

RUNWAY 27 END RSA IMPROVEMENTS PROJECT

Boston Logan International Airport
East Boston, Massachusetts

ES

Executive Summary

ES.1 Introduction

The Massachusetts Port Authority (Massport) is proposing to improve the Runway Safety Area (RSA) at the end of Runway 27 at Boston Logan International Airport (Logan Airport or the Airport), adjacent to Boston Harbor (refer to **Figure ES-1**). The proposed Runway 27 End RSA Improvements Project (the Project or the Proposed Project) is required to meet the RSA design criteria in Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5300-13B, *Airport Design*,¹ and to enhance rescue access in the event of an emergency. **This Project is a required FAA safety project that would not extend the runway or have any effect on normal runway operations, runway capacity, or types of aircraft that use the runway.**

ES.1.1 MEPA and NEPA Process Status Summary

On August 31, 2021, Massport filed an Environmental Notification Form (ENF) with the Massachusetts Executive Office of Energy and Environmental Affairs (EEA) in accordance with the Massachusetts Environmental Policy Act (MEPA). The EEA Secretary issued a Certificate on the ENF on October 8, 2021, confirming the need to prepare a state Environmental Impact Report (EIR) and outlining the scope elements. On June 30, 2022, Massport filed a Draft Environmental Impact Report (DEIR) for the Project with the EEA. The EEA Secretary issued a Certificate on August 29, 2022, confirming that the DEIR complied with MEPA and its regulations and outlining the scope of the Final EIR.

The Project is also subject to the National Environmental Policy Act (NEPA) and FAA determined that an Environmental Assessment (EA) is the appropriate level of review. Massport filed a joint Draft EA/Final EIR with FAA and EEA on December 15, 2022. The EEA Secretary issued a Certificate on January 30, 2023, confirming the Final EIR complied with MEPA. As part of the state permitting process associated with proposed work in tidelands, the EEA Secretary issued a Public Benefits Determination on February 24, 2023.

As required by FAA in accordance with their NEPA compliance, this Final EA describes the Proposed Action and alternatives considered by Massport and FAA, documents the potential environmental effects associated with construction and operation of the Project, and where necessary, identifies measures to avoid, minimize, or mitigate impacts. Based on the Draft EA, FAA found that the Proposed Action is consistent with NEPA and other applicable environmental requirements. As documented in the signed Finding of No

¹ U.S. Department of Transportation, Federal Aviation Administration, Advisory Circular 150/5300-13B, *Airport Design*, March 31, 2022.

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FIGURE ES-1: Logan Airport Aerial

Runway 27 End RSA Improvements Project

- Proposed Project Site
- Logan Airport Property Line
- Political Jurisdictions



Sources: VHB 2021, ESRI, Nearmap Imagery March 2022

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Significant Impact included at the front of this document, FAA finds “the proposed federal action, with the required mitigation referenced above, will not significantly affect the quality of the human environment, or include any condition requiring any consultation pursuant to section 102(2)(C) of NEPA.”

ES.1.2 Public and Agency Coordination

In coordination with FAA, Massport received input throughout the Project from regulatory agencies, elected officials, representatives in East Boston and Winthrop, the Massport Community Advisory Committee (MCAC), the public, and community groups. Additional coordination information is provided in Appendix A, *FEIR Certificate and Comment Letters*, Appendix C, *Agency Coordination*, and Appendix E.5, *Updated Environmental Justice Outreach Plan*.

ES.2 Project Description and Purpose

The purpose of the Project is to enhance safety for aircraft and their passengers in emergency situations by improving the Runway 27 End RSA. The Project would advance an overriding public interest of safety consistent with Title 49 of U.S. Code Section 47101, which states “the safe operation of the airport and airway system is the highest aviation priority.”² **The Project is a required FAA safety project that would not extend the runway or affect normal runway operations, capacity, or types of aircraft using the runway.**

An RSA is a flat surface surrounding the runway that is clear of obstructions. FAA requires airports to provide RSAs at runway ends and on the sides of a runway to reduce risk of injury and damage to aircraft. Runway 9-27, at 7,001 feet long and 150 feet wide, is classified as a Runway Design Code D-V runway. FAA design standards therefore require Runway 9-27 to have an RSA measuring 1,000 feet long beyond each end of the runway and 500 feet wide.³ As shown in **Figure ES-1**, the Runway 27 End (east end of Runway 9-27) is on the eastern edge of the airfield, adjacent to Boston Harbor. The Runway 27 End RSA is only 150 feet long and does not meet FAA’s RSA length requirement of 1,000 feet for a full dimension RSA (see **Figure ES-2**).

