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## SECTION 3.0 PROPOSED ACTION AND ALTERNATIVES ANALYSIS

This section describes the Preferred Alternative (Proposed Action), the No Action, and reasonable alternatives (if any). As defined in FAA Order 5050.4B, the Proposed Action is “the solution the airport sponsor wishes to implement to solve the problem(s) it is facing” and all practicable means to avoid or minimize environmental harm from the alternative selected have been adopted. Alternatives to the Proposed Action have been considered and evaluated. An explanation is provided to explain why some alternatives have been judged “not reasonable” and eliminated from further analyses.

This section also identifies the Environmentally Preferred Alternative. In accordance with NEPA, NPS and FAA are required to identify the “environmentally preferred alternative”. The Environmentally Preferred Alternative is defined by the Council on Environmental Quality (CEQ) as “the alternative that will promote the national environmental policy as expressed in NEPA, Section 101(b)”. In general, the Environmentally Preferred Alternative is the alternative that causes the least damage to the biological and physical environment and that best protects, preserves, and enhances historic, cultural and natural resources. The Environmentally Preferred Alternative is not necessarily the Preferred Alternative.

The environmentally preferred alternative includes alternatives that achieve the following goals:

- Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
- Assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings;
- Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;
- Preserve important historic, cultural and natural aspects of our national heritage and maintain, wherever possible, an environment which supports diversity and variety of individual choice;
- Achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and
- Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

The CIP projects include both safety/security projects and capacity projects. In order to evaluate the projects for the Environmentally Preferred Alternative in terms of the above-listed goals, the grouping of projects was further differentiated to identify projects occurring within an existing footprint (footprint reconstruction projects), operational safety projects that were related to Part 77 navigational airspace, ground operational safety projects, and impact area of the project. Each Environmentally Preferred Alternative has been chosen based on the goals of NEPA, with the aid of these additional criteria.

The projects discussed are:

- 3.1 Westerly Taxiway System Improvements
- 3.2 East End TW Relocation
- 3.3 Terminal Apron Reconstruction
- 3.4 Easterly End of Parallel TW Reconstruction
- 3.5 TW Lighting, Lighted TW Signs, and Electric Vault Installation

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- 3.6 Sightseeing Shack Improvements
  - 3.7 Access Road to MALSF Approach Lights Improvements
  - 3.8 Service Roads to LES and AWOS Construction
  - 3.9 Perimeter Safety/Security Fence Installation
  - 3.10 Auto Parking Expansion
  - 3.11 Terminal Building Expansion
  - 3.12 Turf Apron Expansion

### **3.1 Westerly Taxiway System Improvements**

This FEIR/EA evaluates the potential impact of improving the westerly end of the TW system at the Airport. The sub elements of the Westerly Taxiway System consist of the West End Connector Taxiway, the Westerly End of Parallel Taxiway, and the Mid Connector Taxiway. Two alternatives will be analyzed for environmental impacts in Section 5, and two alternatives have been considered but rejected. The two alternatives analyzed are the No Action alternative and an alternative that would construct westerly TW system improvements. The alternatives that have been considered for the project are illustrated on figures provided at the end of this section.

#### **3.1.1 No Action**

The No Action alternative would maintain the West End TW in its current location and does not address the operational safety issues discussed in the Purpose and Need (Section 2). The taxiway would continue to be located within the clear zone in the approach for Runway 7, which creates the potential for collision between a landing aircraft and a plane waiting to takeoff. Aircraft would continue to taxi onto the runway parallel to the runway end and out of visual contact with approaching aircraft. Aircraft would continue to hold short of the runway which limits their view of the runway and other aircraft.

The No Action alternative would maintain the jog in the parallel taxiway, would not replace the pavement which is in poor condition, and would not address the operational safety issues discussed in detail in Section 2. The pavement is over 20 years old and in poor condition. Paved surfaces at airports must be maintained in good condition. Airfield pavement standards estimate a useful lifespan of 20 years, after which pavement is eligible for reconstruction.

The No Action alternative would maintain the existing Mid Connector TW with the non standard jug-handle intersection with the runway and the parallel taxiway. It would also not align properly with the proposed relocated West End TW and the proposed realigned westerly end of the parallel TW. No impacts to natural resources would occur with the No Action alternative because there would be no construction or change in current conditions.

#### **3.1.2 Westerly TW System Improvements (Proposed Action and Preferred Alternative)**

The sub elements of the Westerly Taxiway System consist of:

- A. West End Connector Taxiway
- B. Westerly End of Parallel Taxiway
- C. Mid Connector Taxiway

The sub elements are discussed individually but will be combined as one project in terms of permitting and construction because the elements would be constructed at the same time.

(A.) Relocate West End Taxiway with Standard Right Angle Out of the Runway 7 Approach

The alternative to relocate the West End TW would address the operational safety issues and would be in compliance with FAA design standards. The taxiway would connect with the end of the runway at a right angle and would be located out of the approach for the runway.

(B.) Realign Westerly End of Parallel Taxiway

This alternative would shift the westerly end of the parallel TW to meet the existing edge of pavement of the easterly portion of the parallel TW. A run-up pad, as required by FAA design standards for new construction, would also be constructed at the end for aircraft to perform required engine and systems checks before takeoff, without blocking the taxiway.

The parallel TW would be reconstructed with a consistent width of 40 feet. Since the pavement width is currently 60 feet, pavement would be removed. Cultural Grassland habitat would be restored in areas of pavement removal.

(C.) Realign Mid Connector TW

The alternative to realign the Mid Connector TW would provide a standard 90 degree intersection design. The aging pavement would also be reconstructed to address the hazard of loose pavement causing harm to aircraft and passengers. The project would be constructed within the existing area of pavement and managed Cultural Grassland habitat.

Collectively, the three elements of the Preferred Alternative for the Westerly TW System Improvements (shown on Figure 3.1) would result in alterations to approximately 28,655 SF of freshwater wetlands, 6,400 SF of coastal dune, and temporary impacts to grassland and rare species habitats for one or more state-listed species. Proposed mitigation measures, as discussed further in Section 7.0, would provide restoration of these habitats and implement construction phase mitigation measures.

### 3.1.3 Environmentally Preferred Alternative

After review, the Westerly Taxiway System Improvements (Preferred Alternative) is the Environmentally Preferred Alternative. The Preferred Alternative would result in a net loss of pavement (See Table 5-2 in Section 5) and includes mitigation to restore areas of wetland and coastal dune impacted by the project. The overall net loss in pavement from all taxiway projects is approximately 42,200 SF. The current state of the taxiway is a hazard to aviators and passengers, and is a risk to the safety of those traveling to and from the Airport, as Airport operation in this area involves runway activity and airplanes in flight (as opposed to ground operations such as taxiing). Constructed improvements are necessary to address the Part 77 navigable airspace safety and operational issues of the West End TW that is currently within the approach to RW 7. These improvements will restore and maintain operational safety within the Part 77 airspace. Additionally, measures to minimize adverse impacts to wetlands and coastal dunes such as steepened slopes have been incorporated into the design, and construction period mitigation measures such as erosion control and construction timing will be implemented to reduce overall impact. An invasive species management plan would also be implemented to preserve an environment that supports the natural

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diversity found within the CCNS. Permitting agencies will issue permits with the condition that wetland mitigation is monitored and repaired, if not successful.

Among the alternatives considered, the West End Taxiway Improvements would ultimately attain the greatest balance between the human population, the operational safety needs for the Airport, and the surrounding natural environment.

### **3.1.4 Alternatives Considered But Rejected**

#### *Existing Footprint Alternative*

The alternative that would reconstruct the West End TW within the existing footprint was suggested by others during the ENF comment period as a way to minimize impacts to wetland and grassland habitats. This alternative would provide a standard right angle connection to the runway, but the taxiway would continue to be located within the approach to Runway 7, as illustrated on Figure 3.1. Likewise, the risk of collisions would not be reduced because aircraft would continue to enter parallel to the runway end, rather than perpendicular to the end of the runway.

This alternative would have unavoidable impacts to approximately 13,665 SF of freshwater wetlands in Wetlands I and C/J/FK, as well as additional impacts to grassland habitat.

The alternative that would reconstruct the existing TW footprint with a standard right angle within the existing footprint has been deemed unsafe and unfeasible because it would not comply with the FAA safety and design standards and it would not address existing operational safety issues. This alternative has been dismissed from further review.

#### *Lights on Existing Parallel TW Alternative*

It was suggested in the comments on the ENF that installation of taxiway lights alone on the existing taxiway could address the safety issues relative to the jog in the partial parallel taxiway. Environmental impacts with this alternative would be limited to minor impacts to grassland habitat. However, pilots do not expect to encounter a jog mid-way along a parallel taxiway. Installation of edge lights would not fully eliminate the non-standard hazardous condition of maneuvering the aircraft through an unexpected turn at night and in bad weather conditions, and would not correct the operational safety issues created by the misaligned pavement. This alternative has been dismissed from further review.

## **3.2 East End TW Relocation**

Two alternatives for the East End Taxiway improvements have been analyzed within this FEIR/EA, including the No Action alternative and an alternative that would relocate the East End TW to connect with the end of Runway 25. The alternative that has been considered for the project is illustrated on Figure 3.2, provided at the end of this section.

### **3.2.1 No Action**

The No Action alternative would maintain the 200-foot offset between the end of Runway 25 and East End TW. Aircraft would continue to back-taxi on the active runway maintaining the current unsafe conditions by possibly interfering with landing aircraft. No impacts to natural resources would occur with the No Action alternative because there would be no construction or change in current conditions.

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### 3.2.2 East End TW Relocation (Proposed Action and Preferred Alternative)

The alternative to relocate the East End TW to connect with the end of the runway would be in full compliance with FAA mandated design standards without impacting the terminal apron. There would be a slight curve in the East End TW centerline to avoid aircraft on the terminal apron. This configuration would not present a safety hazard because the terminal apron is well lit with overhead lighting, and planes are moving slowly as they enter the East End TW. Implementation of this alternative would result in alterations to approximately 28,300 SF of freshwater wetlands (Wetland B), and approximately 5,000 SF of coastal dune. It would also be within managed Cultural Grasslands, with potential impacts to rare species habitat.

### 3.2.3 Environmentally Preferred Alternative

Of the alternatives considered for the East End Taxiway, the East End TW Relocation alternative (Preferred Alternative) is the Environmentally Preferred Alternative. While this alternative involves construction, relocating the current configuration of the taxiway will greatly reduce the significant safety hazard that the current configuration presents to aviators and passengers traveling to and from the Airport. The Preferred Alternative will address the Part 77 navigable airspace safety and operational issues of the East End TW that currently requires planes to back taxi on the active runway. As operations within the East End TW involve runway activity and airplanes in flight, the relocation of the taxiway is required to restore the necessary level of safety in this area to avoid potential undesirable and unintended consequences, while maintaining the diversity of natural resources at the Airport, to the fullest extent possible.

The preferred alternative includes mitigation to restore areas of wetland and coastal dune impacted by the relocation of the taxiway. Overall, the wetland mitigation plan for the CIP projects results in 1.3:1 on site replication, with the addition of invasive species management for several species and a special wetland enhancement management program for *Phragmites*, which will have a beneficial impact on wetlands at the Airport. Measures to minimize adverse impacts to wetlands and coastal dunes such as steepened slopes have been incorporated into the design, and construction period mitigation measures will be implemented such as erosion control and time of construction to reduce overall impacts. An invasive species management plan will also be implemented to preserve an environment that supports the natural diversity found within the CCNS. Permitting agencies will issue permits with the condition that wetland mitigation is monitored and repaired, if not successful. The East End TW Relocation would ultimately attain the greatest balance between the human population, the need to restore operational safety for the Airport, and the natural environment.

### 3.2.4 Alternatives Considered But Rejected

No other alternatives were identified.

## 3.3 Terminal Apron Reconstruction

In accordance with MEPA and NHESP, the Terminal Apron Reconstruction has been included in this FEIR/EA to avoid segmentation, although NEPA does not require this project to be included in the FEIR/EA. This project was allowed to go forward because it would have no impacts. This FEIR/EA evaluates two alternatives for reconstruction of the Terminal Apron pavement, including the No Action alternative and an alternative that would reconstruct the Terminal Apron pavement.

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### **3.3.1 No Action**

The No Action alternative would retain the existing pavement, and would not address the Airport safety issues associated with deteriorated pavement. As previously noted, paved surfaces at airports must be maintained in good condition and are eligible for reconstruction after 20 years. No impacts to environmental resources would occur as a result of the No Action alternative because the pavement would not be reconstructed adjacent to wetland or coastal dune resources.

### **3.3.2 Reconstruct Terminal Apron within the Existing Footprint (Proposed Action and Preferred Alternative)**

The Preferred Alternative would reconstruct the terminal apron pavement within the same footprint to address Airport safety issues. As there would be no environmental impacts, and the implementation of this project element would neither preclude or constrain considerations for all other CIP elements, the Secretary of Energy and Environmental Affairs allowed the Airport to proceed with the reconstruction of the Terminal Apron within the same footprint prior to the completion of the FEIR as iterated in the MEPA Certificate issued on the NPC/DEIR.

The Airport applied for an Order of Conditions (OOC) from the Provincetown Conservation Commission. Coordination was also carried out with staff at the Massachusetts Natural Heritage & Endangered Species Program (NHESP) regarding requirements under MESA, and this project qualifies as an exempt project pursuant to 321 CMR 10.14 (8): “the maintenance, repair or replacement, but not widening of existing paved roads, ...and paved parking areas,…” NHESP reviewed and commented as part of the Notice of Intent (NOI) process under the Wetland Protection Act. The project will, however, be included in the Massachusetts Endangered Species Act (MESA) application for the Airport’s CIP projects to avoid segmentation. The project was issued an OOC (DEP File No. 058-0440), and construction was completed in fall 2008.

### **3.3.3 Environmentally Preferred Alternative**

Upon review of the Terminal Apron alternatives, the Terminal Apron Reconstruction within the Existing Footprint has been selected as the Environmentally Preferred Alternative. This reconstruction project (completed in 2008) was limited to the repavement of the existing paved areas within the same footprint, and there were no impacts to adjacent cultural or natural resource areas. The reconstruction of the Terminal Apron addressed the ground operation safety issues to taxiing aircraft posed by the deteriorating state of the Terminal Apron pavement. Of the alternatives considered, the Terminal Apron Reconstruction best achieved the balance between restoring the safety and productivity of the Airport while protecting the surrounding natural environment (as the project did not impact resource areas). If the Terminal Apron was not reconstructed, it would yield increasing safety concerns for pilots and passengers.

### **3.3.4 Alternatives Considered But Rejected**

No other alternatives were identified.

## **3.4 Easterly End of Parallel TW Reconstruction**

Two alternatives were evaluated in this FEIR/EA for reconstructing the easterly end of the Parallel TW pavement, the No Action alternative and an alternative that would reconstruct the pavement.

### **3.4.1 No Action**

The No Action alternative would retain the existing pavement which is over 20 years old and in poor condition. Pavement at airports is required to be maintained in good condition. The No Action alternative would result in increasing safety concerns for pilots and their passengers. There would be no impacts to environmental resources with the No Action alternative because there would be no pavement reconstruction near wetland or other natural resources.

### **3.4.2 Reconstruct Parallel TW within Existing Footprint (Proposed Action and Preferred Alternative)**

The Preferred Alternative would reconstruct the pavement within the same footprint, but with a reduced pavement width of 40 feet. Grassland habitat would be restored in the pavement removal areas. As this project element would occur within the existing footprint and there would be no environmental impacts as a result of its implementation, the Certificate issued on the NPC/DEIR by the Secretary of Energy and Environmental Affairs allowed the Airport to proceed with the reconstruction of the easterly end of the parallel TW within the same footprint prior to the completion of the FEIR. However, construction of this project element would likely be carried out in conjunction with the West End Taxiway Improvements.

### **3.4.3 Environmentally Preferred Alternative**

The Environmentally Preferred Alternative is the Reconstruction of the Parallel TW within Existing Footprint (Preferred Alternative). The project will not impact wetlands or other natural resources because it will occur within the footprint of the existing Parallel TW. The reconstruction of the parallel taxiway would reduce the pavement width, result in an overall reduction of impervious surfaces at the Airport, and restore a level of safety to ground operations in this area. Timing of construction and erosion controls will be implemented to protect adjacent resources and listed species. This alternative will increase the safety and productivity of the human environment at the Airport while also enhancing the quality of the surrounding natural environment. Areas gained by the pavement reduction would be restored to grassland habitat that is important to state-listed rare Vesper Sparrows, thereby increasing and enhancing environmental resources at the Airport. Reconstruction achieves the greatest balance between preserving the safety and productivity of the Airport as well as protecting the surrounding natural environment.

