

FINAL ENVIRONMENTAL ASSESSMENT

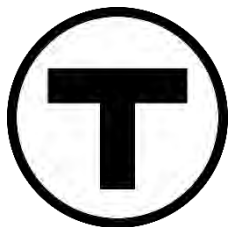


DRAW ONE BRIDGE REPLACEMENT PROJECT

Cambridge & Boston, Massachusetts



Federal Transit Administration
U.S. Department of Transportation



Massachusetts Bay Transportation Authority

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Acronyms and Abbreviations

ACM	Asbestos-containing materials
ACS	American Community Survey
APE	Area of Potential Effects
B&MRR	Boston and Maine Railroad
BET	Boston Engine Terminal
BHCC	Bunker Hill Community College
BPDA	Boston Planning & Development Agency
CAA	Clean Air Act
CCTV	Closed-circuit television
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CMR	Code of Massachusetts Regulations
CO	Carbon monoxide
CSO	Combined sewer overflow
CSX	CSX Railroad
CZM	Massachusetts Office of Coastal Zone Management
CZMA	Coastal Zone Management Act
DCR	Massachusetts Department of Conservation and Recreation
DFE	Design Flood Elevation
EA	Environmental Assessment
EDR	Environmental Database Report
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EJ	Environmental justice
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FHWA	Federal Highway Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
GHG	Greenhouse gas
GIS	Geographic Information Systems
HABS	Historic American Buildings Survey
HAER	Historic American Engineering Record
HAPC	Habitat Areas of Particular Concern
HASP	Health and Safety Plan
IPaC	Information for Planning and Consultation
LCP	Lead contaminated paint
LFA	Lead Federal Agency
MA	Massachusetts
MassDEP	Massachusetts Department of Environmental Protection
DMF	Massachusetts Department of Environmental Protection Division of Marine Fisheries

MassDOT	Massachusetts Department of Transportation
MBTA	Massachusetts Bay Transportation Authority
MCP	Massachusetts Contingency Plan
MEPA	Massachusetts Environmental Policy Act
MESA	Massachusetts Endangered Species Act
MGH	Massachusetts General Hospital
MGL	Massachusetts General Law
MHC	Massachusetts Historical Commission
MHD	Massachusetts Highway Department
MIT	Massachusetts Institute of Technology
MMPA	Marine Mammal Protection Act
MOA	Memorandum of Agreement
MPO	Metropolitan Planning Organization
MSA	Magnuson-Stevens Fishery Conservation and Management Act
MWRA	Massachusetts Water Resources Authority
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHESP	Natural Heritage and Endangered Species Program
NHPA	National Historic Preservation Act
NNEPRA	Northern New England Passenger Rail Authority
NO ₂	Nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
NRHP	National Register of Historic Places
PAH	Polycyclic aromatic hydrocarbons
PCB	Polychlorinated biphenyls
PIP	Public Involvement Program
PLC	Programmable logic controller
PM ₁₀	Particulate matter with a diameter of 10 microns or less
PM _{2.5}	Particulate matter with a diameter of 2.5 microns or less
RCNM	Federal Highway Administration Roadway Construction Noise Model
RCRA	Resource Conservation and Recovery Act
REC	Recognized Environmental Concern
ROW	Right of way
SHPO	State Historic Preservation Office
SIH	Signal Instrument House
SIP	State Implementation Plan
SO ₂	Sulfur dioxide
TNW	Traditional Navigable Waters
USACE	U.S. Army Corps of Engineers
USC	United States Code
USCG	United States Coast Guard
USDOT	U.S. Department of Transportation
USFWS	U.S. Fish and Wildlife Service

VMT Vehicle miles traveled
WPA Massachusetts Wetlands Protection Act
WQC Water Quality Certification

Foreword

This document is the Final Environmental Assessment (EA) for the Draw One Bridge Replacement Project (the “Proposed Project”). Following the issuance of the Draft EA on Friday, December 6, 2024, the EA was made available for public comment from through January 6, 2025, at 12:00 PM. A legal notice of availability was published in *The Boston Globe* on December 7, 2024, and in *The Boston Herald* on December 8, 2024.

The EA was made available for public review at the following locations

- Federal Transit Administration (FTA) Region 1 Office Kendall Square | 220 Binney Street Suite 940 Cambridge, MA 02142
- State Transportation Building | Massachusetts Bay Transportation Authority (MBTA) Draw One Bridge Replacement Program, 10 Park Plaza, Boston, MA 02116
- Boston City Hall | One City Hall Plaza, Boston, MA 02201
- Boston Public Library | 700 Boylston Street, Boston, MA 02116
- Cambridge City Hall | 795 Massachusetts Avenue, Cambridge, MA 02139
- Cambridge Public Library | 45 Pearl Street, Cambridge, MA 02139

The EA was made available online via the project website at: www.MBTA.com/DrawOne.

Additionally, a link to the EA on the project website was forwarded to federal, state, and local agencies; to interested parties; and to Cooperating Agencies (the United States Coast Guard [USCG] and the United States Army Corps of Engineers [USACE]) and one Participating Agency (the Federal Railroad Administration [FRA]) on December 13, 2024.

A virtual public hearing was held via Zoom on Thursday, January 2, 2025, from 6 PM to 7:30 PM, and an open house was held on Friday, January 3, 2025, from 4 PM to 6 PM at the Lewis Room of the Cambridge Public Library - Central Square Branch, 45 Pearl Street, Cambridge, Massachusetts.

The comments made during the public hearing and throughout the public comment period are presented and responded to in a new appendix, Appendix L, “Responses to Comments on the Draft EA.”