Figure ES-2 Runway 27 End - Existing Runway Safety Area



2 U.S. Code, Title 49, Subtitle VII, Part B, Chapter 471, Subchapter I, Section 47101 – Policies, (a) General (1).

3 U.S. Department of Transportation, Federal Aviation Administration, Advisory Circular 150/5300-13B, *Airport Design*, Table G-11, March 31, 2022.

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ES.3 Alternatives Considered

In 2017, FAA directed Massport to conduct a *Boston Logan Airport Runway Incursion Mitigation Study/ Runway 9-27 Runway Safety Area (RSA) Alternatives Study* to determine feasible alternatives to bring the Runway 27 End RSA into compliance (see Appendix B, *RIM Study*). Six build alternatives and the No Action Alternative were evaluated in the Tier 1 Alternatives Screening. FAA concluded that Alternative 4B, an approximately 650-foot-long RSA with an Engineered Materials Arresting System (EMAS)⁴ on a 306-foot-wide deck, was the Preferred Alternative. A No Action Alternative was also carried forward for review.

A second-tier alternatives evaluation was conducted to determine the appropriate deck support structure. Two types of structures were considered: piles and caissons.⁵ Four alternatives for supporting the deck were evaluated. The analysis found Deck Support Alternative 2 would have the least impact on environmental resources and could be constructed with the least airfield operational impacts. Deck Support Alternative 2 was carried forward as the Proposed Action for further analysis, along with the No Action Alternative.

ES.4 Summary of Proposed Improvements

As shown in **Figure ES-3**, Massport would construct a 650-foot-long RSA with an EMAS on a pile-supported deck (approximately 450 feet long by 306 feet wide). The Project would consist of the following:

- Extending the existing Runway 27 End RSA to accommodate a steel sheet pile wall at the inshore limit of the deck to prevent settlement and erosion of the upland areas;
 - Installing a transition slab spanning from the land to the pile-supported structure;
 - Installing a deck structure approximately 450-feet-long and 306-feet-wide (an area of approximately 137,700 square feet [3.2 acres]), supported by 326 twenty-inch square concrete piles;
 - Installing an EMAS approximately 500-feet-long by 170-feet-wide located within the RSA deck;
 - Realigning the existing 20-foot-wide airport perimeter road to enhance vehicular sight lines;
 - Installing two emergency access ramps, one on each side of the proposed deck;
 - Adding life rings on the deck to enhance access in and out of the water in an emergency; and
 - Installing safety railings along the sides and end of the proposed RSA deck.
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ES.5 Environmental Impacts

The Final EA analyzes whether there are significant impacts to environmental resources based on FAA NEPA guidance provided in FAA Order 1050.1F⁶, as summarized in **Table ES-1**. Coastal resources in the footprint of the Project are shown in **Figure ES-4**. Construction would result in temporary, minor increases in noise, emissions, water quality effects (turbidity), and surface traffic. The only alternative that would avoid impacts is the No Action Alternative. However, the No Action Alternative is not acceptable because it does not meet FAA's RSA requirements.