### **3.4.4 Alternatives Considered But Rejected**

No other alternatives were identified.

## **3.5 Taxiway Lighting and Electric Vault**

This FEIR/EA evaluates the potential impact of installing taxiway edge lights and lighted TW signs, and constructing a new electric vault. Two alternatives will be analyzed for environmental impacts in Section 5, and two alternatives have been considered but rejected. The two alternatives analyzed are the No Action alternative and an alternative that would install edge lights and construct an electric vault adjacent to the existing Sightseeing Shack. It should be noted that construction of the Electric Vault would be considered a Connected Action (per NPS DO-12) to the Sightseeing Shack improvements (see Section 3.6 below), as the two elements are closely related and interdependent. The alternatives that have been considered for these project elements are illustrated on Figure 3.3 provided at the end of this section.

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### 3.5.1 No Action

Implementation of the No Action alternative would maintain the taxiway edge reflectors and not upgrade the electric equipment that would remain inside the Sightseeing Shack. There would be no environmental impacts as a result of the No Action alternative because there would be no construction or disturbance within the managed grasslands.

### 3.5.2 Install TW Lighting and Lighted TW Signs, and Construct Electric Vault (Proposed Action and Preferred Alternative)

#### *Install TW Lighting and Lighted TW Signs*

The alternative to install TW edge lights would locate the lights 10 feet off the edge of pavement along the entire length of the taxiway as required by FAA design standards, and lighted TW signs would be installed to identify the locations of each TW. The electric cable for the lights and TW signage would be installed within the existing mowed grassland habitat using the cable plowing method, as described in Section 5.6.2.5. The area would be restored as grassland. Construction timing and other construction mitigation measures would minimize rare species habitat impacts. Lighting is controlled by pilots remotely and would only be operational during landings and takeoffs under inclement weather conditions or at night. Disruptions to Vesper Sparrows or other species are anticipated to be minimal and would be no different than the existing lighting system for the runway.

#### *Construct Electric Vault*

With the Preferred Alternative, the constructed Electric Vault would be located immediately adjacent to the Sightseeing Shack (Alternative 1) in an area of managed grassland, which is isolated from larger expanses of grassland habitat at the Airport. Electric equipment currently housed within the Sightseeing Shack would be upgraded to current electric codes and housed within a new vault adjacent to the Sightseeing Shack. The location of the Electric Vault under the Preferred Alternative would be close to the existing electrical service and equipment, which would minimize the distance for the new main cable connection. Environmental impacts would be minimal.

### 3.5.3 Environmentally Preferred Alternative

The Environmentally Preferred Alternative for this CIP project is the No Action alternative, solely because it does not involve a safety project within Part 77 navigable surfaces nor does it occur within an existing footprint. The safety and operational issue pertains to taxiing aircraft and ground operations. While the proposed project would result in operational safety improvements along the taxiway as well as electrical improvements, it would entail the construction of an additional structure (Electric Vault) and the installation of TW edge lights and signs along the taxiway. The No Action alternative will not involve a new structure or lighting and cultural grasslands would not be disturbed.

However, the No Action alternative will not address the need to bring the existing electric equipment up to current electrical design criteria. The Preferred Alternative for the installation of the taxiway lights would have negligible impacts to adjacent managed grasslands because the cable installation method which has little ground disturbance will be used. As discussed in Section 3.5.2, the trenching construction method will not be used. Impacts to grassland habitat would be negligible for the location of the proposed electric vault, as it would be located in an area previously determined to be of little

significance as habitat due to its isolated location with respect to the expanse of grassland habitat at the Airport.

### **3.5.4 Alternatives Considered But Rejected**

#### *Alternative Construction Method for Light Installation*

The trenching construction method for the cable adjacent to the TW would excavate a trench approximately eight inches wide by two feet deep to install the electric cable, and would result in more grassland disturbance compared to the cable method. This construction component alternative has been dismissed from further review.

#### *Alternative Vault Locations*

Two alternatives were considered for the location of the proposed Electric Vault. Alternative 2 would locate the vault behind the paved GA apron. Alternative 3 would locate the vault at the far west end of the paved GA apron. Each of these alternatives would result in environmental impacts within an area of managed cultural grassland that is contiguous with expanses of this habitat at the Airport and/or impacts to freshwater wetlands (Wetland C) in order to accommodate the conduit for the cable, which would need to avoid other underground utilities in the area. The Preferred Alternative meets the project need with fewer impacts. These alternatives have been dismissed from further review.

## **3.6 Sightseeing Shack Improvements**

Two alternatives have been evaluated in this FEIR/EA for the proposed improvements to the Sightseeing Shack and will be carried forward through the analysis for environmental consequences in Section 5. The two alternatives analyzed are the No Action alternative and an alternative that would repair or replace the building within the existing footprint. It should be noted that improvements to the Sightseeing Shack would be considered a Connected Action to the Installation of TW Lighting and Lighted TW Signs, and Construct Electric Vault (see Section 3.5 above), as the improvements to the Sightseeing Shack would be tied to the relocation of the electrical equipment that is currently housed within the Sightseeing Shack.

### **3.6.1 No Action**

The No Action alternative would allow the existing structure to remain in its present condition, housing the existing electrical equipment that is not up to current electric codes. No impacts would occur to natural resources under the No Action alternative because there would no construction adjacent to natural resources and no change to the building.

### **3.6.2 Repair or Replace Building (Proposed Action and Preferred Alternative)**

Under this alternative, following the relocation of the existing electrical equipment, the Sightseeing Shack would either be repaired (Preferred Alternative), or the walls would be replaced, as necessary. No long-term environmental impacts would occur as a result of this action. The Massachusetts Historical Commission (MHC) has determined that the building is not historically significant (see Section 10.1).

### **3.6.3 Environmentally Preferred Alternative**

Upon consideration of the alternatives presented for this CIP project, the Repair or Replacement of the Building (Preferred Alternative) has been selected as the Environmentally Preferred Alternative, as all

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work will occur entirely within the footprint of the existing Sightseeing Shack. The structural integrity of the existing structure is deteriorating and poses a safety concern to those at the Airport. If the structure was not repaired, undesirable or unintended consequences may occur. The repair of the Sightseeing Shack would restore the structure to its original state and increase the safety of persons using the structure while improving the overall aesthetic value of the Airport. Of note, the building is not considered a state or federal historic structure. Furthermore, the repair of this building will not impact nearby natural resource areas.

### **3.6.4 Alternatives Considered But Rejected**

No other alternatives were identified.

## **3.7 Access Road to MALSF Approach Lights**

This FEIR/EA evaluates the potential impact of improving the access road to the MALSF approach lights. Two alternatives will be analyzed for environmental impacts in Section 5, including the No Action alternative and an alternative that would construct a turn-around. Three alternatives have been considered but rejected. Alternatives considered for this project element are illustrated on Figure 3.4 provided at the end of this section.

### **3.7.1 No Action**

The No Action alternative would maintain the existing narrow access road. As a result, vehicles accessing the MALSF for maintenance or repairs would continue to back up for a distance of approximately 400 feet along the narrow access road. The associated safety issues discussed in Section 2 would not be addressed. There would be no environmental impacts associated with the No Action alternative because there would no construction within the wetland resource.

### **3.7.2 Construct Turn-Around (Proposed Action and Preferred Alternative)**

The Preferred Alternative would involve the construction of a turn-around area, such that vehicles would not have to back up the length of the narrow access road. The proposed turn-around area would be 30 feet wide and 30 feet long to provide enough space for a vehicle to safely reverse direction. The turn-around area would impact approximately 960 SF of freshwater wetlands (Wetland C/J/FK), and would be constructed along the north side of the embankment so that it would not interfere with the approach lights. The material used to construct the turn-around would be structural base material with gravel fill, approved by the Engineer and brought to the site. The top finish layer could be obtained from excavated areas on site. No material would be excavated from the adjacent wetland area for fill material and any material brought to the site will be from a certified archeological object-free and weed-free source. Proposed compensatory mitigation for lost wetland area would be provided on-site at a 1:1 ratio (see Figures 7.1-7.4). Additional mitigation measures will include construction phase mitigation measures.

### **3.7.3 Environmentally Preferred Alternative**

After review, the No Action alternative has been selected as the Environmentally Preferred Alternative solely because the project does not involve operational safety improvements for aircraft operations within Part 77 navigable surfaces nor will it occur within an existing footprint. Additionally, under the No Action alternative there would be no construction and wetlands would not

be altered. The safety and operational issue is ground operation-related and affects vehicles accessing the navigational lighting system.

### **3.7.4 Alternatives Considered But Rejected**

#### *Reduced Turn-Around Footprint with Curbing*

A smaller turn-around area with curbing installed along the length of the access roadway to alert drivers to the limits of the roadway width was considered. This alternative would reduce but not eliminate direct wetland impacts. Additionally, even something as low as a concrete curb could not be installed as it would constitute a vertical penetration into the Runway 7 approach surface, and would not be allowed under FAA regulations. This alternative has been dismissed from further review.

#### *Guardrail*

Installation of a guardrail along the length of the existing access roadway was also considered as an alternative, but was deemed unfeasible because of the vertical penetration into the Runway 7 approach surface. Any objects required to be located within this object free approach area must be frangible (able to be snapped off on impact), which would defeat the function of a guardrail. In addition, the roadway embankments would need to be widened to accommodate the construction of the guardrail without losing width along the roadway, necessitating additional wetland alteration. This alternative has been dismissed from further review.

#### *Acquire a Utility Vehicle*

The Airport has considered acquiring a utility vehicle for the purposes of accessing the MALSF equipment for maintenance or repair, suggested by others during review of the DEIR/EA. This alternative would not result in additional environmental impacts. This alternative would require FAA personnel to transfer their equipment to a smaller utility vehicle. However, the alternative is impractical because FAA personnel need access to all equipment in their vehicles during all weather conditions, and could not feasibly transfer all the equipment to a small utility vehicle. The runway is required to be shut down for certain inspection or maintenance procedures, and transferring necessary equipment, which would not all fit within a smaller vehicle at one time, would result in potential unnecessary delays at the Airport. This alternative has been dismissed from further review.

#### *Construct Shoulders (Option 1)*

This alternative would widen the entire length of the MALSF access road embankments to construct 2-foot shoulders on each side of the existing access road. This alternative would impact approximately 1,800 SF of Wetland C/J/FK, and would not eliminate the safety hazard of vehicles needing to back up for 400 feet. This alternative has been dismissed from further review.

### **3.8 Service Access Roads to the Localizer Equipment Shelter (LES) and to the Weather Station (AWOS)**

Three alternatives were analyzed for the Service Access Roads to the LES, including the No Action alternative, an alternative that would construct an access road to the LES behind the hold line and off the East End TW (Alternative 2), and an alternative that would construct an access road off Race Point Road (Alternative 6). Two alternatives were analyzed for the Service Access Roads to the AWOS, including the No Action alternative and an alternative that would construct an access road to the AWOS behind the hold line and off the East End TW (Alternative 2). Several alternatives have been

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considered but rejected for these two project elements: All alternatives considered for these projects are illustrated on Figures 3.5, 3.6, and 3.7 provided at the end of this section.

### **3.8.1 No Action**

The No Action alternative would retain the lack of defined access routes to both the LES and the AWOS, which essentially prevents vehicle access to the sites other than within the runway operating area. Although there are a few circumstances when service on the AWOS requires the runway to be shutdown, most inspection and maintenance operations are carried out while the runway is active. There would be no impacts to wetlands and coastal dunes because access roads would not be constructed.

### **3.8.2 Service Access Road to AWOS Alternative 2 and Service Access Road to LES Alternative 2 (Proposed Action and Preferred Alternative)**

The Preferred Alternatives for these CIP project elements would construct 10-foot wide defined access roadways that would be paved for the first 300 feet off the East End TW in full compliance with FAA standards. The access road to the AWOS would necessitate alterations to coastal dune and wildlife/rare species habitat (10,560 SF) and 290 SF of wetland alteration within Wetland H. The LES access road would require alterations to 7,610 SF of coastal dune habitat. Proposed mitigation measures, including construction and timing measures, and compensatory mitigation for the loss of natural resources is part of the design of this alternative.

### **3.8.3 Service Access Road to AWOS Alternative 2 and Service Access Road to LES Alternative 6**

This combination of alternatives for the access roadways would construct a 10-foot wide roadway extending from the East End TW (again, paved for the first 300 feet) for the AWOS access roadway, with construction of a dense packed gravel surface (i.e., unpaved) roadway off of Race Point Road for access to the LES. This would result in alterations to 10,560 SF of coastal dune and wildlife/rare species habitat, and 290 SF of wetland alteration within Wetland H. Somewhat reduced alterations to coastal dune habitat (2,500 SF) will occur as a result of the LES access roadway.

### **3.8.4 Environmentally Preferred Alternative**

The Environmentally Preferred Alternative for this CIP project is the No Action alternative because the project does not involve operational safety improvements for aircraft operations within Part 77 navigable surfaces and will not occur within an existing footprint. The No Action alternative would not result in construction, and wetland and coastal dune resources would not be altered. The safety and operational issue pertains to vehicles accessing the weather station and the localizer equipment.

Although the No Action Alternative would not involve construction within wetlands and coastal dunes, this alternative would not address the operational safety issues resulting from the lack of designated access roads to the airfield equipment. The No Action alternative would not eliminate the tracking of foreign materials onto the runway and taxiways, which presents a safety hazard to users at the Airport. The No Action alternative is not the Preferred Alternative. The Preferred Alternative for the project includes measures to minimize adverse impacts to wetlands and coastal dunes such as steepened slopes and a narrower road width. Construction period mitigation measures will be implemented such as erosion control and time of construction to reduce overall impacts.

### 3.8.5 Alternatives Considered But Rejected

#### *Pavement Alternatives*

The alternative of constructing the roads with a porous pavement was evaluated. Porous pavement is a special type of pavement that allows rain and snowmelt to pass through, reducing runoff. However, these pavements require an intensive maintenance schedule and can easily become clogged with sands. Additionally, the pavement is damaged by freezing and thawing in the northern climates. Alternative types of pavement that can be colored (e.g., Natural Pave<sup>®</sup>, a sand-colored pavement, etc.) were also evaluated. These proprietary products have not been tested for durability under airport pavement standards. Because of the maintenance and durability issues, porous and other types of pavement has been dismissed from further review.

#### *Acquire Utility Vehicle*

In response to comments received on the NPC/Draft EIR/EA, the Airport has considered the use of an off-road utility vehicle for access to the AWOS and LES. As with the use of a utility vehicle for the MALSF, this alternative has been deemed unfeasible because FAA personnel need access to all equipment in their vehicles and cannot feasibly transfer all the equipment to a smaller utility vehicle. This alternative has been dismissed from further review.

#### *LES Alternative 1*

Similar to the Preferred Alternative, LES Alternative 1 connects with the East End TW. The road would be approximately 475 feet long and would be paved in compliance with FAA standards (e.g., paved for the first 300 feet). Alterations would occur within a small amount of coastal dune and cultural grassland habitat. This alignment would be in compliance with FAA standards and would meet the project purpose and need, but would not line up with the Preferred Alternative identified for the AWOS road, which is preferable. This alternative has been dismissed from further review.

#### *LES Alternative 3*

Alternative 3 for the LES extends from the employee parking lot driveway adjacent to the gravel pathway that marks the location of the primary service power cables to the NAVAID facilities. This access roadway would be paved and would impact approximately 3,600 SF of isolated wetland in Wetland B. To minimize wetland impacts in this area, the possibility of following the existing narrow path from the driveway to the LES was considered. However, the primary service power cable to the NAVAID facilities is located within this alignment and must be avoided. Alternative 3 has been deemed unfeasible because it would result in wetland impacts that can be avoided, and impacts the power cable. This alternative has been dismissed from further review.

#### *LES Alternative 4*

The alignment for LES Alternative 4 would extend from the end of the runway at the Runway 25 End, and has a direct connection with the active runway operating area. This alternative would impact a small amount of cultural grasslands, and coastal dunes, and associated habitat areas. Construction of new access roads in locations that require vehicles to travel within the active runway operating area do not meet FAA design standards and would not be allowed. This alternative has been dismissed from further review.