Excluding sections which are new to this FEIS (this Foreword and Appendix L, “Responses to Comments on the Draft EA”), substantive edits to the text since the publication of the Draft EA are marked by double-underlining for new text and ~~strikethrough~~ for deleted text. Typographical changes relating to grammar and formatting are not indicated with double-underlining or strikethrough in the Final EA. The substantive changes are described as follows:

- Revised text in Section 1.1.4, “Agency Coordination and Public Involvement,” to reflect the aforementioned information related to the Draft EA public hearing and public comment period;
- Revised text throughout the EA to reflect execution of the Section 106 Memorandum of Agreement (MOA) on December 18, 2024, among FTA, MBTA, the State Historic Preservation Office (SHPO)/the Massachusetts Historical Commission (MHC), the Boston Office of Historic Preservation, the Cambridge Historical Commission, and the Massachusetts Department of Conservation and Recreation (DCR);

- Revised text throughout to reflect DCR’s concurrence with FTA, provided on January 8, 2025, that the Proposed Project would not adversely affect the recreational activities, features, or attributes of Section 4(f) resources that qualified the properties for Section 4(f) protection;
- Revised Section 4.2.8.5, “Ecological Resources,” and Table 8, “Summary of Potential Project Impacts and Benefits and Proposed Measures to Avoid, Minimize, or Mitigate,” to reflect concurrence with both the Essential Fish Habitat (EFH) assessment and FTA’s conclusion that the Proposed Project would not be likely to adversely affect any ESA-listed species or designated critical habitat;
- Updated Table 8, “Summary of Potential Project Impacts and Benefits and Proposed Measures to Avoid, Minimize, or Mitigate,” with additional detail pertaining to best practices that would be implemented to minimize impacts to ecological resources;
- Updated Table 8, “Summary of Potential Project Impacts and Benefits and Proposed Measures to Avoid, Minimize, or Mitigate,” with additional detail to address compliance with 310 Code of Massachusetts Regulations (CMR) 7.11(2) and locomotive idling requirements; and
- Added new Section 9.1, “Federal Uniform Act Compliance,” to specify that the Uniform Relocation Assistance and Real Property Acquisitions Policies Act of 1970 (the “Uniform Act”), as amended, and its implementing regulations (49 Code of Federal Regulations [CFR] 24) will be followed for property acquisitions required to construct the Proposed Project.

ES. Executive Summary

ES.1. Introduction

The Federal Transit Administration (FTA) and the Massachusetts Bay Transportation Authority (MBTA) have prepared this National Environmental Policy Act (NEPA) Environmental Assessment (EA) to evaluate the Draw One Bridge Replacement Project (the “Proposed Project”) in the cities of Cambridge and Boston, Massachusetts.

MBTA proposes to replace the Draw One Bridge,¹ the Boston and Maine Railroad (B&MRR) Signal Tower A, and associated MBTA infrastructure. MBTA owns the rail infrastructure and Right-of-Way (ROW) and contracts with Keolis to operate the commuter rail system; Amtrak also uses the bridge and ROW for its *Downeaster* service between North Station and Brunswick, Maine. Both the Draw One Bridge and the B&MRR Signal Tower A building are eligible for listing in the National Register of Historic Places (NRHP). The Proposed Project also includes modification to the Massachusetts Department of Conservation and Recreation (DCR)-owned North Bank Bridge, which crosses the MBTA ROW north of the Draw One Bridge.

The Draw One Bridge extends across the Charles River northwest of MBTA’s North Station, crossing the Charles River approximately 100 feet and 300 feet west of (upriver of) the Leverett Circle Connector Bridge and the Leonard P. Zakim Bunker Hill Memorial Bridge (Zakim Bridge), respectively, each of which carry vehicular traffic. The Leverett Circle Connector Bridge connects to Interstate 93 (I-93) at the north end, and the Zakim Bridge carries traffic along both I-93 and U.S. Route 1. Nearby properties on the north bank of the Charles River include North Point Park to the west of the MBTA ROW, which contains a boat launch ramp used by DCR, the Massachusetts State Police Marine Section, and the Boston Duck Tours Company; and Paul Revere Park and Boston Sand & Gravel to the east of the MBTA ROW. The North Bank Bridge, which serves cyclists and pedestrians on the north side of the Charles River, crosses over the MBTA ROW on the north bank and connects North Point Park to Paul Revere Park. On the south bank of the Charles River, a Massachusetts General Hospital (MGH) administrative building and its parking lots and floating dock are west of the MBTA ROW and North Station; TD Garden arena is above North Station. Land to the east of the MBTA ROW on the south bank of the river (i.e., beneath and adjacent to Interstate 93 [I-93] and U.S. Route 1 infrastructure) is partly developed with a parking lot adjacent to the Gridley Locks Footpath, which provides pedestrian and bicycle access across the Charles River, connecting to Paul Revere Park on the north bank; this property is owned by DCR and is planned to be improved with a new South Bank Park.

The Proposed Project would require permanent acquisition of an approximately 0.003-acre (131-square foot [sf]) portion of currently unmaintained, sparsely vegetated land adjacent to the east side of the MGH administrative building for track alignment and clearance and an approximately 0.019-acre (828-sf) area in the proposed South Bank Park for the installation of a new manhole. MBTA would also require five temporary construction easements for staging and access, including one at the MGH administrative

¹ The existing Draw One Bridge comprises two bridge spans crossing the Charles River, though it is referred to in the singular in this EA.

building parking lots (0.25 acre); three at existing DCR parklands (1.08 acre at Paul Revere Park,² 0.84 acre at North Point Park, and 0.11 acre at a DCR pier and riverfront walkway); and one at the proposed South Bank Park (0.514 acre). MBTA would temporarily use Boston Sand & Gravel property for construction access pursuant to a license agreement, executed in 2001, granting MBTA the right to enter their property for access to and egress from Signal Tower A and MBTA ROW. Modifications to the North Bank Bridge would require alteration to the existing DCR easement for the relocation of two existing piers and the construction of one additional pier within MBTA ROW. The boat launch ramp in North Point Park may experience multiple temporary closures, and the MGH floating dock and approach ramp would be temporarily removed during construction of the Proposed Project.