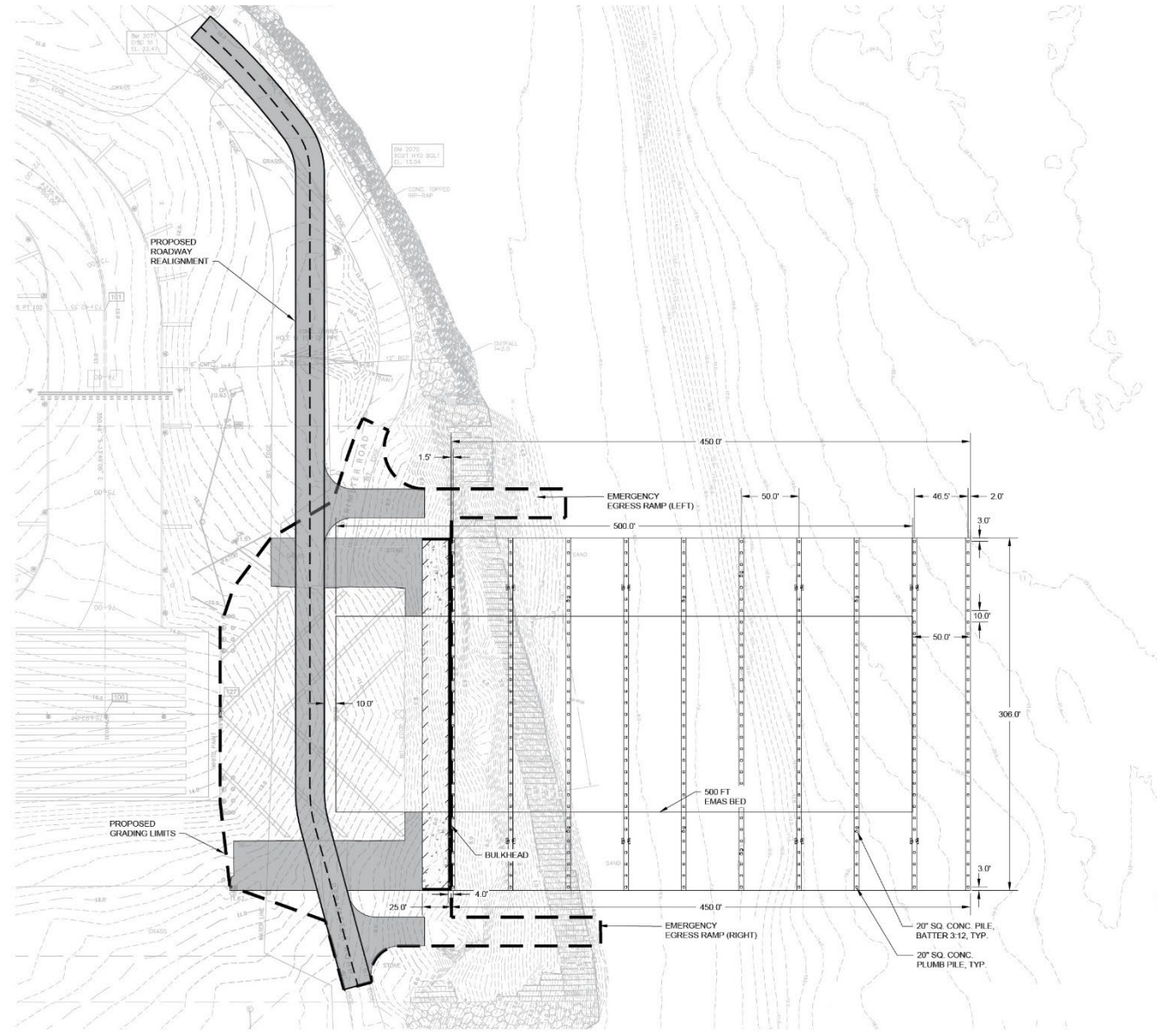
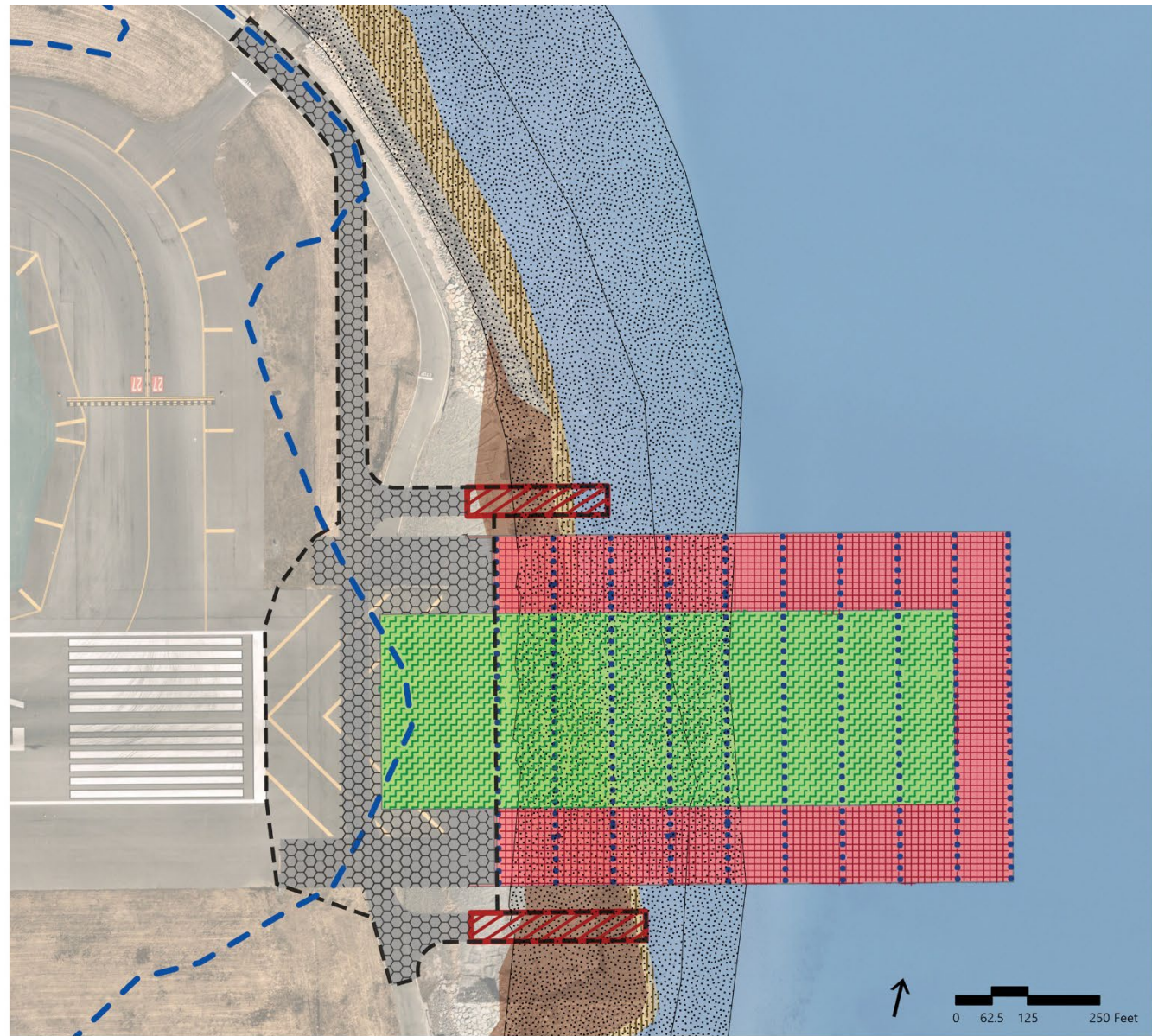
4 An EMAS is a bed of energy-absorbing material; in an emergency, if an aircraft rolls onto the EMAS, it is slowed down in a way that minimizes damage to the aircraft and potential injuries. An EMAS is often used when a full-dimension RSA is not possible due to lack of available land or to minimize environmental impacts; an EMAS provides an FAA-approved level of safety equivalent to an RSA built to the full-length dimensions.

