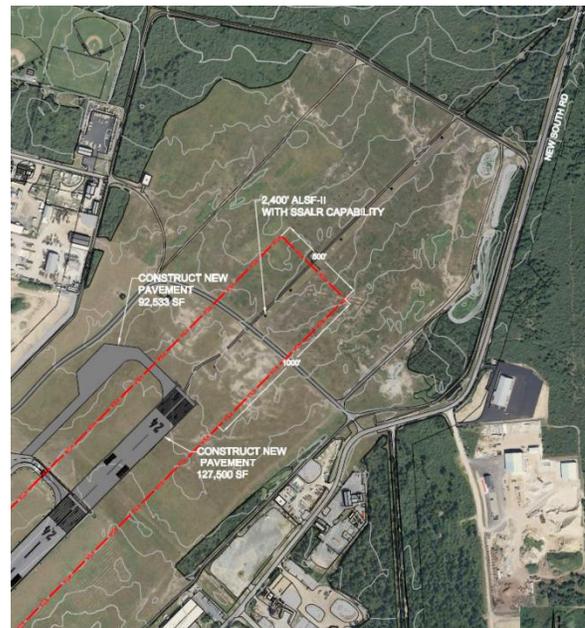


Figure 7-4 RSA Alternative 4- 850FT RW Shift





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7.1.1.5 Alternative 5-1,450-foot RW Shift

RW 6 RSA Alternative 5- 1,450FT RW Shift (<i>Not Recommended</i>)	
<p>Summary: A 1,450-foot runway shift would relocate the runway ends by 1,450 feet to the northeast along the existing centerline. This would allow for a full RSA on both runway ends, plus the benefit of a full MALS approach lighting system inside the dunes between the existing fence and the relocated RW 06 end, plus a glideslope which increasing approach minimums which will allow for increased operations, as well as increased safety by allowing for a full ILS. The RW 24 end will also be relocated and the approach lights can be upgraded to ALSF-II with SSALR capabilities. Shifting the runway by 1,450 feet was found not to be justifiable by FAA's 2000 RSA Determination. This concept is included, however, as a Master Plan reference.</p>	
<p>Trigger: Change in FAA RSA Determination</p>	<p>Preliminary Cost: Not financially viable (\$30+ Million)</p>
<p>Pro:</p> <ul style="list-style-type: none"> • Long term • Avoids coastal erosion issues • Full RSA on both ends 	<p>Con:</p> <ul style="list-style-type: none"> • High construction cost • NEPA/MEPA review required • Permitting for impacts to habitat for listed species required • Construction time • Major environmental effect • Significant community concerns

NOT RECOMMENDED

Figure 7-5 RSA Alternative 5- 1,450FT RW Shift

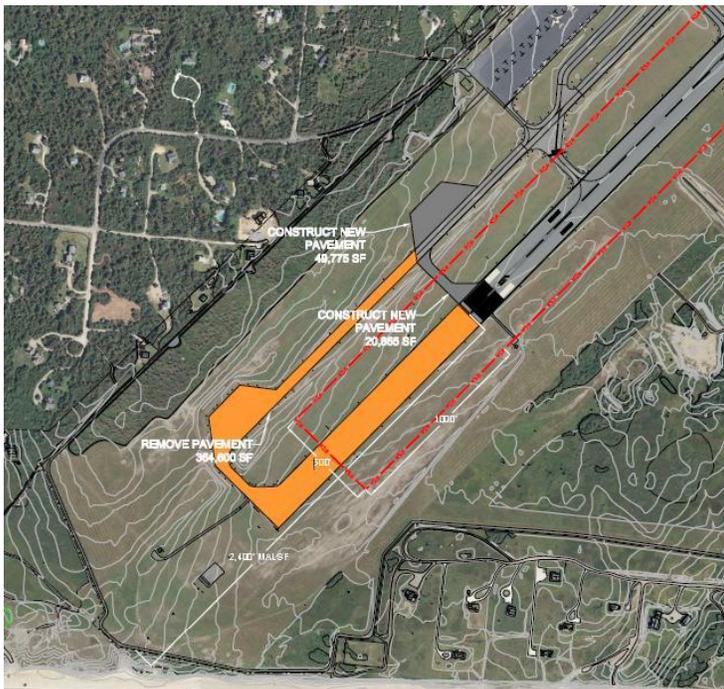
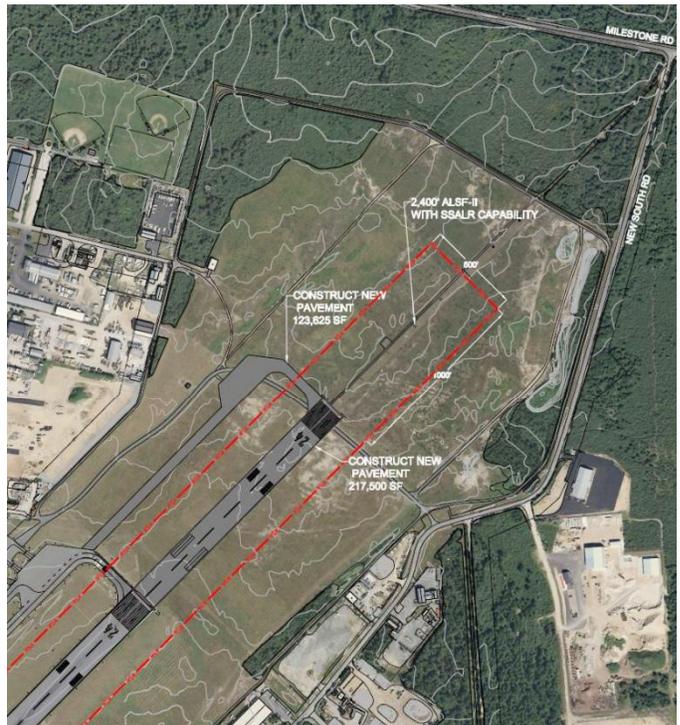


Figure 7-6 RSA Alternative 5- 1,450FT RW Shift



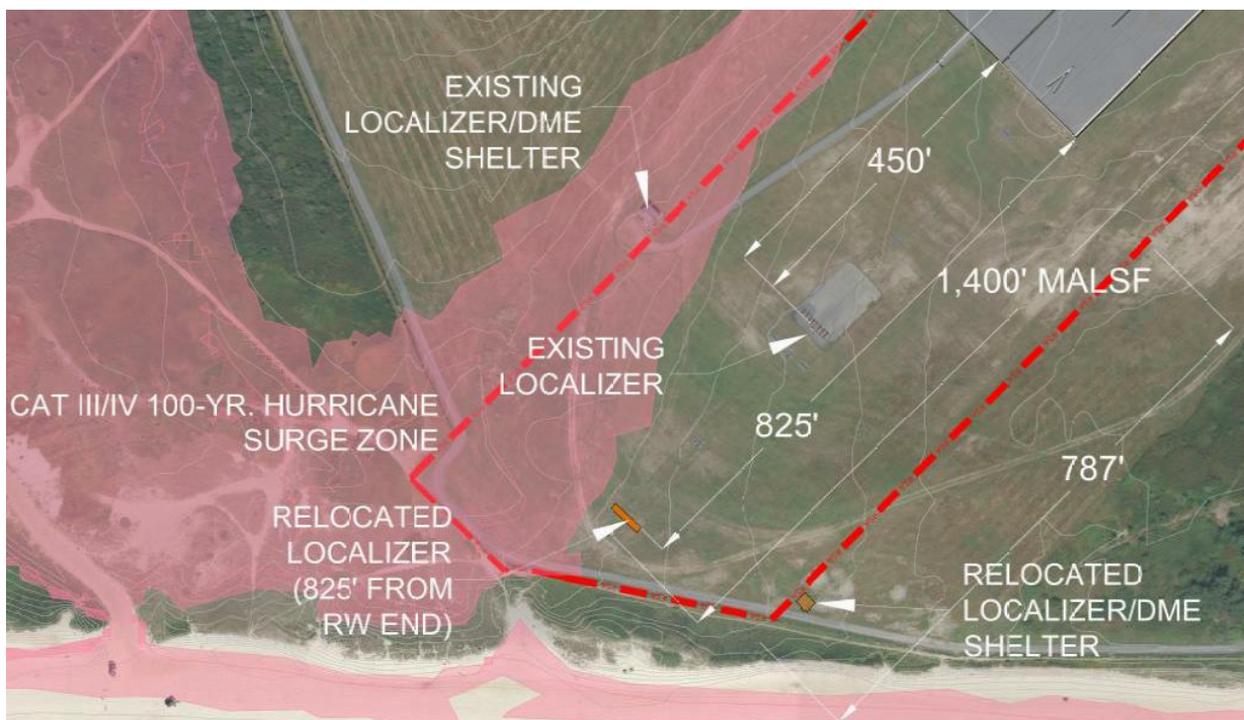


7.1.2 Safety and Security – RW 24 Localizer

7.1.2.1 Alternative 1- Maximum Practicable Relocation

RW 24 Localizer Alternative 1- Maximum Practicable Relocation (<i>RECOMMENDED</i>)	
<p>Summary: The localizer provides runway centerline guidance for approaching aircraft. In 2009, the FAA installed ACK’s primary ILS frangible mount localizer for Runway 24 within the Runway 6 RSA. While siting NAVAIDS such as a localizer within a RSA is not normally considered fixed by function, the localizer was installed after determining there were no other feasible options for relocating the NAVAID outside the RSA. Given the high number and seasonal concentration of operations and the varied aircraft fleet mix, the relocation of the ACK ILS Localizer antenna array to the maximum practical distance (825 feet) from the departure end of Runway 24 improves the safety area.</p>	
<p>Trigger: NAVAID Designation within RSA per FAA AC 150/5300-13A & Change in FAA Determination</p>	<p>Preliminary Cost:</p>
<p>Pro:</p> <ul style="list-style-type: none"> • No adverse operational impacts • No community concerns • Minimal environmental impacts • Construction costs covered by FAA • Is a frangible mounting • Recommended by FAA 	<p>Con:</p> <ul style="list-style-type: none"> • Does not meet 150/5300-13A Standards

Figure 7-7 Localizer Alternative 1- Maximum Practicable Relocation – **RECOMMENDED**





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7.1.2.2 Alternative 2- Relocate Localizer outside RSA

RW 24 Localizer Alternative 2- Relocate beyond RW 6 RSA(Not Recommended)	
<p>Summary: The RW 24 Localizer could be relocated outside the RW 6 RSA. This project would relocate the existing localizer and glide slope shelter by 651' or 1000' from the end of RW 6 pavement. This is not practicable due to excessive costs, relocation beyond airport fence, proximity to sand dunes and beach line. The localizer would also need to be elevated by platform or be placed on a hill for line of sight due to the rising tides and decreasing elevations. Relocating the localizer to this location potentially places it in risk of a Category IV Coastal Flood Hazard Zone.</p>	
<p>Trigger: NAVAID Designation within RSA per FAA AC 150/5300-13A & Change in FAA Determination</p>	<p>Preliminary Cost:</p>
<p>Pro:</p> <ul style="list-style-type: none"> Enhances safety by relocating LOC outside of RSA 	<p>Con:</p> <ul style="list-style-type: none"> Location is within Cat IV Coastal Flood Hazard Zone and environmentally sensitive coastal dune Localizer would potentially need to be elevated to meet line of sight requirements, adding costs Site would create increased maintenance costs NEPA/MEPA environmental review required Permitting for impacts to habitat for listed species, coastal zone and wetland (primary dune) impacts Controversial location with environmental groups and public

Figure 7-8 Localizer Alternative 2- Relocate LOC beyond RW 6 RSA – Not Recommended

*Note: Areas in pink denote Category IV Coastal Flood Zones





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7.1.2.3 Alternative 3- Protect with EMAS

Runway 24 Localizer Alternative 3- Protect Localizer with EMAS (<i>Recommended: Second Choice</i>)	
<p>Summary: The RW 24 Localizer could be protected with EMAS within the RW 6 Irregular RSA. EMAS (Engineered Material Arresting System) would enhance safety within the RW 6 RSA by adding a soft-ground arrestor bed to decelerate any aircraft overrunning the end of the runway. Adding an EMAS was found not to be previously justifiable by FAA’s 2000 RSA Determination (Appendix 4). This concept is included, however, as a Master Plan reference.</p>	
<p>Trigger: NAVAID Designation within RSA per FAA AC 150/5300-13A & Change in FAA determination</p>	<p>Preliminary Cost: \$5.6 million</p>
<p>Pro:</p> <ul style="list-style-type: none"> • Accepted FAA safety enhancement • Avoids excessive cost of RW shift • FAA AIP eligible • Potential minor environmental effect • No operational impact on aircraft 	<p>Con:</p> <ul style="list-style-type: none"> • FAA found EMAS costs were not justified. • Added Maintenance costs • NEPA/MEPA review required • Permitting for impacts to habitat for listed species required

7.1.2.4 Alternative 4- Runway 24 Localizer Back Course with Glide Slope Approach

Runway 24 Localizer Alternative 4- Runway 24 Localizer Back Course Approach (<i>Not Recommended</i>)	
<p>Summary: While not ideal, the RW 24 Localizer located within the RW 6 RSA could be eliminated and the ILS 24 approach could be conducted as a back course approach.</p>	
<p>Trigger: NAVAID Designation within RSA per FAA AC 150/5300-13A & Change in FAA determination</p>	<p>Preliminary Cost:</p>
<p>Pro:</p> <ul style="list-style-type: none"> • FAA safety enhancement 	<p>Con:</p> <ul style="list-style-type: none"> • Eliminates RW 24 Localizer from RSA • Potentially higher minimums • Potential adverse effect on ACK’s Primary Instrument Runway and aeronautical utility • Induces pilot confusion • Cost of removal

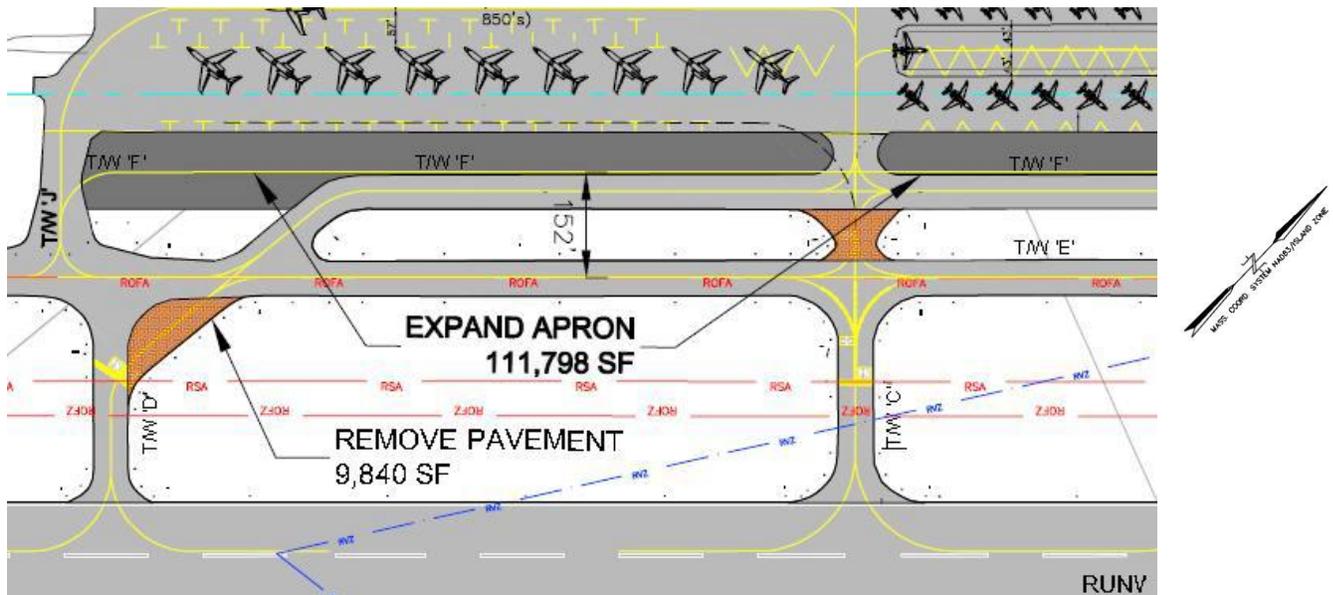


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7.1.4 Safety and Security - Separate Taxiways 'E' and 'F' to meet Group III Standard

Group III Separation of Taxiways 'E' and 'F' (Not Recommended) Restrict TW 'F' to Group I Aircraft	
<p>Summary: The separation between parallel Taxiways "E" and "F" is 125', which is less than the current FAA criteria of 152' for Airplane Design Group (ADG) III aircraft. Unlike the relocation of Taxiway G, above, the centerline of Taxiway F cannot be shifted to the north due to the proximity of the aircraft parking apron and existing operational safety concerns. The current 125-foot separation, combined with ATC's restriction of Taxiway F to Group I aircraft (per FAA Modifications No. 85 and 86, Appendix 7) exceeds the wingtip clearance required between a C-402 and an E-190 by an extra 35 feet. This provides an equivalent level of safety and therefore requires no change. In fact, the 125-foot taxiway separation provides adequate wingtip clearance for opposing operations by Group II and Group III aircraft.</p>	
<p>Trigger: AC 150/5300-13A CHG 1, <i>Airport Design</i>, section 404, Table 4-1, assumes Group III aircraft.</p>	<p>Preliminary Cost: \$1.4 million</p>
<p>Pro:</p> <ul style="list-style-type: none"> Relocating Taxiway 'F' centerline would provide Group III separation between the taxiways Likely to receive FAA funding 	<p>Con:</p> <ul style="list-style-type: none"> Current operational restriction of TW-F to Group I aircraft provides equivalent level of safety Current taxiway separation provides safe wingtip clearance for Group II aircraft on TW-F and a Group III aircraft on TW-E Loss of South Apron parking spaces Increase existing parking congestion Limited construction season to work around peak summer season and winter conditions Permitting and mitigation for potential impacts to habitat for listed species

Figure 7-10 Group III Taxiways 'E' and 'F' – **NOT RECOMMENDED** (Restrict TW F to Group I Aircraft)



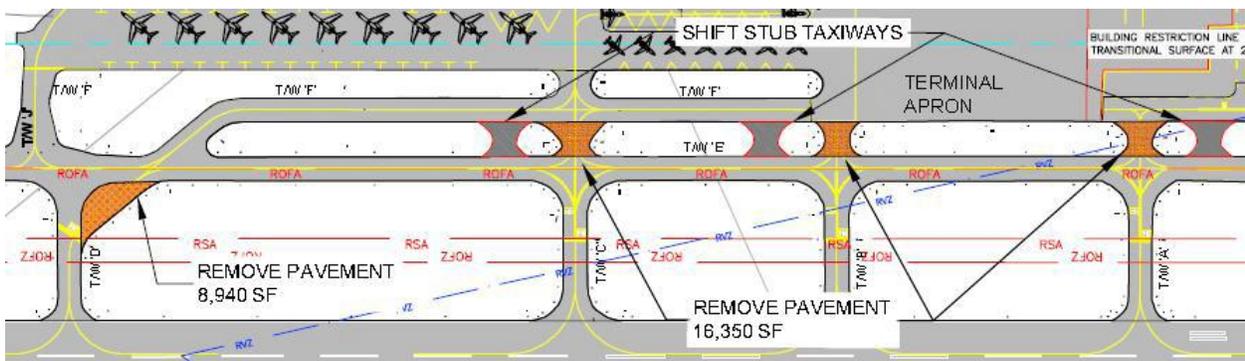


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7.1.5 Safety and Security – Shift Centerlines of Stub Taxiways ‘A’, ‘B’, and ‘C’

Shift Stub Taxiways ‘A’, ‘B’, and ‘C’ (Per FAA Standard)	
<p>Summary: The alignments of stub Taxiways A, B, and C are required by FAA Design Standards to be offset between the apron and Runway 6-24. This is intended to minimize the risk of runway incursions by preventing inadvertent taxiing directly from the apron onto the active runway. The centerlines of the taxiway stubs connecting to the aprons should be offset at least 50 feet from the centerlines of runway exit Taxiways A, B, and C. The current 125-foot separation, combined with ATC’s restriction of Taxiway F to Group I aircraft (per FAA Modifications No. 85 and 86, Appendix 7)</p>	
<p>Trigger: Non-compliance with AC 150/5300-13A CHG 1, <i>Airport Design</i>, Section 401.b.(5)(g), Figure 4-3.</p>	<p>Preliminary Cost: \$500,000</p>
<p>Pro:</p> <ul style="list-style-type: none"> Offsetting the centerlines of stub Taxiways ‘A’, ‘B’ and ‘C’ by 50 feet will bring the alignments into FAA compliance. 	<p>Con:</p> <ul style="list-style-type: none"> Shifting TW-C stub would increase ARFF response time by 30% to RW33 and increase the hazard of an ARFF vehicle rollover Creates pilot confusion and disorientation during low visibility. Increases taxiway congestion, taxi times and fuel burns. Increases pavement rutting and deterioration. Limit construction period to avoid peak summer season and winter conditions Permitting and mitigation for impacts to rare species habitat

Figure 7-11 Offset Stub Taxiways ‘A’, ‘B’, and ‘C’ – Required by FAA Design Standard. Airport will seek Modification of Standard to retain existing alignments based upon equivalent level of safety, historic lack of incursion incidents and current ATC operating environment.