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*LES Alternative 5*

As with LES Alternative 4, this alignment has a direct connection with the active runway operating area and would result in alterations within a small amount of cultural grasslands, coastal dunes, and associated habitats. Construction of new access roads in locations that require vehicles to travel within the active runway operating area do not meet FAA design standards and would not be allowed. This alternative has been dismissed from further review.

*AWOS Alternative 1*

Alternative 1 for the AWOS access road connects with the East End TW. The road would be approximately 800 feet long and would be paved in compliance with FAA standards. Alternative 1 would impact approximately 440 SF of Wetland H and impact a small amount of coastal dunes. This alternative would align with the LES Alternative 1, but has been dismissed from further review, because a shift in the alignments of both access roadways would reduce wetland impacts.

*AWOS Alternative 3*

Alternative 3 would connect with the parallel taxiway and, as with all of the alternatives for the access roadways, would be paved for 300 feet. Approximately 3,000 SF of Wetland H would be altered for this alternative, as well as a small amount of cultural grasslands. Because other alignments would have smaller wetland impacts, this alternative was dismissed from further review.

*AWOS Alternative 4*

Similar to the LES Alternatives 4 and 5, this alignment has a direct connection with the active runway operating area, which would not meet FAA design standards and would not be allowed. This alternative would result in alterations to coastal dune (3,480 SF), a small amount of grassland habitat, and Wetland H (720 SF). This alternative has been dismissed from further review.

*AWOS Alternative 5*

The L-shaped configuration of this alternative alignment would result in alterations to 9,840 SF of cultural grassland habitat and 720 SF of Wetland H. As with AWOS Alternative 4, this alignment has a direct connection with the active runway operating area (between the runway and the hold line of the taxiway), which would not meet FAA design standards and would not be allowed. This alternative has been dismissed from further review.

### **3.9 Perimeter Safety/Security Fence**

Seven alternatives have been evaluated for the construction of a Perimeter Safety/Security Fence, four of which are carried forward and analyzed for environmental impacts in Section 5. Three alternatives have been considered but rejected. The four alternatives analyzed are the No Action alternative, Concept 6 (Final Preferred Alternative), Concept 4, and Concept 1 (Preferred Alternative in Draft EIR/EA). It should be noted that Concept 1 has been dismissed but has been carried forward to the impact analysis because it was the preferred alternative in the DEIR and must be retained to comply with NPS NEPA procedures. The alternatives that have been considered for this project element are illustrated on Figures 3.8 and 3.9 provided at the end of this section.

#### **3.9.1 No Action**

The No Action alternative would have no direct impacts to the natural resources or habitats at the Airport because clearing for the fence and construction of the fence would not occur. However, the No

Action alternative would not address the operational safety and security, visitor safety, and wildlife safety issues discussed in Section 2. The potential for deer and other (non-avian) wildlife to continue to come into conflict with operating aircraft, jeopardizing the safety of passengers and pilots using the Airport, would remain. Unauthorized persons would continue to have undeterred access to the currently unsecured airport operating area, and recreational users (including hunters) would remain a potential threat to the health and safety of aircraft operations and those using the Airport facilities. It may also be noted that TSA and MassDOT ban the possession of firearms in aircraft operational areas.

### **3.9.2 Perimeter Safety / Security Fence Concept 6 (Proposed Action and Preferred Alternative)**

Following the alignment shown on Figures 3.8 and 3.9 at the end of this section, Concept 6 would involve the construction of an 11,700 linear foot (LF), 8-foot high, black vinyl chain link security fence with 2 inch openings topped with an additional foot consisting of 3 strands of barbed wire for a total height of nine feet. The fence would traverse areas of coastal dune (8,060 SF direct; 24,028 SF indirect) and freshwater BVW wetlands (1,152 SF direct; 8,972 SF indirect), and Isolated Vegetated Wetlands (25,648 SF direct; 3,952 SF indirect), and directly and indirectly alter wildlife and rare species habitats. Direct impacts to natural resources would involve alterations associated with the installation of fence posts, while indirect alterations would be associated with the proposed 4-foot wide swaths of managed vegetation on both sides of the fence, which are required to be clear of trees and tall shrubs that may otherwise jeopardize the fence integrity. These areas would be either brush hogged or trimmed but would not be graded. The cleared areas would allow for inspection of the fence. This alignment, which is in close proximity to the taxiway on the north side and existing maintained areas to the south, would eliminate the need for construction of patrol roads. Since July of 2009, significant agency coordination and field site work has been completed relative to refining the alignment of the preferred alternative, Concept 6. The fence alignment is shown on scaled plans that have been field checked and are accurate enough for permitting. The final precise location of the fence would be determined in the field prior to construction as directed by staff of NHESP, NPS, and other permitting agencies, in order to minimize to the fullest extent possible impacts to wetlands while at the same time preserving critical buffer. The fence would connect with the existing sections of fence adjacent to the bike path and the SRE building. Additionally, Concept 6 would eliminate fencing at the west end around the ILS.

Approximately 113 acres would be separated from remaining areas of the CCNS with Concept 6 fence area. The majority of the area consists of airport infrastructure (paved runway and taxiways, buildings, parking areas, navigational aids, and managed safety areas). Additionally, the western-most end around the ILS would not be enclosed, thus eliminating direct impacts within tidally-influenced portions of Wetland C/J/FK. In consultation with NHESP, the fence design would also have gaps along the bottom to allow for the movement of Eastern Box Turtles, minimizing impacts to the movements of this state-listed rare species as well as other small animals.

The fence design, 9 feet tall (total) topped with barbed wire, would deter deer from jumping the fence. Although deer can jump higher than 9 feet, the angled wire on top makes it difficult for them to judge the height of the fence. Additionally, cleared areas along the fence would allow deer to run along the outside of the fence (rather than jump the fence onto the active airfield if alarmed). Although the Preferred Alternative results in avoidable impacts, proposed mitigation and design modifications have avoided and minimize impacts to the fullest extent feasible.

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### **3.9.3 Perimeter Safety / Security Fence Concept 4**

Concept 4 would involve the construction of an approximately 15,400 LF fence of similar design to that of the Preferred Alternative. However, this fence alignment would enclose the approach light system, completely enclosing the Airport facilities. Direct (50 SF Isolated, 540 SF BVW) and indirect (5,670 SF Isolated, 43,080 SF BVW SF) alterations to wetlands as well as alterations to coastal dunes and associated habitats would occur with Concept 4. This concept would meet the project purpose and would not impact Airport operations or protected operational and navigational surfaces and object free areas. However, it would have impacts to tidal flow in Hatches Harbor.

### **3.9.4 Perimeter Safety / Security Fence Concept 1**

The alignment under Concept 1 follows the perimeter of the Airport lease area. The length of the fence would be approximately 24,000 LF and would result in direct (34,067 SF) and indirect (33,800 SF) alterations to wetlands as well as direct (209,845 SF) and indirect (208,200 SF) alterations to coastal dunes and associated habitats, while completely enclosing approximately 317 acres of the 322 acres of the Airport. This alignment would require a 10-foot wide paved or gravel access road to allow for fence maintenance. The alignment would meet the project purpose and would protect Airport operations within airport operational areas and navigational surfaces. However, it would have impacts to tidal flow in Hatches Harbor.

### **3.9.5 Environmentally Preferred Alternative**

Of the alternatives considered for the Perimeter Safety/Security Fence, the No Action alternative has been selected as the Environmentally Preferred Alternative, as the project does not involve operational safety improvements for aircraft operations within Part 77 navigable surfaces and will not occur within an existing footprint. The No Action alternative would not involve construction and would not alter wetland and coastal dune resources.

Although the No Action alternative would not involve construction within wetlands and coastal dunes, this alternative would not address the safety and security issues resulting from the lack of a perimeter fence. While the No Action alternative would not result in any impacts to natural resources, this alternative would continue to risk the health and safety of those at the Airport, possibly resulting in potentially undesirable or unintended consequences, both of which are defining elements of an environmentally preferred alternative per DO-12.

The No Action alternative is not the Preferred Alternative. An extensive analysis was carried out for the safety security fence in order to identify an alternative that would address the security and safety issues while minimizing impacts to wildlife, wetlands, and other natural resources. While the Preferred Alternative would result in impacts to resource areas, significant mitigation measures have been incorporated into the design and alignment of the fence concept to minimize these impacts. Additionally, a construction management plan has been drafted to minimize impacts during construction.

### **3.9.6 Alternatives Considered But Rejected**

This section describes the following alternatives that have been identified and dismissed as explained.

- Concept 2: Apron Offset North; 500 Foot Primary Surface South
- Concept 3: Apron Offset North; 1,000 Foot Primary Surface South

- Concept 5: Apron Offset North; Wetland Offset South

Concepts 2 and 3 include a fence around the ILS with a 10-foot wide maintained area on the outside of the fence clear of trees and shrubs and a 10-foot wide vehicle travel path on the Airport side of the fence for security inspection patrols.

Concept 5 includes a fence around the ILS with a 4-foot wide maintained area on the outside of the fence clear of trees and shrubs and a 10-foot wide vehicle travel path, which would be maintained on the Airport side of the fence for security inspection patrols, except where the fence can be inspected from the GA aprons on the north.

*Concept 2: Apron Offset North; 500 Foot Primary Surface South*

This fence alignment would be offset approximately 320 feet from the runway centerline on the south side in compliance with the current FAA Waiver, and approximately 10 feet off the back of the aircraft aprons on the north side of the taxiway. The total length of the fence would be approximately 17,000 LF, enclosing approximately 104 acres. The alignment would directly and indirectly impact approximately 4 acres of wetlands (both bordering and isolated) and prime breeding habitat for the Eastern Spadefoot Toad with additional impacts to coastal dunes and associated habitats. In addition, Concept 2 has the potential to impact tidal flow and flood storage capacity since the fence in the vicinity of the ILS may impede normal tidal flow and flooding during storm events.

Concept 2 would meet the project purpose and need, and would be in compliance with the current FAA Waiver. Under the current Waiver, any fence alignment must be at least 63 feet beyond the edge of the FAR Part 77 Primary Surface to accommodate the 7 to 1 Transitional Surfaces that extend upward and out as an obstruction clear area. However, if this Waiver were ever to be revoked in the future, the fence under Concept 2 would have to be removed and relocated. Therefore this alternative has been deemed unfeasible and has been dismissed from further review.

*Concept 3: Apron Offset North; 1,000 Foot Offset Primary Surface South*

This alignment would have an approximately 500-foot offset from the runway centerline on the south and approximately 10 feet off the back of the aircraft aprons on the north side. The length of the fence would be approximately 17,900 LF, enclosing approximately 128 acres. The alignment would impact approximately 4.5 acres of wetlands (both bordering and isolated) and prime breeding habitat for the Eastern Spadefoot Toad with additional impacts to coastal dunes and Eastern Box Turtle habitat, and would likely have adverse impacts to these rare species. As with Concept 2, Concept 3 has the potential to impact tidal flow and flood storage capacity since the fence would be in the vicinity of the ILS. Maintaining the fence alignment in close proximity to the taxiway would reduce direct, long-term wetland and dune impacts by eliminating the need for a portion of the perimeter roadway. Concept 3 would meet the project purpose and need. However, this alternative has been deemed unfeasible for environmental permitting reasons and has been dismissed from further review.

*Concept 5: Apron Offset North; Wetland Offset South*

The Concept 5 alternative follows the same alignment on the southern side as Concept 4 (see Section 3.9.3). On the northern side, however, the fence would be located a minimum of 10-feet behind the aircraft parking aprons. The length of the fence would be approximately 14,000 LF, encompassing 148 acres. Concept 5 would impact approximately 1.5 acres (direct and indirect) of wetlands, and as with Concepts 2 and 3, also would have the potential to impact tidal flow and flood storage capacity in the vicinity of the ILS. While located within wetland areas, the close proximity of the fence to the

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taxiway would eliminate the need for a perimeter roadway along this stretch of the fence (e.g., as with the northern segments considered in Concepts 2 and 3). It is anticipated that this alignment would only require vegetation management along the fence, minimizing wetland alterations. In addition, portions of these wetlands are currently subject to vegetation management practices to maintain airfield safety. Similar to Concept 4, Concept 5 is also located at the base of the dune ridge to the south of the runway. Where required, the width for the vehicle path would be approximately 10 feet wide. The width of vegetation clearing would be reduced to 4 feet for the entire perimeter of the fence to further minimize impacts. The 4-foot clearing would be on both sides of the fence where a 10-foot patrol road is not necessary.

This alignment provides suitable clearance along the north side of the GA aprons to accommodate spatial considerations for aircraft that are pushed by hand onto the turf aprons, access to the electric controls on the back of the GA apron light poles, and overall constructability and, as such, meets the purpose and need and fully complies with FAA design standards.

This proposed alignment, while reducing overall wetland impacts, would still result in habitat fragmentation on the south side of the Airport, separating the large aggregate of isolated wetland areas from the adjacent upland areas of coastal dune. Taking the results of the Eastern Spadefoot Toad habitat surveys into consideration, placement of the fence along the toe of the dune ridge had the potential for interfering with breeding activity for this species. Accordingly, it was determined that Concept 5 was not the preferred alternative with respect to the natural resources at the Airport. Concept 5 again requires the construction of patrol roads along most lengths of the fence (except for north of the taxiway) for monitoring, and encloses a portion of the tidally-influenced wetlands within Hatches Harbor. As such, this alternative has been dismissed from further review.

### **3.10 Auto Parking Expansion**

Three alternatives have been analyzed for the Auto Parking Expansion: The No Action alternative, an alternative that would construct additional parking in two phases Concept 4 (Preferred Alternative), and an alternative that would construct additional parking in one phase (Concept 1 Preferred Alternative in Draft EIR/EA). Three additional alternatives have been considered but dismissed from further review. The alternatives that have been considered for the project are illustrated on Figures 3.10 through 3.13 provided at the end of this section. All alternatives include reconstructing the deteriorated access road.

#### **3.10.1 No Action**

The No Action alternative would retain the existing parking area. Existing and future needs would not be met because parking would continue to be congested at peak periods, and visitors would continue to park along Airport Drive occasionally during peak periods, creating a potential safety hazard. The No Action would not impact natural resources because there would be no additional parking area constructed within coastal dune resources.

#### **3.10.2 Auto Parking Concept 4, Phases 1 and 2 (Proposed Action and Preferred Alternative)**

The parking lot currently has 62 spaces. Concept 4 would construct 28 additional spaces for Phase 1 (Phase 1 total 90 spaces). Phase 2 would construct additional parking spaces (estimated at an additional 29 spaces for a total of 119) after additional parking studies have been carried out and the

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studies have been reviewed and approved by NPS and CCC. Expanding the parking lot in phases would address the existing and mid term planning period need for additional parking.

The Preferred Alternative would result in an initial impact of 7,315 SF of coastal dune with the potential for approximately 5,707 SF of additional dune alteration for Phase 2. Dune alterations would be mitigated as discussed in Section 7. The parking aisles would be paved and parking spaces would consist of packed gravel. Infiltration swales would be constructed for Phase 1. A bioretention system would be constructed for Phase 2 which would provide treatment of runoff in accordance with current WPA regulations. Landscaping designed to screen views of the parking would use native plants similar to those listed in the NPS *Site and Building Design and Rehabilitation Handbook*, September 2005 developed for the Highlands Center at CCNS.

As an adjunct element to Phase 1, efforts to reduce demand by improving awareness of the shuttle system, encouraging the use of taxis, and working with NPS to explore the use of remote lots for long-term parking may possibly reduce or delay the need to implement Phase 2. The phases would be permitted separately with the Provincetown Conservation Commission so that each phase can be evaluated independently but with an understanding of the entire project.

### **3.10.3 Auto Parking Concept 1**

Concept 1 would construct the proposed parking lot expansion in one phase by constructing 57 additional spaces and a third aisle with parking on both sides directly adjacent and parallel to the existing two aisles, providing a total of 119 spaces. This number of spaces would meet most of the existing and projected demand. The aisle would be paved and the parking spaces would be packed gravel. Alterations to coastal dune (10,000 SF) and isolated wetlands (4,650 SF of Wetland A) would occur under Concept 1.

### **3.10.4 Environmentally Preferred Alternative**

The Environmentally Preferred Alternative for the proposed Auto Parking Expansion has been identified to be the No Action alternative, because the project is a capacity improvement. Additionally, with the No Action alternative there would be no construction and no impacts to coastal dune.

However, the No Action alternative is not the Preferred Alternative because it would not address the purpose and need for additional auto parking.