5 Piles are circular or square elements made from precast concrete that are driven into the ground using vibration or impact (pile driving). Caissons, which are circular columns typically larger than piles, involve drilling a hole into the bedrock into which structural steel is placed and concrete pumped to form a column.

6 U.S. Department of Transportation, Federal Aviation Administration, Order 1050.1F: *Environmental Impacts: Policies and Procedures*, Exhibit 4-1, "Significance Determination for FAA Actions," pages 4-4 to 4-13, July 16, 2015.

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326 20-Inch Square Concrete Piles

The pile configuration includes:

- 326 total piles (294 vertical piles and 32 batter piles)
- 20-inch square concrete piles driven to rock in 10 bents¹ of 31 piles each
- Bents spaced 50 feet apart and piles within each bent spaced 11 feet apart

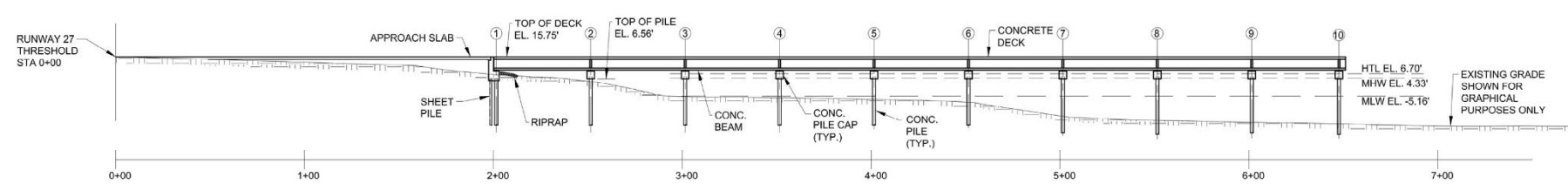
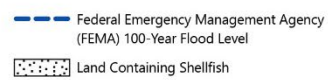