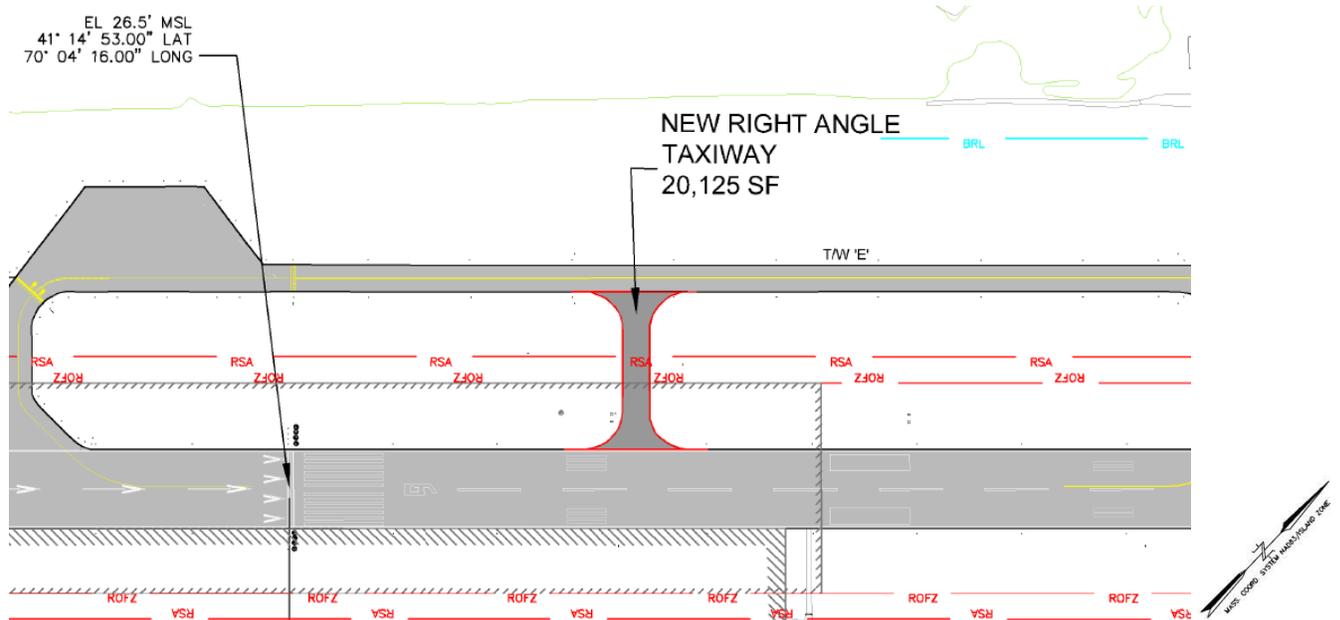
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7.1.6 Safety and Security - RW 24 Exit Taxiway

7.1.6.1 Alternative 1- Right Angle Exit Taxiway

Alternative 1: Right Angle Exit Taxiway (Not Recommended)	
Summary: RW 24 would benefit from an additional exit taxiway located between exit Taxiway D and the runway end to enable jets to exit the runway sooner, minimize back-taxi time, fuel burn and noise from the taxiway system.	
Trigger: Medium term recommended based on demand. Enhances compliance with FAA AC 150/5300-13A, Chap. 409. a. through e.	Preliminary Cost: \$500,000 – <i>Not Recommended</i>
Pro: <ul style="list-style-type: none"> • Meets FAA Standard • Minimal Pavement • Lower Cost • Intersection takeoffs • Reduces taxi times, fuel use, emissions and noise 	Con: <ul style="list-style-type: none"> • Aircraft must almost stop before exiting to make two 90° turns • Permitting and mitigation for potential impacts to habitat for listed species

Figure 7-12 Alternative 1- Right Angle Exit Taxiway –NOT RECOMMENDED



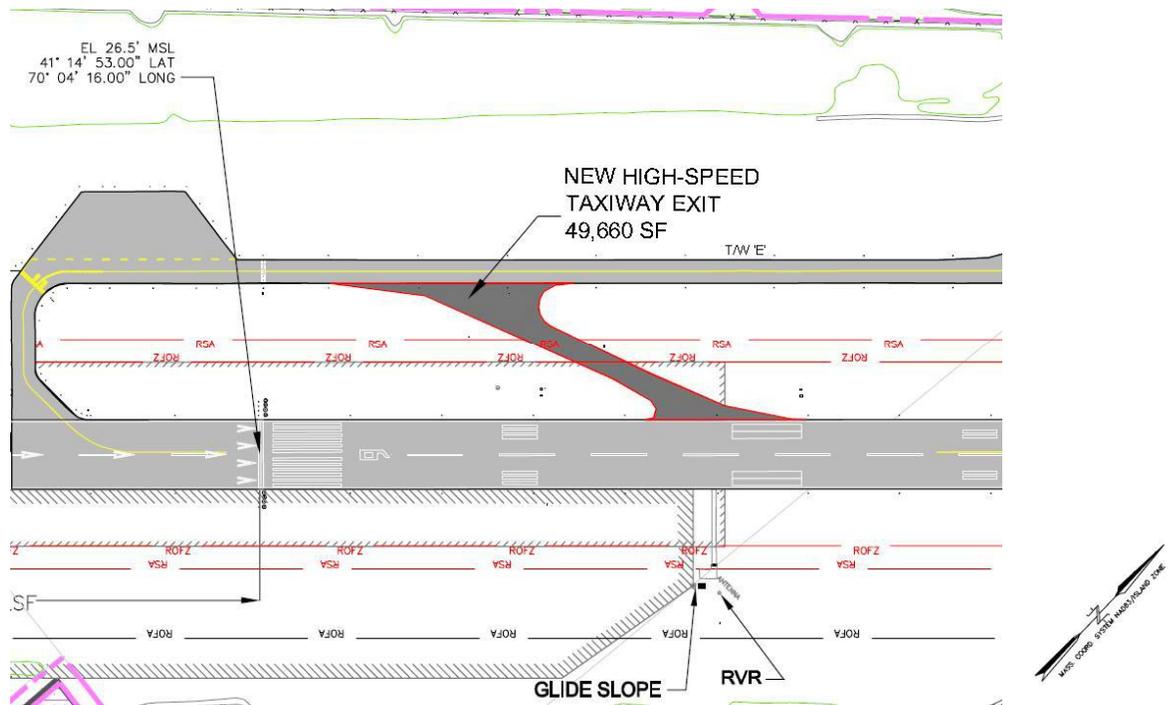


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7.1.6.2 Alternative 2 – High Speed Exit Taxiway

Alternative 2: High Speed Exit Taxiway (Recommended: Year 3)	
Summary: RW 24 would benefit from a high-speed exit taxiway located between exit Taxiway D and the Runway 6 end to enable jets to exit the runway sooner and at higher speeds, minimizing back-taxi time, reducing fuel burn and lessening noise from taxiway operations.	
Trigger: Medium term recommended based upon demand. Enhances compliance with FAA AC 150/5300-13A, Chap. 409. a. through e.	Preliminary Cost: \$830,000
Pro: <ul style="list-style-type: none"> Satisfies need for jets to exit at higher speeds enhancing safety and minimizing delays Reduces noise (reverse thrust duration) Reduces taxi times, fuel use and emissions Help traffic flow on runways and taxiways 	Con: <ul style="list-style-type: none"> Requires more pavement than Alternative 1 Somewhat Higher Costs Permitting and mitigation for potential impacts to habitat for listed species Requires concrete turning pad at TW 'E' intersection

Figure 7-13 Alternative 2- High Speed Exit - **RECOMMENDED**





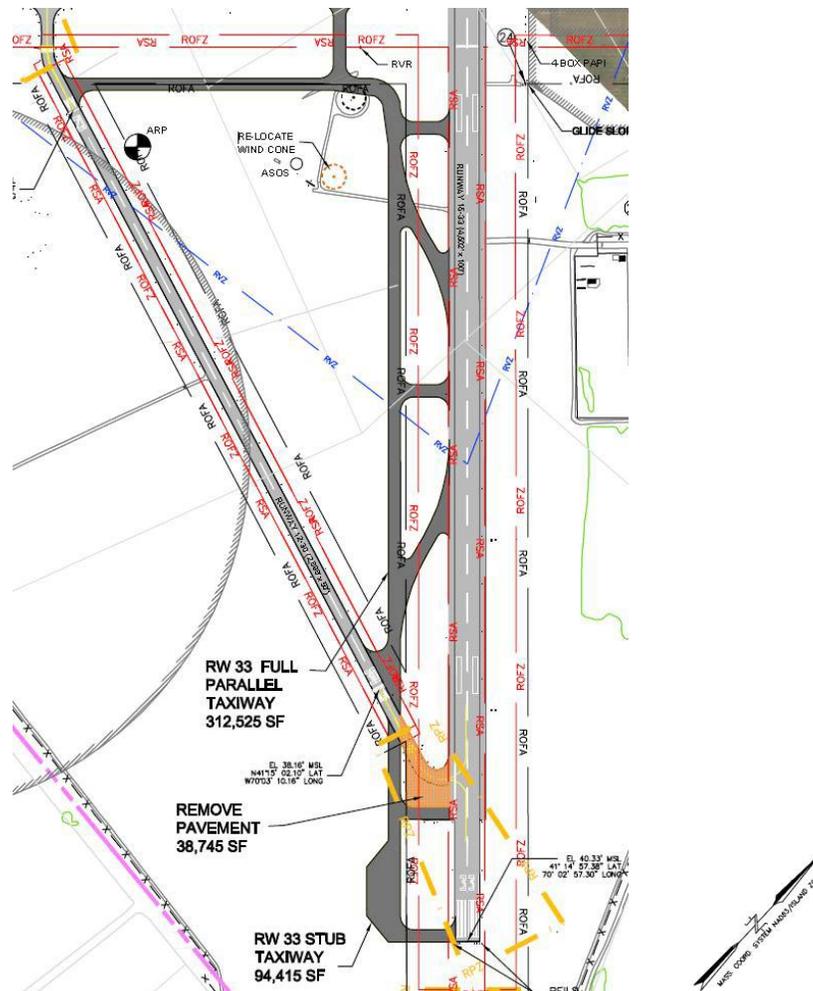
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7.1.7 Safety and Security- Runway 33 Exit Taxiway

7.1.7.1 Alternative 1- Full Length Taxiway

Runway 33 Exit Taxiway- Alternative 1 Full Length Taxiway (Not Recommended)	
Summary: FAA Design Standards recommend a full-length parallel taxiway for non-precision instrument runways as a safety enhancement measure. RW33 would benefit from a parallel taxiway to eliminate land and hold short operations which could enhance use of over-water noise abatement flight tracks.	
Trigger: Medium term recommended based on demand according to FAA AC 150/5300-13A.	Preliminary Cost: \$5.5 million
Pro: <ul style="list-style-type: none"> Meets FAA recommended standards for non-precision instrument RW Consistent w/FAA SRMP recommendations Enhances use of over-water flight track and helps to reduce noise impacts 	Con: <ul style="list-style-type: none"> NEPA/MEPA review required Environmental impacts to rare species High mitigation ratio requirement for NHESP at this location Cost Increased pavement maintenance Requires RW Crossing

Figure 7-14 Alternative 1- Runway 33 Full Length Taxiway - NOT RECOMMENDED



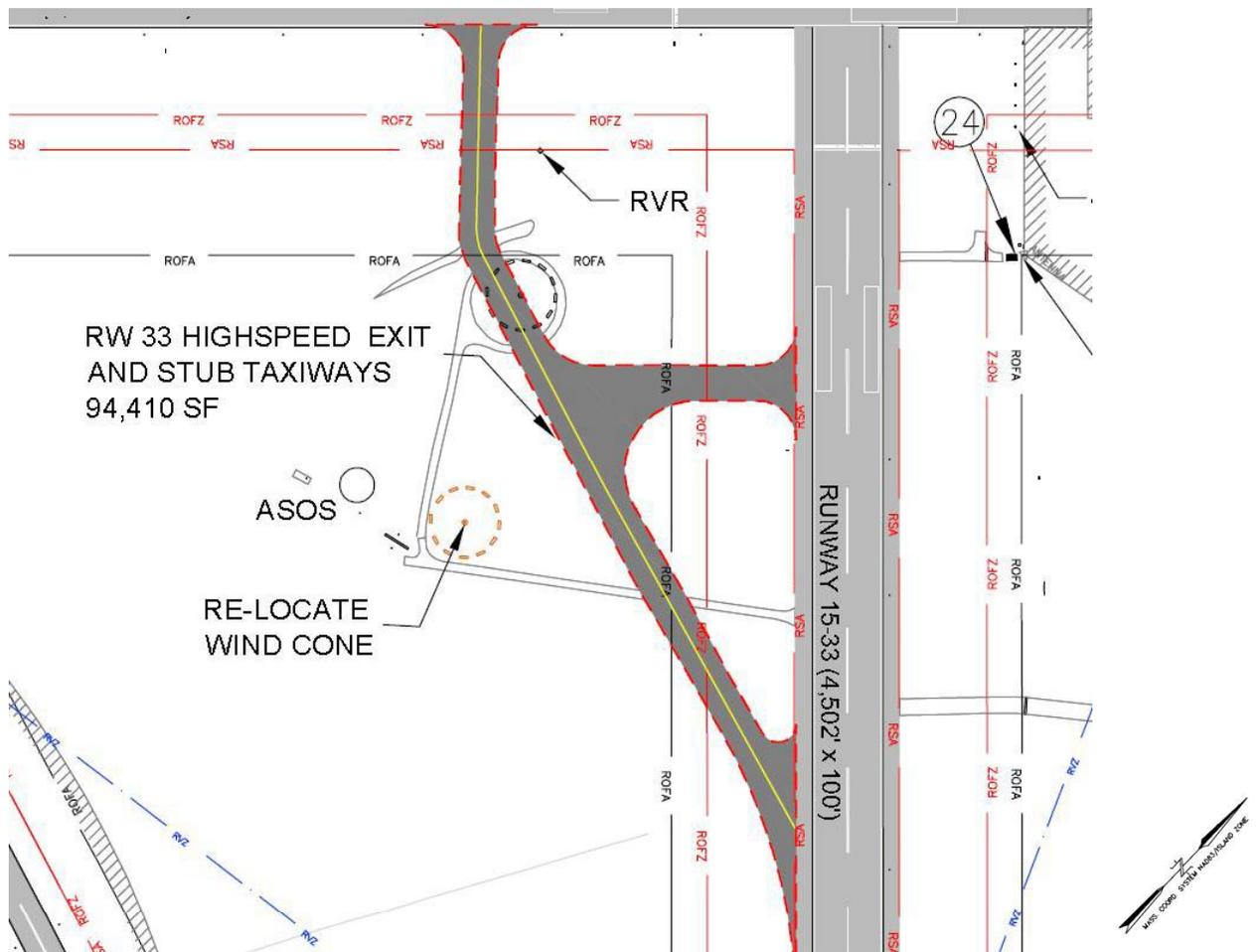


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7.1.7.2 Alternative 2- High Speed Exit Taxiway

Runway 33 Exit Taxiway- Alternative 2 High Speed Exit Taxiway (Recommended: Year 8)	
Summary: FAA Design Standards recommend a full-length parallel taxiway for non-precision instrument runways as a safety enhancement measure. As a minimum-build alternative, RW33 would benefit from a shorter, high speed exit taxiway that would eliminate land and hold short operations, reduce taxi times, fuel burn and enhance use of over-water noise abatement flight tracks.	
Trigger: Medium term recommended based on demand according to FAA AC 150/5300-13A.	Preliminary Cost: \$1.5 Million
Pro: <ul style="list-style-type: none"> Meets FAA recommended standards for non-precision instrument RW Consistent w/FAA SRMP recommendations Enhances use of over-water flight track and helps to reduce noise impacts Less cost and impacts than Alt. 1 full parallel 	Con: <ul style="list-style-type: none"> NEPA/MEPA review required High mitigation ratio requirement for NHESP Environmental impacts Requires RW Crossing Relocate wind cone and ASOS

Figure 7-15 Alternative 2- RW 33 High Speed Exit Taxiway - **RECOMMENDED**



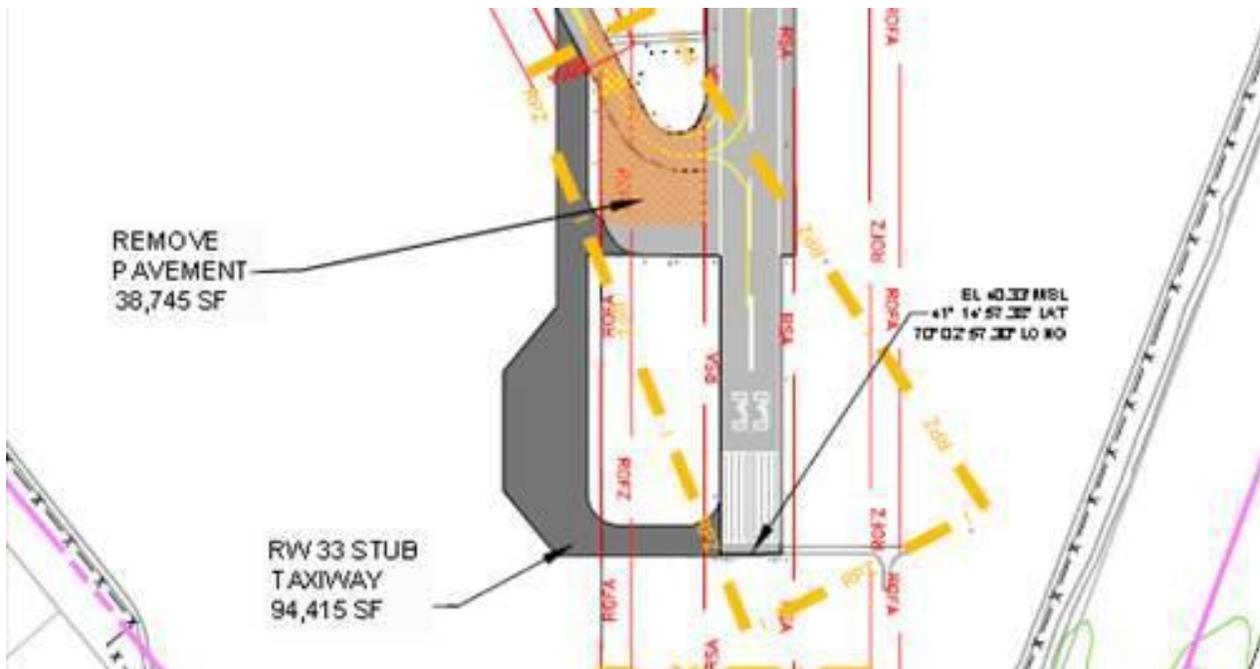


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7.1.7.3 Alternative 3- RW 33 Stub Taxiway and Run-up Pad

Runway 33 Stub Taxiway and Runup Pad - Alternative 3 RW 33 End Stub Taxiway and Runup Pad (<i>Recommended Year 10</i>)	
Summary: FAA Design Standards recommend a full-length parallel taxiway for non-precision instrument runways as a safety enhancement measure. As a minimum-build alternative, RW33 would benefit from a short stub taxiway to the Runway 33 end that would reduce the risk of runway incursions, enable piston engine run-ups, reduce fuel burn and eliminate the risk of back-taxiing aircraft for departures.	
Trigger: Medium term recommended based on demand according to FAA AC 150/5300-13A.	Preliminary Cost: \$1.23 Million
Pro: <ul style="list-style-type: none"> Reduces risk of runway incursions by eliminating the need for back-taxiing for full length departures Meets FAA recommended standards for non-precision instrument RW Consistent w/FAA SRMP recommendations Helps to reduce noise impacts by enabling full-length RW33 departures Less cost and impacts than Alt. 1 full parallel 	Con: <ul style="list-style-type: none"> NEPA/MEPA review required High mitigation ratio requirement for NHESP Environmental impacts

Figure 7-16A Alternative 3- Runway 33 End, Stub Taxiway and Run-up Pad Combo - **RECOMMENDED**



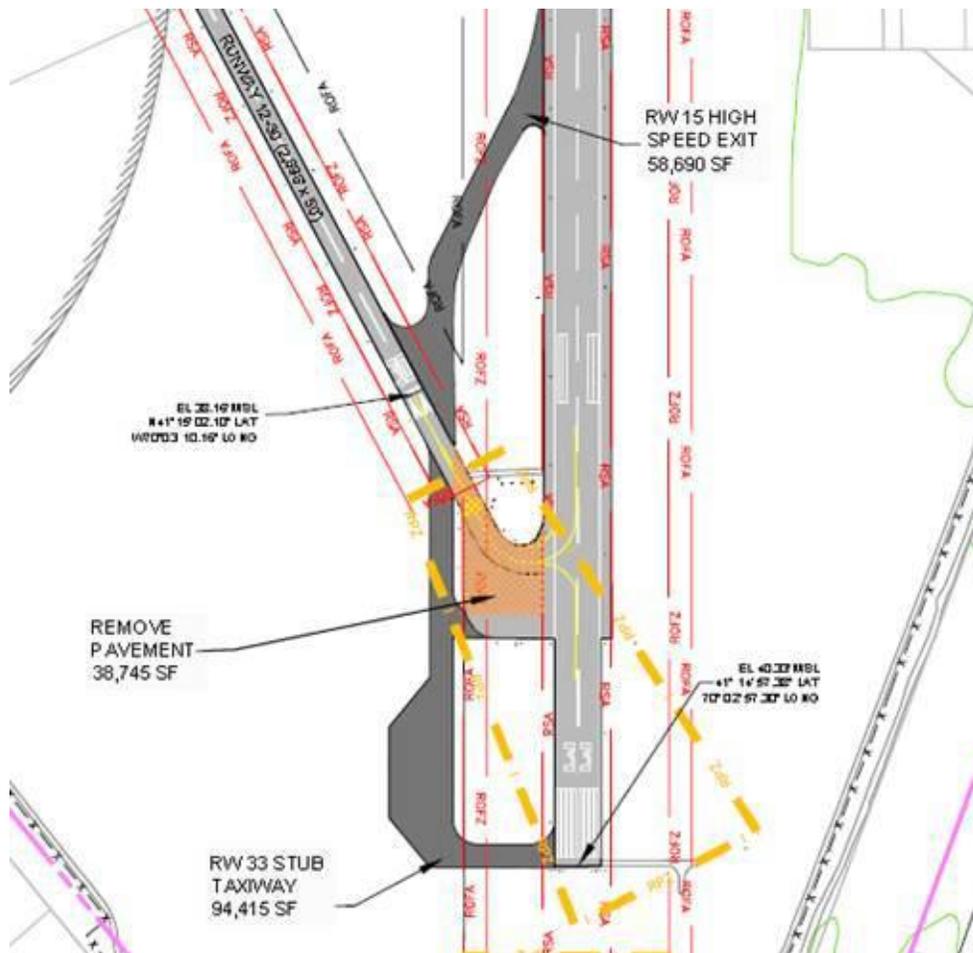


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7.1.7.4 Alternative 4- RW15 High Speed Exit/RW 33 Stub Taxiway and Run-up Pad Combo

Runway 15 High Speed Exit/ 33 Stub Taxiway- Alternative 3 RW15 High Speed Exit/RW 33 End Stub Taxiway and Runup Pad Combo	
Summary: FAA Design Standards recommend a full-length parallel taxiway for non-precision instrument runways as a safety enhancement measure. As a minimum-build alternative, RW15 would benefit from a High Speed exit taxiway at the Runway 33 end that would reduce runway occupancy times. A short stub taxiway to the RW33 end would enable piston engine run-ups, reduce fuel burn and eliminate the risk of back taxiing aircraft for departures.	
Trigger: Medium term recommended based on demand according to FAA AC 150/5300-13A.	Preliminary Cost: \$2.18 Million
Pro: <ul style="list-style-type: none"> Reduces risk of runway incursions and reduces runway occupancy times Meets FAA recommended standards for non-precision instrument RW Consistent w/FAA SRMP recommendations Less cost and impacts than Alt. 1 full parallel 	Con: <ul style="list-style-type: none"> RW15 approaches averaged less than 2% of the total 2014 operations Extensive NEPA/MEPA review required High mitigation ratio requirement for NHESP Significant Environmental impacts

Figure 7-16B Alternative 4- RW15 High Speed Exit/RW 33 End Stub Taxiway and Run-up Pad Combo – NOT RECOMMENDED



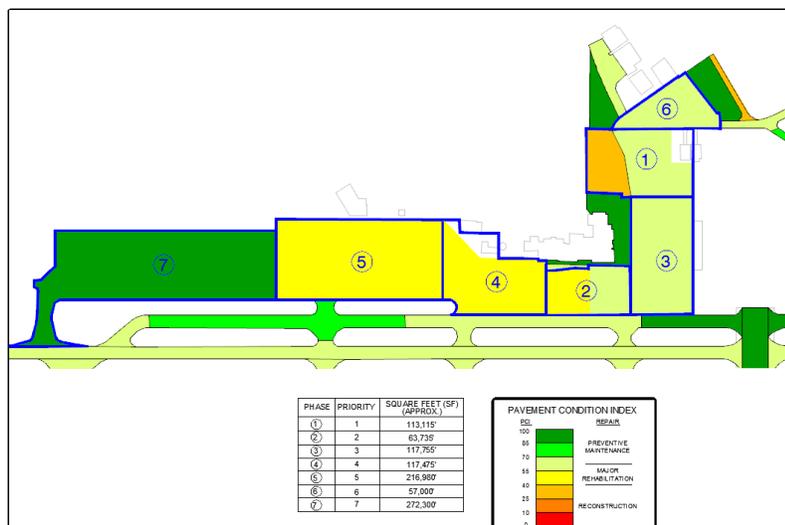


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7.1.8 Safety and Security-Terminal Apron Repaving in up to 7 Phases

Terminal Apron Repaving in 7 Phases (<i>Recommended- Alternate Years</i>)	
<p>Summary: The terminal apron repaving areas are shown as Phases 1-7 in Figure 7-15, some of which are nearing their 20-year design life. These phases are based upon the operational needs of the airport, and combine the MassDOT's PCI Plan into new rehab areas. Although the 2014 MassDOT Crack Seal improvements extended pavement life by approximately 5 years, a portion of Phase 1 may need early action which, if combined with an expanded apron operational area would address the current need for an additional air carrier jet parking spot at the Terminal Building (see also Alternative 7.1.11.1).</p>	
<p>Trigger: Area '1' PCI condition and need for short term air carrier parking position at Terminal Building, while addressing Part 77 tail height constraints (see 7.1.11.1, below)</p>	<p>Preliminary Costs: (Sorted in order of Priority) Phase 1 - \$1.7 million Phase 2 - \$1.03 million Phase 3 - \$1.73 million Phase 4 - \$1.73 million Phase 5 - \$3.02 million Phase 6 - \$945,000 Phase 7 - \$3.74 million</p>
<p>Pro:</p> <ul style="list-style-type: none"> Enhances safety for air carriers FAA AIP eligible Identified on prior CIP Phasing can minimize disruption to airside operations as well as spread costs over multi-year program <p>Affords opportunities for incorporating ramp/electrification/ground power in cooperation w/carbon neutral initiative</p>	<p>Con:</p> <ul style="list-style-type: none"> Construction season to work around peak season and winter conditions \$15.5 million over next ten years Prioritize in context with Financial Plan and all other CIP Projects

Figure 7-17 Terminal Area Apron Repaving Phases ²⁸ - **RECOMMENDED**



²⁸ Graphic modified from Hoyle, Tanner & Associates, Inc. *Pavement Condition Index Map* for Massachusetts Department of Transportation-Aeronautics Division, January 2013. This does NOT include 2014 MassDOT Crack Seal improvements which extend pavement life 5-7 years.