### **3.10.5 Alternatives Considered But Rejected**

#### *Auto Parking Concept 2*

Concept 2 would provide a total of 161 spaces by constructing two additional aisles parallel to the existing two aisles. This configuration would impact approximately 10,950 SF of isolated wetland within Wetland A, as well as more than 10,000 SF of coastal dune and associated habitat. The aisles would be paved and the parking spaces would be packed gravel. This alternative has been dismissed from further review because this number of spaces would exceed the existing and projected demand.

#### *Auto Parking Concept 3*

Concept 3 would provide a total of 116 spaces parallel to the entrance drive, and would meet most of the existing and projected demand. This configuration would impact approximately 1,125 SF of isolated wetland within Wetland A and coastal dune habitat. The aisles would be paved and the

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parking spaces would be packed gravel. This option puts some of the parking spaces at a long distance from the entrance to the Terminal and would be more visible from Race Point Road. The vehicle circulation is also awkward. This alternative has been dismissed from further review.

### **3.11 Terminal Building**

Three alternatives for the Terminal Building expansion project element were explored, including the No Action alternative, an alternative that would construct a second floor within the existing footprint (Vertical Concept), and an alternative that would expand the 1<sup>st</sup> floor footprint (Horizontal Concept). All three alternatives are carried forward in the assessment of environmental impacts in Section 5.0. The alternatives that have been considered for the project are illustrated on Figures 3.14, 3.15, and 3.16 provided at the end of this section.

#### **3.11.1 No Action**

The No Action would maintain the current conditions in the passenger terminal building. Figure 1.4 in Section 1 depicts the floor plan of the existing terminal building along with photos. The space requirements for TSA operations were not in existence when the current terminal building was designed and built. The 1,660 SF taken over by TSA would not be replaced and the inefficient and cramped conditions for passengers and Airport staff would continue. Currently, passengers do not have enough space in the public, non-secure waiting area, and general aviation pilots do not have space for flight planning, while the conference room and various office spaces are congested and used for storage that was lost due to TSA occupation, which would continue. No impacts to the environment would occur because there would be no construction or change in the appearance or size of the building.

#### **3.11.2 Vertical Concept (within existing footprint) - (Proposed Action and Preferred Alternative)**

The Vertical Concept alternative would place a second floor above the existing building and reconfigure space in the existing first floor terminal. The Vertical Concept would satisfy the need to obtain the lost space to TSA, as well as the projected 0.7% annual increase in passengers over the planning period. This concept would provide the additional terminal space needed to operate the Airport in a safe and efficient manner. This concept would provide the additional 1,660 SF of lost TSA space plus approximately 1,000 to 2,200 SF of projected demand over the 20-year period.

The Vertical Concept would have no direct impacts to natural resources and potential impacts to the visual environment would be mitigated with landscape screening as well as with design elements. Minimizing the mass and height of the building is a priority of the CCNS. In order to accommodate a second floor, the increased height of the proposed building would be as minimal as possible, while maintaining an aesthetically pleasing architecture for NPS guests. It would likely be necessary to raise the height of the building to accommodate the second floor. The Vertical Concept terminal building would be approximately 6 to 12 feet higher than the existing 20'9<sup>3/4</sup>" building, resulting in a 26'9<sup>3/4</sup>" to 32'9<sup>3/4</sup>" building height. A maximum height would be identified during meetings between the Airport, the architect, and CCNS staff. The Airport architects will work closely with CCNS staff to ensure a collaborative effort goes into designing the terminal building expansion. CCNS staff will be a member of the terminal design client group from the scoping of the project to final design.

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The Vertical Concept alternative would provide the spatial needs to satisfy the purpose and need, while satisfying CCNS request for input from pre-design to ensure minimal visual impacts to Park resources. Therefore, the Vertical Concept is the Preferred Alternative.

### **3.11.3 Horizontal Concept (expand footprint)**

The Horizontal Concept alternative would expand the building to the southwest adjacent to the existing passenger waiting area. The building height of the addition would match the height of the existing terminal building. The alternative would also include modifications to the interior of the existing terminal building.

The Horizontal Concept alternative expansion would provide an additional 900 to 1,200 SF of non-secured area, less than the needed 1,600 SF lost to TSA secure operations, and would not satisfy the purpose and need. Horizontal expansion would result in alterations to Wetland C (560 SF). Any further expansion to the west would affect the location of the underground fuel tank. Expansion to the north would impact the existing passenger drop-off area and/or the existing parking lot. This would impact the proposed expansion of the parking area.

Additionally, the Horizontal Concept would require that the TSA trailer be relocated. After further evaluation since the NPC/DEIR/EA, it has been determined that the TSA trailer could not be located adjacent to the fuel farm due to Occupational Health and Safety Administration (OSHA) requirements. The location for the TSA trailer would likely need to be in the passenger parking lot or adjacent to the GA apron, again having an adverse impact on parking by occupying a minimum of six parking spaces. The auto parking area circulation road would need to be realigned, resulting in the loss of several additional auto parking spaces.

The Horizontal Concept would also have additional potential impacts on the visual environment, as the relocated TSA trailer would be visible from the existing CCNS bike path. In addition, TSA operations would also be located outside the secure area, which is unacceptable to TSA.

### **3.11.4 Environmentally Preferred Alternative**

The Environmentally Preferred Alternative for the proposed Terminal Building Expansion has been identified to be the No Action alternative, because the project is a capacity improvement. There would be no construction and no change in the visual environment under the No Action alternative.

However, the No Action alternative is not the Preferred Alternative because it would not address the purpose and need for additional space in the Terminal. NPS visitors that utilize the Airport as a means of accessing the CCNS, as well as Airport staff and pilots, would continue to be inconvenienced by the existing cramped conditions in the Terminal. With careful design coordination through NPS, the Preferred Alternative would have minimal visual impacts on Park visitors, and would achieve the Purpose and Need.

### **3.11.5 Alternatives Considered But Rejected**

No other alternatives were identified.

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### **3.12 Turf Apron Expansion**

The potential impacts of constructing additional turf apron to accommodate GA aircraft were analyzed with three alternatives: the No Action alternative, an alternative that would construct additional apron space for a full range of GA aircraft (Full Dimension alternative), and an alternative that would accommodate smaller GA aircraft (Reduced Dimension). The alternatives that have been considered for the project are illustrated on Figures 3.17 and 3.18 provided at the end of this section.

#### **3.12.1 No Action**

The No Action would maintain the current area for turf parking of GA aircraft. There would be no impacts to natural resources because the turf area would not be reconstructed and reinforced. The need for additional parking area would not be met and it would continue to be necessary to close the Mid Connector taxiway to provide overflow aircraft parking areas during peak demand, and would not meet the purpose and need.

#### **3.12.2 Expand Apron, Full Dimension**

The Full Dimension alternative would construct the turf apron outside of the Taxiway Free Area (TOFA) in compliance with FAA safety design standards, and would accommodate the full range of GA aircraft that use the turf apron at the Airport. The width of the apron would accommodate the larger GA planes. Implementation of this alternative would result in impacts to Wetland C (1,250 SF). There would be temporary impacts to cultural grassland habitat (approximately 16,800 SF) during construction, which would be restored to grasslands.

#### **3.12.3 Expand Apron, Reduced Dimension (Proposed Action and Preferred Alternative)**

Under the Reduced Dimension alternative, additional turf apron would be constructed between the two existing areas for turf apron parking by increasing the carrying capacity of the existing grass area to support the weight of the planes. Approximately 16,780 SF of existing managed cultural grassland habitat would be temporarily impacted during construction, and would be restored to managed grassland habitat.

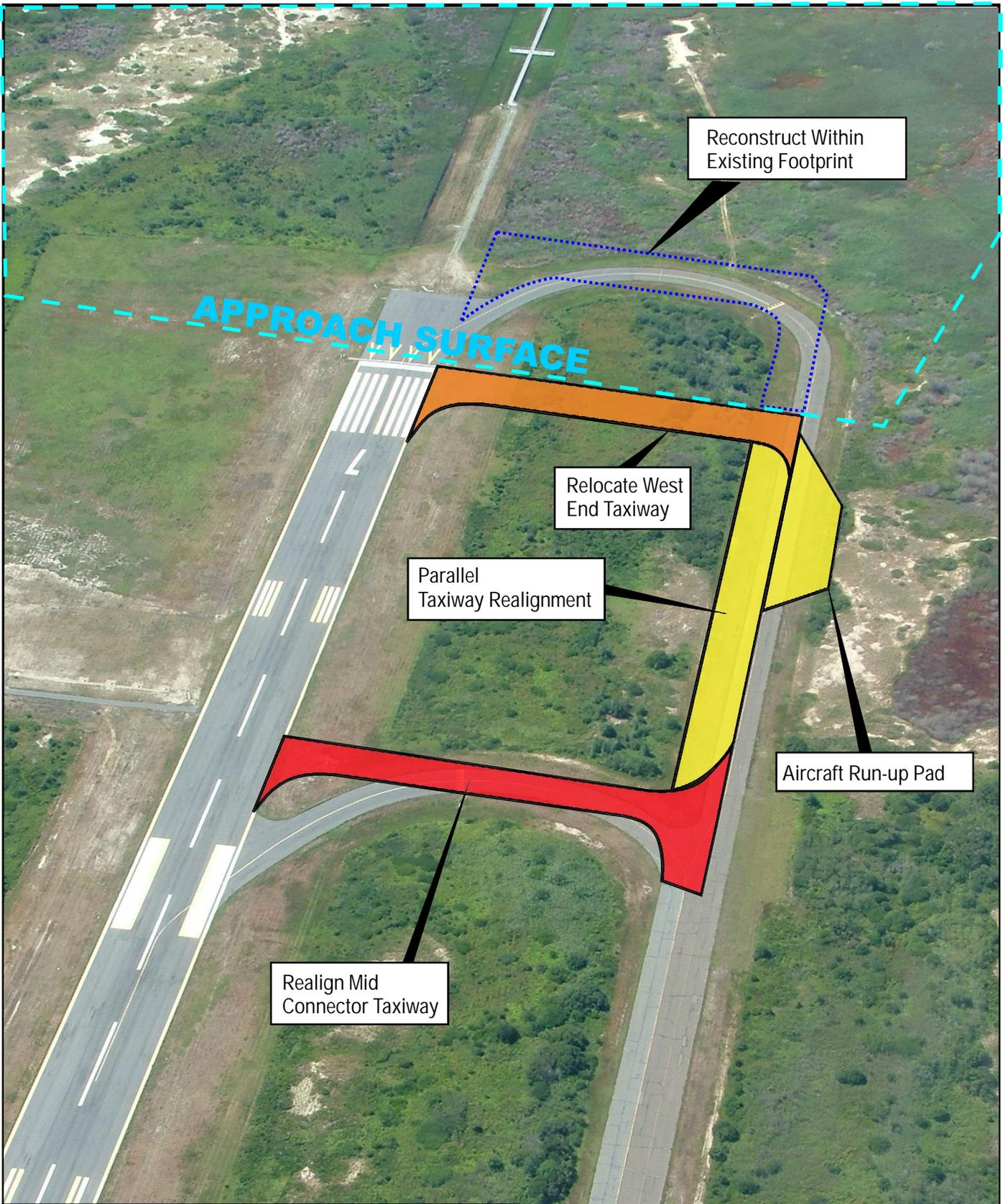
#### **3.12.4 Environmentally Preferred Alternative**

The Environmentally Preferred Alternative for the proposed Turf Apron Expansion has been identified to be the No Action alternative, as the project is a capacity improvement. The No Action alternative would not result in construction or impacts to cultural grassland.

However, the No Action alternative is not the Preferred Alternative because it would not address the purpose and need for additional turf apron space. The Preferred Alternative would, after mitigation and through careful construction timing, restore the grassland habitat with little or no impacts to this resource, while achieving a balance between the need for visitor aircraft parking space and protection of the natural environment.

#### **3.12.5 Alternatives Considered But Rejected**

No other alternatives were identified.



Prepared By:

**JACOBS**<sup>TM</sup>

Source: Edwards and Kelcey 2007

Provincetown Municipal Airport  
 Capital Improvements Plan  
 Westerly Taxiway  
 System Improvements

Figure 3.1





Relocate East End Taxiway

Prepared By:

**JACOBS**<sup>TM</sup>

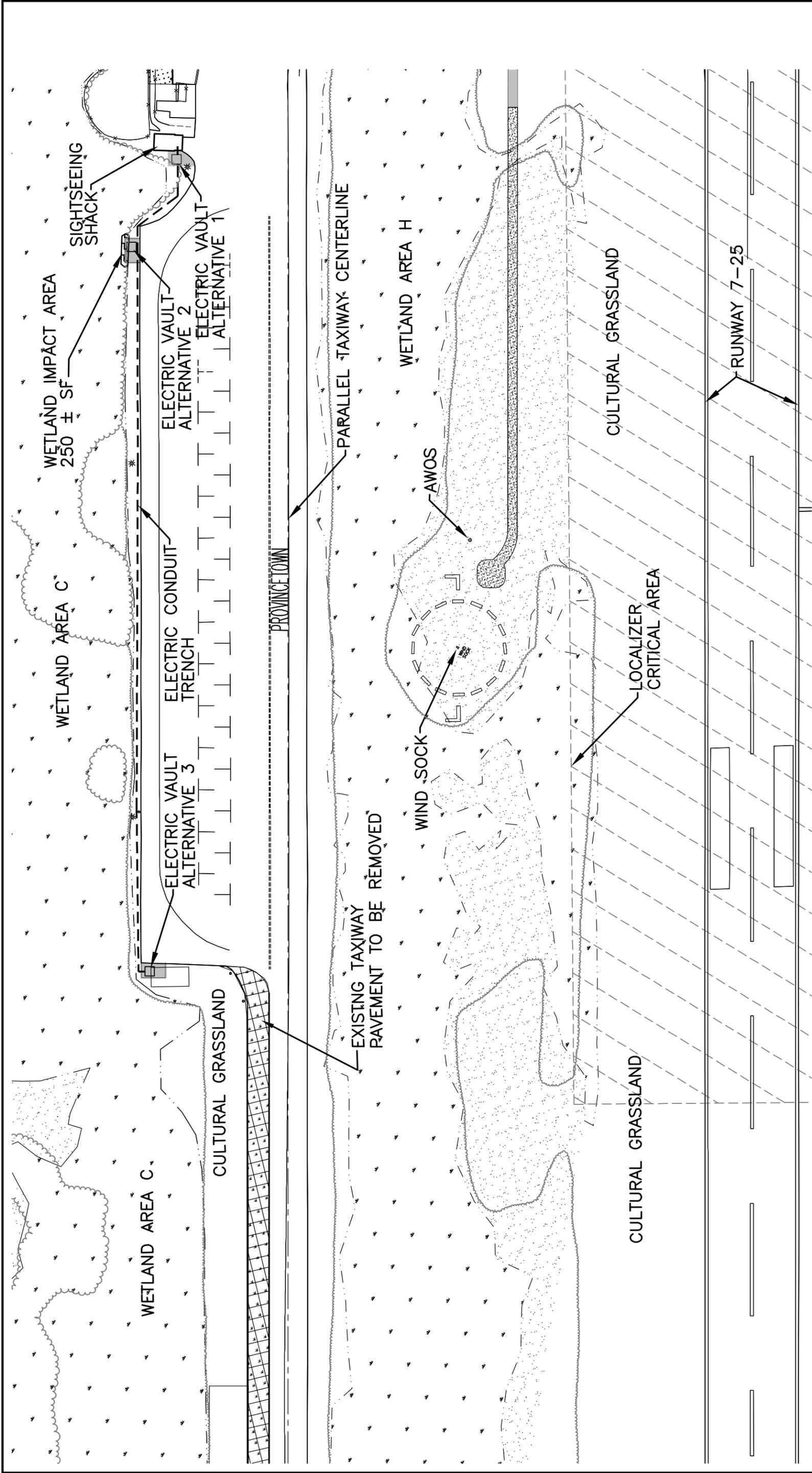
Provincetown Municipal Airport  
Capital Improvements Plan

East End Taxiway Relocation

Source: Edwards and Kelcey 2007

Figure 3.2

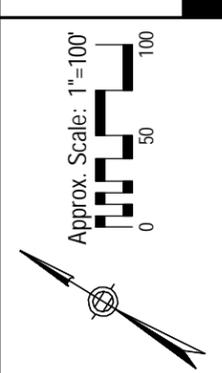




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-  EXISTING IMPERVIOUS AREA TO BE REMOVED
-  EXISTING WETLAND AREA
-  EXISTING DUNE AREA
-  EXISTING TREFLINE EXISTING BRUSHLINE
-  PROPOSED IMPERVIOUS PAVED AREA
-  PROPOSED CULTURAL GRASSLAND
-  PROPOSED PERVIOUS GRAVEL AREA
-  PROPOSED WETLAND IMPACT AREA
-  PROPOSED RESTORATION AREA