FIGURE ES-3: RSA Deck Support Alternative 2

Runway 27 End RSA Improvements Project

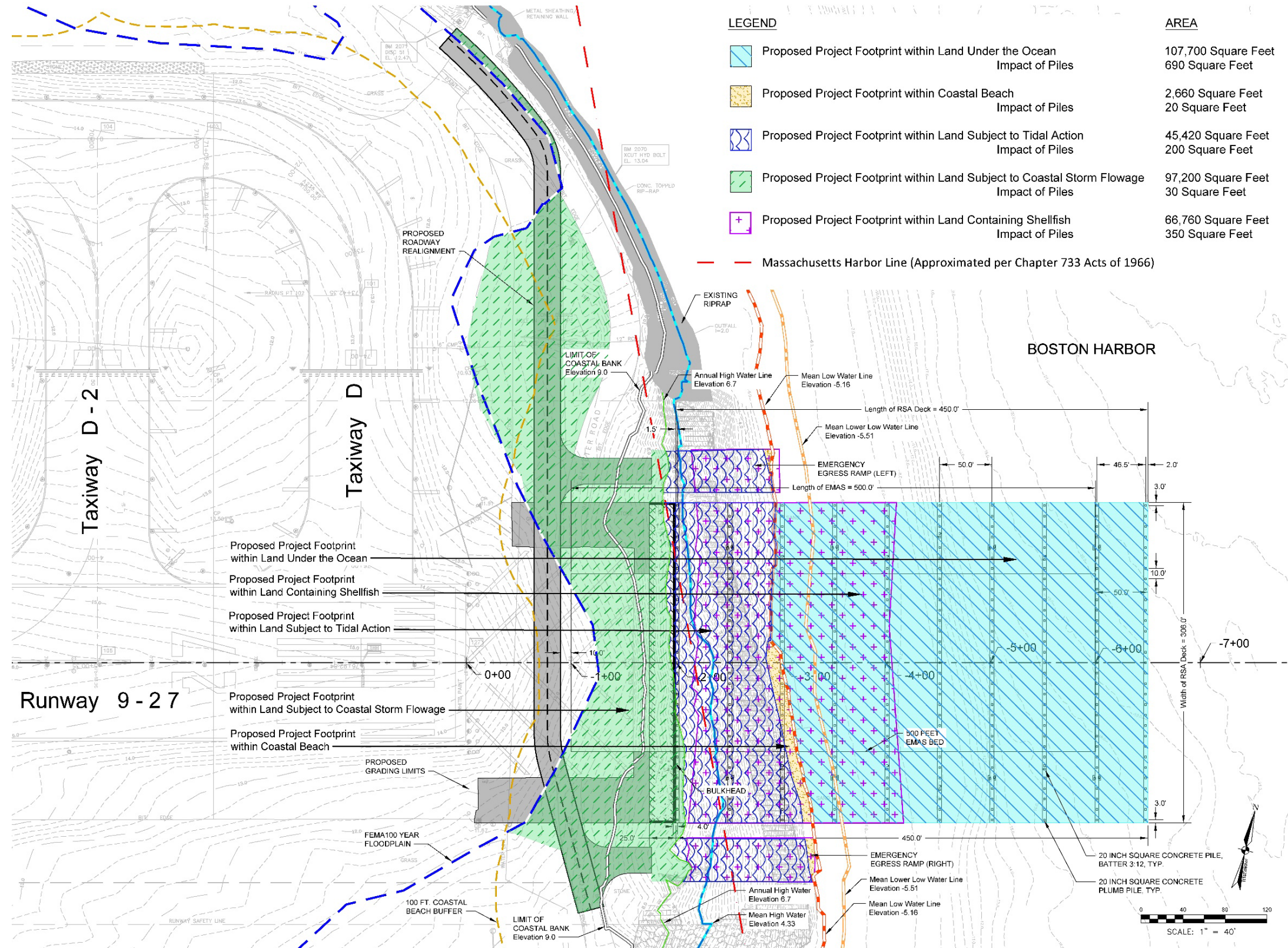


¹ A bent is an array of piles in a row and fastened together at the top by a pile cap.

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Figure ES-4 Coastal Resources Located within the Project Site



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Table ES-1 Summary of Potential Impacts

Impact Category	Significant Impact?
Air Quality	No. No change proposed to aircraft operations, type of aircraft, or location in which aircraft operate. Temporary increases in air pollutants during construction would be below the <i>de minimis</i> standards.
Biological Resources (Including Fish, Wildlife, and Plants)	No. No adverse impacts to federally listed threatened or endangered species under U.S. Fish and Wildlife Service (USFWS) jurisdiction (terrestrial species) are anticipated. Consultation with National Oceanic and Atmospheric Administration (NOAA) Fisheries is ongoing (marine species). The pilings would offer new hard substrate for encrusting marine animals and algae, providing feeding habitat for fish. A portion of the Project is in priority upland habitat for two grassland bird species: the upland sandpiper (<i>Bartramia longicauda</i>) [State endangered] and Eastern meadowlark (<i>Sturnella magna</i>) [State special concern]. Approximately 20,300 square feet of grassland habitat would be permanently impacted by the Project. An additional 22,000 square feet of grassland would be temporarily altered during construction. Massport will work with the Natural Heritage and Endangered Species Program (NHESP) to identify suitable locations where existing pavement can be removed to create new grassland habitat to offset Project impacts. Temporarily altered grassland will be restored in place.
Climate Change and Greenhouse Gas (GHG) Emissions	No. No increase in climate risk to nearby properties is anticipated. The Project would not change Airport operations or surface transportation patterns. The Runway Safety Area (RSA) deck would be designed to withstand anticipated coastal storms and sea level rise to the extent possible. Other than temporarily during construction, the Project would not increase GHG emissions.
Coastal Resources	No. The proposed RSA deck will overshadow approximately 3.2 acres of intertidal and subtidal habitat. The elevated deck will allow the free flow of tidal waters under the deck, preserving the intertidal and benthic habitat The RSA deck pilings would alter approximately 880 square feet of Land Subject to Tidal Action and Land Under the Ocean, including Coastal Bank, Coastal Beach/Tidal Flats, and Land Containing Shellfish. An additional 9,460 square feet of coastal resources previously disturbed by the RSA would be altered to construct the two emergency egress ramps. No changes are anticipated in wave direction or velocity, nor increases in erosion or deposition in the marine environment. Minor scour effects in the vicinity of each piling are anticipated.
Department of Transportation Act, Section 4(f)	No. No resources present.
Farmlands	No. No resources present.
Hazardous Materials and Solid Waste	No. No adverse impacts anticipated. No sites within the Study Area are listed on the U.S. Environmental Protection Agency's (USEPA) National Priorities List (NPL) or in the Massachusetts Department of Environmental Protection's (MassDEP) online database.
Historical, Architectural, Archaeological, and Cultural	No. No construction period or permanent impacts to historical/cultural resources are anticipated. No identified above ground or archaeological resources (including marine) in the area of potential effect.
Land Use	No. The Project would not result in changes to existing land uses on- or off-Airport at any point during construction or operation. No permanent impacts to noise sensitive land uses are anticipated.
Natural Resources and Energy Supply	No. No permanent impacts to natural resources and energy supply anticipated, nor significant impacts resulting from construction activities.
Noise	No. The Project consists of safety enhancements and would not extend the length of Runway 9-27 or affect normal runway operations, runway capacity, runway use, or the types of aircraft using the runway. Construction noise is anticipated for 120 days total during two separate 60-day periods over two years. Noise levels are not anticipated to exceed the City of Boston's construction noise limit criteria.