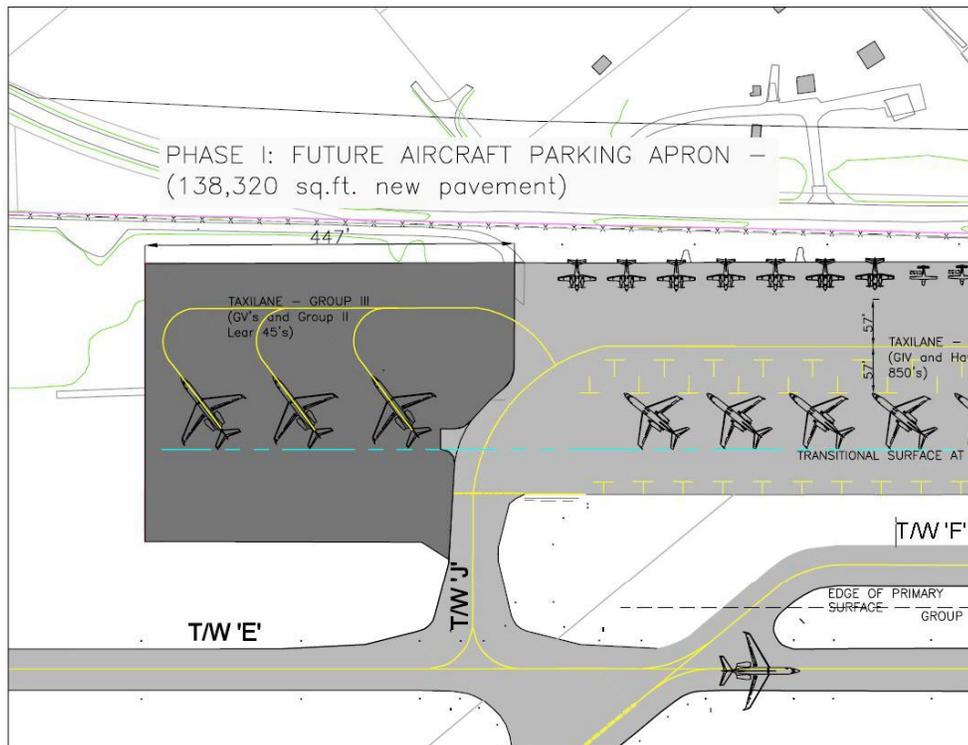
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7.1.9 Safety and Security -South Apron Redesign/Expansion

7.1.9.1 South Apron Redesign/Partial Build –Phase 1

South Apron Redesign/Partial Build - Phase 1 (Recommended: Year 3)	
<p>Summary: A 447-foot extension of the South Apron would enable a Group III parking area for aircraft with large wingspans. This would be a “Phase 1” option that would address current taxilane constraints on the South Ramp by segregating aircraft into smaller Group II and quick-turn parking on the existing apron, with long-term larger wingspans on the new extension. It would not, however, meet FAA Design Standards for average day/peak month aircraft parking demand for Nantucket’s fleet mix.</p>	
<p>Trigger: Current Need per AC 150/5300-13A CHG 1, Section 404.a.(2) and (4) and b.(1), plus Table 4-1</p>	<p>Preliminary Cost: \$1.8 Million</p>
<p>Pro:</p> <ul style="list-style-type: none"> • Meets FAA taxilane standards for increased wingspans • Reduces ramp congestion • Enhances operational safety • Can be built in phases • Less expensive • Enables different segments of apron to be used by different wingspan aircraft • Maintains current revenue stream from larger jets • Phasing allows for FAA budget conformity 	<p>Con:</p> <ul style="list-style-type: none"> • NEPA/MEPA review required • Requires Environmental permitting/mitigation • Potential increased exposure to aircraft noise to abutters requires mitigation • Construction cost • Lower priority for FAA funding • Prioritize in context with Financial Plan and all other CIP Projects

Figure 7-18 South Apron Redesign/Partial Build - Phase 1 - **RECOMMENDED**



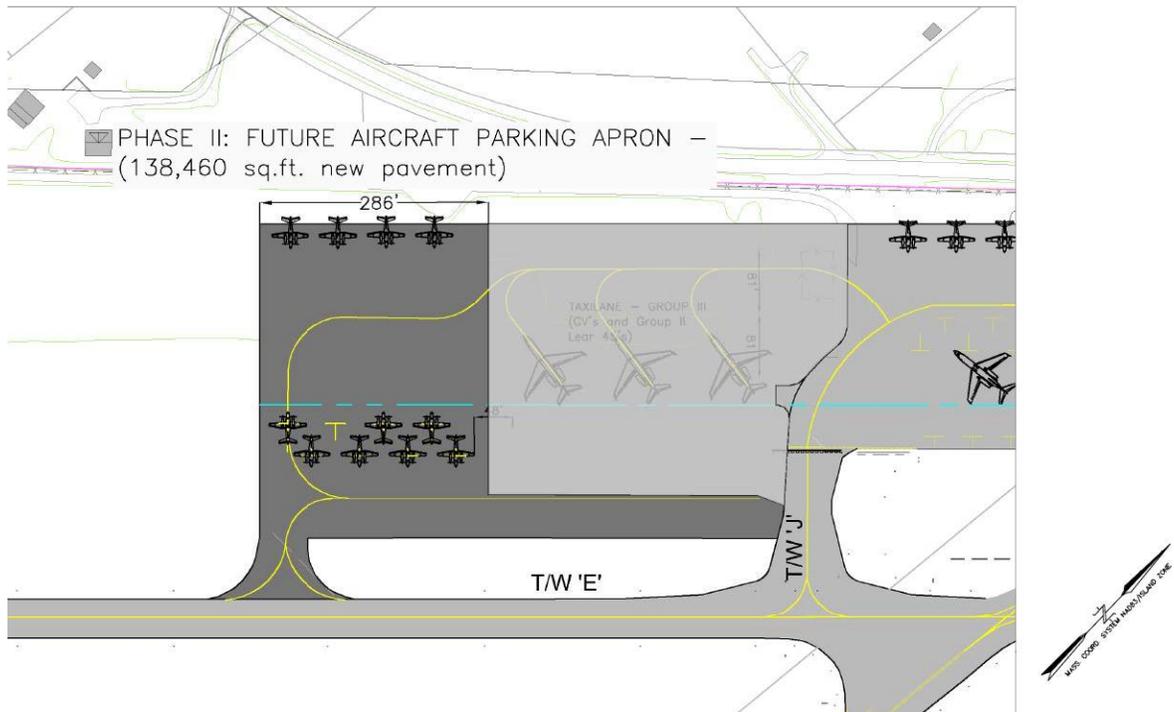


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7.1.9.2 South Apron Redesign/Partial Build Expansion– Phase 2

South Apron Redesign/Partial Build Expansion- Phase 2 (Recommended: Year 7)	
<p>Summary: A 286-foot extension of the South Apron would enable a Group III parking area for aircraft with large wingspans. This would be a “Phase 2” expansion that would address current taxiway constraints on the South Ramp by segregating aircraft into smaller Group II and quick-turn parking on the existing apron, with long-term larger wingspans on the new extension. It would not, however, meet FAA Design Standards for average day/peak month aircraft parking demand for Nantucket’s fleet mix.</p>	
<p>Trigger: Current Need per AC 150/5300-13A CHG 1, Section 404.a.(2) and (4) and b.(1), plus Table 4-1</p>	<p>Preliminary Cost: \$1.8 Million</p>
<p>Pro:</p> <ul style="list-style-type: none"> • Meets FAA taxiway standards for increased wingspans • Reduces ramp congestion • Enhances operational safety • Can be built in phases • Less expensive • Enables different segments of apron to be used by different wingspan aircraft • Maintains current revenue stream from larger jets • Phasing allows for FAA budget conformity 	<p>Con:</p> <ul style="list-style-type: none"> • NEPA/MEPA review required • Requires Environmental permitting/mitigation • Potential increased exposure to aircraft noise to abutters requires mitigation • Construction cost • Lower priority for FAA funding • Prioritize in context with Financial Plan and all other CIP Projects

Figure 7-19 South Apron Redesign/Partial Build - Phase 2 - **RECOMMENDED**



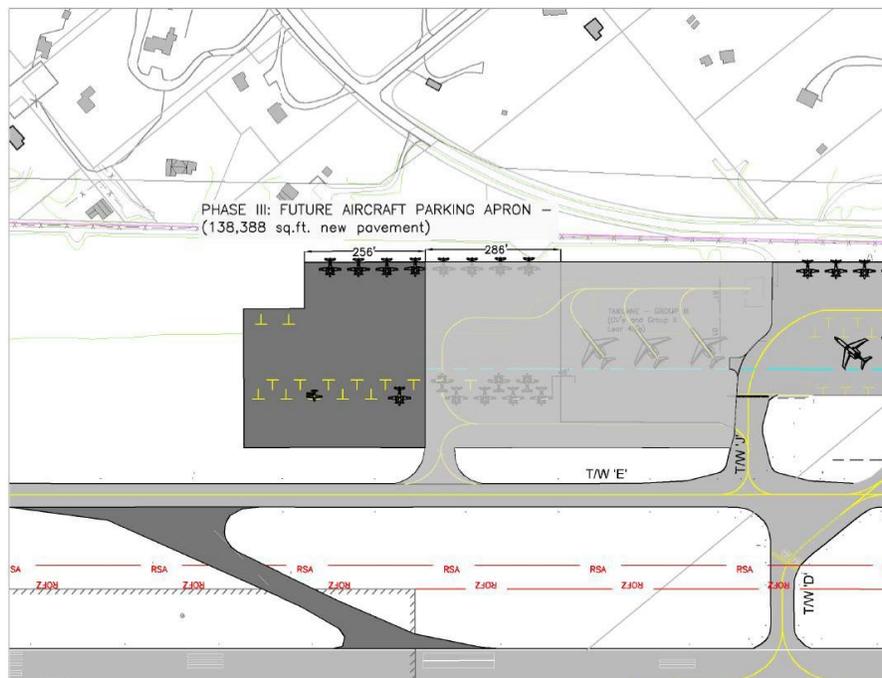


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7.1.9.3 South Apron Redesign/Partial Build Expansion– Phase 3

South Apron Redesign/Partial Build Expansion- Phase 3 (Recommended: Year 12)	
<p>Summary: A 300 (approx.) foot extension of the South Apron would enable a Group III parking area for aircraft with large wingspans. This would be a “Phase 3” expansion that would address current taxilane constraints on the South Ramp by segregating aircraft into smaller Group II and quick-turn parking on the existing apron, with long-term larger wingspans on the new extension. It would not, however, meet FAA Design Standards for average day/peak month aircraft parking demand for Nantucket’s fleet mix.</p>	
<p>Trigger: Current Need per AC 150/5300-13A CHG 1, Section 404.a.(2) and (4) and b.(1), plus Table 4-1</p>	<p>Preliminary Cost: \$1.8 Million</p>
<p>Pro:</p> <ul style="list-style-type: none"> • Meets FAA taxilane standards for increased wingspans • Reduces ramp congestion • Enhances operational safety • Can be built in phases • Less expensive • Enables different segments of apron to be used by different wingspan aircraft • Maintains current revenue stream from larger jets • Phasing allows for FAA budget conformity 	<p>Con:</p> <ul style="list-style-type: none"> • NEPA/MEPA review required • Requires Environmental permitting/mitigation • Potential increased exposure to aircraft noise to abutters requires mitigation • Construction cost • Lower priority for FAA funding • Prioritize in context with Financial Plan and all other CIP Projects

Figure 7-20 South Apron Redesign/Partial Build - Phase 3 - **RECOMMENDED**



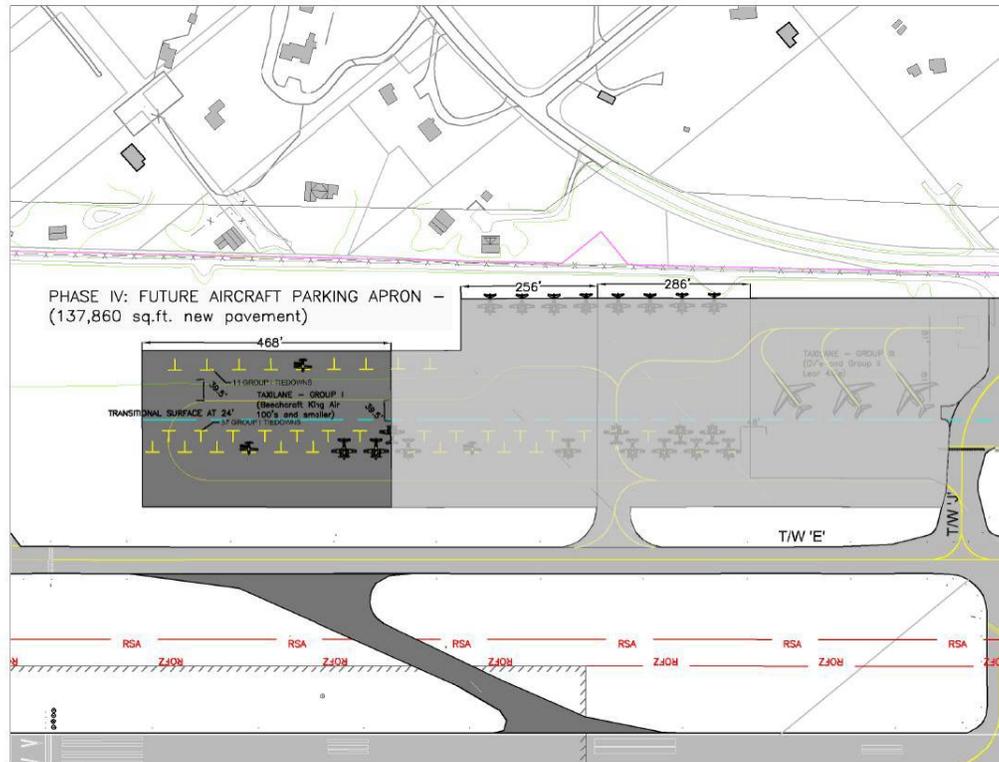


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7.1.9.4 South Apron Redesign/Partial Build Expansion– Phase 4

South Apron Redesign/Partial Build Expansion- Phase 4 (Recommended: Year 14)	
<p>Summary: A 468' (approx.) foot extension of the South Apron would enable additional Group I aircraft parking. This would be a "Phase 4" expansion that would address current taxiway constraints on the South Ramp by segregating aircraft into smaller Group I/II and quick-turn parking on the existing apron, with long-term larger wingspans on the new extension. It would also meet FAA Design Standards for average day/peak month aircraft parking demand for Nantucket's fleet mix.</p>	
<p>Trigger: Current Need per AC 150/5300-13A CHG 1, Section 404.a.(2) and (4) and b.(1), plus Table 4-1</p>	<p>Preliminary Cost: \$1.8 Million plus Potential Noise Mitigation Feature</p>
<p>Pro:</p> <ul style="list-style-type: none"> Meets FAA taxiway standards for increased wingspans Reduces ramp congestion Enhances operational safety Can be built in phases Enables noise mitigation feature to be added Enables different segments of apron to be used by different wingspan aircraft Maintains current revenue stream from larger jets Phasing allows for FAA budget conformity 	<p>Con:</p> <ul style="list-style-type: none"> NEPA/MEPA review required Requires Environmental permitting/mitigation Potential increased exposure to aircraft noise to abutters requires mitigation feature Construction cost Lower priority for FAA funding Prioritize in context with Financial Plan and all other CIP Projects

Figure 7--21 South Apron Redesign/Partial Build - Phase 4 - **RECOMMENDED**



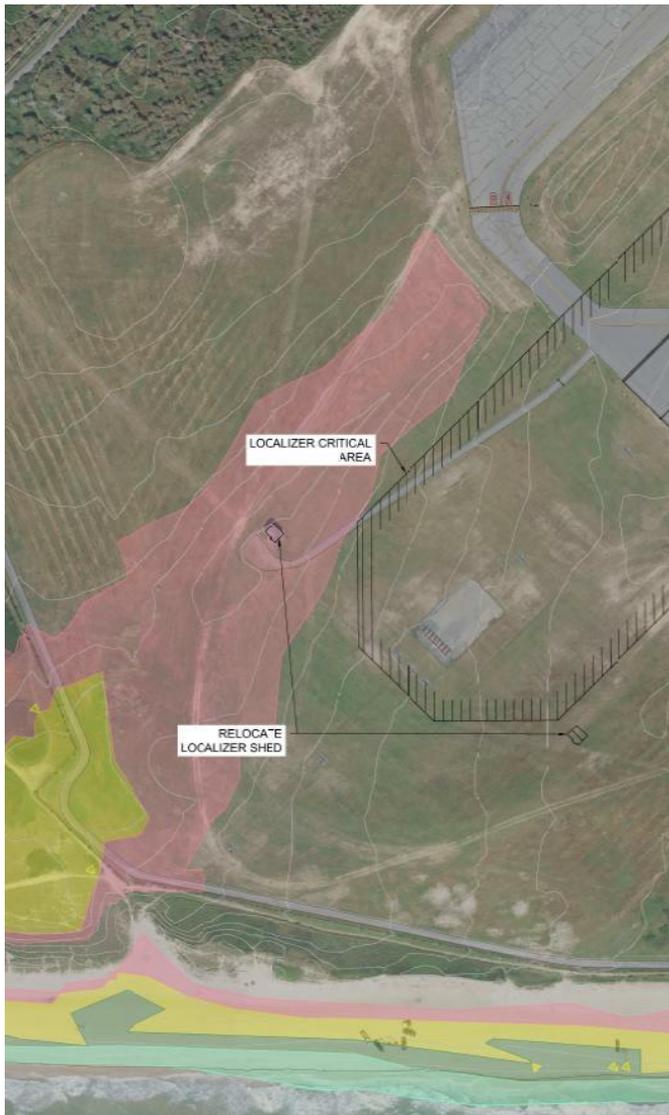


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7.1.10 Safety and Security- RW24 DME/Localizer Facility Relocation – Coastal Flood Hazard Zone

DME/Localizer Facility Relocation (Pending FAA Resiliency Funding)	
<p>Summary: The FAA Flood should consider relocation of the RW24 DME/LOC shelter to eliminate the high risk of coastal flood damage and to enhance resiliency of the Airport's Primary ILS system.</p>	
<p>Trigger: Immediate – Shelter located within CAT IV Hurricane Tidal Surge Zone.</p>	<p>Preliminary Cost: \$750,000 (FAA Expense)</p>
<p>Pro:</p> <ul style="list-style-type: none"> • Avoids loss of RW 24 ILS Approach after major hurricane, when most needed for emergency access • FAA Facility eligible for FAA resiliency funding 	<p>Con:</p> <ul style="list-style-type: none"> • Requires FAA to add resiliency funding to their internal budget • Not under Airport control • High potential for RW24 ILS Outage

Figure 7--23 FAA Relocate RW24 Localizer Shed - **RECOMMENDED**



LEGEND	
(HURRICANE SURGE-WORSE CASE FLOODING)	
CATEGORY I	
CATEGORY II	
CATEGORY III	
CATEGORY IV	

Source: MassGIS HURR_INUN_ZONES_P OLY, Oct. 2013.