Construction is expected to last approximately eight years, beginning in 2026, and be completed in 2034.

ES.1.1. Proposed Actions

As currently contemplated, the Proposed Project would be implemented with federal funding authorized by FTA. In addition, the Proposed Project would require a bridge permit from the United States Coast Guard (USCG) and a Clean Water Act (CWA) Section 404 permit from the U.S. Army Corps of Engineers (USACE).

ES.1.2. Project Sponsor and Lead Agency

MBTA is the Local Lead Project Sponsor. FTA is the Lead Federal Agency under NEPA, USCG and USACE are cooperating agencies, and the Federal Railroad Administration (FRA) is a participating agency. In accordance with NEPA, FTA must evaluate the environmental consequences of the Proposed Project prior to construction activities.

ES.1.3. Class of Action: Environmental Assessment (EA)

An Environmental Assessment (EA) is needed for an action for which the significance of the environmental impact is not clearly established (23 Code of Federal Regulations [CFR] 771.115). An EA is prepared when the action is not categorically excluded and does not appear to require the preparation of an Environmental Impact Statement (EIS) because no significant impacts are anticipated; preparation of an EA may assist in determining the need for an EIS.

This EA has been prepared pursuant to the National Environmental Policy Act (NEPA; 42 United States Code [USC] § 4321 et seq.); the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 CFR Parts 1500-1508); and FTA, Federal Highway Administration (FHWA), and FRA joint regulations implementing NEPA contained in the Environmental Impact and Related Procedures (23 CFR Part 771). This EA documents compliance with other applicable federal laws and regulations, including Section 106 of the National Historic Preservation Act (NHPA); the Conformity requirements of the Clean Air Act (CAA); the CWA; the Rivers and Harbors Act of 1899; Section 4(f) of the Department of Transportation Act of 1966 (Section 4(f)); the Endangered Species Act (ESA); Executive Order 11988 and United States Department of Transportation (USDOT) Order 5650.2 on Floodplain Management; Executive Order 11990

² The temporary construction easement at Paul Revere Park was previously assumed to be approximately 0.86 acre, which is reflected in the ~~draft~~ Section 4(f) agreement between MBTA and DCR in Appendix J, "Section 4(f)." However, based on DCR review and comment, the easement has been slightly increased to approximately 1.08 acre to accommodate an extension of the access drive.

on Protection of Wetlands; the Magnuson-Stevens Act related to Essential Fish Habitat (EFH); the Coastal Zone Management Act (CZMA); Executive Order 14096 on Environmental Justice (EJ); and the Environmental Justice Policy Guidance for FTA Recipients, FTA C 4703.1.

This EA first provides a discussion of the purpose and need for the Proposed Project; a description of the No Action Alternative (i.e., the “No Build” condition, or the condition in the future were the Proposed Project not implemented); a brief overview of reasonable conceptual “Build” alternatives to the Proposed Project that were previously considered but ultimately dismissed; and a description of the Proposed Project and its construction means, methods, and schedule, which has been advanced to preliminary engineering and environmental review. The affected environment (both existing and future conditions) is then described, followed by technical analyses that determine whether the Proposed Project, as compared against the No Action Alternative, would result in impacts to an array of resources that constitute the human-made and natural environments. The potential effects of the Proposed Project are characterized as direct or indirect, permanent or temporary, and comparison is made between the Proposed Project and the No Action Alternative. Finally, this EA identifies measures to avoid, minimize, and mitigate these impacts and inventories the various permits and approvals necessitating coordination with other federal, state, and local agencies; the mitigation measures are also examined for any potential effects that may result with their implementation.

ES.1.4. Agency Coordination and Public Involvement

NEPA requires that the Lead Federal Agency coordinate with other federal, state, and local agencies in the environmental review process as either cooperating agencies or participating agencies. Under NEPA, a cooperating agency has jurisdiction by law or special expertise with respect to any environmental issue being addressed in the NEPA analysis and, therefore, has more involvement in the NEPA process than other participating agencies. Other federal, state, and local agencies may request or be invited to be participating agencies in the environmental review process because the agency may be affected by the Proposed Project.

FRA is a participating agency and, given that the Proposed Project would require a bridge permit from USCG and a Section 404 permit from USACE, USCG and USACE are cooperating agencies in the environmental review process.

FTA and MBTA developed a Public Involvement Program (PIP) to coordinate engagement with stakeholders and members of communities potentially affected by the Proposed Project (e.g., residents, businesses, commuters, etc.) and their elected representatives, as well as federal, state, and local agencies (see Appendix A, “Public Outreach and Agency Coordination”).

MBTA distributed an introductory email on May 13, 2024, to Amtrak, Boston Duck Tours Company, Boston Sand & Gravel, Charles River Boat Company, the Massachusetts Department of Transportation (MassDOT), MGH, and the State Police to describe the Proposed Project and provide an opportunity to arrange individual follow-up meetings if requested. In response, MBTA delivered a presentation to these groups, with the exception of the State Police, to discuss project alternatives, resources that may be potentially affected by construction and operations, measures to minimize or mitigate potential adverse environmental impacts, and other environmental review and agency consultation requirements. MBTA distributed the presentation to the State Police via email as they were unable to attend this initial meeting.