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Impact Category	Significant Impact?
Socioeconomics, Environmental Justice (EJ), and Children's Health and Safety Risks	No. EJ populations would not be disproportionately affected by this safety project. The Project is a safety improvement and does not include permanent changes in employment or economics. It would not relocate houses or businesses, disrupt local traffic patterns, or reduce the community tax base. Construction would have a positive economic and jobs impact. The Project would not create or make more readily available products or substances that could harm children.
Light Emissions and Visual Impact	No. No new airfield or runway-related navigational light sources are proposed. Lighting installed on the RSA deck, along with lighting on a relocated security zone buoy, is anticipated to be minor given the existing urban setting and distance to residences across Boston Harbor. The RSA deck is not anticipated to significantly affect area viewsheds. The view of the shoreline from the closest residences is not anticipated to be substantially different given the low elevation of the proposed deck and in context of the surrounding Airport environment and urban setting.
Wetlands	No. Mitigation measures for impacts to wetlands are proposed. Massport proposes a wetland mitigation goal of 1:1 restoration or replacement of 1,200 square feet of filled wetland area (piles and emergency egress ramps) via construction or restoration of mudflat based on U.S. Army Corps of Engineers (USACE) and MassDEP guidance. The proposed RSA deck would overshadow coastal wetlands, but they will continue to provide functional value.
Floodplains	No. The Project would alter approximately 97,200 square feet of coastal floodplain. Work will generally maintain the existing ground elevation and not significantly reduce available floodplain volume. Any filling of coastal floodplain will not impact future base flood elevations.
Surface Waters	No. Turbidity may be generated during installation of piles and could temporarily affect water quality in a localized area adjacent to the Project. A turbidity curtain would be deployed around the immediate work area to contain sediment resuspended during pile-driving activities.
Groundwater	No. The Project is not anticipated to result in a higher pollutant load nor in an increase of total suspended solids.
Wild and Scenic Rivers	No. No resources present.

Source: U.S. Department of Transportation, Federal Aviation Administration, Order 1050.1F: *Environmental Impacts: Policies and Procedures*, Exhibit 4-1, "Significance Determination for FAA Actions," pages 4-4 to 4-13, July 16, 2015; U.S. Department of Transportation, Federal Aviation Administration, Office of Environment and Energy, *1050.1F Desk Reference*, Version 2, February 2020.

ES.6 Mitigation Measures

Measures to mitigate potential impacts associated with the Project are summarized in **Table ES-2**. Construction mitigation measures would be incorporated into contract documents and specifications. Construction activities would comply with FAA Advisory Circular 150/5370-10H, *Standard Specifications for Construction of Airports*.⁷ On-site resident engineers and inspectors would monitor construction activities to ensure mitigation measures are implemented.

⁷ U.S. Department of Transportation, Federal Aviation Administration, Advisory Circular 150/5370-10H, *Standard Specifications for Construction of Airports*, December 2018.

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Table ES-2 Proposed Mitigation Measures and Commitments