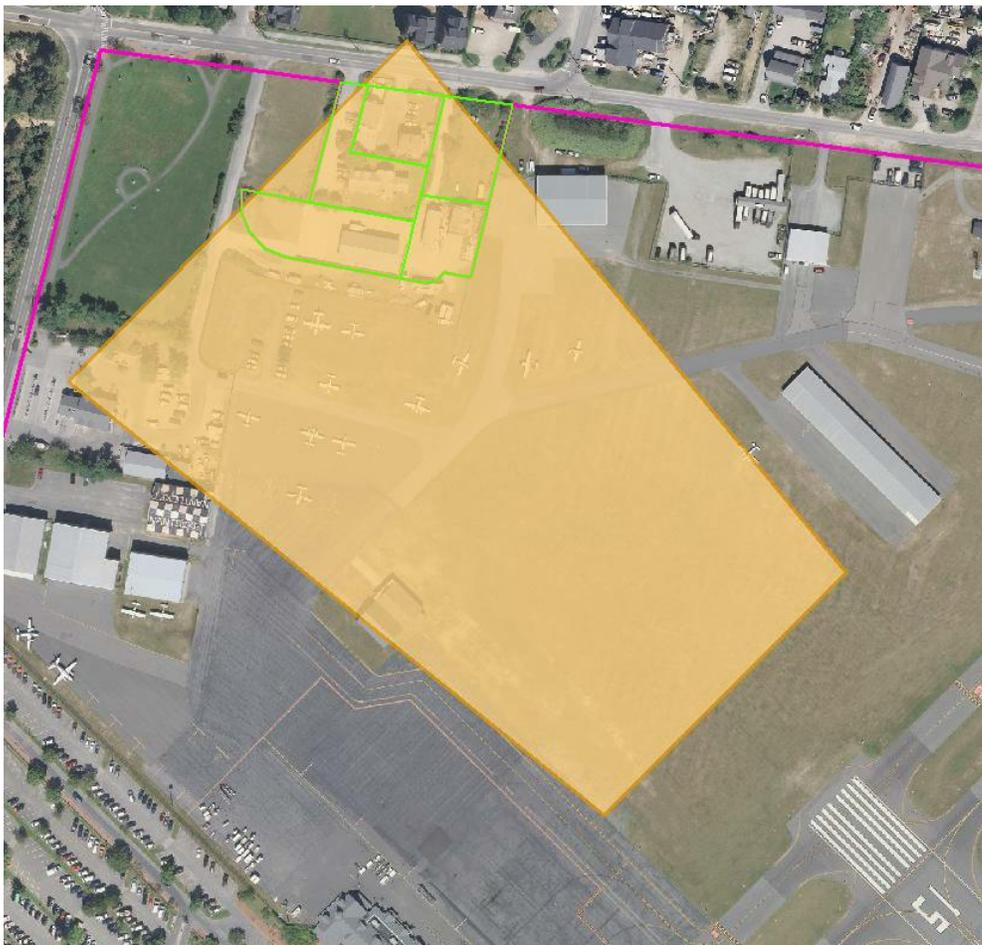




7.1.11 Safety and Security - RW 15 Runway Protection Zone (RPZ)

Create RW 15 Protection Zone (Recommended: Year 1)	
<p>Summary: The Runway 15 RPZ overlays 1.7 acres of non-Airport property, which creates a requirement for the Airport to promote restrictions on incompatible land uses, whose purpose is to protect people and property on the ground. This can be achieved via a zoning overlay district that would restrict construction of new residences, schools, churches, hospitals, fuel storage facilities, or electrical substations, per FAA Standards. The FAA expects that the airport takes all possible measures to protect against and remove or mitigate any incompatible land uses.</p>	
<p>Trigger: Compliance with FAA AC 150/5300-13A, Sections 310.a. and b.; Interim Guidance on Land Uses within a Runway Protection Zone (Sept. 2012); & Interim Guidance on Land Uses within a Runway Protection Zone. Table 1.</p>	<p>Preliminary Cost: Minimal (approx. \$5,000)</p>
<p>Pro:</p> <ul style="list-style-type: none"> • Requires coordination and support of NPEDC and Board of Selectmen • Enhances protection of people and property on the ground • Promotes compatible land use within RPZ, per FAA Standards 	<p>Con:</p> <ul style="list-style-type: none"> • Requires Town Meeting vote

Figure 7--24 RW 15 RPZ Overlay Zone- **RECOMMENDED**





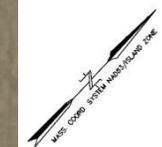
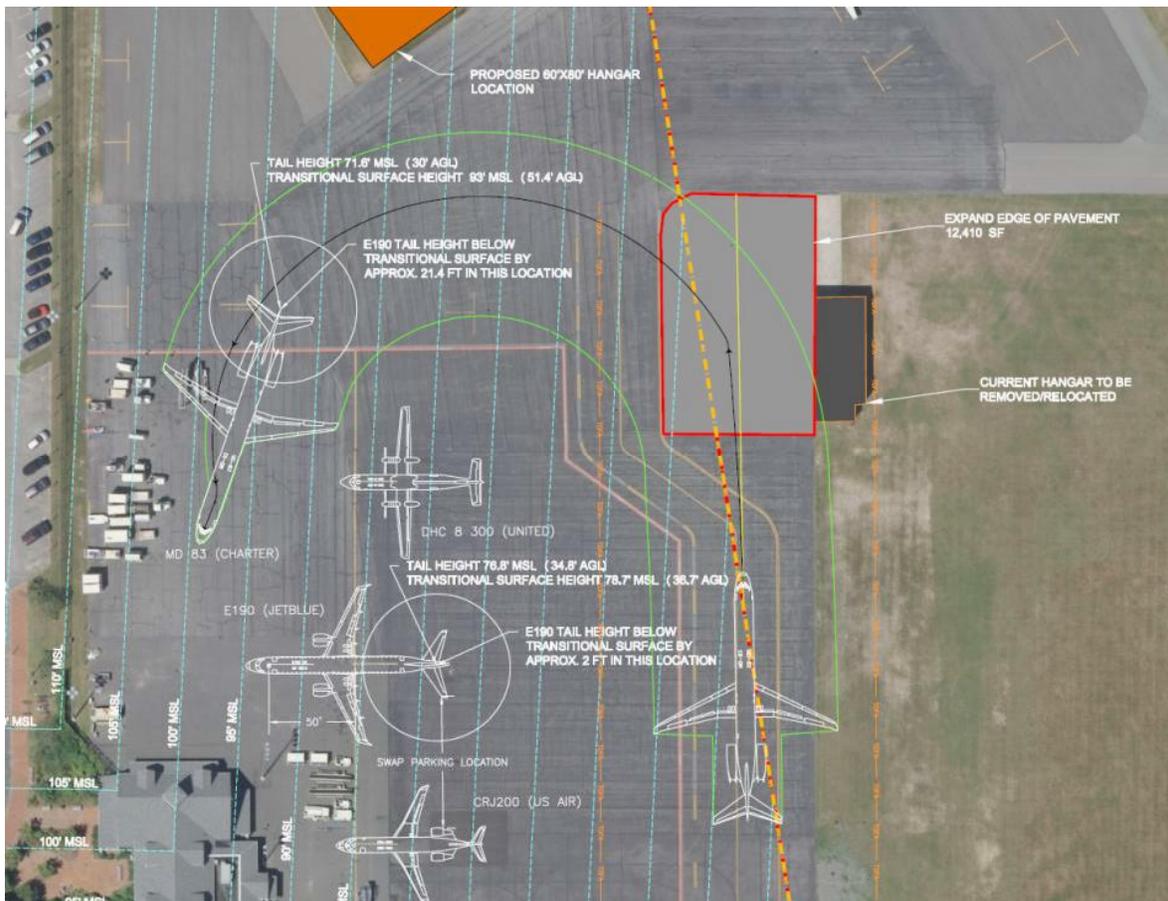
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7.1.12 Safety and Security - North Ramp Part 77 Aircraft Tail Heights

7.1.12.1 Alternative 1- Create New Parking Position

North Ramp Part 77 Aircraft Tail Heights- Alternative 1 Create New Parking Position (<i>Recommended: Year 1</i>)	
<p>Summary: Tail heights of E-190 aircraft parked on the north apron can penetrate the RW 15-33 Part 77 Transitional Surface by up to 7 feet. A new parking position could be created at the northerly end of the Terminal Building which would enable E-190's and other larger aircraft to park at the Terminal. This could be achieved in combination with the reconstruction of Apron Area 1.</p>	
<p>Trigger: Immediate due to non-compliance of aircraft tail height per CFR FAR Part 77, <i>Safe Efficient Use, and Preservation of the Navigable Airspace, Sub Part C, section 77.17.</i></p>	<p>Preliminary Cost: Combine with pavement reconstruction of Terminal Apron Area 1. Preliminary Cost = \$1.7 million (see Safety & Security 7.1.7, Phase 1).</p>
<p>Pro:</p> <ul style="list-style-type: none"> Complies with Part 77 Regulations Combines needed reconstruction of Area '1' of North Ramp with eventual relocation of Hangars 5 & 6 outside of RPZ Straightens and completes Taxiway H 	<p>Con:</p> <ul style="list-style-type: none"> Requires modified aircraft parking placements Requires coordination of leases for Hangars 5 & 6 with future apron reconstruction project Loss of GA hangars and two tiedowns

Figure 7-25 Alternative 1- Create New Parking Position - **RECOMMENDED**



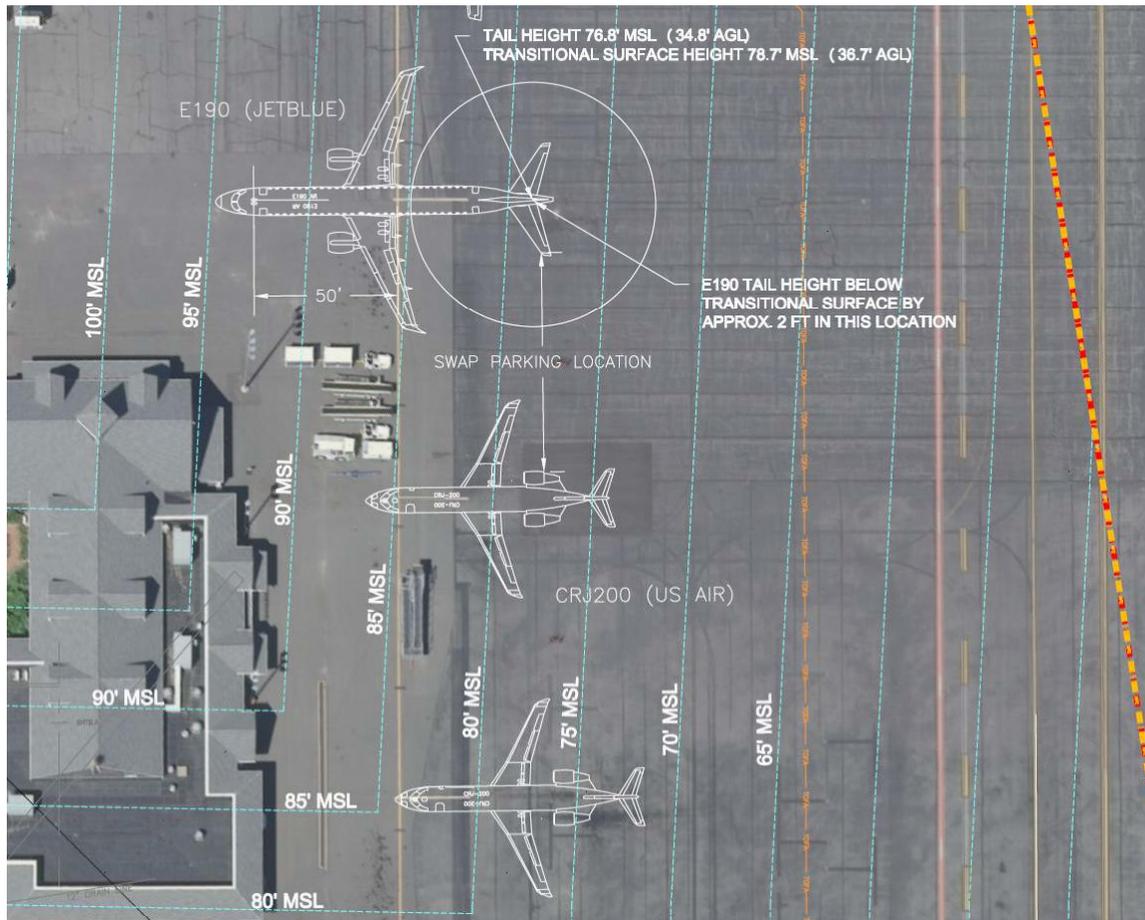


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7.1.12.2 Alternative 2- Swap Parking Positions

North Ramp Part 77 Aircraft Tail Heights- Alternative 2 Swap Parking Positions (<i>Pending FAA Mandate</i>)	
<p>Summary: Tail heights of E-190 aircraft parked on the north apron can penetrate the RW 15-33 Part 77 Transitional Surface by up to 7 feet. The E-190 and CRJ-200 can exchange parking positions, allowing the E-190's tail height to be positioned below the Transitional Surface.</p>	
<p>Trigger: Immediate due to non-compliance of aircraft tail height per CFR FAR Part 77, <i>Safe Efficient Use, and Preservation of the Navigable Airspace, Sub Part C, section 77.17.</i></p>	<p>Preliminary Cost: \$5,000 for pavement markings</p>
<p>Pro:</p> <ul style="list-style-type: none"> Complies with Part 77 Regulations No construction costs 	<p>Con:</p> <ul style="list-style-type: none"> Requires modified aircraft parking placements

Figure 7--26 Alternative 2- Swap Parking Positions - **RECOMMENDED**





7.1.13 Safety and Security- Perimeter Security and IT

7.1.13.1 Vehicle and Pedestrian Access Points

Perimeter Security – Vehicle and Pedestrian Access Points (<i>Recommended: Year 5</i>)	
Summary: Upgrade and integrate remaining access gates and doors, on flight line, into existing central security system.	
Trigger: FAA AC 150-5300-13A, Section 211.a. through d. and FAR Part 139 Certification requirements.	Preliminary Cost: \$300,000
Pro: <ul style="list-style-type: none"> • Central control and administration • Positive access control • Consolidate access cards/keys to a single system • Simplify and streamline access badging • Wildlife protection 	Con: <ul style="list-style-type: none"> • High initial costs

7.1.13.2 Alternative 1- Fiber Optic Sensor Active Intrusion Detection

Active Intrusion Detection Measures – Alternative 1 – Fiber Optic Sensors (<i>Recommended: Year 10</i>)	
Summary: Implement active intrusion detection measures for physical perimeter fence – Fiber optic sensors for detection.	
Trigger: FAA AC 150-5300-13A, Section 211.a. through d. and FAR Part 139 Certification requirements.	Preliminary Cost: \$500,000
Pro: <ul style="list-style-type: none"> • Active security and detection • Constant detection without human intervention • Cover gaps in perimeter surveillance • Systems can serve dual-purpose as high-speed communications pathways • Virtually maintenance-free • Wildlife protection 	Con: <ul style="list-style-type: none"> • High initial costs • Reliability issues • Potential false alarms



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7.1.13.3 Alternative 2- Video Analytic Active Intrusion Detection

Active Intrusion Detection Measures – Alternative 2 – Video Analytics (<i>Not Recommended</i>)	
Summary: Implement active intrusion detection measures for physical perimeter fence – video analytics.	
Trigger: FAA AC 150-5300-13A, Section 211.a. through d. and FAR Part 139 Certification requirements.	Preliminary Cost: \$500,000
Pro: <ul style="list-style-type: none"> • Active security and detection • Constant detection without human intervention • Cover gaps in perimeter surveillance • Increase situational awareness • Wildlife protection 	Con: <ul style="list-style-type: none"> • High initial costs • Time to “train” system for ambient conditions • Reliability issues

Figure 7--27 Intrusion Detection/ Video Analytics- NOT RECOMMENDED



7.1.13.4 Upgrade IT – Terminal to SRE Building

New Communications Pathways – Terminal to SRE Building (<i>Recommended: Year 5</i>)	
Summary: Upgrade existing Backbone CAT5 and 2 Mbps wireless voice/data link system within Main Terminal and to SRE and ARFF Building with high-capacity fiber optic or modern wireless system.	
Trigger: FAA AC 150-5300-13A, Section 211.a. through d. FCC and TSA mandated requirements, existing system failure.	Preliminary Cost: \$10,000
Pro: <ul style="list-style-type: none"> • Enhance communications to SRE building • Provide path for security data to central system • Relatively inexpensive to implement • Simplified setup and configuration • Low maintenance and minimal support 	Con: <ul style="list-style-type: none"> • None



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7.1.13.5 Consolidate IT Equipment- Main Terminal

Consolidate Communications Facilities – Main Terminal (Recommended: Year 5)	
Summary: Move and consolidate all communications and security head-end equipment to the Security Room (Room 008).	
Trigger: FAA AC 150-5300-13A, Section 211.a. through d. FCC and TSA mandated requirements, existing system failure.	Preliminary Cost: \$100,000
Pro: <ul style="list-style-type: none"> • Single location for all data/security systems • Provide clean, environmentally controlled space for all equipment • Access controlled equipment space 	Con: <ul style="list-style-type: none"> • Cutover and system downtime will need to be closely coordinated • Initial, upfront cost

7.1.13.6 Information Technology Systems

Consolidate FIDS Systems (Recommended: Year 1)	
Summary: Consolidation of several stand-alone FIDS systems to a single server or set of servers to provide redundancy and backup.	
Trigger: FAA AC 150-5300-13A, Section 211.a. through d. FCC and TSA mandated requirements, existing system failure; and as a visual aid for ADA compliance.	Preliminary Cost: \$25,000
Pro: <ul style="list-style-type: none"> • Enhanced FIDS reliability and operation • Integrate FIDS with new Public Address System for automated flight announcements • Provide backup and failover • Simplified setup and configuration • Low maintenance and minimal support 	Con: <ul style="list-style-type: none"> • Brief system outage during setup • Tie-in to Passur feed



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7.1.13.7 Upgrade Public Address (PA) System

New Public Address System (Recommended: Year 1)	
<p>Summary: The current public address system is outdated and lacks many of the requirements set for the by current FAA and TSA standards.</p>	
<p>Trigger: FAA AC 150-5300-13A, Section 211.a. through d. FCC and TSA mandated requirements, existing system failure; and as an audio aid to meet ADA compliance.</p>	<p>Preliminary Cost: \$350,000</p>
<p>Pro:</p> <ul style="list-style-type: none"> Easily manage, store and playback TSA-required automated safety and security announcements Provide mass notification for public safety announcements Integrate with FIDS automated flight announcements Low maintenance and minimal support 	<p>Con:</p> <ul style="list-style-type: none"> Brief system outage during setup Initial upfront cost

7.1.13.8 Upgrade Telephone Airport Telephone System - RECOMMENDED

Upgrade Voice Telephone System (Recommended: Year 5)	
<p>Summary: The telephone systems at the Airport do not provide the Airport administrative staff or tenants all the functionality that they require and need to be improved.</p>	
<p>Trigger: Existing system failure.</p>	<p>Preliminary Cost: \$300,000</p>
<p>Pro:</p> <ul style="list-style-type: none"> Provide simplified digital call communication to all Airport employees Eliminate costly Verizon CENTREX lines and move to all digital PRI's – potential savings of several thousand dollars per month in reoccurring fees Augment communications with unified messaging, email integration, and radio communications 	<p>Con:</p> <ul style="list-style-type: none"> Brief system outage during setup Initial upfront cost



7.2 Capacity/Terminal Airfield Concepts

7.2.1 Capacity/Terminal Airfield Concepts - Terminal Secure Hold Room

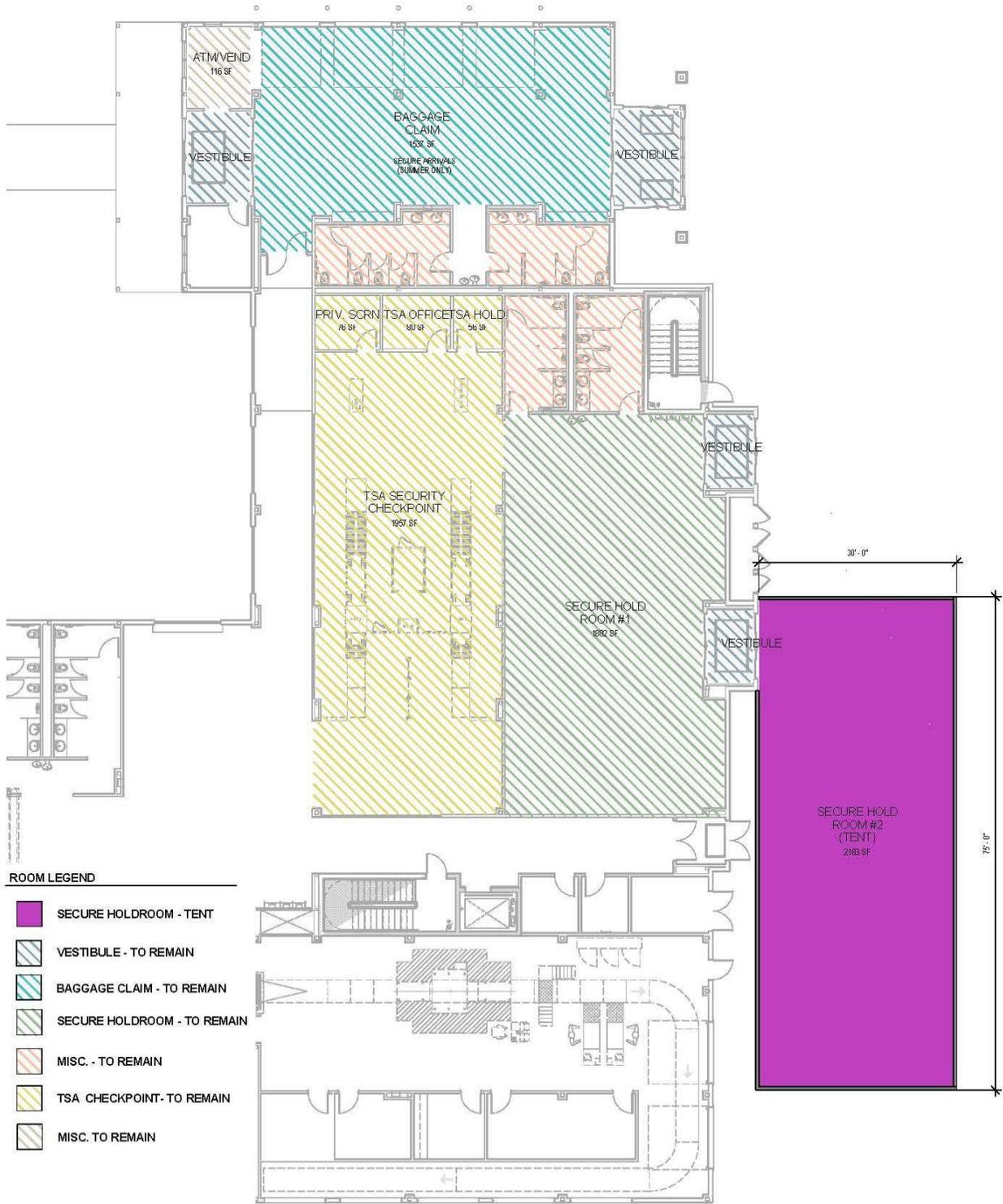
7.2.1.1 Alternative 1- Seasonal Tent for Temporary Hold Room - RECOMMENDED

Terminal Secure Hold Room – Alternative 1 Temporary Tent Structure (Recommended: Year 3 - ASMP)	
<p>Summary: The secure hold room is often at or exceeding its rated occupancy. Expansion to meet demand and code requirements needs to be addressed. A potential option is the use of a seasonal tent structure as a temporary hold room during summer months. A temporary tent was used at ACK during construction of the terminal expansion. No new restrooms or expanded restrooms planned in this concept.</p> <ul style="list-style-type: none"> • 2,183 sq ft temporary tent for hold room 	
<p>Trigger: Immediate per International Building Code, Table 1004.1.</p>	<p>Preliminary Cost: \$20,000+</p>
<p>Pro:</p> <ul style="list-style-type: none"> • Addresses seasonal congestion • Has been done previously • Low cost • Allows arriving passengers to return to main terminal 	<p>Con:</p> <ul style="list-style-type: none"> • Short-term solution • Expansion into air side • No significant increase in TSA screening area. • No increased restroom space or A/C • Need PA system • Need boarding pass collection booth • Reduced airside parking area