MBTA held meetings with DCR on June 5, 2024, and November 20, 2024, to provide an overview of the Proposed Project and discuss the potential use of Section 4(f) properties and proposed mitigation measures. In addition, a public meeting was held on June 6, 2024, to discuss project progress and provide an update on the status of Section 106 consultation.

A public hearing will be held during the 30-day review period for this draft EA. The public review period for the Draft EA extended from Friday, December 6, 2024, to 12:00 PM on Monday, January 6, 2025. A virtual public hearing was held via Zoom on Thursday, January 2, 2025, from 6 PM to 7:30 PM, and an open house was held on Friday, January 3, 2025, from 4 PM to 6 PM at the Lewis Room of the Cambridge Public Library - Central Square Branch, 45 Pearl Street, Cambridge, MA.

ES.2. Project Description

MBTA proposes to replace the Draw One Bridge, which carries Amtrak passenger and MBTA commuter rail traffic over the Charles River in the cities of Boston and Cambridge, Massachusetts. The existing two-track bascule bridge spans still in use, as well as the supporting infrastructure of the two disused spans, would be replaced with three two-track, standalone vertical lift bridge structures within the footprint of the existing bridge (the new bridge structures would carry six tracks, rather than four). The Proposed Project would also replace the B&MRR Signal Tower A and modify the DCR-owned North Bank Bridge, which crosses the MBTA ROW north of the Draw One Bridge. The existing signal system and switch heaters associated with the Draw One Bridge would be replaced, and a new drainage system would be provided. The existing Draw One Bridge and Signal Tower A, both of which are eligible for listing in the NRHP, would be demolished.

As described in Section 2.2.2, “Other Contemplated Projects in the Study Area,” DCR’s Cross River Pedestrian and Bicycle Crossing project is an entirely separate project from, and not part of, the Proposed Project considered herein.

ES.3. Construction

Construction is expected to begin in 2026 and be complete in 2034. The purpose of the Proposed Project is to keep this portion of the rail system in a state of good repair and improve the reliability and safety of rail service in the Boston metropolitan area and greater Northeast by replacing the current bridge, which is classified as both functionally and operationally obsolete and approaching the end of its useful life, as well as the existing signal tower and temporary control tower with a new Tower A to serve this new bridge. The Proposed Project would not result in any significant change in commuter or passenger rail operations.

Construction would be undertaken in five phases following site preparation and mobilization, which is estimated to take approximately four months. The existing Signal Tower A would be demolished and replaced in the first phase. The new bridge span, to the west/upstream of the existing structures, would be constructed and commissioned first, then each of the existing bridge spans would be replaced in two successive stages so that four tracks across the Charles River would remain in operation at all times. While most construction staging would occur on MBTA-owned property and barges in the Charles River, five temporary construction easements would be required.

ES.4. Planned Future Projects in the Vicinity of the Proposed Project Limits

Two transit projects and two park projects are expected to be completed or in construction in the future independent of the Proposed Project (in the No Action Alternative) in 2034. The MBTA Mainline Tracks Rehabilitation and Ancillary Improvements Project will rehabilitate and improve tracks, switches, signal systems, and drainage along the mainline tracks north of the Draw One Bridge to improve safety, reliability, and operational flexibility. Construction is expected to begin in 2025 and be complete in 2028. The MBTA North Station Platform F Extension and Ancillary Improvements Project will rehabilitate and extend Platform F at North Station, just to the southeast of the project site, and rehabilitate the two station tracks serving the platform. It will also improve platform lighting and egress to improve safety, reliability, and operational flexibility. Construction is expected to begin in 2025 and be complete in 2027.

DCR has planned a new South Bank Park to replace a portion of an existing DCR parking lot and a portion of the Gridley Locks Footpath, generally located below the I-93 and Route 1 elevated highway on the south side of the Charles River to the east of the project site. Construction is expected to begin as early as 2026, so for the purpose of these analyses it is assumed to be complete in 2034. DCR also has plans to develop the South Bank Bridge on the south bank of the Charles River as part of a commitment for the Massachusetts Highway Department (MHD) Central Artery Tunnel Project. The bridge would provide pedestrian and bicycle access over the MBTA ROW just west of North Station, connecting Nashua Street Park to the DCR property that will contain the future South Bank Park. While the South Bank Bridge is assumed to be neither under construction nor complete in 2034, it is considered in the assessment of potential cumulative effects that may result with the Proposed Project. Similarly, DCR is independently contemplating a “Cross River Pedestrian and Bicycle Crossing,” which would provide a separate Charles River crossing for pedestrians and cyclists. While it is assumed to be neither under construction nor complete in 2034, it is also considered in the assessment of potential cumulative effects.

ES.5. Comparison of No Action Conditions to Existing Conditions

With the No Action Alternative, conditions are generally expected to resemble existing conditions. The four existing Draw One Bridge tracks would remain in service until bridge components reach the end of their finite lives and fail outright despite ongoing maintenance and regular repairs. Bridge controls would continue to be operated from a temporary control tower structure, and the existing Signal Tower A would remain unsafe, and therefore unusable by operations staff, as it continues to deteriorate.

MBTA’s planned mainline track and North Station platform transit improvements will represent an improvement in transit services over existing conditions in 2034, but residents, employees, those seeking medical care, students, and tourists visiting rail-accessible National Park Service (NPS) historical and recreational sites in Massachusetts, New Hampshire, and Maine would continue to experience delays, which would likely occur with greater frequency and longer durations. Current marine conditions would not be altered, but as the bridge ages, required maintenance and repairs are likely to increase the number and duration of channel restrictions and closures, affecting commuter and passenger rail service and marine transportation through the navigational channel.