Environmental Category	Mitigation Measure	Implementation Schedule
Land Containing Shellfish	Provide mitigation fee to Massachusetts Division of Marine Fisheries (DMF) for off-site restoration.	Prior to Construction
Habitat	Replace lost upland grass habitat, where possible.	During Construction
	Implement winter flounder time-of-year (TOY) restriction from February 1 to June 30 for in-water construction activities.	During Construction
Coastal Wetlands	Provide in-lieu fee (U.S. Army Corps of Engineers [USACE]) for impacts to mud flat.	Prior to Construction
	Provide 1:1 replacement/restoration of intertidal and subtidal wetlands impacted by piles and egress ramps. In close coordination with the resource agencies, mud flat mitigation is expected to be provided in the form of shoreline restoration within Boston Harbor/Chelsea Creek or could involve mud flat creation similar to what Massport previously conducted to offset impacts associated from the Runway 33L End Runway Safety Area (RSA) project at Rumney Marsh in Saugus, Massachusetts.	During Construction
Water Quality	Develop and implement a comprehensive Soil Erosion and Sediment Control Plan in accordance with National Pollutant Discharge Elimination System (NPDES) and MassDEP standards.	During Construction
	Apply water to dry soil to prevent fugitive dust.	During Construction
	Stabilize highly erosive soils with erosion control blankets or by using other methods.	During Construction
	Use sediment control methods (such as silt fences and hay bales) to prevent silt and sediment entering the stormwater system and waterways.	During Construction
	Maintain equipment to prevent oil and fuel leaks.	During Construction
	Use turbidity curtains around in-water construction activities.	During Construction
Noise	Provide measures for stormwater management and runoff treatment.	During Construction
	Maintain mufflers on construction equipment in accordance with Occupational Safety and Health Administration (OSHA) standards.	During Construction
	Minimize engine idling in accordance with Massachusetts anti-idling regulations.	During Construction
	Fit air-powered equipment with pneumatic exhaust silencers.	During Construction
Transportation	Minimize nighttime construction.	During Construction
	Minimize noise during pile driving activities where possible.	During Construction
Air Quality and Greenhouse Gas (GHG) Emissions	Limit construction traffic to federal or state highways or Logan Airport roadways, prohibiting use of East Boston roadways by construction vehicles.	During Construction
	Implement construction worker vehicle trip management techniques.	During Construction
	Minimize truck idling in accordance with Massachusetts anti-idling regulations.	During Construction
Hazardous Materials and Solid Waste	Retrofit appropriate diesel construction equipment with diesel oxidation catalysts and/or particulate filters.	During Construction
	Implement construction worker vehicle trip management techniques.	During Construction
Hazardous Materials and Solid Waste	Pre-characterize any materials before disposal (if any) to determine course of action for removal.	During Construction

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ES.7 Permits and Approvals

The Proposed Project would require various local, state, and federal environmental permits prior to construction. Full review of the Project by regulatory and resource agencies, and the public would occur during the permitting process. The shoreline within the Project footprint consists of Land Subject to Tidal Action and Land Under the Ocean and is subject to regulation pursuant to several state regulatory programs. Boston Harbor is a Navigable Water of the U.S. and placement of a structure or filling within Boston Harbor is subject to federal regulation pursuant to Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act. **Table ES-3** summarizes the anticipated permits and approvals.

Table ES-3 Anticipated Project Permits and Approvals

Agency/Department	Permit/Approval/Action
Federal	
Federal Aviation Administration (FAA)	■ National Environmental Policy Act (NEPA) (fulfilled by this document)
U.S Army Corps of Engineers (USACE)	■ Section 10 of the Rivers and Harbors Act ■ Section 404 of the Clean Water Act
National Oceanic and Atmospheric Administration (NOAA) Fisheries Service	■ Section 7 Endangered Species Consultation
U.S Coast Guard (USCG)	■ Navigation Coordination
U.S. Environmental Protection Agency (USEPA)	■ National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP)
Commonwealth of Massachusetts	
Executive Office of Energy and Environmental Affairs (EEA)	■ Massachusetts Environmental Policy (MEPA) Review (complete) ■ Public Benefit Determination (complete)
Massachusetts Office of Coastal Zone Management (CZM)	■ Consistency Statement with Massachusetts Coastal Zone Management Plan
Massachusetts Department of Environmental Protection (MassDEP)	■ Individual Section 401 Water Quality Certification ■ Chapter 91 Waterways Program License Modification
Massachusetts Natural Heritage and Endangered Species Program (NHESP)	■ Conservation and Management Permit (if required)
City of Boston	
Boston Conservation Commission (BCC)	■ Massachusetts Wetlands Protection Act (WPA) Order of Conditions

Note: This is a preliminary list of local, state, and federal permits and approvals that may be sought for the Project. This list is based on current information about the Project and is subject to change as the design of the Project evolves.