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Figure 7--28 Alternative 1- Temporary Tent Structure - **RECOMMENDED**





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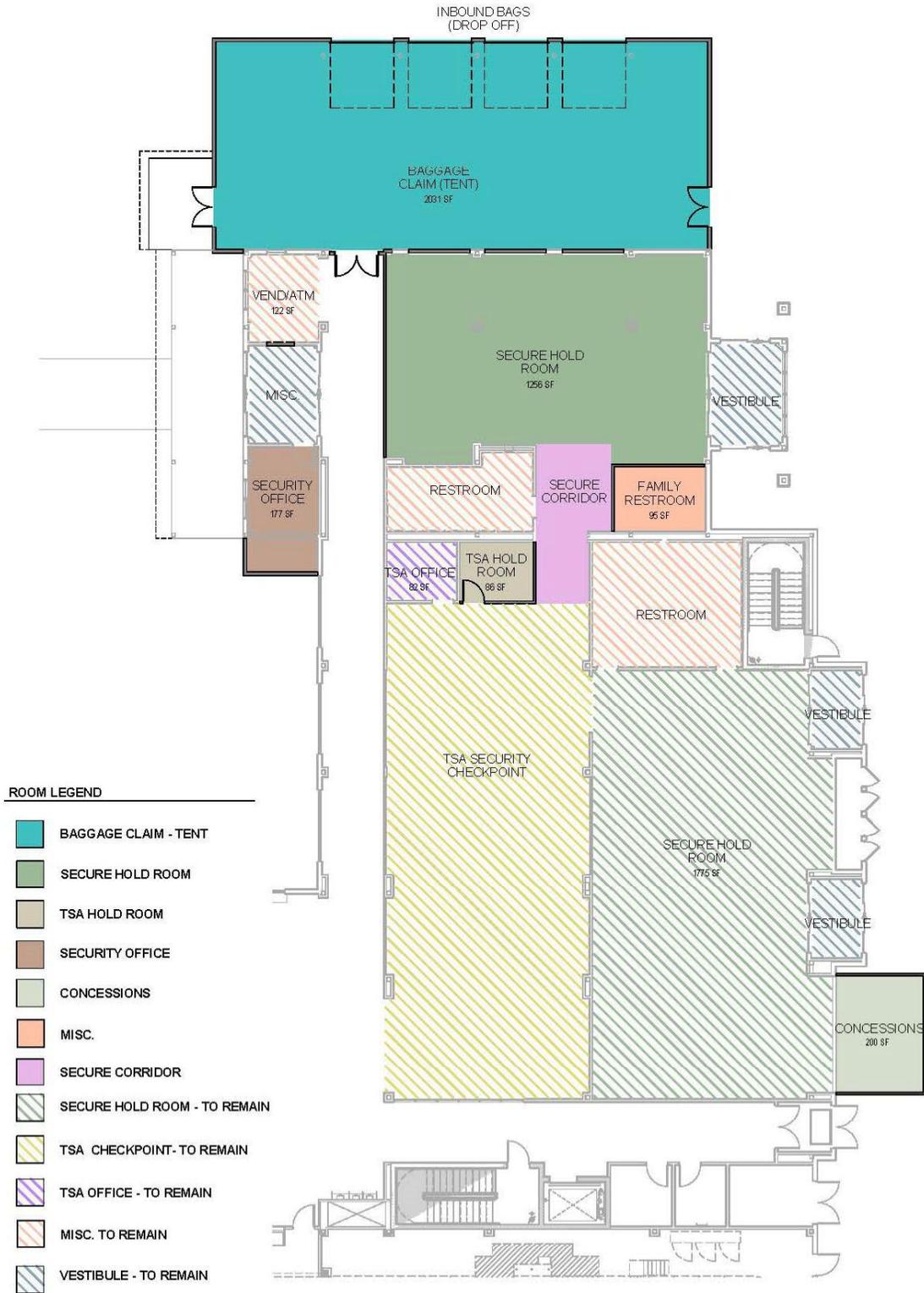
7.2.1.2 Alternative 2- Convert Bag Claim to Second Hold Room/ Use Temporary Tent for Seasonal Baggage Claim

Terminal Secure Hold Room – Alternative 2 Temporary Tent Structure/Flat-Top Re-use/Building Renovations (<i>Not Recommended</i>)	
<p>Summary: The secure hold room is often at or exceeding capacity during peak summer weekends. Expansion to meet demand and code requirements needs to be addressed. Converting the existing Baggage Claim area into a secure hold room space would alleviate the current capacity issues. A temporary tent structure (or re-use of flat-top) could then be added during the peak summer months for baggage claim.</p> <p>Terminal building improvements include:</p> <ul style="list-style-type: none"> • 2,183 sq ft temporary tent for baggage claim • 1,250 sq ft expanded secure hold room space • 168 sq ft of TSA office/hold room • 200 sq ft of new concession space (new bump-out) • New family restroom • Improved passenger flow between secure hold rooms • 177 sq ft of Airport Security Office 	
<p>Trigger: Immediate per International Building Code, Table 1004.1.</p>	<p>Preliminary Cost: \$20,000+ (tent/flat-top) + \$1.8 million permanent renovations/expansions</p>
<p>Pro:</p> <ul style="list-style-type: none"> • Addresses seasonal congestion • Has been done previously • Low cost • Create new secure side concessions • Enlarge Airport Security Office space 	<p>Con:</p> <ul style="list-style-type: none"> • Short-term solution • Reduced 1 gender restroom to family restroom in order to provide smoother passenger flow between hold rooms. • Level of service • Appearance • Effect on North Ramp airline GSE area



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Figure 7--29 Alternative 2- Convert Bag Claim to Second Secure Hold Room/Use Temporary Tent Structure for Seasonal Bag Claim –NOT RECOMMENDED





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7.2.1.3 Alternative 3- Convert Baggage Claim to Second Hold Room, Construct New Permanent Baggage Claim

Terminal Secure Hold Room – Alternative 3 Baggage Claim as Second Hold Room (Recommended: Year 10)	
<p>Summary: The secure hold room is at or often exceeding capacity during peak summer weekends. Expansion to meet demand and code requirements needs to be addressed. Converting the existing Baggage Claim area into a secure hold room space would alleviate the current capacity issues. A new permanent structure would then be constructed to the north of the existing baggage claim to serve as the new baggage claim area. New construction would allow for the potential installation of a baggage belt system to alleviate crowding during the summer peak months.</p> <ul style="list-style-type: none"> • 1,000 sq ft of new secure holdroom (convert existing baggage claim to holdroom) • 2,000 sq ft for new baggage claim • 300 sq ft of new secure concession area • 150 sq ft for new security office • 237 sq ft for new family restrooms • 93 sq ft for new storage • 152 sq ft for new security office • 284 sq ft for TSA offices 	
<p>Trigger: Immediate per International Building Code, Table 1004.1.</p>	<p>Preliminary Cost: \$5 Million estimated</p>
<p>Pro:</p> <ul style="list-style-type: none"> • Addresses seasonal congestion • Long-Term Solution • Addresses secure side concession needs • Address increased secure side restroom facility needs • Allows passengers to exit baggage claim and continue down non-secure corridor back to main terminal area • Expanded restroom capacity. 	<p>Con:</p> <ul style="list-style-type: none"> • Higher Costs • No significant increase in TSA screening area. • Effect on North Ramp airline GSE area



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Figure 7-30 Alternative 3 - Baggage Claim as Second Hold Room and Construct New Permanent Bag Claim – **RECOMMENDED** (Year 10)





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7.2.1.4 Alternative 4- Renovation/Expansion

Terminal Secure Hold Room – Alternative 4 Complete Renovation/Expansion (Recommended: Year 20)	
<p>Summary: Complete renovation and expansion of existing building. Allows for all space needs to be met per 2025 forecast.</p> <ul style="list-style-type: none"> • 830 sq ft of secure holdroom (convert existing baggage claim to holdroom) • 2,000 sq ft of new baggage claim • 375 sq ft of new secure concession area • 750 sq ft of additional TSA screening space • 750 sq ft of additional secure holdroom space. • 322 sq ft of new baggage claim service • 360 sq ft of new TSA ancillary space • 178 sq ft of Airport Security office space • 600 sq ft of new inbound passenger corridor space • 600 sq ft of new restrooms. 	
<p>Trigger: Immediate per International Building Code, Table 1004.1.</p>	<p>Preliminary Cost: +\$8.0 Million (New construction + Renovation) estimated</p>
<p>Pro:</p> <ul style="list-style-type: none"> • Addresses seasonal congestion • Long-Term Solution • Adds holdroom space • Adds concession space • Adds TSA space • Adds Airport Security Office space • Expanded restroom capacity 	<p>Con:</p> <ul style="list-style-type: none"> • Highest Cost of all alternatives • Effect on North Ramp airline GSE area



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Figure 7--31 Alternative 4- Complete Renovation/Expansion – **RECOMMENDED** (Year 20)





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7.2.2 Capacity/Airfield Concepts- Air Carrier Bypass Taxiway/Hold Areas

Air Carrier Bypass Taxiway/Hold Area (Recommended: Year 7)	
<p>Summary: Departing passenger jets often receive Air Traffic ground holds due to weather problems at NYC or DC airports. This causes parking issues at ACK when the aircraft must leave the gate, but there is no room on the airfield for temporary parking. FAA AC 150/5300-13A, Sections 410 and 412 recommend designs for Bypass Taxiways and Holding Bays to address these congestion issues. Since a Bypass Taxiway serves both functions and can be built at less cost with less paved area, it is a viable option for Nantucket.</p>	
<p>Trigger: Current peak flow departure delays</p>	<p>Preliminary Cost: \$400,000 (x 2)</p>
<p>Pro:</p> <ul style="list-style-type: none"> Addresses safety and congestion issues Avoids bottlenecks when preceding aircraft is not ready for takeoff and blocks access to runway Provides flexibility to Air Traffic Controllers Minimizes fuel burn and exhaust from idling aircraft 	<p>Con:</p> <ul style="list-style-type: none"> Environmental permitting Cost (95% FAA/MassDOT eligible)

Figure 7--32 RW 6 – Air Carrier Bypass Taxiway/Hold Area - **RECOMMENDED**

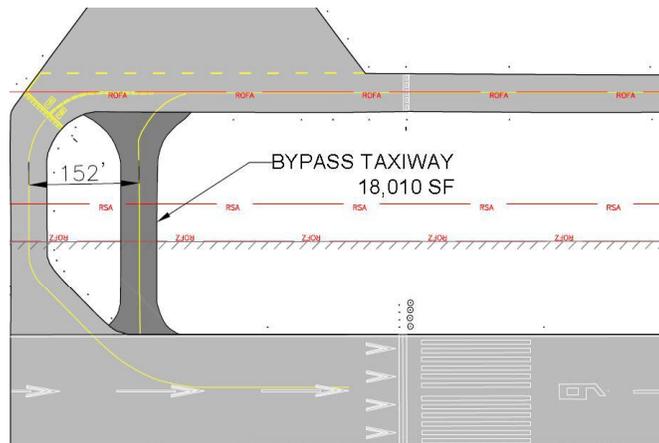
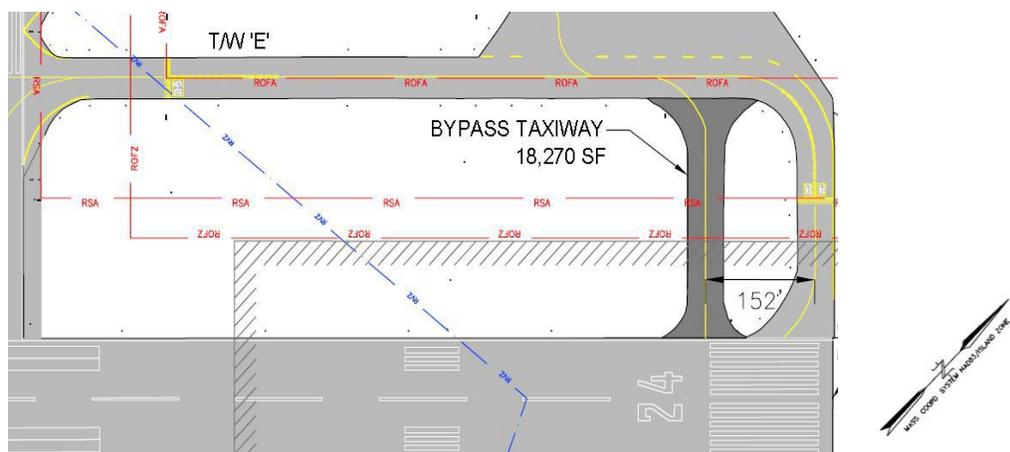


Figure 7-33 RW 24 - Air Carrier Bypass Taxiway/Hold Area - **RECOMMENDED**





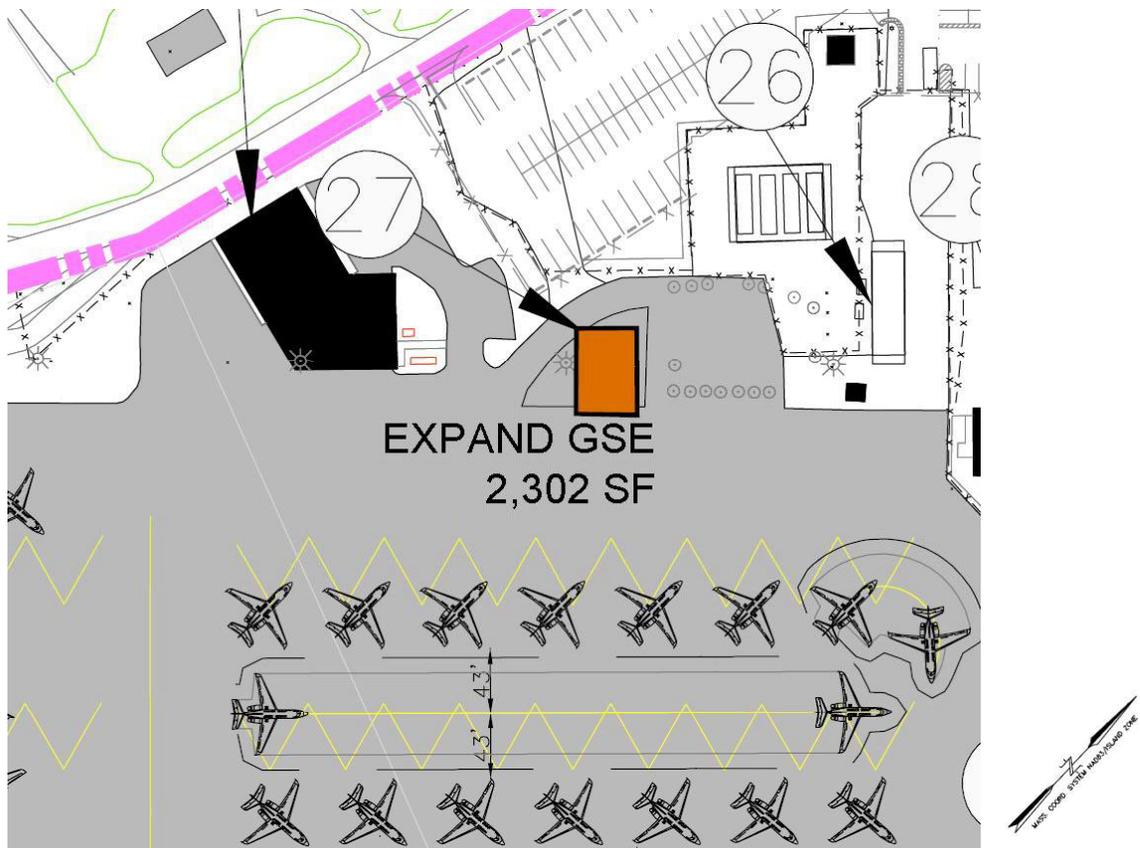
7.3 Efficiency/Accessory Needs

7.3.1 Efficiency/Accessory Needs- GSE Storage Expansion

7.3.1.1 Alternative 1- Expand Existing GSE Garage Footprint

GSE Storage Expansion – Alternative 1 Expand Existing GSE Garage Footprint (<i>Not Recommended</i>)	
Summary: Currently the GSE equipment is stored in various locations on the airfield. All equipment should be in one location.	
Trigger: Current need for more Airport GSE storage	Preliminary Cost: \$300,000
Pro: <ul style="list-style-type: none"> • Provides adequate space for all GSE • Potentially qualified for MassDOT ASMP Grant 	Con: <ul style="list-style-type: none"> • Cost • Not FAA eligible

Figure 7--34 Alternative 1 – Expand Existing GSE Garage Footprint – NOT





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7.3.1.2 Alternative 2- Construct New GSE Storage Building

GSE Storage Expansion – Alternative 2 Construct new GSE Storage Building (Recommended Year 5 - ASMP)	
Summary: Currently the GSE equipment is stored in various locations on the airfield. All equipment should be in one location.	
Trigger: Current need for more Airport GSE storage	Preliminary Cost: \$312K
Pro: <ul style="list-style-type: none"> • Provides adequate space for all GSE • Potentially qualified for MassDOT ASMP Grant • Improved condition of Airport GSE • Extended life of GSE • Protects Airport’s investment in GSE 	Con: <ul style="list-style-type: none"> • Cost • Not FAA AIP eligible

Figure 7-35 New GSE Storage Building - **RECOMMENDED**





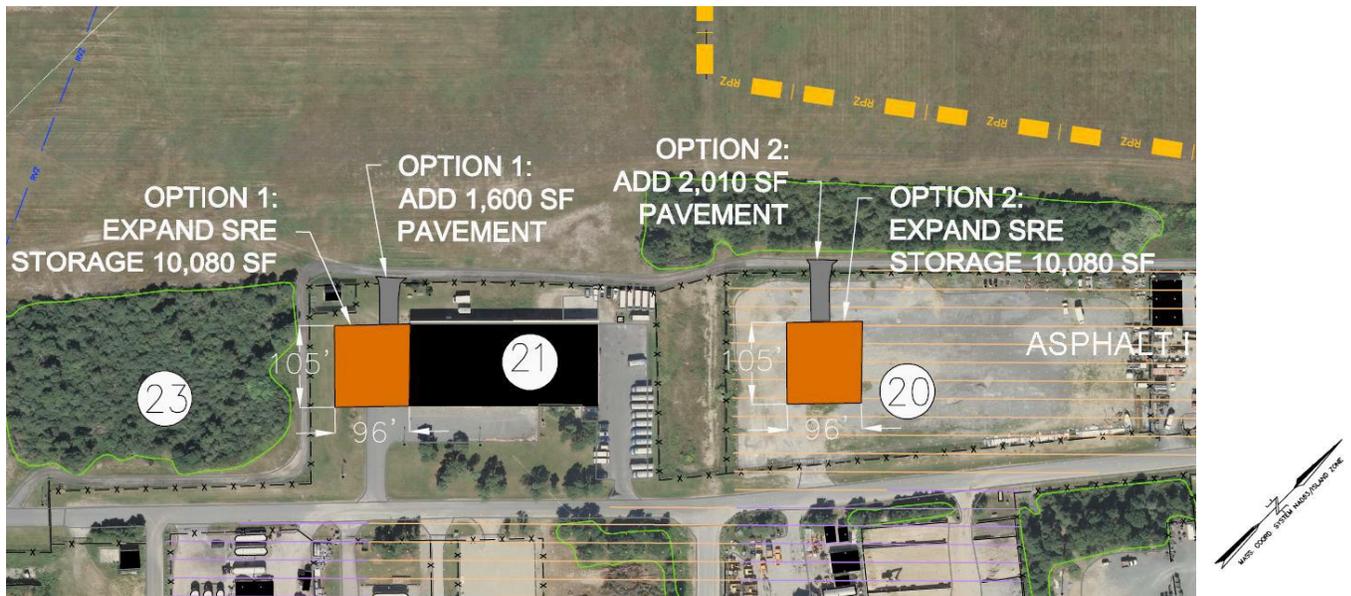
Nantucket Memorial Airport Master Plan Update

7.3.2 Efficiency/Accessory Needs - SRE Storage Expansion

7.3.2.1 Alternative 1- Expand Existing Storage Footprint

SRE Storage Expansion – Option 1 Expand Existing Storage Footprint (<i>Recommended: Year 7</i>)	
<p>Summary: New SRE equipment is expected to be added in the short term while existing SRE equipment is stored in various locations on the airfield. All equipment should be in one location. FAA’s Equipment Safety Zone (ESZ) criteria for stored SRE vehicles require approximately 10,000 SF of additional vehicle storage area.</p>	
<p>Trigger: Short term. SRE storage needs are per FAA AC 150/5220-18A, <i>Buildings for Storage and Maintenance of Airport Snow and Ice Control Equipment and Materials.</i></p>	<p>Preliminary Cost: \$1.4 (Expansion). \$1.2 million new annex (cold storage)</p>
<p>Pro:</p> <ul style="list-style-type: none"> • More space for SRE, eliminates existing fragmented storage • Protects Airport’s investment in SRE • Extended life of SRE 	<p>Con:</p> <ul style="list-style-type: none"> • Cost (Potential MassDOT ASMP 80%) • Environmental Permitting

Figure 7--36 Alternative 1 – Expand Existing Storage Footprint: Option 1-**RECOMMENDED**





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7.3.2.2 Alternative 2- Take Over NRTA Space in SRE Building

SRE Storage Expansion – Alternative 2 Take over NRTA Space in SRE Building <i>(Not Recommended)</i>	
<p>Summary: New SRE equipment is expected in the short term and existing SRE equipment is stored in various locations on the airfield. All equipment should be in one location. The NRTA’s space within the Airport’s SRE Building would provide 7,800 SF of additional vehicle storage area if the Airport were to terminate the lease.</p>	
<p>Trigger: Short term. SRE storage needs can be located in AC 150/5220-18A, <i>Buildings for Storage and Maintenance of Airport Snow and Ice Control Equipment and Materials.</i></p>	<p>Preliminary Cost: (Loss of NRTA Lease payments)</p>
<p>Pro:</p> <ul style="list-style-type: none"> • More space for SRE, eliminates cost of constructing an addition on the existing building • Minimal construction requirements 	<p>Con:</p> <ul style="list-style-type: none"> • Limited by 20 year NRTA lease • Requires breaking existing lease

7.3.3 Efficiency/Accessory Needs – Air Traffic Control Tower Rehab

Air Traffic Control Tower Rehab– Phase 2 of ATCT Rehabilitation <i>(Recommended: Year TBD)</i>	
<p>Summary: There is a need to complete Phase 2 of the Air Traffic Control Tower rehab project. The existing Tower needs upgrades to rest room and meeting facilities. The Airport has committed to complete the Phase 2 upgrades.</p>	
<p>Trigger: Immediate due to current need.</p>	<p>Preliminary Cost: \$ 1,000,000 (+)</p>
<p>Pro:</p> <ul style="list-style-type: none"> • FAA gains use of upgraded Tower facility. 	<p>Con:</p> <ul style="list-style-type: none"> • Requires local funding.