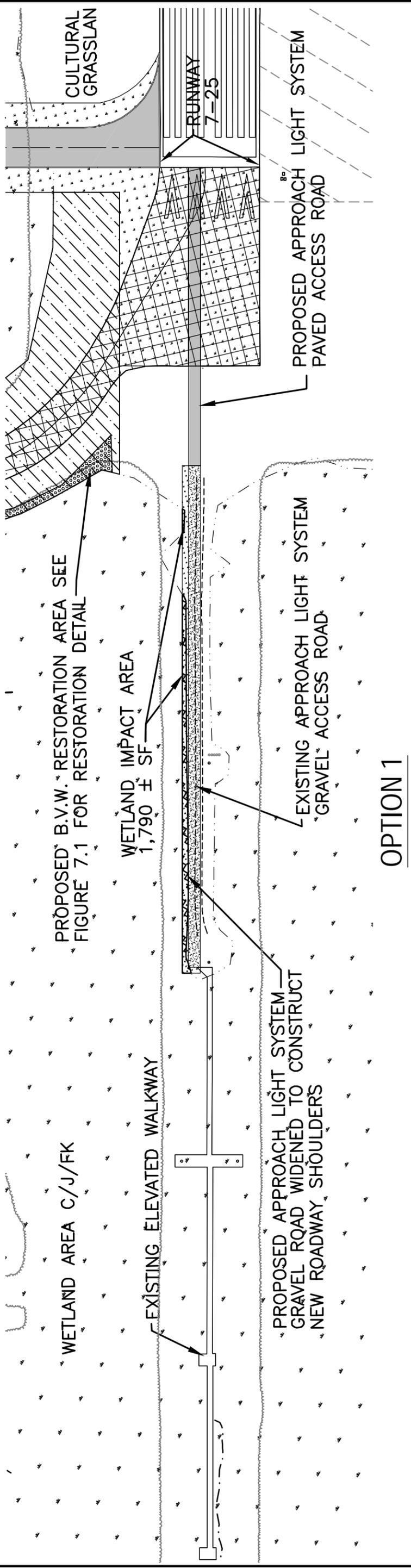
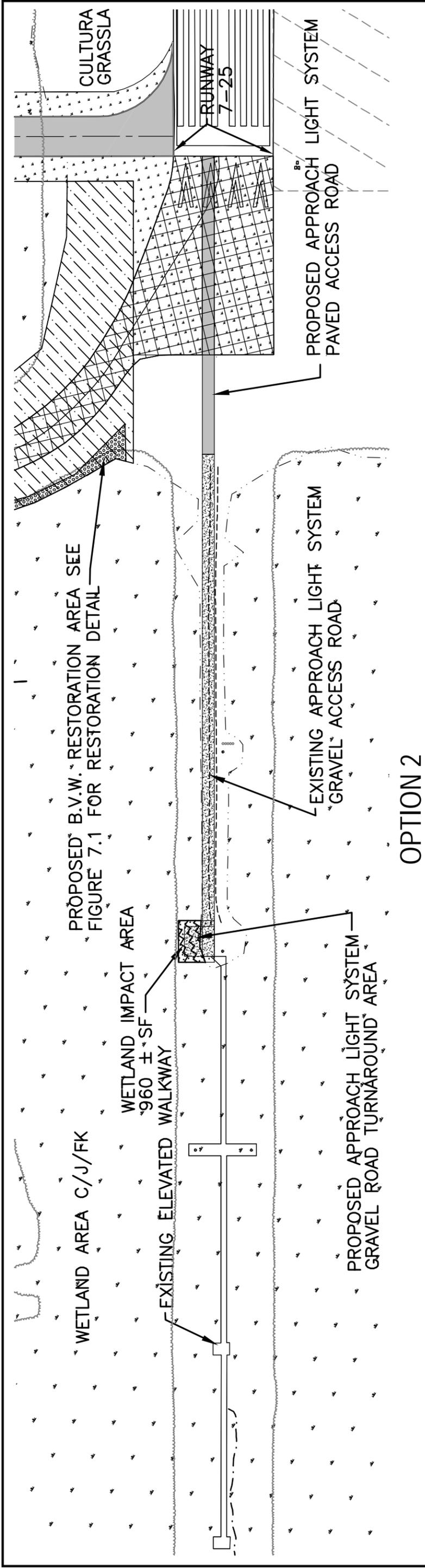


Provincetown Municipal Airport  
Capital Improvements Plan

ALTERNATIVE VAULT LOCATIONS

Figure 3.3

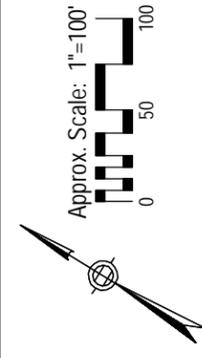




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**JACOBS**

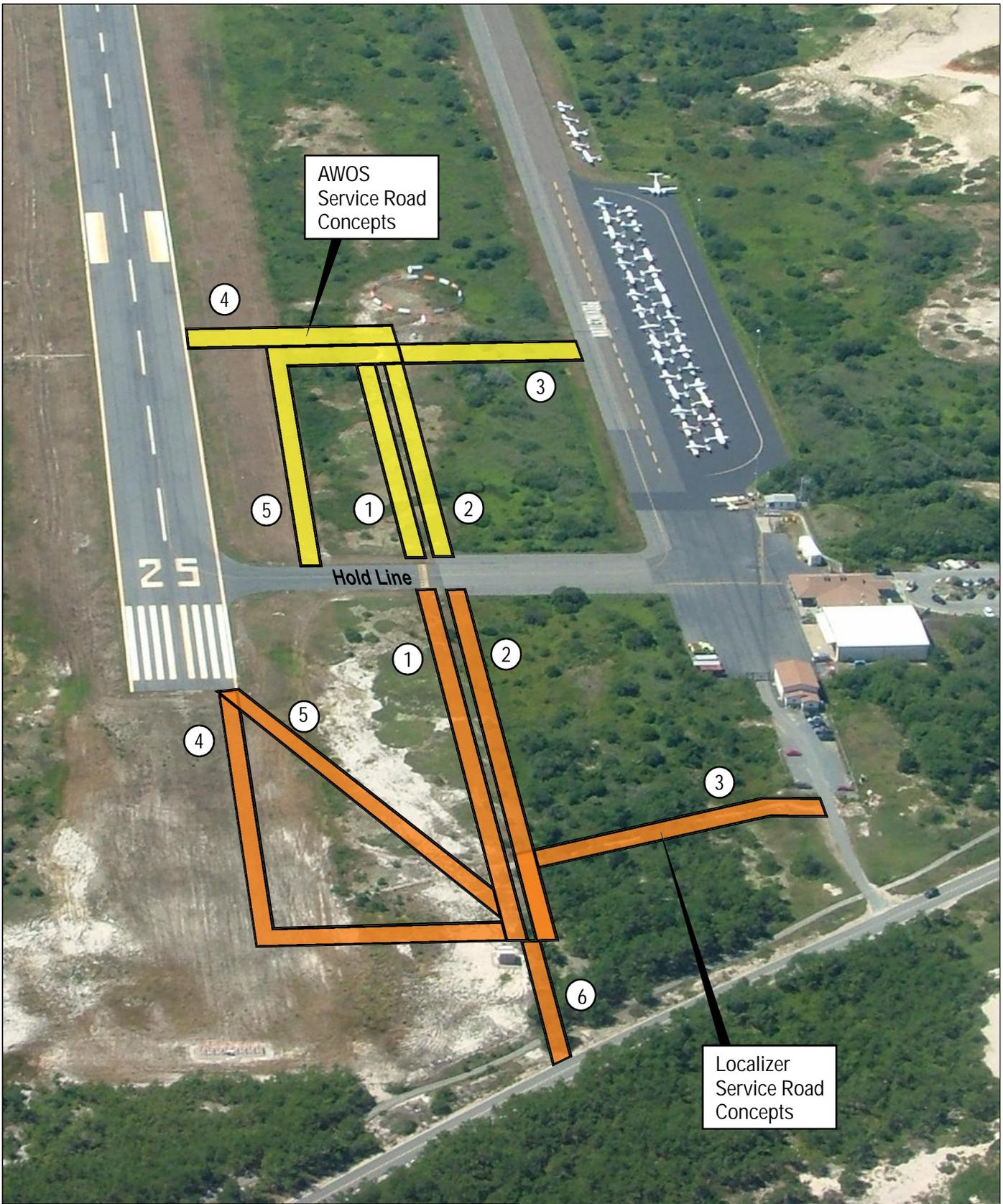
- EXISTING IMPERVIOUS AREA TO BE REMOVED
- EXISTING WETLAND AREA
- EXISTING DUNE AREA
- EXISTING TREE LINE EXISTING BRUSHLINE
- PROPOSED IMPERVIOUS PAVED AREA
- PROPOSED CULTURAL GRASSLAND
- PROPOSED PERVIOUS GRAVEL AREA
- PROPOSED WETLAND IMPACT AREA
- PROPOSED RESTORATION AREA



Provincetown Municipal Airport  
Capital Improvements Plan  
**APPROACH LIGHTS ACCESS ROAD  
ALTERNATIVES**

Figure 3.4





Prepared By:

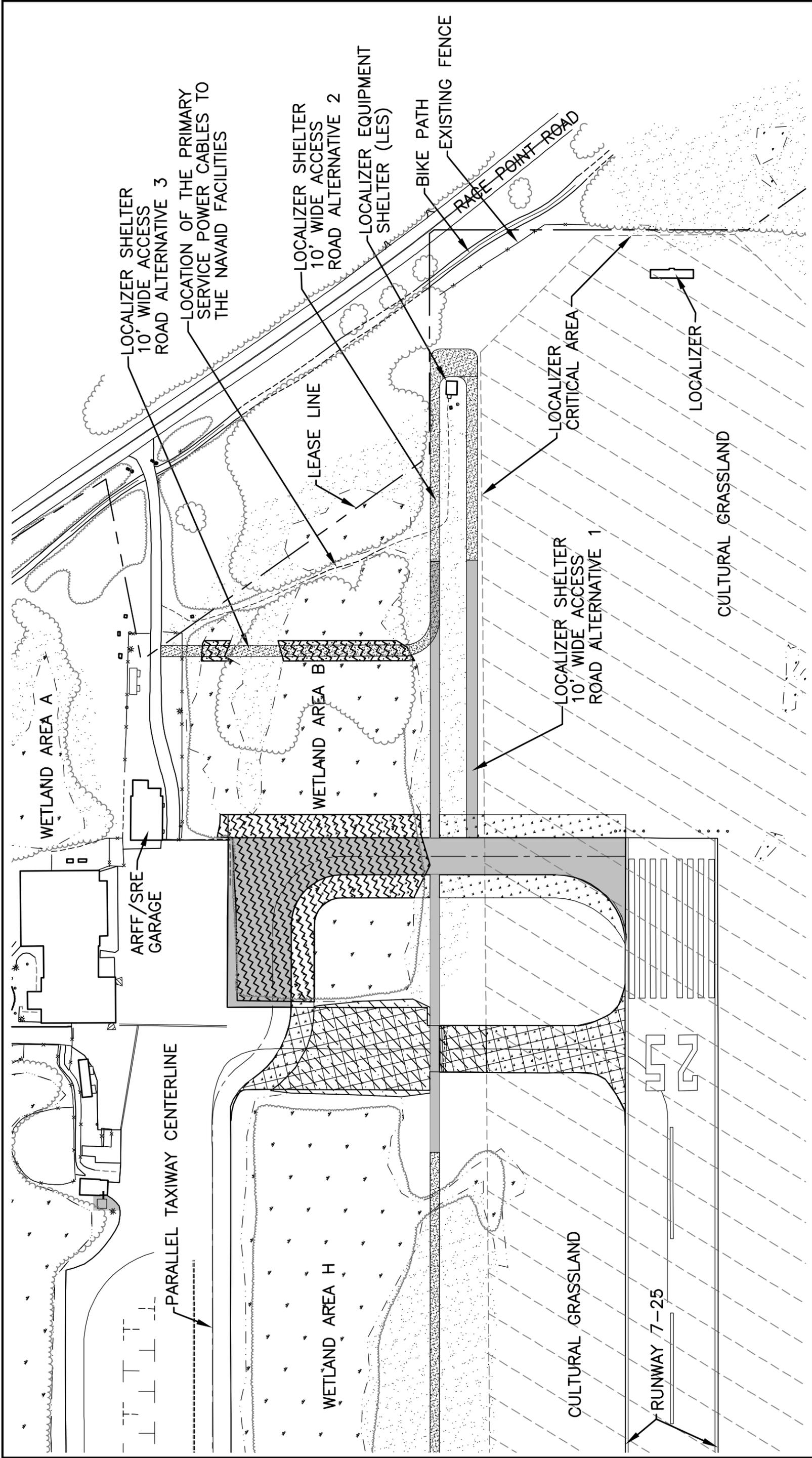
**JACOBS**<sup>TM</sup>

Source: Edwards and Kelcey 2005

Provincetown Municipal Airport  
 Capital Improvements Plan  
**SERVICE ROADS PROJECT CONCEPTS**

Figure 3.5





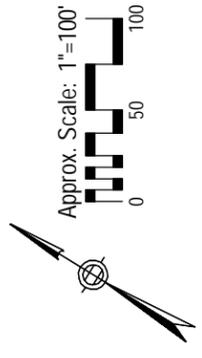
Prepared By:



- EXISTING IMPERVIOUS AREA TO BE REMOVED
- EXISTING DUNE AREA
- EXISTING WETLAND AREA
- EXISTING TREELINE
- EXISTING BRUSHLINE

- PROPOSED IMPERVIOUS PAVED AREA
- PROPOSED CULTURAL GRASSLAND
- PROPOSED WETLAND IMPACT AREA

- PROPOSED PERVIOUS GRAVEL AREA
- PROPOSED RESTORATION AREA

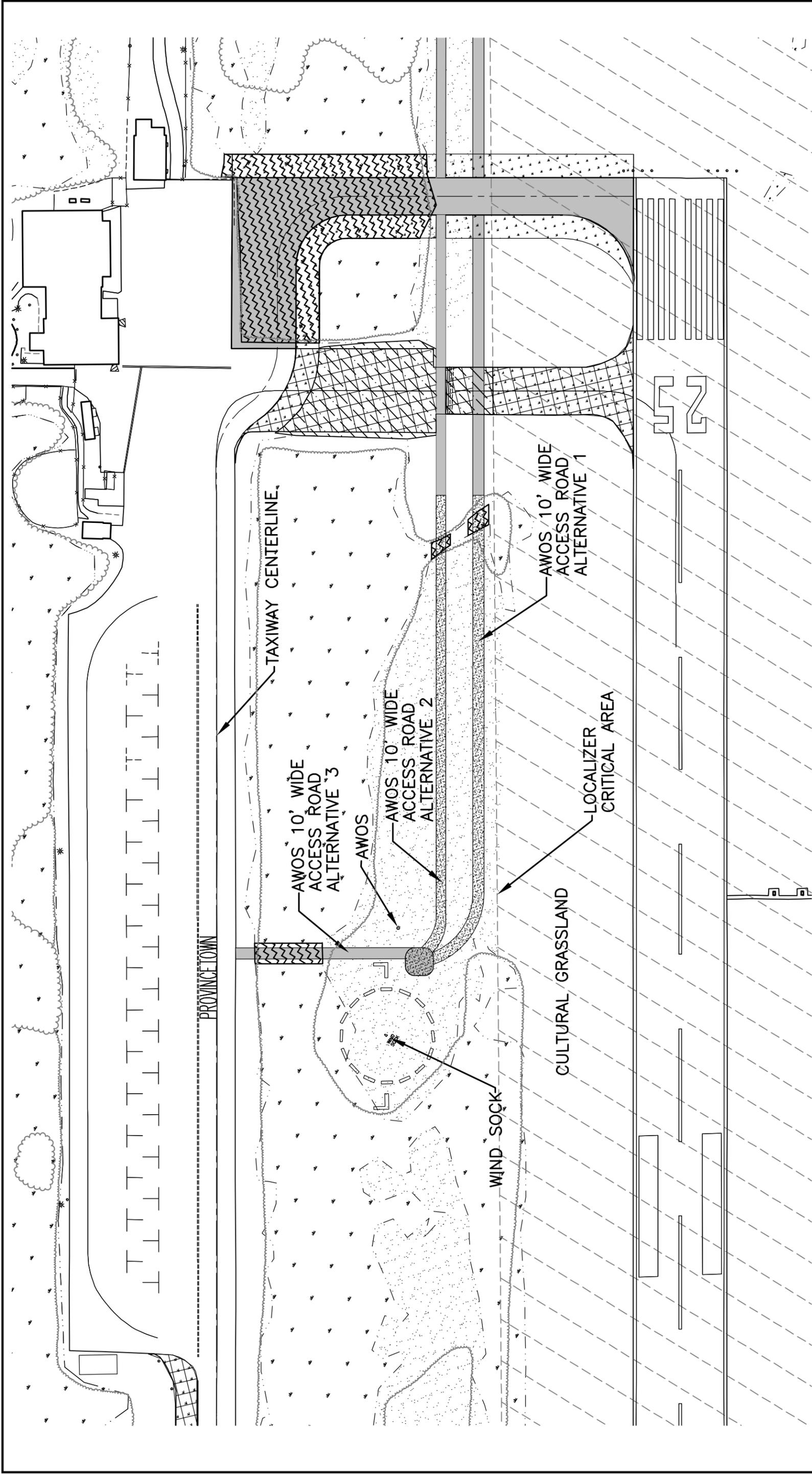


Provincetown Municipal Airport  
Capital Improvements Plan

LES ACCESS ROAD ALTERNATIVES

Figure 3.6





Prepared By:

**JACOBS**

-  EXISTING IMPERVIOUS AREA TO BE REMOVED
-  EXISTING WETLAND AREA
-  EXISTING DUNE AREA
-  EXISTING TREELINE/EXISTING BRUSHLINE

-  PROPOSED IMPERVIOUS PAVED AREA
-  PROPOSED CULTURAL GRASSLAND

-  PROPOSED PERVIOUS GRAVEL AREA
-  PROPOSED WETLAND IMPACT AREA

-  PROPOSED RESTORATION AREA

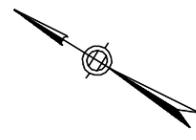
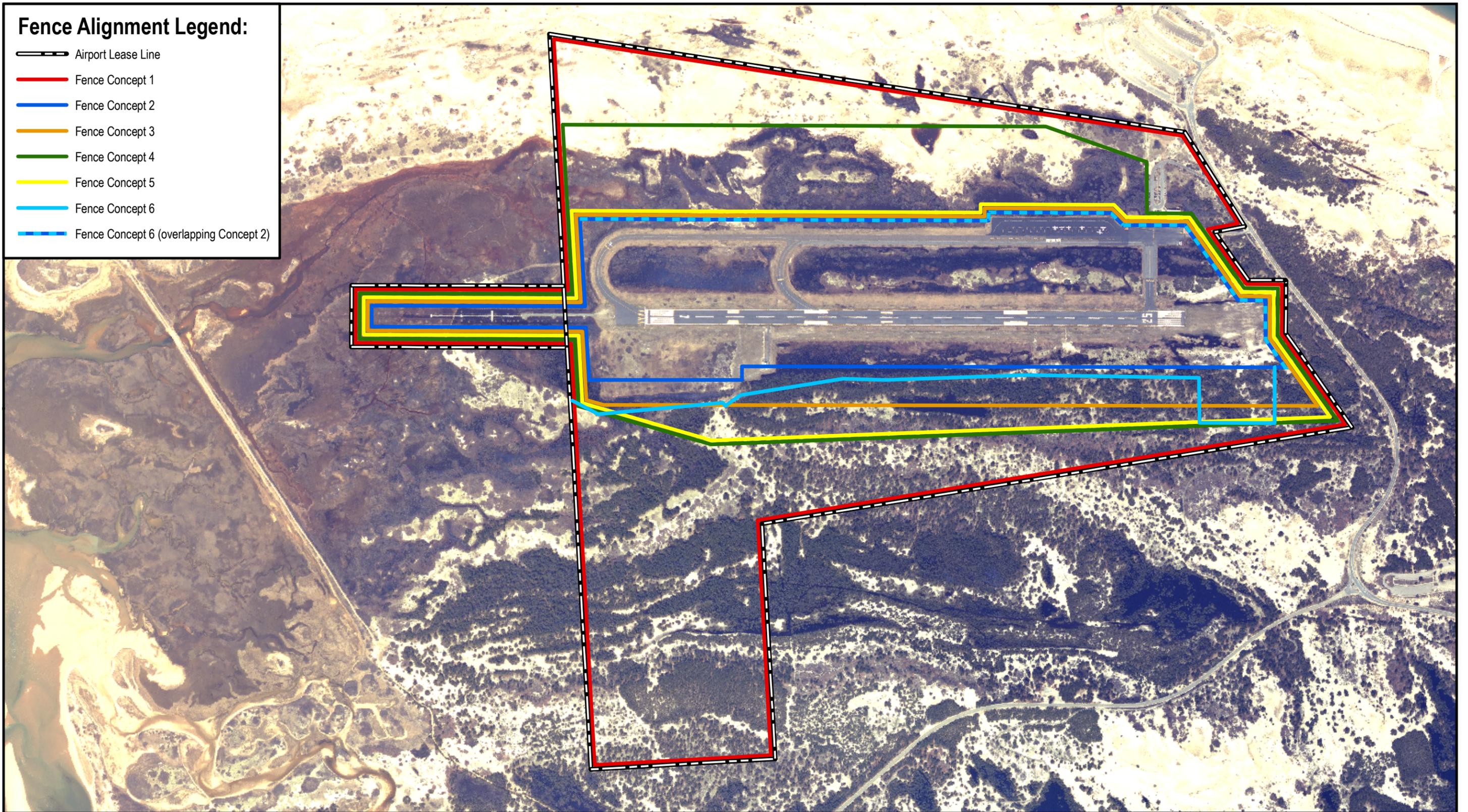


Figure 3.7

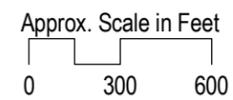


### Fence Alignment Legend:

-  Airport Lease Line
-  Fence Concept 1
-  Fence Concept 2
-  Fence Concept 3
-  Fence Concept 4
-  Fence Concept 5
-  Fence Concept 6
-  Fence Concept 6 (overlapping Concept 2)



Prepared By:  
**JACOBS**



Data Source: MassGIS, Commonwealth of Massachusetts EOE



Provincetown Municipal Airport  
Capital Improvements Plan  
**ALTERNATIVE  
FENCE ALIGNMENTS**  
Figure 3.8

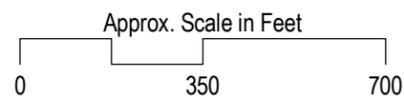


**Legend:**

— Fence Concept 6



Prepared By:  
**JACOBS**



Data Source: MassGIS, Commonwealth of Massachusetts EOE

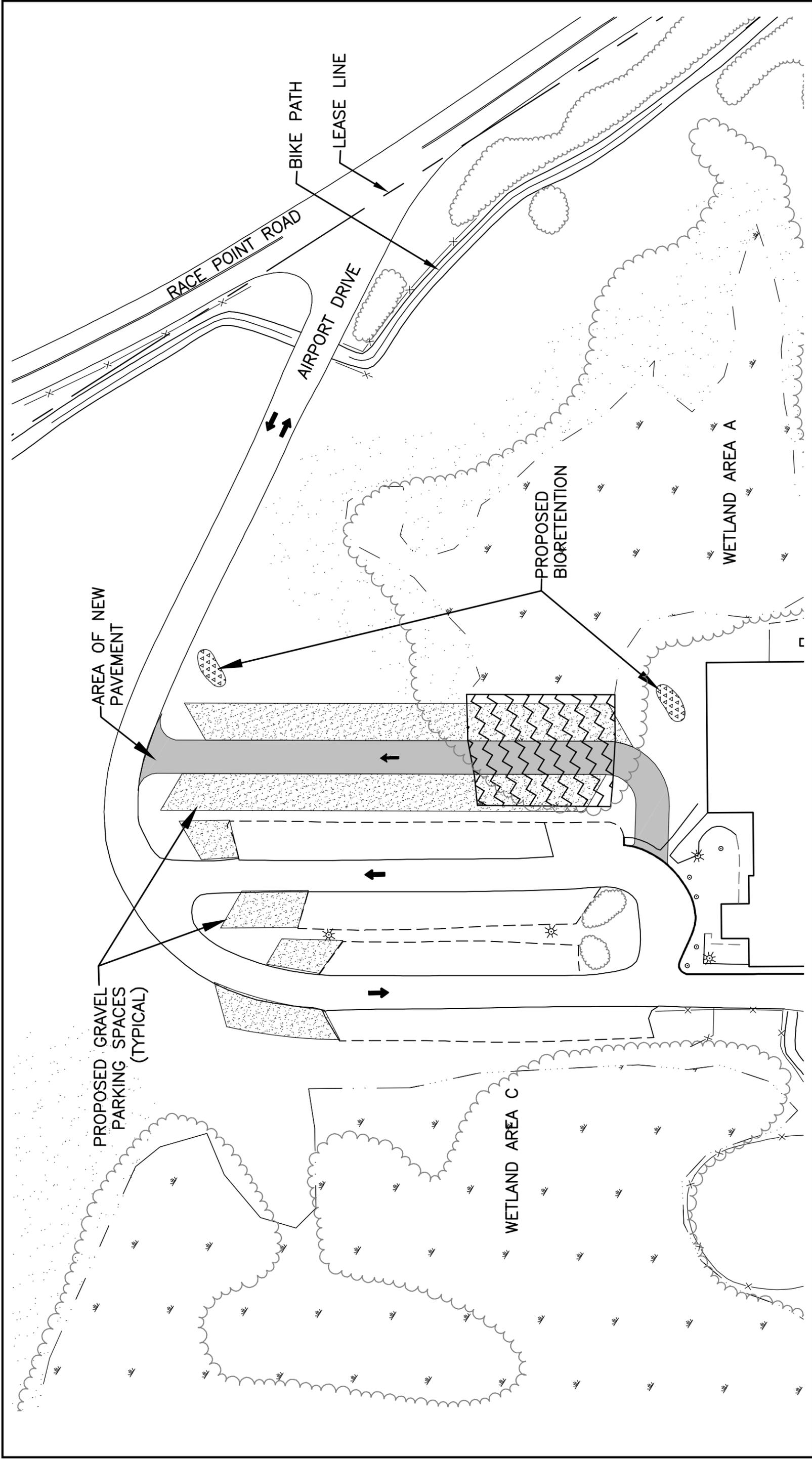


Provincetown Municipal Airport  
Capital Improvements Plan

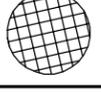
**FENCE CONCEPT 6**

Figure 3.9

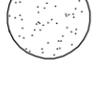




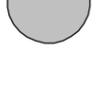
Prepared By:



EXISTING IMPERVIOUS AREA TO BE REMOVED



EXISTING DUNE AREA



EXISTING TREE/LINE/EXISTING BRUSHLINE



PROPOSED IMPERVIOUS PAVED AREA



PROPOSED CULTURAL GRASSLAND



PROPOSED PERVIOUS GRAVEL AREA



PROPOSED NATURAL LANDSCAPE BUFFER AREA



PROPOSED WETLAND IMPACT AREA



PROPOSED BIORETENTION AREA



Approx. Scale: 1"=50'

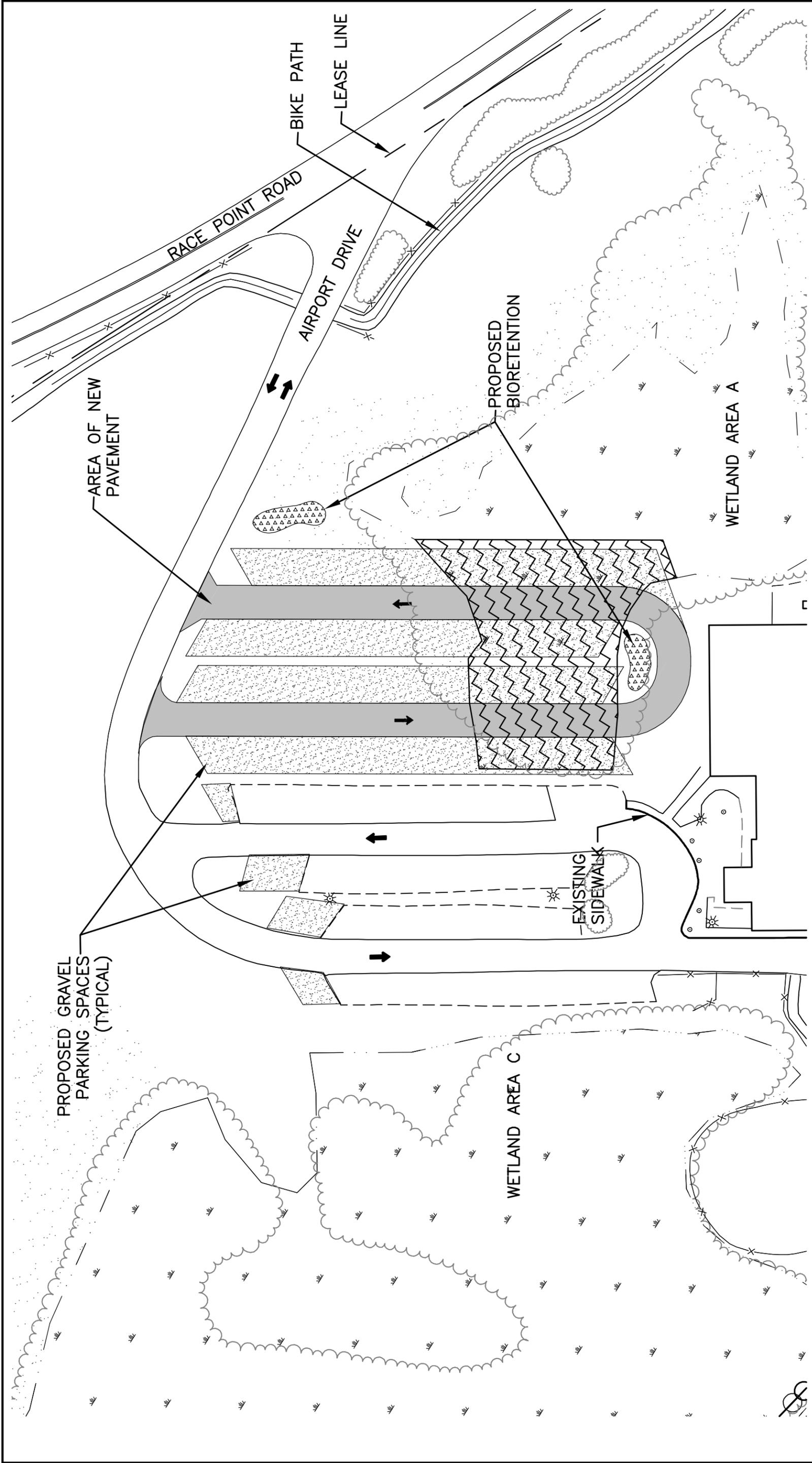


EXPAND AUTO PARKING CONCEPT 1

Figure 3.10

Provincetown Municipal Airport  
Capital Improvements Plan





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-  EXISTING IMPERVIOUS AREA TO BE REMOVED
-  EXISTING DUNE AREA
-  EXISTING TREELINE EXISTING BRUSHLINE
-  PROPOSED IMPERVIOUS PAVED AREA
-  PROPOSED PERVIOUS GRAVEL AREA
-  PROPOSED NATURAL LANDSCAPE BUFFER AREA
-  PROPOSED WETLAND IMPACT AREA
-  PROPOSED BIORETENTION AREA
-  PROPOSED CULTURAL GRASSLAND