The No Action Alternative would not result in the demolition of the existing Draw One Bridge and Signal Tower A, so while there would be no impacts to archaeological or historic architectural resources, ongoing

deterioration of the bridge and building could require remedial measures that might be considered to diminish their integrity of materials and design and thereby cause an adverse impact.

Therefore, while there would be improvements to parklands and visual resources with the implementation of South Bank Park, the No Action Alternative would also result in adverse effects related to community facilities and services, cultural and historic resources, commuter and passenger rail service, and marine transportation.

ES.6. Comparison of With Action Conditions (Proposed Project) to No Action Conditions

The Proposed Project, similar to the No Action Alternative, would introduce no permanent effects to land uses or zoning in or near the project site. It would continue existing transportation land uses and be consistent with existing zoning regulations. It would not introduce new residents or employees to the study area, so as with the No Action Alternative, existing conditions related to its socioeconomic character would remain the same. The Proposed Project would not directly affect existing community facilities or emergency or medical services in the study area. The Area of Potential Effects (APE) contains no known archaeological resources, so there would be no effects with the Proposed Project.

The Proposed Project would require two permanent easements and five temporary (construction) easements and may result in minor and temporary construction-period impacts with respect to land use, socioeconomic conditions, community facilities and services, parks and recreational resources, pedestrian and bicycle facilities, visual and aesthetic conditions, natural resources, rail transportation and transit, marine transportation, noise and vibration, vehicular traffic, parking, and hazardous materials.

In contrast with the No Action Alternative, the Proposed Project, including the new Draw One Bridge and Signal Tower A, would return rail infrastructure over the Charles River to a state of good repair and enhance the reliability and safety of passenger and commuter rail for people living and working in or visiting greater Boston and the New England coast.

Also in contrast with the No Action Alternative, the Proposed Project may result in construction-period impacts with respect to land use, socioeconomic conditions, community facilities and services, parks and recreational resources, pedestrian and bicycle facilities, visual and aesthetic conditions, natural resources, rail transportation and transit, marine transportation, noise and vibration, vehicular traffic, parking, and hazardous materials. Any of these construction-period impacts, however, would be minor and temporary, not significant or permanent.

The Proposed Project would result in minor permanent impacts to parks and recreational resources, though generally conditions would resemble those with the No Action Alternative. While slight modifications to the North Bank Bridge, affecting landings in North Point Park and Paul Revere Park, would be required to accommodate and tie into the new rail infrastructure, the Proposed Project would not impede access to these parks. It would require the acquisition of an extremely small portion of the South Bank Park site for the installation of a new manhole in approximately the same location as an existing manhole, but this would not represent a direct or indirect significant impact to the future South Bank Park.

It would also require the permanent removal of public sidewalks along the east and west sides of the existing Draw One Bridge south trestles, but these sidewalks terminate before the navigable Charles River

channel and do not provide access to pedestrian or bicycle facilities north of the river, so this would not represent a significant impact to pedestrian and bicycle resources.

Local soils and topography would be permanently altered by the excavation and grading required to construct the proposed Draw One Bridge and rail approaches, but these resources have been largely altered by the placement of manmade fill material and subject to frequent disturbance over many years.

Construction of the Proposed Project would require the demolition of the NRHP-eligible Draw One Bridge and Signal Tower A, resulting in a permanent adverse effect to historic resources, in contrast with the No Action Alternative. This adverse effect would be unavoidable but mitigated.

There would be no unmitigated adverse impacts with the Proposed Project.

ES.7. Summary of Mitigation and Commitments

Pursuant to the requirements of Section 106 of the NHPA, a Memorandum of Agreement (MOA) ~~will be~~ was executed on December 18, 2024, among FTA, MBTA, the State Historic Preservation Office (SHPO)/the Massachusetts Historical Commission (MHC), the Boston Office of Historic Preservation, the Cambridge Historical Commission, and DCR ~~to identify that identifies~~ measures to be taken to address adverse effects to the existing Draw One Bridge and Signal Tower A. The ~~draft executed~~ MOA, which is currently being refined and finalized by FTA in coordination with the Section 106 consulting parties, contains mitigation measures including Historic American Engineering Record (HAER) documentation of the bridge spans; a Historical Architectural Building Survey (HABS) for Signal Tower A; interpretive displays of the bridge and tower in both Cambridge and Boston; a video for public viewing online showing trains crossing the Draw One Bridge and the bridge structures being raised and lowered; a historic context study of bridges across the Charles River; the potential salvage of significant features of the bridge and tower; and provision of design plans to SHPO/MHC, the Boston Office of Historic Preservation, the Cambridge Historical Commission, and DCR for review and comment.

DCR concurred with FTA on January 8, 2025, that the Proposed Project would not adversely affect the recreational activities, features, or attributes of Section 4(f) resources that qualified the properties for Section 4(f) protection. ~~Pursuant to Section 4(f), coordination with DCR is ongoing for their review and comment on the Proposed Project's use of Section 4(f) parks and recreational resources.~~ Measures to minimize harm to parklands and public recreation areas in the vicinity of the Proposed Project ~~will be~~ have been developed with and agreed upon by MBTA and DCR. Potential measures to minimize harm may include signed detours for pedestrians and bicyclists for each walking/biking path affected during construction activities; regrading, seeding, and planting new trees, shrubs, and other plants; and/or general landscaping for areas disturbed by construction.

MBTA will develop an Unanticipated Discoveries Plan, to be included in construction contract specifications and documentation, that will be followed if any unanticipated archaeological and/or human remains are encountered during construction.