Figure 7--37 Air Traffic Control Tower Rehabilitation – Phase 2 - **RECOMMENDED**





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7.3.4 Efficiency/Accessory Needs – Essential/Emergency Airport Personnel Housing

Essential/Emergency Airport Personnel Housing (Recommended: Year 2)	
<p>Summary: There is a critical and immediate need to provide Essential/Emergency Airport Personnel Housing and rehab the Existing Thompson House used for seasonal employees. The Airport could lease or sell certain non-aviation surplus parcels to generate revenue to rehab the existing Thompson House and construct Essential/Emergency Airport Personnel Housing on Airport-owned surplus land off Nobadeer Farm Road.</p>	
<p>Trigger: Immediate due to critical current need.</p>	<p>Preliminary Cost: Cost to be offset by lease or sale of surplus parcels.</p>
<p>Pro:</p> <ul style="list-style-type: none"> • Airport gains revenue by leasing surplus parcels off Sun Island and Nobadeer Farm Road. • Construct new Essential/Emergency Airport Personnel Housing on surplus parcel off Nobadeer Farm Road. • Rehab Thompson House as continued employee housing. 	<p>Con:</p> <ul style="list-style-type: none"> • Requires FAA approval of surplus parcels (lots acquired on 7-6-70 under FAA 9-19-013-C808) • Potential environmental permitting.

Figure 7-38 Essential/Emergency Airport Personnel Housing - **RECOMMENDED**





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7.3.5 Efficiency/Accessory Needs– Fuel Farm Jet-A Tank

Fuel Farm Jet-A Tank (Recommended: Year 5-10)	
Summary: There is a growing need to provide additional Jet-A fuel storage to meet the needs of increasing corporate jet and turbine aircraft traffic. The airport could place the tank adjacent to the existing fuel farm.	
Trigger: Jet-storage needs in excess of 100,000 gallons.	Preliminary Cost: \$ 300,000-400,000 (Potentially offset by fuel provider)
Pro: <ul style="list-style-type: none"> • Airport gains revenue by increased Jet-A fuel sales. • Space appears to be available adjacent to existing fuel tanks. • Meets growing corporate jet demands forecasts in Chapter 5. 	Con: <ul style="list-style-type: none"> • Potential permitting requirements. • Costs not eligible for FAA funding.

Figure 7-39 Additional Jet-A Tank - **RECOMMENDED**



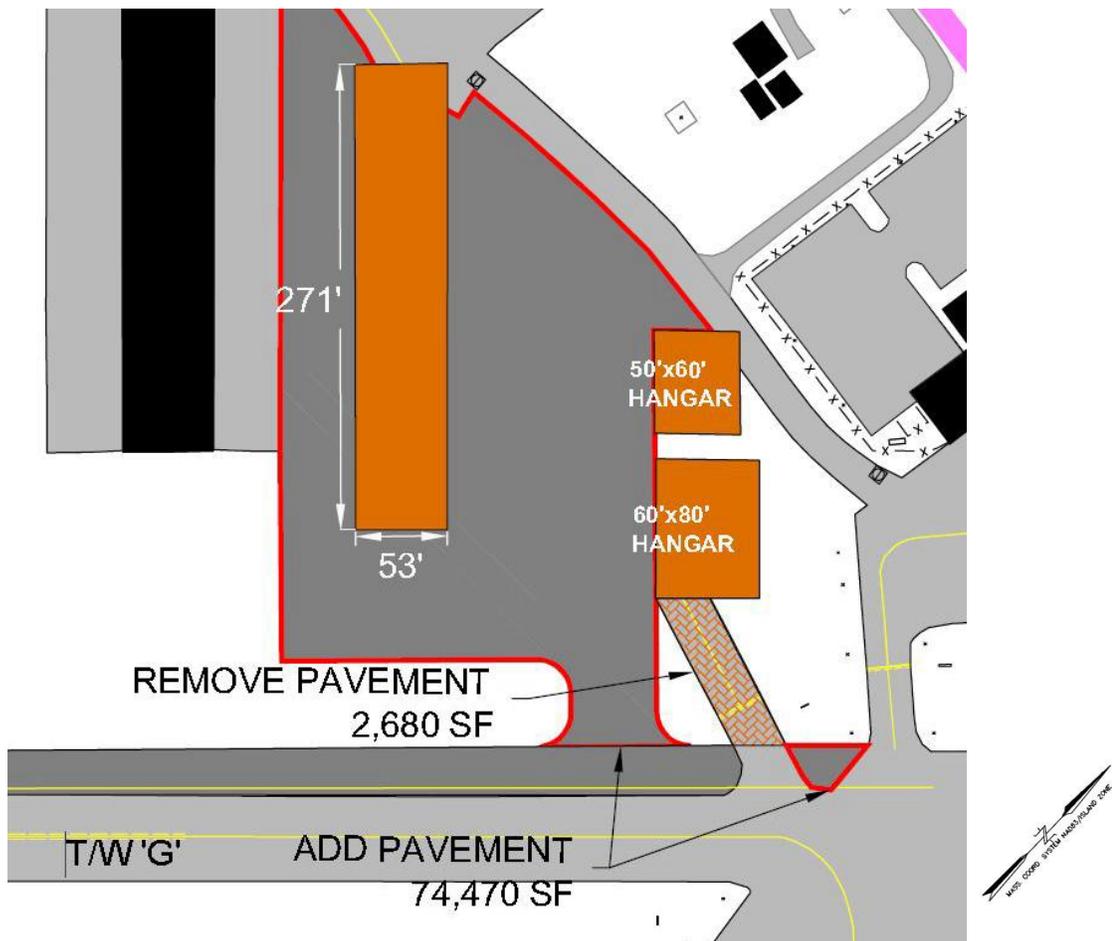


7.4 Revenue Enhancement Concepts

7.4.1 Revenue Enhancement Concepts – North Apron GA Hangars

North Apron GA Hangars (Recommended Pending Private Development)	
Summary: As a revenue-generating enhancement and to meet current demand, the Airport could solicit RFP's for the construction of new GA Hangars within the North Ramp area.	
Trigger: Current demand for GA hangar space.	Preliminary Cost: Borne by developer (\$2.25 million for pavement)
Pro: <ul style="list-style-type: none"> New revenue source Potential MassDOT ASMP pavement funding 	Con: <ul style="list-style-type: none"> Potential environmental permitting

Figure 7-39 North Apron Private GA Hangars - **RECOMMENDED**



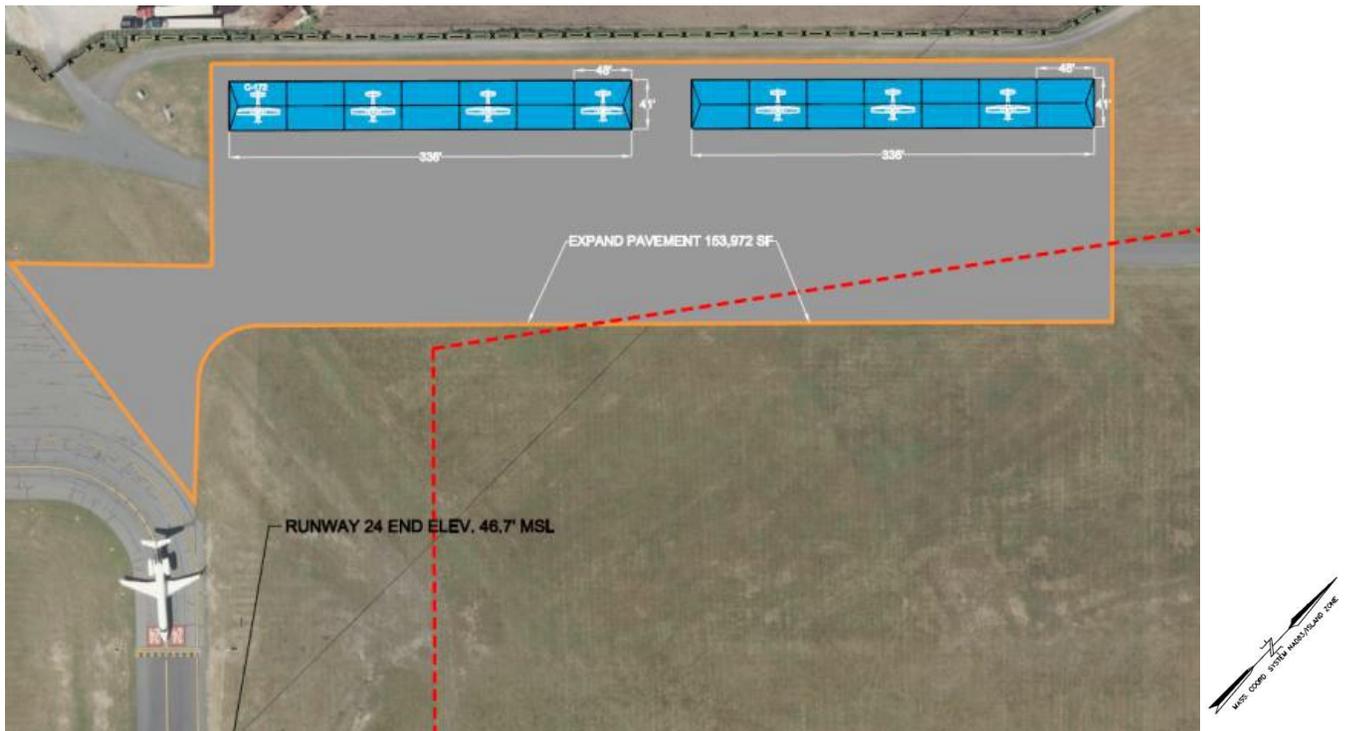


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7.4.2 Revenue Enhancement Concepts - Combo GA Hangar/Commercial Space

Combo GA/Commercial Hangars (Recommended Pending Private Development)	
Summary: As a revenue-generating enhancement and to meet current demand, the Airport could solicit RFP's for the construction of new Combo GA/Commercial Hangars east of the North Ramp and adjacent to the recently-developed sand and gravel pit area.	
Trigger: Current demand for GA hangar space and commercial rental space.	Preliminary Cost: Borne by developer (\$2.25 million for pavement)
Pro: <ul style="list-style-type: none"> Source of revenue to airport 	Con: <ul style="list-style-type: none"> Requires FAA approval for through-the-fence and non-aviation commercial uses Environmental permitting Additional habitat mitigation area required

Figure 7-40 Private Combo GA/Commercial Hangars - **RECOMMENDED**



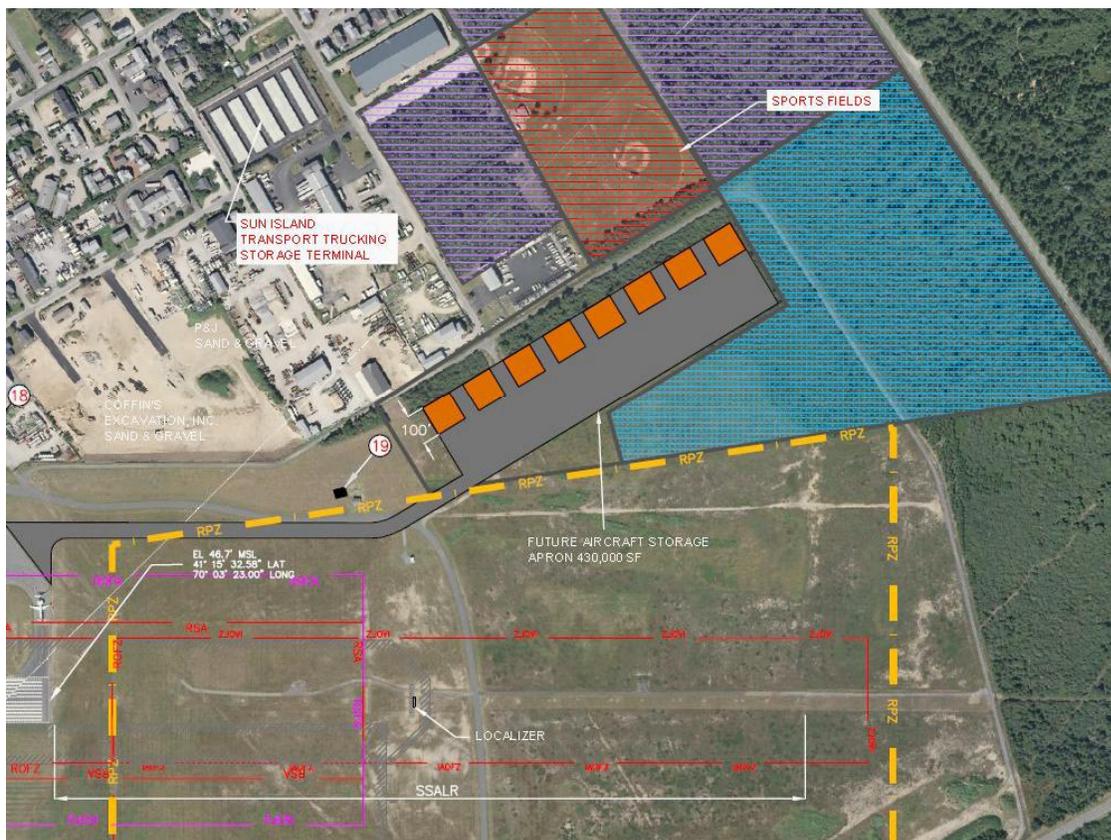


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7.4.3 Revenue Enhancement Concepts - Potential Large GA Jet Hangars

Potential Large GA Jet Hangars (Recommended Pending Private Development)	
<p>Summary: As a long-term revenue enhancement and to meet potential future demand, the Airport could solicit RFP's for the construction of new large size Corporate GA Hangars east of the North Ramp and adjacent to the Delta Parcel, as shown on the previous ALP.</p>	
<p>Trigger: Long-term potential need for large-box GA storage hangars</p>	<p>Preliminary Cost: Borne by developer (Pavement cost @ \$5.8 million)</p>
<p>Pro:</p> <ul style="list-style-type: none"> • Source of revenue to airport • Combine pavement with smaller Combo GA/Commercial Hangars adjacent to Coffin's sand and gravel pit development in previous alternative • Potential MassDOT ASMP pavement grant 	<p>Con:</p> <ul style="list-style-type: none"> • Environmental permitting • Additional habitat mitigation area required • Not FAA priority for funding

Figure 7-41 Potential Large Private GA Jet Hangars - **RECOMMENDED**





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7.4.4 Revenue Enhancement Concepts – Parking Lot Operations: Hourly vs. Overnight rates/Access Gate Upgrades

Parking Lot Operations	
Free Short-term Access/ New Long-term Access Gate/Median Barrier <i>(Recommended: Year 1-ASMP)</i>	
Summary: Create new short-term entrance/exit, plus one added access control gate with two exit control gates and median barrier, to separate short term from long term parking will allow for enhanced long-term parking revenue controls.	
Trigger: Current issues with inoperative control gate	Preliminary Cost: \$80,000
Pro: <ul style="list-style-type: none"> Creates added entrance and two controlled exits for long-term parking revenue control 	Con: <ul style="list-style-type: none"> Segregates parking into two lots Low return on investment

Figure 7-42 Free Short-term Access/2'nd Control Gate/Median Barrier - **RECOMMENDED**



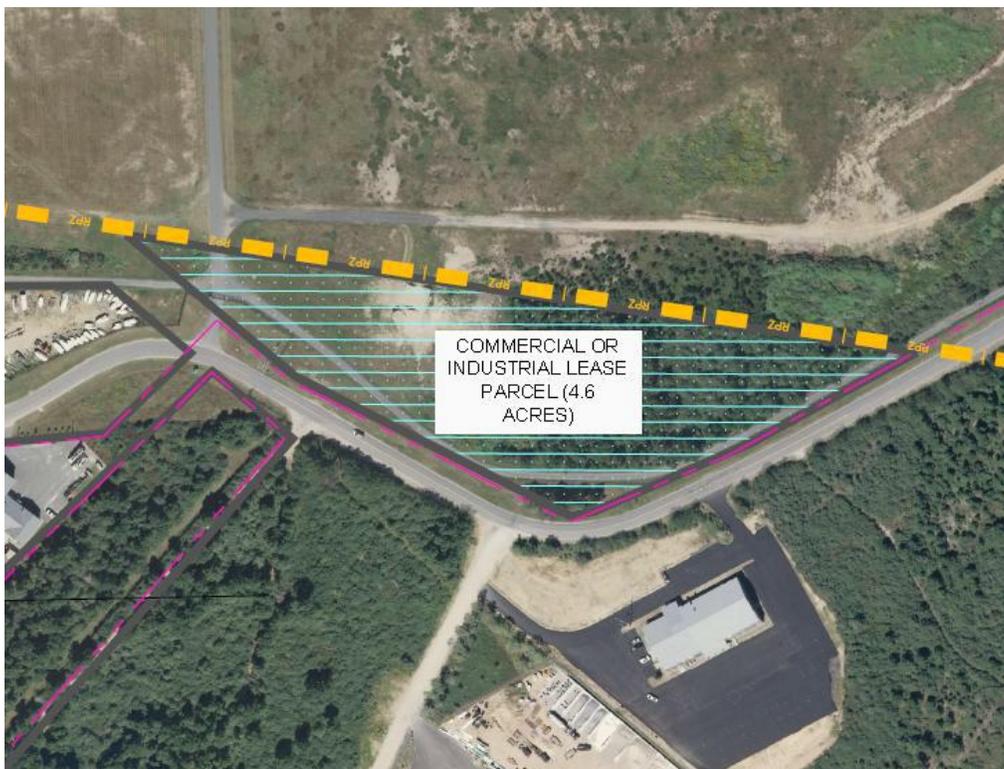


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7.4.5 Revenue Enhancement Concepts – Bunker Road Commercial Vehicle Parking Area

Bunker Road Commercial Vehicle Parking Area (<i>Recommended: Year 5</i>)	
Summary: As a revenue-generating opportunity, the Airport-owned parcel on Bunker Road (Town GIS Map 69 – Lot 7) could be converted into long-term, secure parking for contractor or other commercial vehicles.	
Trigger: Existing demand for long-term commercial vehicle parking	Preliminary Cost: \$15,000 for grading and fencing
Pro: <ul style="list-style-type: none">• Revenue source• Minimal cost to airport• Meets current need for contractor parking	Con: <ul style="list-style-type: none">• Remote location relative to terminal area• Environmental permitting• Habitat replacement

Figure 7-43 New Bunker Road Commercial Vehicle Parking Area - **RECOMMENDED**





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7.4.6 Revenue Enhancement Concepts - Expand Bunker Area Industrial Development

Expand Bunker Area Industrial Development (<i>Recommended: Year 3</i>)	
Summary: As an enhanced source of revenues, additional industrial development parcels can be created in the Airport’s Bunker Area industrial subdivision. The development will need to be coordinated with the Army Corps of Engineers on clean-up of the Formerly Used Defense Site (FUDS), as noted below.	
Trigger: On-going Island-wide demand for light industrial sites	Preliminary Cost: Borne by developers
Pro: <ul style="list-style-type: none"> Generates sustainable revenues to Airport 	Con: <ul style="list-style-type: none"> FUDS clean-up Potential habitat permitting issues Potential solar development area limits (see Fig 7-44)

Figure 7-44 Expand Bunker Area Industrial Development - **RECOMMENDED**





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7.4.7 Revenue Enhancement Concepts - Delta Parcel/Public Employee Housing Concept

Delta Parcel/ Public Employee Housing/ Microtel Concept (Recommended: Year 3)	
<p>Summary: The Airport owns significant undeveloped acreage at the corner of Milestone and Nobadeer Farm Roads. This area is surplus to aviation needs and has significant value for compatible development that could provide long-term, sustainable revenue generation to offset Airport operating and maintenance costs. Appendix 8 shows additional non-aeronautical parcels that are available for revenue generation as surplus parcels. (Recommended: Year 3)</p>	
<p>Trigger: Immediate need for Airport revenue enhancement, combined with public need for affordable housing on Nantucket</p>	<p>Preliminary Cost: Minimal costs offset by real estate lease revenues</p>
<p>Pro:</p> <ul style="list-style-type: none"> • Significant revenue stream potential • Leasing opportunities for multiple uses • Meets need for affordable housing needs • Maintains existing public Ball Fields 	<p>Con:</p> <ul style="list-style-type: none"> • Town re-zoning • NEPA/MEPA review required • Permitting for impacts to habitat for listed species required

Figure 7-44 Delta Parcel Lease for Multi-use/Employee Housing/Microtel/Commercial - **RECOMMENDED**





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7.4.8 Revenue Enhancement Concepts – Airport Rates and Charges

Rates and Charges (Recommended: Year 1)	
Summary: Review of Airport rates and charges will be developed in Chapter 8: Financial Plan using bench marking of comparable airport rates and charges.	
Trigger: Current cash flow and long-term sustainability.	Preliminary Cost: Minimal
Pro: <ul style="list-style-type: none"> Enhances revenues Long-term financial sustainability Bring ACK on par with comparable airports Nantucket is a High-Value resort destination 	Con: <ul style="list-style-type: none"> Resistance to new rates by users Administrative costs

7.4.9 Revenue Enhancement Concepts - Wingspan vs. Weight-based Fees

Wingspan vs. Weight-based Fees (Recommended: Year 1)	
Summary: The limited space available for the parking of aircraft is often burdened by large wingspan aircraft and is independent of aircraft weight. A review of aircraft parking fees will be conducted in Chapter 8 Financial Plan to review charges based upon the more demanding aircraft wingspan rather than aircraft weight.	
Trigger: Immediate/existing limited ramp space.	Preliminary Cost: Minimal
Pro: <ul style="list-style-type: none"> Enhanced revenue More equitable charges 	Con: <ul style="list-style-type: none"> Resistance to change Administrative costs

7.4.10 Revenue Enhancement - Flex Space Terminal/GA Building Rental Opportunities

Flex Space Terminal/GA Building Rental Opportunities (Recommended: Years 1 - 5)	
Summary: Chapter 8 Financial Plan will review the opportunity to promote rental of underutilized airport building spaces for community/private functions as a potential revenue generation opportunity during the off season.	
Trigger: Short term/need for revenue.	Preliminary Cost: Negligible
Pro: <ul style="list-style-type: none"> Enhanced revenue 	Con: <ul style="list-style-type: none"> Administrative effort



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7.4.11 Revenue Enhancement Concepts - GA Revitalization/Special Events/Owner type Group Fly-ins

GA Revitalization/Special Events/Owner Type Group Fly-ins (Recommended: Years 1- 5)	
Summary: Promote owner “type” group beach fly-in/fish events to strengthen light GA traffic and enhance airport revenue. These types of “GA Related” activities could build on the Island’s current themes of the Pops Night, Daffodil Days, and the Fugawi Weekend, for example.	
Trigger: Short-term Revenue and long-term users.	Preliminary Cost: Staff time and coordination effort
Pro: <ul style="list-style-type: none">• Enhance revenue• Strengthen aviation community• Promotes GA• Compliments ongoing Island events• Enhances off season use of facilities	Con: <ul style="list-style-type: none">• Administrative effort• Return on investment

Figure 7-45 Special Fly-in Events to Strengthen GA Community and Airport Revenues