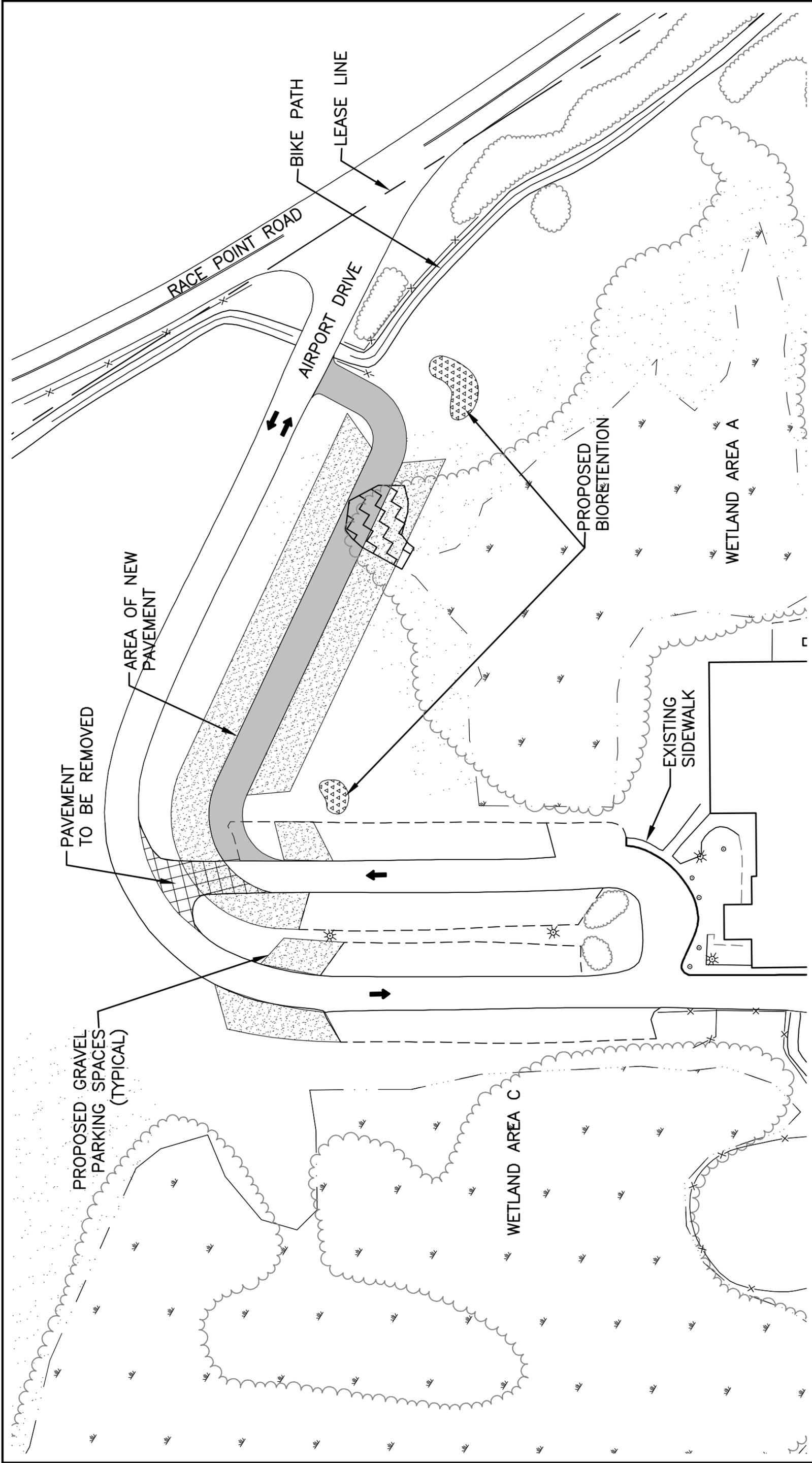
Approx. Scale: 1"=50'  
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Provincetown Municipal Airport  
 Capital Improvements Plan

EXPAND AUTO PARKING CONCEPT 2

Figure 3.11





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- EXISTING IMPERVIOUS AREA TO BE REMOVED
- EXISTING WETLAND AREA
- EXISTING DUNE AREA
- EXISTING TREELINE
- EXISTING BRUSHLINE

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- PROPOSED WETLAND IMPACT AREA

- PROPOSED NATURAL LANDSCAPE BUFFER AREA
- PROPOSED BIORETENTION AREA



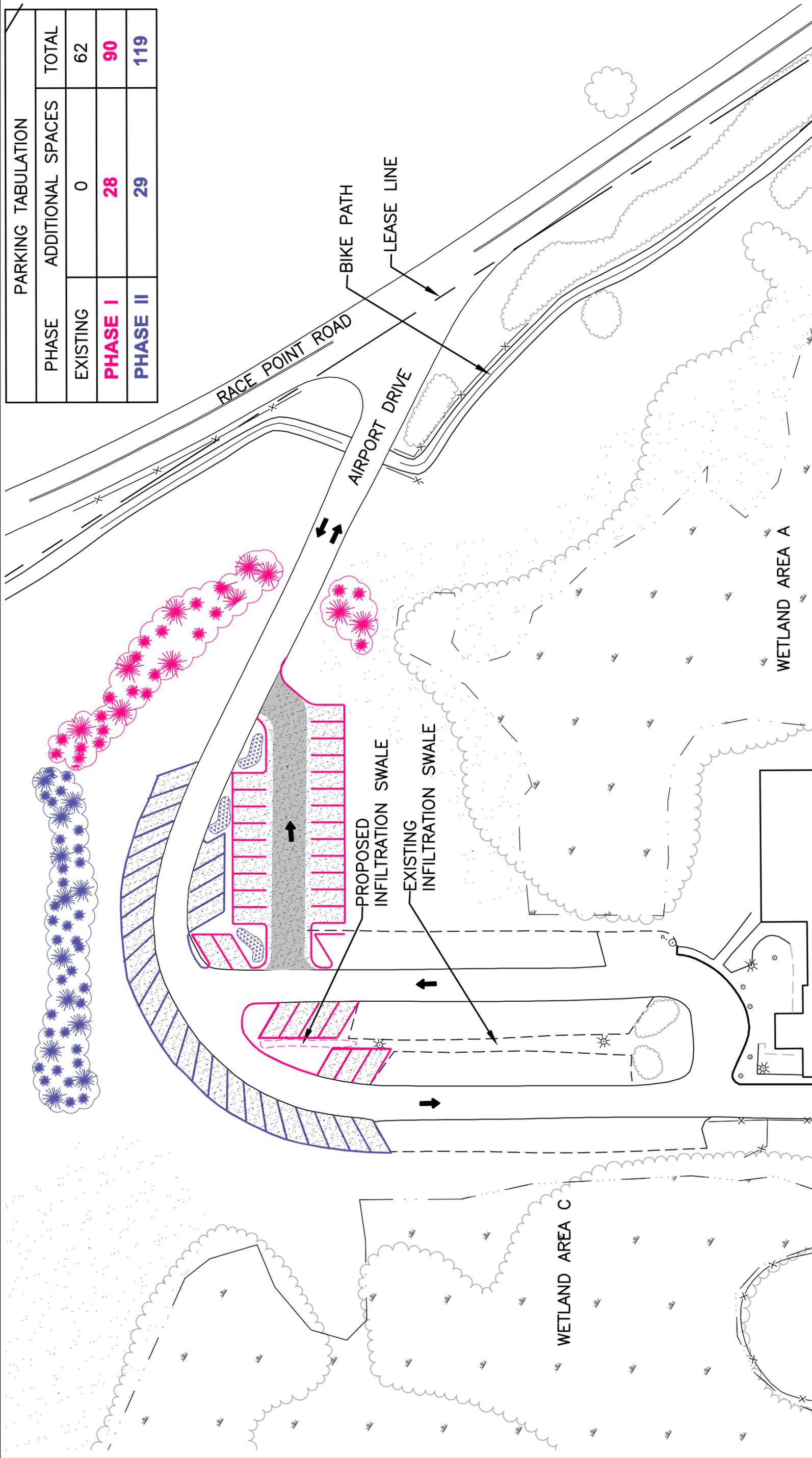
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Provincetown Municipal Airport  
Capital Improvements Plan

EXPAND AUTO PARKING CONCEPT 3

Figure 3.12

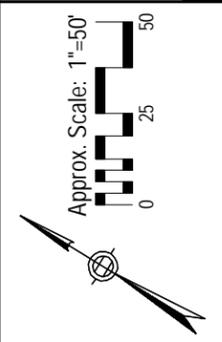




PARKING TABULATION		
PHASE	ADDITIONAL SPACES	TOTAL
EXISTING	0	62
<b>PHASE I</b>	<b>28</b>	<b>90</b>
<b>PHASE II</b>	<b>29</b>	<b>119</b>

Prepared By:  
**JACOBS**

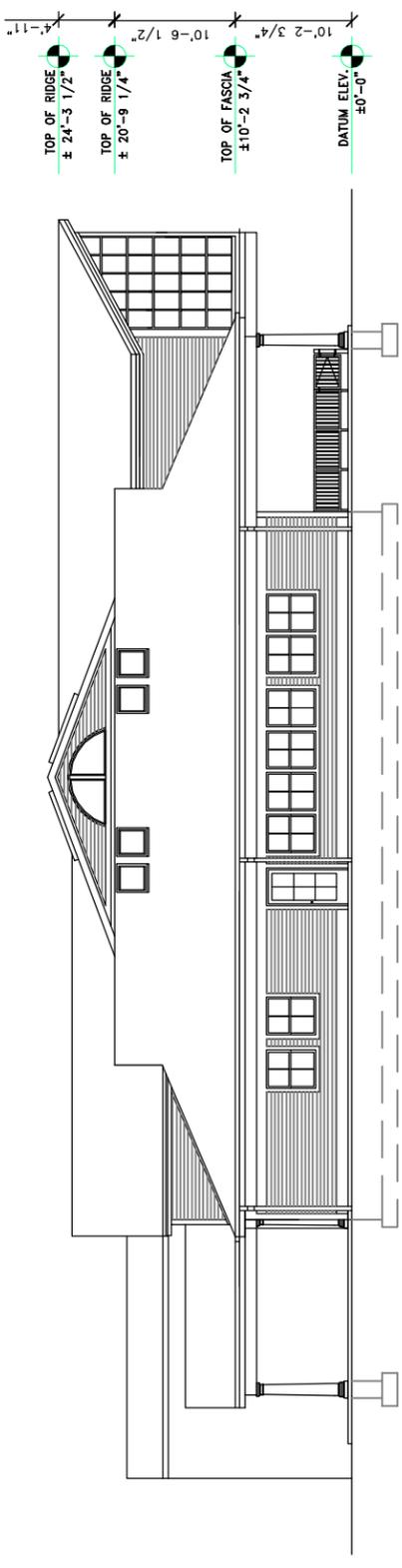
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- EXISTING WETLAND AREA
- EXISTING DUNE AREA
- EXISTING TREELINE/EXISTING BRUSHLINE
- PROPOSED IMPERVIOUS PAVED AREA
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- PROPOSED PERVIOUS GRAVEL AREA
- PROPOSED WETLAND IMPACT AREA
- PROPOSED NATURAL LANDSCAPE BUFFER AREA
- PROPOSED BIORETENTION AREA



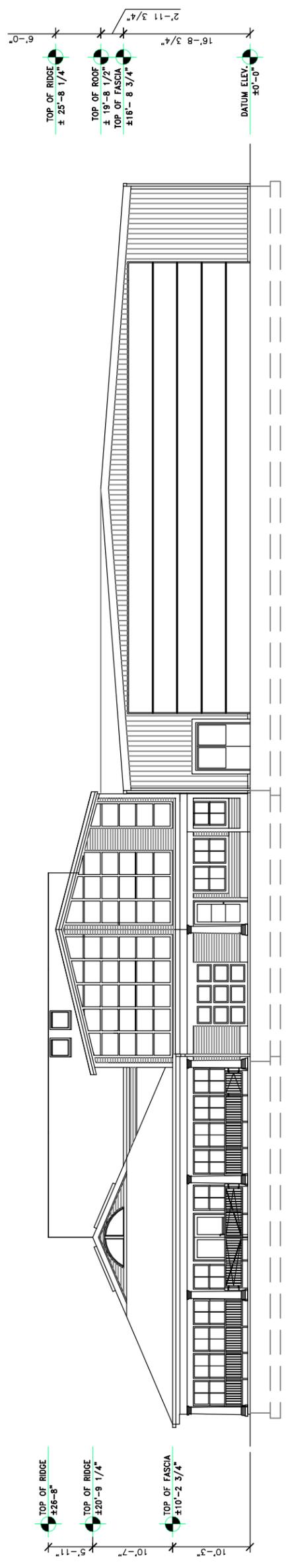
Provincetown Municipal Airport  
 Capital Improvements Plan  
**AUTO PARKING PLAN  
 CONCEPT 4**

Figure 3.13

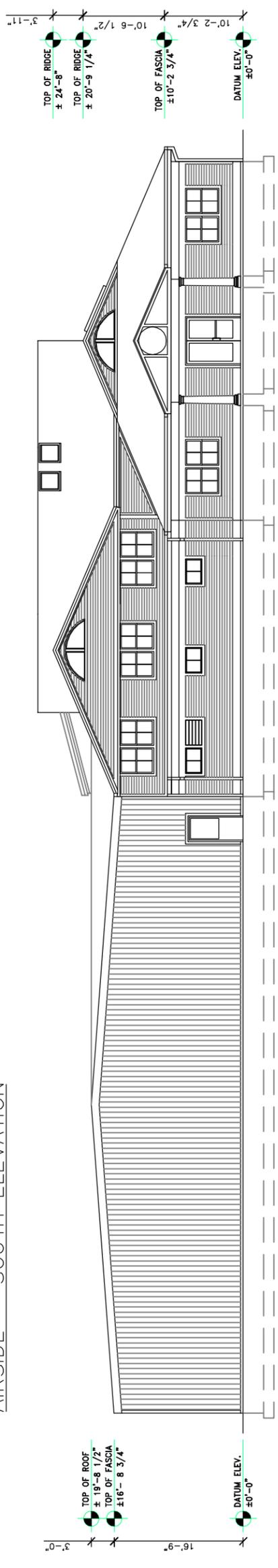




VERTICAL CONCEPT 1  
WEST ELEVATION



VERTICAL CONCEPT 1  
AIRSIDE - SOUTH ELEVATION



VERTICAL CONCEPT 1  
ENTRY - NORTH ELEVATION

Prepared By:

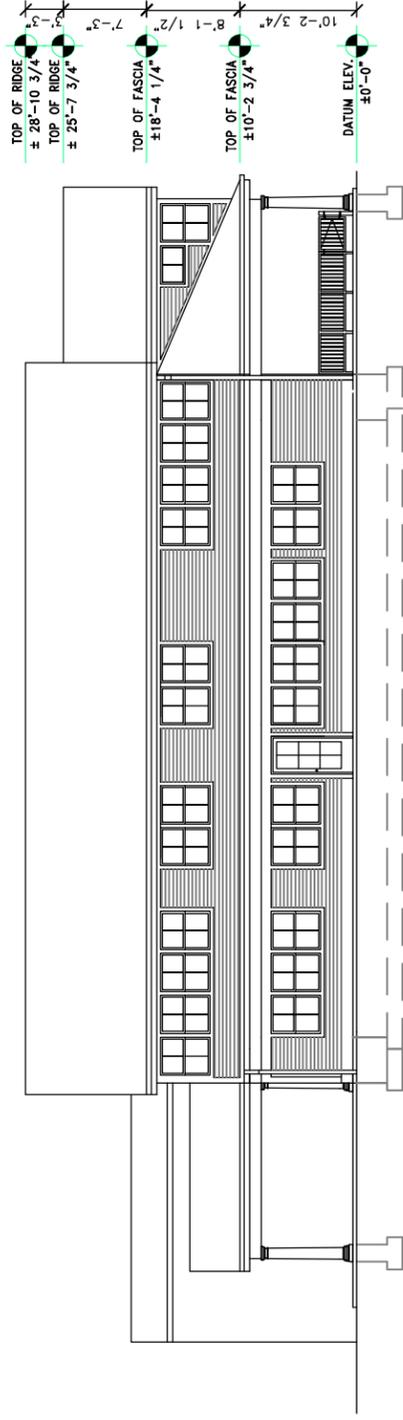


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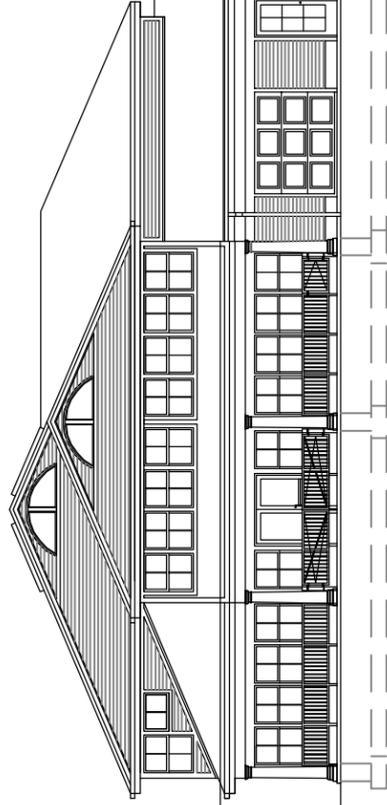
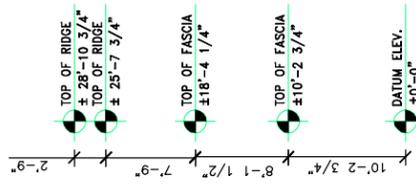
Provincetown Municipal Airport  
Capital Improvements Plan  
AIRPORT TERMINAL BUILDING  
VERTICAL CONCEPT 1 ELEVATIONS