To avoid and minimize construction-period impacts, MBTA will undertake ongoing outreach to affected neighborhoods and coordinate with affected businesses and community service providers. Public access to the Project Limits would be limited with protective measures. MBTA will notify the public of any

unavoidable closures and provide alternate routes for rail service on weekends, when such closures would be expected to occur, and notify USCG, DCR, and mariners of any required temporary channel closures.

MBTA will collaborate with the owners of property subject to construction easements to minimize disruptions, limit public access, and restore property to existing conditions. The Uniform Relocation Assistance and Real Property Acquisitions Policies Act of 1970 (the “Uniform Act”), as amended, and its implementing regulations (49 CFR 24) will be followed for property acquisitions required to construct the Proposed Project. The Proposed Project would not result in any residential or commercial displacements; therefore, relocation assistance services are not required.

The Proposed Project has been designed, and construction methods have been selected, to minimize impact and disturbance to natural resources. Construction vehicles would be limited to designated routes and staging areas. Air emissions during construction will be minimized and mitigated using strategies such as water suppression for dust control, compliance with Massachusetts Department of Environmental Protection (MassDEP) air quality regulations, and other best management practices. MBTA will prepare a Noise Control Plan, an Excavated Materials Management Plan, a Groundwater Management Plan, and a Health and Safety Plan (HASp), all of which would be included in contract specifications. Potentially contaminated materials would be characterized and disposed of in accordance with applicable regulations.

1. Introduction

1.1. Summary

The Federal Transit Administration (FTA) and the Massachusetts Bay Transportation Authority (MBTA) have prepared this National Environmental Policy Act (NEPA) Environmental Assessment (EA) to evaluate the Draw One Bridge Replacement Project (the “Proposed Project”) in the cities of Cambridge and Boston, Massachusetts.

MBTA proposes to replace the Draw One Bridge,³ the Boston and Maine Railroad (B&MRR) Signal Tower A, and associated MBTA infrastructure. MBTA owns the rail infrastructure and Right-of-Way (ROW) and contracts with Keolis to operate the commuter rail system; Amtrak also uses the bridge and ROW for its *Downeaster* service between North Station and Brunswick, Maine. Both the Draw One Bridge and the B&MRR Signal Tower A building are eligible for listing in the National Register of Historic Places (NRHP). The Proposed Project also includes modification to the Massachusetts Department of Conservation and Recreation (DCR)-owned North Bank Bridge, which crosses the MBTA ROW north of the Draw One Bridge.

The Draw One Bridge extends across the Charles River northwest of MBTA’s North Station, crossing the Charles River approximately 100 feet and 300 feet west of (upriver of) the Leverett Circle Connector Bridge and the Leonard P. Zakim Bunker Hill Memorial Bridge (Zakim Bridge), respectively, each of which carry vehicular traffic (see Figure 1, “Project Location”). The Leverett Circle Connector Bridge connects to Interstate 93 (I-93) at the north end, and the Zakim Bridge carries traffic along both I-93 and U.S. Route 1. Nearby properties on the north bank of the Charles River include North Point Park to the west of MBTA ROW, which includes a boat launch ramp used by DCR, the Massachusetts State Police Marine Section, and the Boston Duck Tours Company, and Paul Revere Park and Boston Sand & Gravel east of the MBTA ROW. The North Bank Bridge, which serves cyclists and pedestrians on the north side of the Charles River, crosses over the MBTA ROW on the north bank and connects North Point Park to Paul Revere Park. On the south bank of the Charles River, the Massachusetts General Hospital (MGH) administrative building and its parking lots and floating dock are west of the MBTA ROW and North Station; TD Garden arena is above North Station. Land to the east of the MBTA ROW on the south bank of the river (i.e., beneath and adjacent to Interstate 93 [I-93] and U.S. Route 1 infrastructure) is partly developed with a parking lot adjacent to the Gridley Locks Footpath, which provides pedestrian and bicycle access across the Charles River, connecting to Paul Revere Park on the north bank; this property is owned by DCR and is planned for the location of a new South Bank Park.

As described in Section 2.2.2, “Other Contemplated Projects in the Study Area,” DCR’s Cross River Pedestrian and Bicycle Crossing project is an entirely separate project from, and not part of, the Proposed Project considered herein.

³ The existing Draw One Bridge comprises two bridge spans crossing the Charles River, though it is referred to in the singular in this EA.



Source: Massachusetts Executive Office of Technology Services and Security, MassGIS; STV Incorporated, 2024.

 Project Location

Figure 1
Project Location



As described in Section 2.4.4, “Property Acquisitions,” and presented in Table 3, “Permanent and Temporary Easements,” the Proposed Project would require permanent acquisition of an approximately 0.003-acre (131-square foot [sf]) portion of currently unmaintained, sparsely vegetated land adjacent to the east side of the MGH administrative building for track alignment and clearance and an approximately 0.019-acre (828-sf) area in the proposed South Bank Park for the installation of a new manhole. MBTA would also require five temporary construction easements for staging and access, including one at the MGH administrative building parking lots (0.25 acre); three at existing DCR parklands (1.08 acre at Paul Revere Park,⁴ 0.84 acre at North Point Park, and 0.11 acre at a DCR pier and riverfront walkway); and one at the proposed South Bank Park (0.514 acre). MBTA would temporarily use Boston Sand & Gravel property for construction access pursuant to a license agreement, executed in 2001, granting MBTA the right to enter their property for access to and egress from Signal Tower A and MBTA ROW. Modifications to the North Bank Bridge would require alteration of the existing DCR easement for the relocation of two existing piers and the construction of one additional pier within MBTA ROW. The boat launch ramp in North Point Park may experience multiple temporary closures, and the MGH floating dock and approach ramp would be temporarily removed during construction of the Proposed Project.

Construction is expected to last approximately eight years, beginning in 2026, and be completed in 2034.