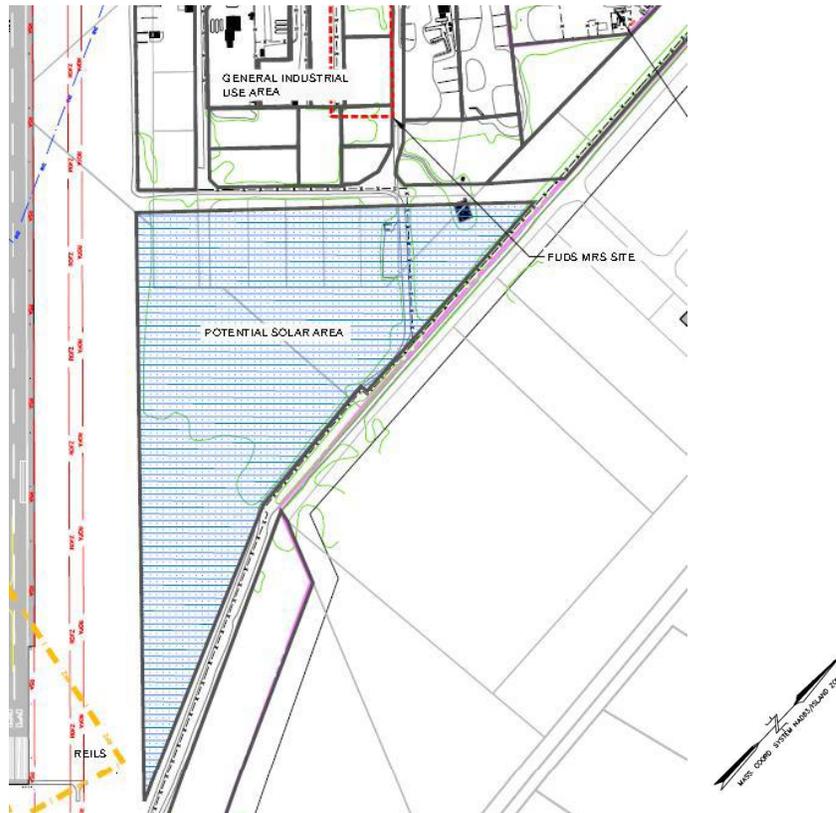
7.5 Environmental/Sustainability Concepts

7.5.1 Environmental/Sustainability Concepts - Solar Array Developments

7.5.1.1 Solar Array Development in Bunker Area

Solar Array Development in Bunker Area	
<p>Summary: Consider installation of solar photovoltaic panels as sustainable power source and revenue generator. (Similar to HYA solar installation)</p>	
<p>Trigger: Short-term – Sustainable source</p>	<p>Preliminary Cost: Providing surplus parcel & NHESP Permit – 17 Acres</p>
<p>Pro:</p> <ul style="list-style-type: none"> • Long-term revenue source • Ultimate power/offset/reduce costs • Sustainable energy source • Potential low cost to airport • Low installation cost 	<p>Con:</p> <ul style="list-style-type: none"> • Environmental permitting • Habitat mitigation/ replacement costs • FAA Approvals/FAA glint and glare review • Limits future aviation use of site

Figure 7-46 - Solar Array Development in Bunker Area - **RECOMMENDED**



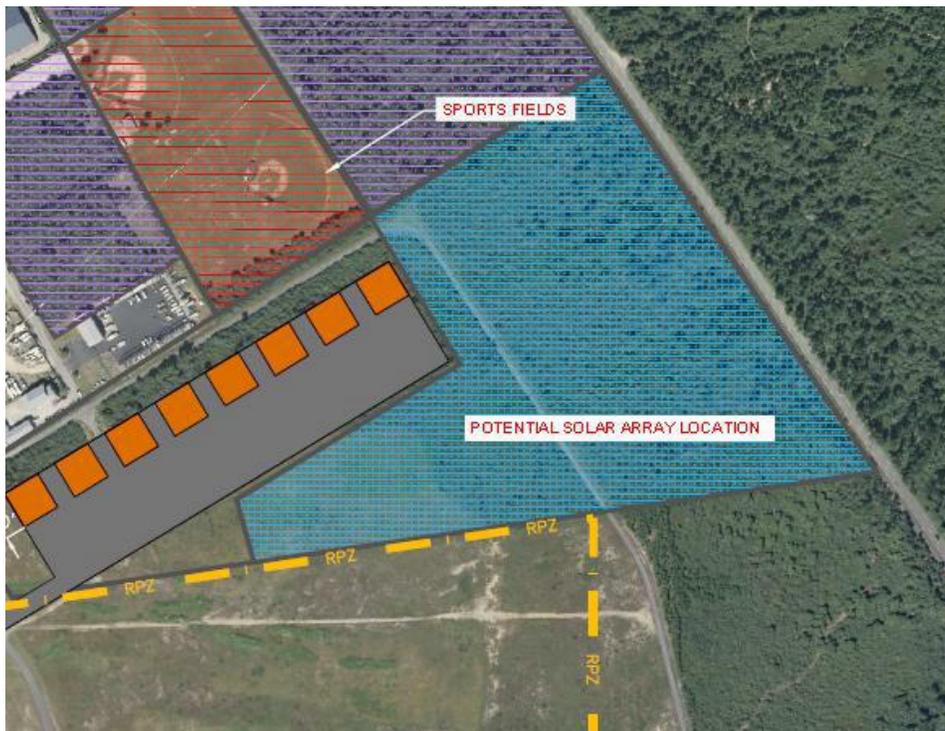


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7.5.1.2 – Solar Array Development adjacent to Runway 24

Solar Array Development adjacent to Runway 24	
Summary: Consider installation of solar photovoltaic panels as sustainable power source and revenue generator on an open area adjacent to Runway 24. This location would be very similar to the new solar installation at Barnstable Municipal Airport, adjacent to its Runway 24 approach.	
Trigger: Short-term – Sustainable source	Preliminary Cost: Providing surplus parcel & NHESP Permit- 23 Acres
Pro: <ul style="list-style-type: none"> • Long-term revenue source • Ultimate power/offset/reduce costs • Sustainable energy source • Low installation cost • Potentially larger site 	Con: <ul style="list-style-type: none"> • Environmental permitting • Habitat mitigation/replacement costs • FAA Approvals/FAA glint and glare review

Figure 7-47 - Solar Array Development Adjacent to Runway 24 – **RECOMMENDED** (long-term)





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7.5.2 Environmental/Sustainability Concepts - Endangered Species Master Plan

Endangered Species Master Plan (RECOMMENDED: Year 6)	
<p>Summary: Botanical survey and land use mapping to provide a long term plan for the airport to manage its habitat and endangered species on site. This plan would identify reasonably foreseeable capital projects and provide a “bank” for habitat mitigation to pull from as each project moves forward.</p>	
<p>Trigger: New capital improvement projects that would require significant habitat mitigation.</p>	<p>Preliminary Cost: \$250,000 (estimated)</p>
<p>Pro:</p> <ul style="list-style-type: none"> NHESP has indicated that with up front mitigation such as a habitat bank, ratios of impact to mitigation may be negotiated, rather than a direct 3:1 ratio of mitigation to impact area. Surplus land decisions will be made with full understanding of requirements for future mitigation 	<p>Con:</p> <ul style="list-style-type: none"> Cost of study and up front mitigation are not eligible for FAA funding

7.5.3 Environmental/Sustainability Concepts - Coastal Management Initiative

Coastal Management Initiative (RECOMMENDED: On-Going)	
<p>Summary: Nobadeer Beach at ACK has shown a net gain in beach since 1994, but has been eroding since 2000. To maximize the benefits of the accretion since 1994, expanding active beach management at Nobadeer can be undertaken to stabilize the beach and dune system and help solidify the gains. Beach management can include vehicle restrictions in areas of dune grass, signage, fencing to restrict trampling of dune grass root systems.</p>	
<p>Trigger: Reduction in coast line that encroaches on the safety area to Runway 6/24, requiring modification to the approach.</p>	<p>Preliminary Cost: \$50,000 (estimated)</p>
<p>Pro:</p> <ul style="list-style-type: none"> Methods to protect dune grass are inexpensive compared with runway relocation 	<p>Con:</p> <ul style="list-style-type: none"> Many beach armoring methods are ineffective or temporary



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7.5.4 Environmental/Sustainability Concepts - Convert Airport Maintenance Fleet to Alternative Fuels

Convert Airport Maintenance Fleet to Alternative Fuels (RECOMMENDED : Pending Federal Funding Source)	
Summary: Phase-in new alternative-fuel maintenance vehicles to replace vehicles operating on diesel. Examine the viability of retro-fitting airport ground service vehicles with alternate propane or electric powered engines to reduce noise and emissions.	
Trigger: To improve airport sustainability/medium term.	Preliminary Cost: \$500,000 (estimated)
Pro: <ul style="list-style-type: none"> Reduces local emissions and fuel costs Consistent with MassDOT’s Electric GSE and Ops vehicle GreenDOT Plan recommendations 	Con: <ul style="list-style-type: none"> Unknown capital funding source Unknown maintenance requirements and cost

7.5.5 Environmental/Sustainability Concepts - Increase NRTA Seasonal Service Frequency

Increase NRTA Seasonal Service Frequency (RECOMMENDED : Year 5)	
Summary: Increase the frequency of the NRTA’s Ferry/Airport Route from the current 20-minute headway during the peak seasonal period.	
Trigger: To provide employees and visitors a low-emissions alternative to driving automobiles/medium term.	Preliminary Cost: (N/A)
Pro: <ul style="list-style-type: none"> Increases affordable options for access to the airport May reduce emissions May reduce localized traffic congestion 	Con: <ul style="list-style-type: none"> Not under jurisdiction of ACK Availability of operating funds could vary year to year Lowest utilization on NRTA system

7.5.6 Environmental/Sustainability Concepts - Advertise Rental Cars/Cabs/Bike Parking/Courtesy Vans

Advertise Rental Cars/Cabs/Bike Parking/Courtesy Vans (RECOMMENDED : On going)	
Summary: Promote available shuttles, rental cars, cabs, and courtesy vans at the airport and through a variety of venues, publications and media. Partner with area.	
Trigger: To increase awareness of alternatives to getting to and from the airport/short term.	Preliminary Cost: (N/A)
Pro: <ul style="list-style-type: none"> Raise awareness of ease of access to ACK by a variety of modes May reduce parking demand May reduce emissions 	Con: <ul style="list-style-type: none"> May reduce parking revenue Unknown funding source(s)



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7.5.7 Environmental/Sustainability Concepts - Preferential Parking for Alternative-Fuel Cars and Additional EV Charging Stations

Preferential Parking for Alternative-fuel Cars/EV Charging Stations (RECOMMENDED: Pending Market Demand and Federal Funding Sources)	
Summary: Locate dedicated parking spaces for cars powered by alternative fuels in parking lot close to the terminal. Provide free or low-cost charging station for EV vehicle(s) in short-term parking area.	
Trigger: Promote use of alternative-fuel vehicles by providing incentives/short term.	Preliminary Cost: \$45,000 (three stations @ \$15,000 each station)
Pro: <ul style="list-style-type: none"> • May help increase the number of alternative fuel vehicles on island • May reduce emissions 	Con: <ul style="list-style-type: none"> • Without similar programs on-island, may be ineffective. • Return on investment

7.5.8 Environmental/Sustainability Concepts - Bike Share or Loan/Bike Rental

Bike Share or Loan/Bike Rental (RECOMMENDED: Pending Private Developer Initiative)	
Summary: Provide loaner bicycles or bike-share station for pilots and/or visitors to use for short-term (see Chatham Airport or BWI Thurgood Marshall Airport). Or partner with hotel(s) or Town for multiple-station Town-wide bike share program. Provide free or discounted space for vendor for bike rental desk.	
Trigger: To promote the use of bicycles for access to and from the airport to increase non-auto mode share/short term or medium term if partnering.	Preliminary Cost: Say \$50,000 for loaner bikes, bike rental desk and/or seed money for bike-share station or to participate in Town-wide bike share program.
Pro: <ul style="list-style-type: none"> • May help reduce auto trips to and from airport • May reduce emissions and congestion 	Con: <ul style="list-style-type: none"> • Impact on local bike rental companies • May reduce parking revenue • Bike share operating costs unknown • Unknown funding source(s) • Return on investment

7.5.9 Environmental/Sustainability Concepts- Additional and Higher - Security Bike Parking/Bike Parking/Bike Path Extension

Additional and Higher - Security Bike Parking/Bike Parking/Bike Path Extension (RECOMMENDED: Pending Private Developer Initiative)	
Summary: Provide additional modern bike parking with protection from the elements and higher security, such as a card-key-access bike cage. Extended existing bike paths closer to the airport.	
Trigger: To promote the use of bicycles for access to and from the airport to increase non-auto mode share/short term.	Preliminary Cost: Say \$250,000 for bike path extensions and secure shelter.
Pro: <ul style="list-style-type: none"> • May encourage more cycling to the airport for both short- and long-term trips • May reduce emissions and congestion 	Con: <ul style="list-style-type: none"> • May reduce parking revenue • Unknown funding source(s) • Return on investment



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7.5.10 Environmental/Sustainability Concepts - “Fly Friendly” Aircraft Noise Mitigation Measures

“Fly Friendly” Aircraft Noise Mitigation Measures (RECOMMENDED: Ongoing)	
Summary: The Airport should continue to promote the voluntary noise mitigation flight tracks and disseminate “Flying Friendly” noise management strategies to visiting pilots.	
Trigger: Ongoing public sensitivity to aircraft noise	Preliminary Cost: Staff Administrative Time
Pro: <ul style="list-style-type: none"> Helps to mitigate noise impacts of aircraft operations over key neighborhoods on the Island 	Con: <ul style="list-style-type: none"> Potential safety risks to pilots and passengers due to offshore routes or power management techniques

7.5.11 Environmental/Sustainability Concepts - Ramp Electrification

Ramp Electrification (RECOMMENDED: Pending VALE or Alternate Funding Source)	
Summary: Explore the viability of installation ramp electrification as alternate power sources to commercial and large GA jet aircraft, so as to reduce use of on-board auxiliary power units (APU’s) which contribute to aircraft ground noise.	
Trigger: Existing ground noise and emissions from aircraft and service vehicles	Preliminary Cost: \$4 million (VALE Project)
Pro: <ul style="list-style-type: none"> Reduced noise and emissions Enhances carbon neutral program objectives 	Con: <ul style="list-style-type: none"> Requires funding availability from non-traditional FAA AIP sources Return on investment

7.5.12 Environmental/Sustainability Concepts - Apron Lighting Control/PCL Dimmer Concept

Apron Lighting Control/PCL Dimmer Concept (RECOMMENDED: Phase 5 Apron Rehab)	
Summary: Explore the viability of converting the apron lighting controls so that the apron floodlights are only at full illumination when needed for the safety of aircraft operations and ramp personnel activity.	
Trigger: High light levels disturb neighbors	Preliminary Cost: \$80,000
Pro: <ul style="list-style-type: none"> Reduced disruption of dark sky objectives, consistent with airport safety Reduced electricity costs Enhances carbon neutral program objectives May be FAA eligible under related AIP ramp repaving project Compatible with Phase 4 or 5 of Terminal Apron Repaving program (see section 7.1.7) 	Con: <ul style="list-style-type: none"> Cost needs to be wrapped into related ramp reconstruction project to be AIP eligible Security and operational concerns



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7.5.13 Environmental/Sustainability Concepts – South Apron Noise Barrier

South Apron Noise Barrier (Potential Add-on to Phased Apron Repaving/Extension Projects)	
<p>Summary: The Airport Commission, in response to community concerns expressed through the Advisory Committee, has requested the addition of a Noise Barrier along the South Apron to minimize ground noise impacts to the adjacent residential community. A full length noise wall would be 2,600 feet long and about 15 feet high. The wall could replace the airport’s perimeter fence along that portion of the airport boundary.</p>	
<p>Trigger: Aircraft noise disturbs neighbors.</p>	<p>Preliminary Cost: \$1.95M (2600lf x 15’high x \$50/sf)</p>
<p>Pro:</p> <ul style="list-style-type: none"> The Airport’s 2012 Noise Analysis reported a 15-foot noise barrier could provide a 16 Dba reduction in Lmax ground noise from taxiing aircraft and activity on the aircraft parking ramps Compatible with future Phases of South Apron repaving or extension projects Could serve to replace contiguous segments of Airport perimeter fence 	<p>Con:</p> <ul style="list-style-type: none"> Costs need to be added to previously-estimated ramp repaving/extension costs Noise Wall Costs NOT eligible for FAA funding Local Historic District Commission permitting and aesthetic concerns could affect estimated costs

Figure 7-49 – South Apron Noise Barrier

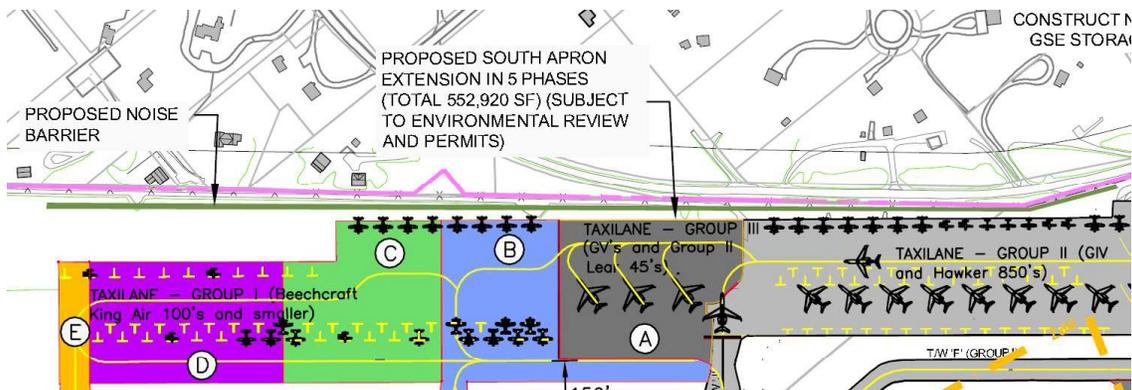
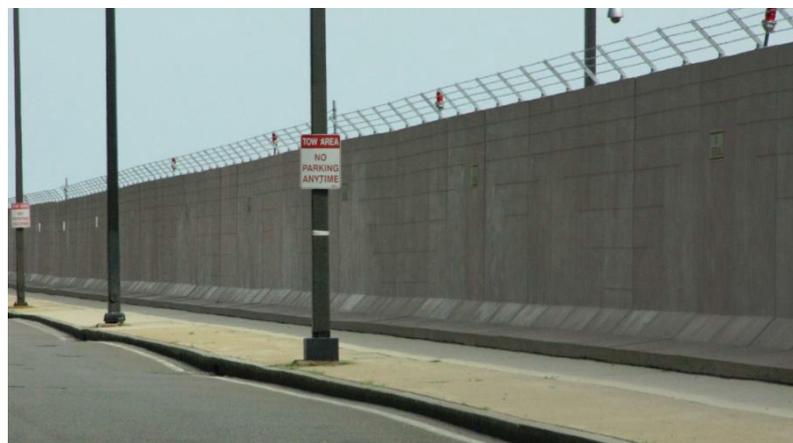


Figure 7-50 – Boston-Logan Airport Noise Barrier





7.6 Alternatives - Evaluation Matrix and Proposed Priorities

7.6.1 Evaluation Criteria

The criteria used to evaluate and rank the alternatives are a composite of multiple factors. These combine FAA and TSA requirements, operational safety, revenue and costs, as well as environmental and sustainability considerations, as listed below:

FAA Safety, Security and Design criteria, and TSA Security criteria - the ability for alternatives to meet the criteria set forth by the FAA and the TSA.

Operational Criteria - the ability to accommodate current and status-quo forecasted needs of aircraft, passengers, and vehicles.

Economic Criteria – an estimate of preliminary costs to provide a basis for comparison of each alternative, as well as the potential for revenue sources to offset costs.

Feasibility Criteria- tangible and intangible factors that affect the Airport’s ability to implement certain development projects.

Environmental Criteria – development that provides for minimal environmental disruption or, conversely, requires significant environmental mitigation

Sustainability Factors – the relationship of the alternative to enhancing financial or environmental sustainability for the Airport

Cost/Benefit Criteria – the relative value (cost) of a potential alternative as compared with its potential benefit in terms of the range of criteria evaluated above.

7.6.2 Evaluation Matrix - Weighted Factors

The following Evaluation Matrix utilizes weighted factors for the various evaluation criteria that are applied based upon the relative importance within a grouping of alternatives. For example, within the “Safety and Security” group, the safety and security evaluation criteria are assigned higher weights, or values, than sustainability or cost/benefit. Similarly, in the “Revenue Enhancement” group, revenue generation is given the highest value, followed by safety and security. In like fashion within the “Environmental/Sustainability” group, sustainability and environmental considerations are ranked more important than the other criteria.

The weighted factors are assigned a value of one through nine, for the nine evaluation criteria that are used. Each alternative has been given a relative value that ranges from zero (“0”) value for Not Applicable, to one (“1”) for Minimal value, up to five (“5”) for Optimum value. The relative values were established based, in part, upon the bulleted list of pros and cons for each alternative shown in the preceding text. These relative values, multiplied by the weighted factors for each evaluation criteria, are used as a means of prioritizing the evaluation process and developing the resulting “Priority Scores” for each alternative.



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The highest priority scores within each time frame (5, 10 and 20 years) were then be used as a basis for The Airport Working Group to establish the Project Priorities List (**Section 7.6.3**). That became the basis for the 5-Year Capital Improvement Plan (CIP) in Chapter 8 - **Facilities Implementation Plan**. That CIP in turn set the basis for the **Financial Feasibility Plan** in Chapter 9 and the resulting **Airport Layout Plan (ALP)** in Chapter 10.