Figure 3.14

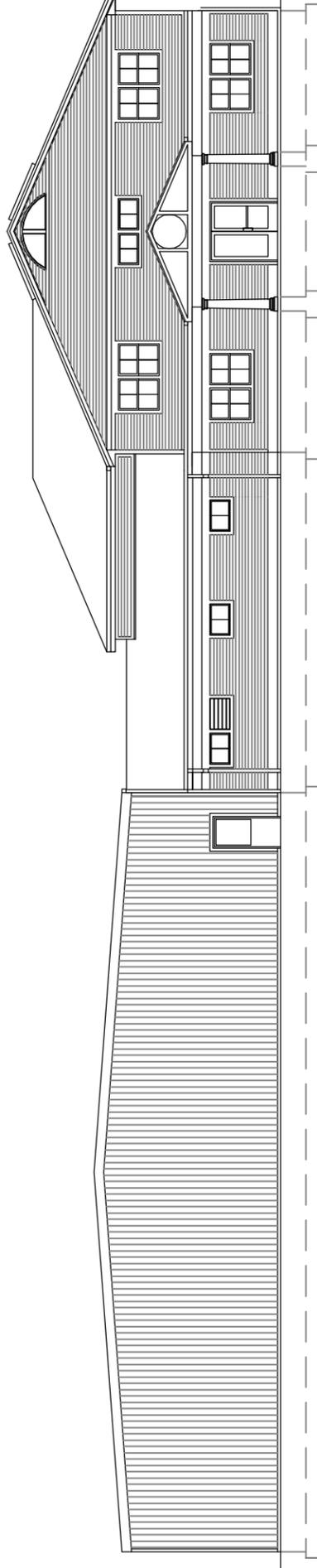
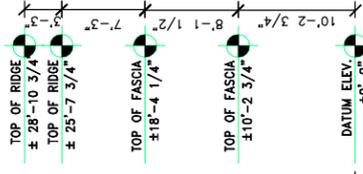
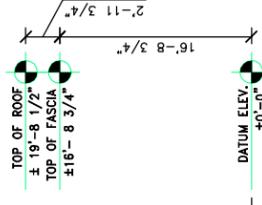
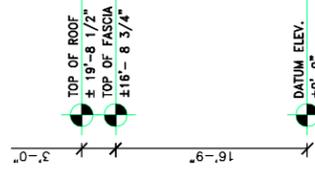




VERTICAL CONCEPT 2  
WEST ELEVATION



VERTICAL CONCEPT 2  
SOUTH ELEVATION



VERTICAL CONCEPT 2  
ENTRY - NORTH ELEVATION

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**JACOBS**

Approx. Scale: 1/16"=1'

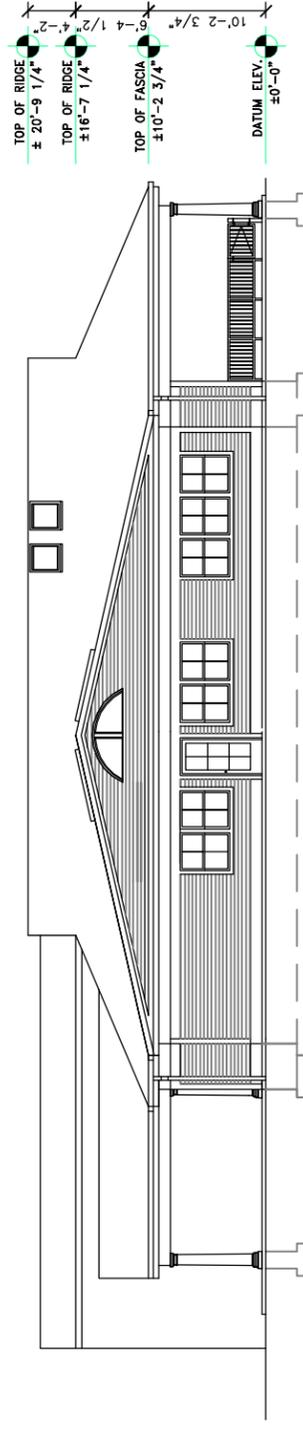


Provincetown Municipal Airport  
Capital Improvements Plan

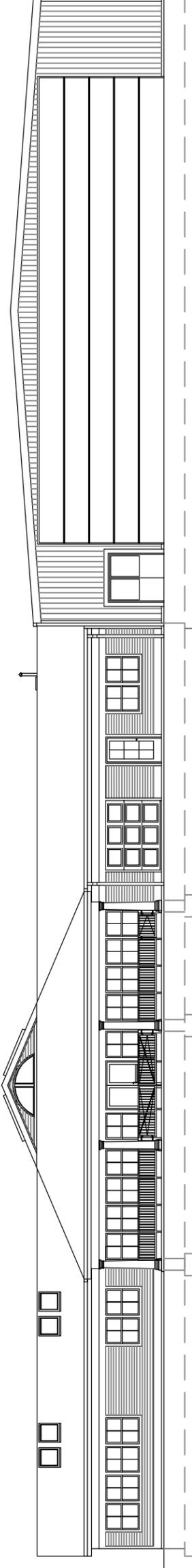
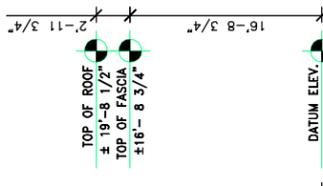
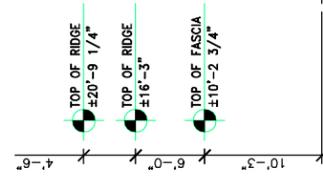
AIRPORT TERMINAL BUILDING  
VERTICAL CONCEPT 2 ELEVATIONS

Figure 3.15

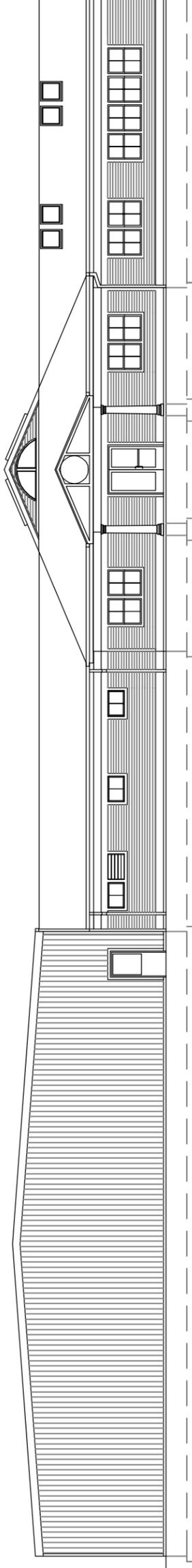
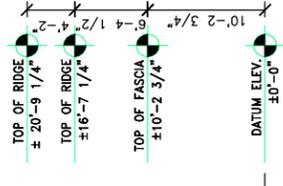
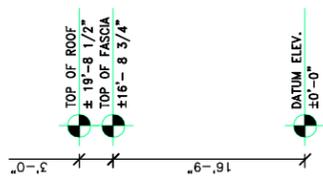




HORIZONTAL CONCEPT  
WEST ELEVATION



HORIZONTAL CONCEPT  
AIRSIDE — SOUTH ELEVATION



HORIZONTAL CONCEPT  
ENTRY — NORTH ELEVATION

Prepared By:

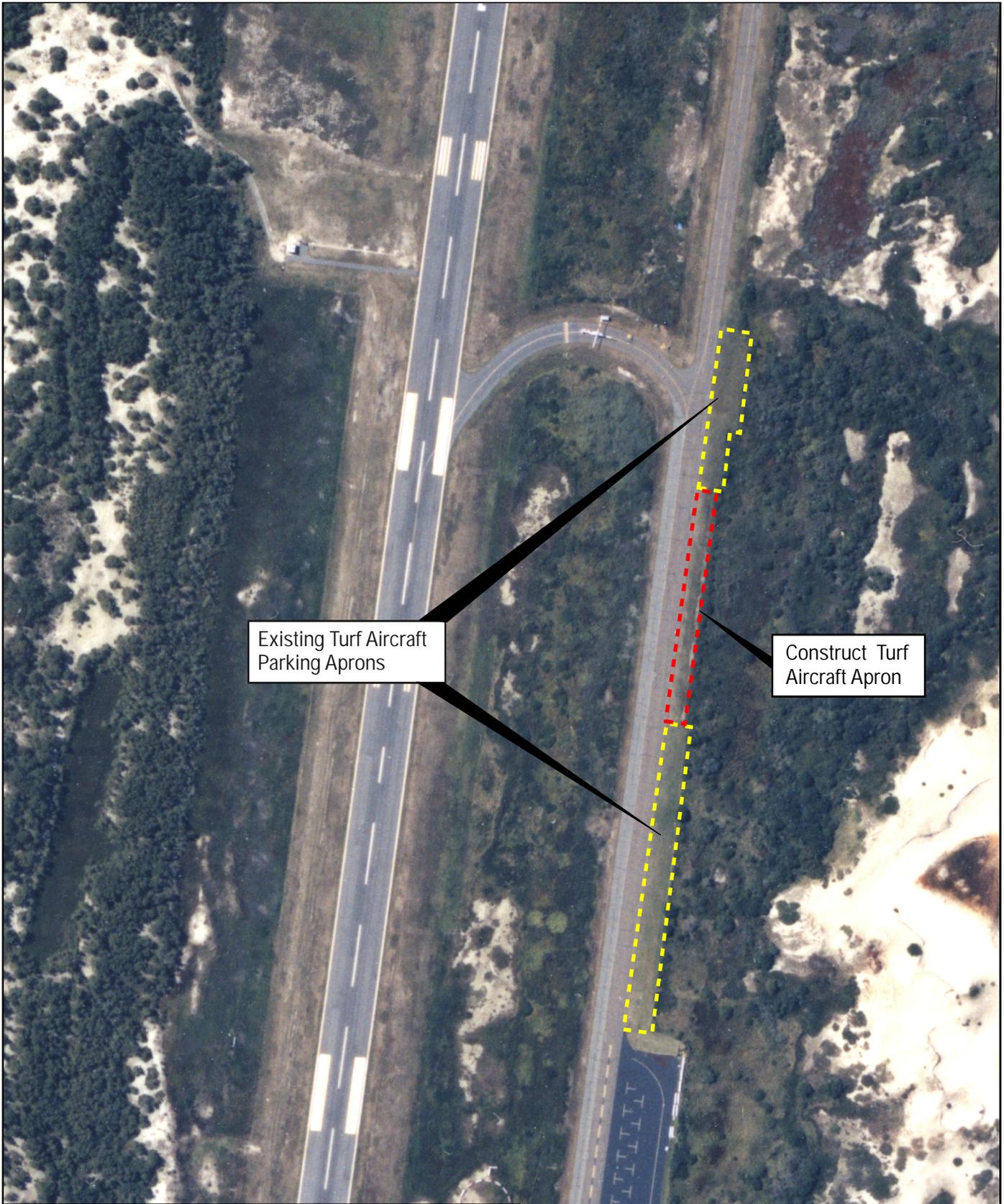


Approx. Scale: 1/16"=1'

Provincetown Municipal Airport  
 Capital Improvements Plan  
**AIRPORT TERMINAL BUILDING**  
 HORIZONTAL CONCEPT ELEVATIONS

Figure 3.16





Existing Turf Aircraft  
Parking Aprons

Construct Turf  
Aircraft Apron

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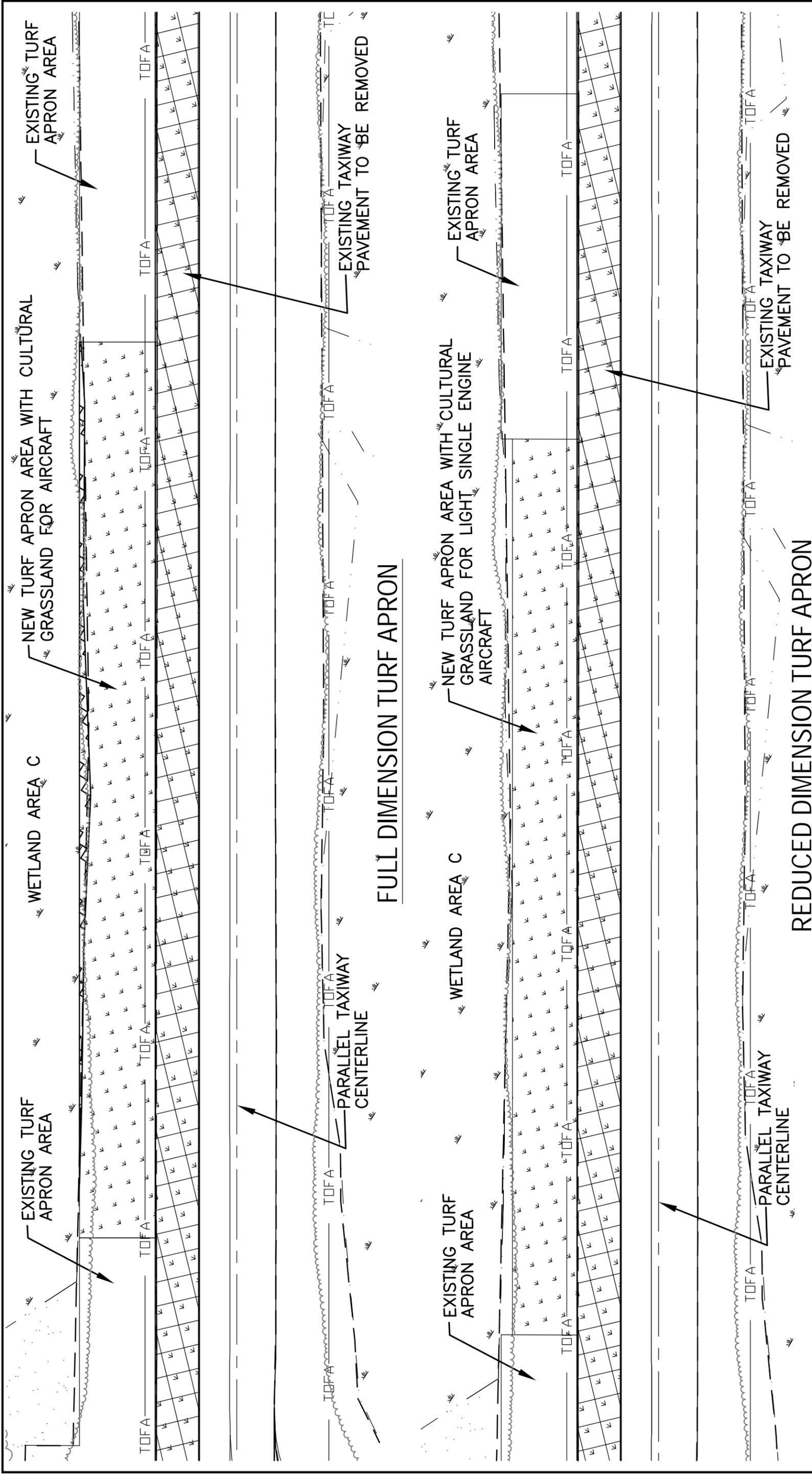
**JACOBS**<sup>TM</sup>

Source: Edwards and Kelcey 2007

Provincetown Municipal Airport  
Capital Improvements Plan  
Turf Apron Improvements

Figure 3.17



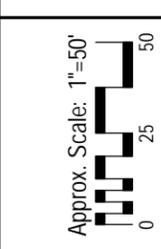


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- EXISTING IMPERVIOUS AREA TO BE REMOVED
- EXISTING WETLAND AREA
- EXISTING DUNE AREA
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- PROPOSED RESTORATION AREA

Provincetown Municipal Airport  
Capital Improvements Plan



TURF APRON ALTERNATIVES PLAN

Figure 3.18