1.1.1. Proposed Actions

As currently contemplated, the Proposed Project would be implemented with federal funding authorized by FTA. In addition, the Proposed Project would require a bridge permit from the United States Coast Guard (USCG) and a Clean Water Act (CWA) Section 404 permit from the U.S. Army Corps of Engineers (USACE).

1.1.2. Project Sponsor and Lead Agency

MBTA is the Local Lead Project Sponsor. FTA is the Lead Federal Agency under NEPA, USCG and USACE are cooperating agencies, and the Federal Railroad Administration (FRA) is a participating agency. In accordance with NEPA, FTA must evaluate the environmental consequences of the Proposed Project prior to construction activities.

1.1.3. Class of Action: Environmental Assessment (EA)

An EA is needed for an action for which the significance of the environmental impact is not clearly established (23 Code of Federal Regulations [CFR] 771.115). An EA is prepared when the action is not categorically excluded and does not appear to require the preparation of an Environmental Impact Statement (EIS) because no significant impacts are anticipated; preparation of an EA may assist in determining the need for an EIS.

This EA has been prepared pursuant to the National Environmental Policy Act (NEPA; 42 United States Code [USC] § 4321 et seq.); the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 CFR Parts 1500-1508); and FTA, Federal Highway Administration (FHWA) and FRA joint regulations

⁴ The temporary construction easement at Paul Revere Park was previously assumed to be approximately 0.86 acre, which is reflected in the ~~draft~~ Section 4(f) agreement between MBTA and DCR in Appendix J, “Section 4(f).” However, based on DCR review and comment, the easement has been slightly increased to approximately 1.08 acre to accommodate an extension of the access drive.

implementing NEPA contained in the Environmental Impact and Related Procedures (23 CFR Part 771). This EA documents compliance with other applicable federal laws and regulations, including Section 106 of the National Historic Preservation Act (NHPA); the Conformity requirements of the Clean Air Act (CAA); the CWA; the Rivers and Harbors Act of 1899; Section 4(f) of the Department of Transportation Act of 1966 (Section 4(f)); the Endangered Species Act (ESA); Executive Order 11988 and United States Department of Transportation (USDOT) Order 5650.2 on Floodplain Management; Executive Order 11990 on Protection of Wetlands; the Magnuson-Stevens Act related to Essential Fish Habitat (EFH); the Coastal Zone Management Act (CZMA); Executive Order 12898 on Environmental Justice (EJ); and the Environmental Justice Policy Guidance for FTA Recipients, FTA C 4703.1.

This EA first provides a discussion of the purpose and need for the Proposed Project; a description of the No Action Alternative (i.e., the “No Build” condition, or the condition in the future were the Proposed Project not implemented); a brief overview of reasonable conceptual “Build” alternatives to the Proposed Project that were previously considered but ultimately dismissed; and a description of the Proposed Project and its construction means, methods, and schedule, which has been advanced to preliminary engineering and environmental review. The affected environment (both existing and future conditions) is then described, followed by technical analyses that determine whether the Proposed Project, as compared against the No Action Alternative, would result in impacts to an array of resources that constitute the human-made and natural environments. The potential effects of the Proposed Project are characterized as direct or indirect, permanent or temporary, and comparison is made between the Proposed Project and the No Action Alternative. Finally, this EA identifies measures to avoid, minimize, and mitigate these impacts, as well as inventories the various permits and approvals necessitating coordination with other federal, state, and local agencies; the mitigation measures are also examined for any potential effects that may result with their implementation.

1.1.4. Agency Coordination and Public Involvement

NEPA requires that the Lead Federal Agency coordinate with other federal, state, and local agencies in the environmental review process as either cooperating agencies or participating agencies. Under NEPA, a cooperating agency has jurisdiction by law or special expertise with respect to any environmental issue being addressed in the NEPA analysis and, therefore, has more involvement in the NEPA process than other participating agencies. Other federal, state, and local agencies may request or be invited to be participating agencies in the environmental review process because the agency may be affected by the Proposed Project.

FRA is a participating agency and, given that the Proposed Project would require a bridge permit from USCG and a Section 404 permit from USACE, USCG and USACE are cooperating agencies in the environmental review process.

FTA and MBTA developed a Public Involvement Program (PIP) to coordinate engagement with stakeholders and members of communities potentially affected by the Proposed Project (e.g., residents, businesses, commuters, etc.), as well as federal, state, and local agencies and elected representatives of these communities. (See Appendix A, “Public Outreach and Agency Coordination.”)

FTA engaged in Section 106 consultation with the Massachusetts Historical Commission (MHC) in early 2020 and held an initial meeting with MHC and additional Section 106 consulting parties – including the

Boston Office of Historic Preservation and the Cambridge Historical Commission – on February 4, 2020. Most recently, FTA met with the Section 106 consulting parties on May 2, 2024, May 30, 2024, and September 5, 2024, to discuss the proposed mitigation measures in the draft MOA, described in Section 6.2.1.1, “Section 106 Memorandum of Agreement.”