Nantucket Memorial Airport Master Plan Update

Nantucket Airport Master Plan
 MASTER PLAN ALTERNATIVE CONCEPTS - EVALUATION MATRIX

SAFETY & SECURITY CONCEPTS (7.1)

Project Number	Section	Project	FAA Eligible		Time Frame			Evaluation Criteria							Priority Score (WV X B)			
			Yes	No	0 Years - 5 Years	6 Years - 10 Years	11 Years - 20 Years	Safety	Security	FAA Design	Operational	Revenue	Feasibility	Environmental		Sustainability	Cost/Benefit	
					Weighted Value (WV)			9	8	7	6	5	4	3	2	1		
7	Terminal Apron Repaving in 7 Phases																	
	7	Phase 1	✓		X				5	3	5	5	5	5	0	3	197	
11	North Ramp Part 77 Aircraft Tail Heights Concepts				X													
	11.1	Create New Parking Position	✓		X				5	3	5	5	5	0	5	5	194	
	11.2	Swap Parking Position	✓		X				5	3	5	5	3	5	0	5	184	
	11.3	NOTAM Runway 15 Closure	N/R															
7	Terminal Apron Repaving in 7 Phases																	
	7.1	Phase 2	✓		X				5	3	5	5	0	5	5	5	184	
2	Separation of Taxiways "E" and "G"		✓		X				5	3	5	5	0	3	5	0	3	164
5	RW 24 Exit Taxiway																	
	5.1	Right-Angle Exit Taxiway	N/R						5	3	5	3	0	5	5	0	3	160
	5.2	High-Speed Angle Exit Taxiway	✓		X				5	3	5	5	0	5	3	0	3	166
14	Information Technology System Upgrades													0				
	14.4	Upgrade Voice Telephone System	✓		X				5	5	0	5	3	5	0	3	5	161
8	South Apron Redesign/Expansion - EA/EIR/MNHESP Permits		✓		X				5	1	5	5	0	5	5	5	5	168
	8.1	Phase One - South Apron Extension	✓		X				5	1	5	5	3	5	1	0	3	159
14	Information Technology System Upgrades													0				
	14.3	Terminal PA System	✓		X				5	5	0	5	3	5	0	0	5	155
10	RW 15 RPZ (Runway Protection Zone) Overlay Zone		✓		X				5	3	5	3	0	5	0	0	5	147
12	Security System Upgrade																	
	12.1	Vehicular and Pedestrian Access Controls	✓		X				5	5	0	5	0	5	0	0	5	140
14	Information Technology System Upgrades													0				
	14.2	Terminal FIDS System	✓		X				3	5	0	5	3	5	0	0	5	137
	14.1	Main Terminal Backbone System	✓		X				3	5	0	5	1	5	0	0	5	127
13	Terminal Building to SRE - IT Communication Link		✓		X				3	5	0	5	0	5	0	0	5	122
12	Security System Upgrade																	
	12.3	Video Analytic Intrusion System	✓		X				5	5	0	3	0	3	0	0	3	118
1	RW 6 RSA (Runway Safety Area) Concepts																	
	1.1	Existing Irregular RSA	N/A		X													N/A
7	Terminal Apron Repaving in 7 Phases																	
	7.4	Phase 2	✓			X			5	3	5	5	5	5	0	3	197	
	7.5	Phase 3	✓			X			5	3	5	5	5	5	0	3	197	
	7.6	Phase 4	✓			X			5	3	5	5	5	5	0	3	197	
8	South Apron Redesign/Expansion																	
	8.2	Phase Two	✓			X			5	1	5	5	5	5	1	0	3	169
6	RW 33 Exit Taxiway																	
	6.2	High-Speed Exit Taxiway	✓			X			5	3	5	5	0	3	3	0	3	158
2	Relocate Stub Taxiways "A", "B", and "C"		✓			X			5	1	5	3	1	3	5	1	3	143
3	Separation of Taxiways "E" and "F"		✓			X			5	3	5	1	0	3	3	0	3	134
12	Security System Upgrade																	
	12.2	Fiber Optic Intrusion Sensors	✓			X			5	5	0	3	0	3	0	0	3	118
9	RW 24 DME/Localizer Facility Relocation - Coastal Flood Hazard Zone (FAA Project)		✓			X												N/A
7	Terminal Apron Repaving in 7 Phases																	
	7.7	Phase 5	✓				X		5	1	5	5	3	5	5	3	3	177
	7.3	Phase 6	✓				X		5	3	5	3	5	5	0	0	3	170
6	RW 33 Exit Taxiway																	
	6.1	Full-Length Parallel Taxiway	N/R				X											
1	RW 6 RSA (Runway Safety Area) Concepts																	
	1.2	EMAS with Irregular RSA	N/R				X											N/A
	1.3	200-Foot Runway Shift	N/R				X											N/A
	1.4	850-Foot Runway Shift	N/R				X											N/A
	1.5	1,450-Foot Runway Shift	N/R				X											N/A



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Nantucket Memorial Airport Master Plan Update

Nantucket Airport Master Plan
 MASTER PLAN ALTERNATIVE CONCEPTS - EVALUATION MATRIX

CAPACITY/TERMINAL AIRFIELD CONCEPTS (7.2)

Project Number	Section	Project	FAA Eligible		Time Frame			Evaluation Criteria							Priority Score (WV X B)			
			Yes	No	0 Years - 5 Years	6 Years - 10 Years	11 Years - 20 Years	Safety	Security	FAA Design	Operational	Revenue	Feasibility	Environmental		Sustainability	Cost/Benefit	
					Weighted Value (WV)			9	8	7	6	5	4	3	2	1		
1		<i>Terminal Secure Hold Room Concepts</i>																
	1.1	Seasonal Tent/Secure Hold Room		✓	X				3	1	0	3	0	5	5	3	5	99
4		<i>Air Carrier Bypass Taxiway/Hold Areas</i>	✓			X			5	3	5	5	0	5	1	0	5	162
1		<i>Terminal Secure Hold Room Concepts</i>																
	1.2	Convert Bag Claim to Hold Room/Tent or Flat Top Reuse, for Bag Claim /		✓		X			3	3	0	3	0	5	5	5	5	119
1		<i>Terminal Secure Hold Room Concepts</i>																
	1.4	Building Renovation/Expansion		✓			X		3	5	0	5	0	3	3	5	3	131
	1.3	Convert Bag Claim to Hold Room/Construct New Bag Claim Addition		✓			X		3	5	0	3	0	3	3	5	3	119

N/A : Not AIP Eligible

N/R : Not Recommended

B

5	Optimum
3	Neutral
1	Minimum
0	Not Applicable



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Nantucket Memorial Airport Master Plan Update

Nantucket Airport Master Plan
 MASTER PLAN ALTERNATIVE CONCEPTS - EVALUATION MATRIX

EFFICIENCY/ACCESSORY NEEDS (7.3)

Project Number	Section	Project	FAA Eligible		Time Frame			Evaluation Criteria							Priority Score (WV X B)			
			Yes	No	0 Years - 5 Years	6 Years - 10 Years	11 Years - 20 Years	Safety	Security	FAA Design	Operational	Revenue	Feasibility	Environmental		Sustainability	Cost/Benefit	
						Weighted Value (WV)			9	8	7	6	5	4	3	2	1	
4		Airport Manager's/Thompson House Rehabilitation		✓	X				1	1	0	5	0	5	1	5	5	85
1		Reconstruction North Ramp	✓			X			5	3	5	5	5	3	1	0	3	177
2		GSE																
	2.1	Expand Existing GSE Footprint	N/R	✓		X			3	3	0	5	0	5	3	3	5	121
	2.2	Construct New GSE Garage		✓		X			3	3	0	5	0	5	1	5	5	119
3		SRE																
	3.1	Expand Existing Footprint	✓			X			3	3	0	5	0	5	1	5	5	119
	3.2	Construct SRE Storage Annex				X			3	3	0	3	0	5	3	3	3	107

N/A : Not AIP Eligible

N/R : Not
 Recommended

B

5	Optimum
3	Neutral
1	Minimum
0	Not Applicable



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Nantucket Airport Master Plan
 MASTER PLAN ALTERNATIVE CONCEPTS - EVALUATION MATRIX

REVENUE ENHANCEMENT CONCEPTS (7.4)

Project Number	Section	Project	FAA Eligible		Time Frame			Evaluation Criteria								Priority Score (WV X B)	
			Yes	No	0 Years-5 Years	6 Years-10 Years	11 Years-20 Years	Revenue	Safety	Security	FAA Design	Operational	Feasibility	Environmental	Sustainability		Cost/Benefit
					Weighted Value (WV)			9	8	7	6	5	4	3	2	1	
10		Wingspan vs. Weight-based Fees		✓	X			5	3	3	0	1	5	5	5	5	145
2		Combo GA Hangars/Commercial Space	N/R	✓	X			5	3	3	0	5	5	1	0	5	143
8		Flat Top/Double Wide Re-use															
	8.1	Former Marine Home Lease Parcel		✓	X			5	3	3	0	0	5	5	5	5	140
9		Airport Rates and Charges		✓	X			5	3	3	0	0	5	5	5	5	140
6		Expand Bunker Area Industrial Development		✓	X			5	3	3	0	0	5	1	5	5	128
7		DELTA Parcel/Public Employee Housing/Seasonal Employee		✓	X			5	3	3	0	0	3	1	5	5	120
8		Flat Top/Double Wide Re-use															
	8.2	Portion of USPS Lease Parcel		✓	X			5	3	3	0	0	3	1	5	5	120
4		Parking Lot Operations: Hourly vs. Overnight Rates / Access Gate		✓	X			5	3	0	0	0	5	5	5	5	119
5		Bunker Road Commercial Vehicle Parking Areas		✓	X			5	3	0	0	0	5	3	0	5	103
11		Revenue and Enhancement Concepts - Flex Space Terminal/GA Building		✓	X			5	0	0	0	0	5	5	5	5	95
12		GA Revitalization/Special Events/Owner Type Group Fly-ins		✓	X			5	0	0	0	0	5	5	5	3	93
1		North Apron GA Hangars	N/R	✓		X		5	3	3	0	5	5	1	0	5	143
3		Potential Large GA Jet Hangars	N/R	✓			X	5	3	3	0	5	3	1	0	5	135

N/A : Not AIP Eligible

N/R : Not

Recommended

B

5	Optimum
3	Neutral
1	Minimum
0	Not Applicable



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Nantucket Airport Master Plan
 MASTER PLAN ALTERNATIVE CONCEPTS - EVALUATION MATRIX

ENVIRONMENTAL/SUSTAINABILITY CONCEPTS (7.5)

Project Number	Section	Project	FAA Eligible		Time Frame			Evaluation Criteria								Priority Score		
			Yes	No	0 Years - 5 Years	6 Years - 10 Years	11 Years - 20 Years	Sustainability	Environmental	Safety	Security	FAA Design	Operational	Revenue	Feasibility		Cost/Benefit	
						Weighted Value (WV)			9	8	7	6	5	4	3	2	1	
3		Coastal Management Initiative		✓	X		X	5	5	3	3	0	3	0	5	5	151	
12		Apron Lighting Control/PCL Dimmer Concept	✓		X			5	5	1	1	1	3	0	5	3	128	
11		Ramp Electrification - VALE Funding		✓	X			5	5	0	0	0	3	3	3	3	115	
1		Solar Array Development																
	1.1	Bunker Area Solar Development		✓	X			5	3	0	0	0	3	5	5	5	111	
10		"Fly Friendly" Aircraft Noise Mitigation Measures		✓	X	X	X	5	5	1	0	0	1	0	3	3	105	
6		Advertise Rental Cars/Taxis/Bike/Courtesy Vans		✓	X			5	5	0	0	0	0	0	5	3	98	
8		Bike Share/Rental Program	N/R	✓	X			5	5	0	0	0	0	1	3	3	97	
5		Increase NRTA Seasonal Service Frequency		✓	X			5	5	0	0	0	0	0	3	3	94	
3		Coastal Management Initiative		✓	X	X	X	5	5	3	3	0	3	0	5	5	151	
1		Solar Array Development																
	1.2	DELTA Parcel/Adjacent Runway 24 Solar Array		✓		X		5	3	0	0	0	3	5	5	5	111	
4		Convert Airport Maintenance Fleet to Alternative Fuels	N/R	✓		X		5	5	0	0	0	3	0	3	3	106	
10		"Fly Friendly" Aircraft Noise Mitigation Measures		✓	X	X	X	5	5	1	0	0	1	0	3	3	105	
9		Secure Bike Parking/Bike Path Extension	N/R	✓		X		5	5	0	1	0	0	0	3	1	98	
7		Preferential Parking for Alternatives-Fuel Cars and Additional EV Charging Stations		✓		X		5	5	0	0	0	0	0	5	1	96	
3		Coastal Management Initiative		✓	X	X	X	5	5	3	3	0	3	0	5	5	151	
10		"Fly Friendly" Aircraft Noise Mitigation Measures		✓	X	X	X	5	5	1	0	0	1	0	3	3	105	

N/A : Not AIP Eligible

N/R : Not Recommended

B	
5	Optimum
3	Neutral
1	Minimum
0	Not Applicable



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Nantucket Memorial Airport Master Plan Update

7.6.3 Priority Projects List (as finalized with Airport Working Group)

The following Priority Projects List is a summary of the preceding alternatives, as derived from the Evaluation Matrix, revised and balanced to show the project priorities within each time frame (5, 10 and 20 years). The priorities are listed in sequence for each of the five improvement categories, with preliminary cost estimates for each improvement. The matrix also identifies the eligibility for funding under the FAA's Airport Improvement Program (AIP) and MassDOT Aeronautics funding, as well as the need for private capital (IE: for new hangar complexes).

This Projects Priority List was discussed and voted upon by the Master Plan's Working Group, made up of local residents, neighborhood and environmental groups, as well as Town and Airport personnel. The Working Group attended a series of briefings with Master Plan staff on the Aviation Activity Trends and Forecasts, plus the Facilities Requirements for airport improvements. The Working Group conducted workshops during which the Alternatives were evaluated and the Proposed Priority Projects List was developed. The Working Group's Priorities List was an advisory statement intended as guidance to Airport Management and the Airport Commission. The Commission's Planning Subcommittee reviewed the 5-Year Safety and Security Concepts with Airport Management staff and made minor revisions to balance the priority rankings and timing, relative to the five year budget and FAA funding limits.

The Priority Projects List provided a useful segue for Airport Management to establish the **5-Year Airport Capital Improvement Plan (ACIP)** and the **Facilities Implementation Plan**, as detailed in Chapter 8. That ACIP, in turn, sets the basis for the resulting **Airport Layout Plan (ALP)** in Chapter 9, the **Financial Feasibility Plan** in Chapter 10, and the **Environmental Notification Form (ENF)** in Chapter 11.



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 MASTER PLAN ALTERNATIVE CONCEPTS - PRIORITY LIST

0 Years- 5 Years

Project Chapter	Section	Project	Engineers Probable Cost	FAA Eligible		Recommended		Total Time Frame	Priority Score	Time Frame								
				Yes	No	Yes	No			0 Years - 5 Years	(W/V X B)	1	2	3	4	5		
SAFETY & SECURITY CONCEPTS: 0-5 Years																		
7.1.7		Terminal Apron Repaving in 7 Phases																
	1	Phase 1	\$1.7M	✓		✓		X	197	X								
7.1.11		North Ramp Part 77 Aircraft Tail Heights Concepts																
	1	Create New Parking Position	\$5K	✓		✓		X	194	X								
	2	Swap Parking Position		✓		✓		X	184									
		Taxiway/South Apron MEPA-MESA Permitting	\$750K	✓		✓		X			X							
7.1.2		Separation of Taxiways "E" and "G"	\$600K	✓		✓		X	164		X							
7.1.5		RW 24 Exit Taxiway																
	2	High-Speed Angle Exit Taxiway	\$830K	✓		✓		X	166			X						
7.1.12		Information Technology System Upgrades																
	8	Upgrade Voice Telephone System	\$300K	✓		✓		X	161								X	
7.1.8		South Apron Redesign/Expansion																
	1	Phase 1	\$1.8M	✓		✓		X	159			X						
7.1.7		Terminal Apron Repaving in 7 Phases																
	2	Phase 2	\$1.8M	✓		✓		X	159						X			
7.1.12		Information Technology System Upgrades																
	6 & 7	Terminal PA System/FIDS	\$375K	✓		✓		X	155	X								
7.1.10		RW 15 RPZ (Runway Protection Zone) Overlay Zone	\$5K	✓		✓		X	147	X								
7.1.12		Security System Upgrade																
	1	Vehicular and Pedestrian Access Controls	\$300K	✓				X	140								X	
7.1.12		Information Technology System Upgrades																
	5	Consolidate Communications Facilities- Main Terminal	\$100K	✓		✓		X	127								X	
7.1.12		Information Technology System Upgrades																
	4	Terminal Building to SRE - IT Communication Link	\$10K	✓		✓		X	122								X	
7.1.1		RW 6 RSA (Runway Safety Area) Concepts																
	1	Existing Irregular RSA	N/A	N/A		✓		X	N/A									
Sub Total=			\$8.58M							\$2.09M	\$1.35M	\$2.63M	\$1.8M	\$710K				
CAPACITY/TERMINAL AIRFIELD CONCEPTS: 0-5 Years																		
7.2.1		Terminal Secure Hold Room Concepts																
	1	Seasonal Tent/Secure Hold Room	\$20K			✓		X	99				X					
Sub Total=			\$20K										\$20K					
EFFICIENCY-ACCESSORY CONCEPTS: 0-5 Years																		
7.3.4		Airport Manager's/Thompson House Rehabilitation	\$750K			✓		X	85			X						
		Air Traffic Control Tower Rehabilitation	\$1M			✓		X	N/A	X								
Sub Total=			\$1.75M							\$1M	\$750K							
REVENUE-ENHANCEMENTS: 0-5 Years																		
7.4.10		Wingspan vs. Weight-based Fees/Rates and Charges	N/A			✓	✓	X	145	X								
7.4.2		Combo GA Hangars/Commercial Space (Private Costs)	\$2.5M			✓	✓	X	143	X								
7.4.6		Expand Bunker Area Industrial Development	N/A			✓	✓	X	128			X						
7.4.7		DELTA Parcel/Public Employee Housing/Seasonal Employee	N/A			✓	✓	X	120			X						
7.4.4		Parking Lot Operations: Hourly vs. Overnight Rates / Access Gate	\$80K			✓	✓	X	119	X								
7.4.5		Bunker Road Commercial Vehicle Parking Areas	\$15K			✓	✓	X	103								X	
7.4.11		Revenue and Enhancement Concepts - Flex Space Terminal/GA	N/A			✓	✓	X	95	X	X	X	X	X	X	X	X	
7.4.12		GA Revitalization/Special Events/Owner Type Group Fly-ins	N/A			✓	✓	X	93	X	X	X	X	X	X	X	X	
Sub Total=			\$2.6M							\$2.58M	N/A	N/A	\$100K	\$15K				
ENVIRONMENTAL-SUSTAINABILITY: 0-5 Years																		
7.5.3		Coastal Management Initiative (On-Going)	\$50K (Per-Year)			✓	✓	X	151	X	X	X	X	X	X	X	X	
7.5.12		Apron Lighting Control/PCL Dimmer Concept	\$80K	✓		✓		X	128								X	
7.5.11		Ramp Electrification- VAIL	(\$4M)			✓	✓	X	115		?							
7.5.1		Solar Array Development																
	7.5.1.1	Bunker Area Solar Development	N/A			✓	✓	X	111	X								
7.5.10		"Fly Friendly" Aircraft Noise Mitigation Measures (On-Going)	\$10K (Per-Year)			✓	✓	X	105	X	X	X	X	X	X	X	X	
7.5.6		Advertise Rental Cars/Taxis/Bike/Courtesy Vans/NRTA	\$5K (Per-Year)			✓	✓	X	98	X	X	X	X	X	X	X	X	
7.5.8		Bike Share/Rental Program	N/A			✓	✓	X	97								X	
Sub Total=			\$405K							\$145K	\$70K	\$65K	\$65K	\$145K				
(0 - 5 Year Engineer Probable Cost) TOTAL=			\$13.5M							\$5.82M	\$2.17M	\$2.72M	\$1.9M	\$870K				

AP ELIGIBLE



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 MASTER PLAN ALTERNATIVE CONCEPTS - PRIORITY LIST

6 Years-10 Years

Project Chapter	Section	Project	Engineers Probable Cost	FAA Eligible		Recommended		Total Time Frame 6 Years - 10 Years	Priority Score (W X B)	Time Frame						
				Yes	No	Yes	No			6	7	8	9	10		
SAFETY & SECURITY CONCEPTS: 6-10 Years																
7.1.7		<i>Terminal Apron Repairing in 7 Phases</i>														
	7.1.7	Phase 3	\$1.73M	✓		✓		X	197	X						
	7.1.7	Phase 4	\$1.73M	✓		✓		X	197		X					
	7.1.7	Phase 5	\$3.02M	✓		✓		X	197			X				
7.1.8		<i>South Apron Redeign/Expansion</i>														
	3	Phase 3	\$1.8M	✓				X	169					X		
7.1.6		<i>RW 33 Exit Taxiway</i>														
	2	High-Speed Exit Taxiway	\$1.5M	✓		✓		X	158			X				
	3	High-Speed Exit Taxiway and Stub Combo	\$1.2M	✓		✓									X	
7.1.4		Relocate Stub Taxiways "A", "B", and "C"	\$500K	✓				X	143				X			
7.1.3		Separation of Taxiways "E" and "F"	\$1.4M	✓		✓		X	134			X				
7.1.12		<i>Security System Upgrade</i>														
	2	Fiber Optic Intrusion Sensors	\$500K	✓		✓		X	118						X	
7.1.9		<i>RW 24 DME/Localizer Facility Relocation - Coastal Flood Hazard Zone (FAA Project)</i>	\$750K	✓				X	N/A					X		
Sub Total=			\$ 14.13M							\$ 1.73M	\$ 1.73M	\$ 6.4M	\$ 2.55M	\$ 1.7M		
CAPACITY/TERMINAL AIRFIELD CONCEPTS: 6-10 Years																
7.2.2		<i>AirCarrier Bypass Taxiway/Hold Areas</i>	\$800K	✓		✓		X	162		X					
7.2.1		<i>Terminal Secure Hold Room Concepts</i>														
	2	Convert Bag Claim to Hold Room/Tent	(\$1.8 M)		✓		✓	X	119							
	1.3	Convert Bag Claim to Hold Room/Construct New Bag Claim Addition	\$5M		✓	✓		X	119						X	
Sub Total=			\$ 5.8M								\$800K			\$5M		
EFFICIENCY/ACCESSORY CONCEPTS: 6-10 Years																
7.3.1		<i>GSE Storage Expansion Concepts</i>														
	1	Expand Existing GSE Footprint	(\$300K)		✓		✓	X	121							
	2	Construct New GSE Garage	\$300K		✓	✓		X	119	X						
7.3.2		<i>SRE Storage Expansion Concepts</i>														
	1	Expand Existing Footprint	\$1.4M		✓	✓		X	119		X					
	2	Construct SRE Storage Annex	(\$1.2M)		✓		✓	X	107							
Sub Total=			\$ 1.7M							\$230K	\$ 1.4M					
REVENUE ENHANCEMENT CONCEPTS: 6-10 Years																
7.4.1		<i>North Apron GA Hangars (Pending Private Development)</i>	\$ 2.25M		✓	✓		X	143				X			
Sub Total=			\$ 2.25 M										\$ 2.25M			
ENVIRONMENTAL SUSTAINABILITY CONCEPTS: 6-10 Years																
7.5.3		<i>Coastal Management Initiative (On-Going)</i>	\$50K		✓	✓		X	151	X	X	X	X	X	X	
7.5.2		<i>Endangered Species Master Plan</i>	\$250K		✓	✓			108	X						
7.5.1		<i>Solar Array Development</i>														
	2	DELTA Parcel/Adjacent Runway 24 Solar Array	N/A		✓	✓		X	111	X						
7.5.4		<i>Convert Airport Maintenance Fleet to Alternative Fuels</i>	\$500K		✓	✓		X	106							
7.5.10		<i>"Fly Friendly" Aircraft Noise Mitigation Measures (On-Going)</i>	N/A		✓	✓		X	105	X	X	X	X	X	X	
7.5.8		<i>Secure Bike Parking/Bike Path Extension</i>	\$250K		✓	✓		X	98							
7.5.7		<i>Preferential Parking for Alternatives- Fuel Cars and Additional EV Charging Stations</i>	\$45K		✓	✓		X	96							
Sub Total=			\$ 1.95M							\$300K	\$50K	\$550K	\$300K	\$345K		
TOTAL=			\$ 25.4M							(Per Year) TOTAL=	\$ 2.26M	\$ 4M	\$ 9.2M	\$ 2.85M	\$ 7.05M	

FAA ELIGIBLE