MBTA distributed an introductory email on May 13, 2024, to Amtrak, Boston Duck Tours Company, Boston Sand & Gravel, the Charles River Boat Company, the Massachusetts Department of Transportation (MassDOT), MGH, and the State Police to describe the Proposed Project and provide an opportunity to request individual follow-up meetings. In response, MBTA delivered a presentation to these groups, with the exception of the State Police, to discuss project alternatives, resources that may be affected by construction and operations, measures to minimize or mitigate adverse environmental impacts, and other environmental review and agency consultation requirements for the Proposed Project. MBTA distributed the presentation to the State Police via email as they were unable to attend this initial meeting. MBTA met with DCR on June 5, 2024, and on November 20, 2024, to provide an overview of the Proposed Project and discuss potential use of Section 4(f) properties and proposed mitigation measures. In addition, a public meeting was held on June 6, 2024, to discuss project progress and provide an update on the status of Section 106 consultation. ~~A public hearing will be held during the 30-day review period for this draft EA.~~

The public review period for the Draft EA extended from Friday, December 6, 2024, to 12:00 PM on Monday, January 6, 2025. A virtual public hearing was held via Zoom on Thursday, January 2, 2025, from 6 PM to 7:30 PM, and an open house was held on Friday, January 3, 2025, from 4 PM to 6 PM at the Lewis Room of the Cambridge Public Library - Central Square Branch, 45 Pearl Street, Cambridge, Massachusetts.

1.2. Purpose and Need

1.2.1. Background

The existing Draw One Bridge consists of two adjacent two-track bridge spans crossing the Charles River, with a timber trestle approach structure to the north and a precast concrete approach structure to the south. As originally constructed in 1930-1931, Draw One comprised four steel bascule bridges crossing the Charles River. In 1969, the superstructures of the two westerly bridges, Spans 3 and 4, were dismantled.⁵ The concrete caissons supporting Spans 3 and 4 remain in place, along with the rest pier⁶ and portions of timber piers.

The remaining usable bridge spans consist of two Scherzer-type rolling lift bascule bridges.⁷ Each bridge span has two tracks, for a total of four tracks crossing the Charles River. Each bridge span includes a steel through truss bascule span and a track girder span. The substructure consists of concrete-filled steel caissons. Structural steel beams are embedded in the upper portion of the caissons. The northern approach structure consists of seven spans of timber trestle supported on timber piles. The southern approach structure, which was reconstructed in 1985 after a fire damaged the original timber trestle,

⁵ *Rare Old Bridges Replaced in B. & M. Railroad Terminal Improvements at Boston*, Engineering News-Record 107 (5 November 1931):718-722.

⁶ A rest pier is a pier designed to carry the load of a bridge’s swing span when in the closed position.

⁷ The existing bridge spans are double-track structures in the form of single-leaf rolling-lift bascules, a design made famous by the Scherzer Rolling Lift Bridge Company of Chicago.

consists of 19 spans of precast concrete slabs and girders supported on a combination of timber piles and steel H piles.

Signal Tower A is located just north of the Draw One Bridge, east of the tracks. The structure was built in 1930 and housed the control system for bridge operations as well as the electric room and an overlook room for the bridge operator. The building is severely deteriorated and contains asbestos; to protect operations staff, a temporary control tower was built in 2018. This 14-foot-high structure consists of an observation deck supported by a steel frame on a ten-by-ten-foot concrete pad. Conduits below grade connect the temporary control tower to the equipment “left in place” in the adjacent Signal Tower A.

1.2.2. Need for the Proposed Project

Replacement of the Draw One Bridge is critical in order to keep the MBTA system in a state of good repair and improve the reliability and safety of MBTA commuter rail and Amtrak services. The bridge is a crucial rail link between Boston and greater New England. Tens of thousands of people use these services every week, travelling for purposes including work, school, recreation, culture, and medical care, mainstays of the regional economy. Safe and reliable rail options make it easier for commuters and other travelers to keep their cars at home and off congested freeways and city streets, limiting greenhouse gas emissions and contributing to better air quality.

Built approximately 90 years ago, the existing Draw One Bridge and Signal Tower A have reached the end of their useful lives. The existing Draw One Bridge movable spans and its trestles present an ongoing maintenance challenge and are found to be beyond repair. Therefore, the Draw One Bridge, Signal Tower A, and trestles need to be replaced.

1.2.2.1. *Bridge Conditions*

Through a decade-long series of detailed inspections, MBTA determined that the Draw One Bridge suffers from structural deficiencies that severely reduce the reliability of commuter rail service and negatively affect navigation access along the Charles River (see Figure 2, “Existing Draw One Bridge, Signal Tower A, and Temporary Drawbridge Control Tower”). Service has been regularly disrupted during the past several years by signal-related delays, crossing gate failures, and emergency repairs of steel structural elements, usually undertaken on weekends. Structural, mechanical, and electrical deficiencies also reduce the reliability of the bridge operating system, disrupting marine traffic in the Charles River.

Key structural deficiencies of the Draw One Bridge include:

- Cracked segmental girders and rack framing;
- Deteriorated structural steel stringers and floor beam members;
- Improper seating of movable spans and alignment of rails in closed position;
- Deteriorated, corroded, and cracked top surfaces of the caisson substructures;
- Deterioration and decay of timber piles and beams; and
- Significantly outdated and non-redundant electrical, mechanical, and signaling systems, with the potential to cause extended outages and significant disruptions to rail and river traffic.

In addition, many of the existing track components on the Draw One Bridge and trestles are more than 25 years old. By the time the Proposed Project is completed – in 2034, as currently contemplated – many of

these track components will be nearing the end of their useful lives. Further, directly south of the Draw One Bridge, where most tracks curve between North Station and the Draw One Bridge, some of the fixed rail support system's concrete plinths have deteriorated to the point where they have been demolished and replaced with steel ties, which are not supported by full-depth ballast and thus do not provide the same level of stability. The existing south trestle does not have a drainage system serving this portion of track (i.e., stormwater drains directly into the Charles River), which does not meet stormwater management 'best practice' standards.

The two remaining, usable Draw One Bridge spans, which provide only four tracks over the navigation channel, form a critical physical bottleneck for daily train movements into and out of North Station, which currently has ten station tracks. In the event of service disruptions, operational efficiencies are severely reduced.

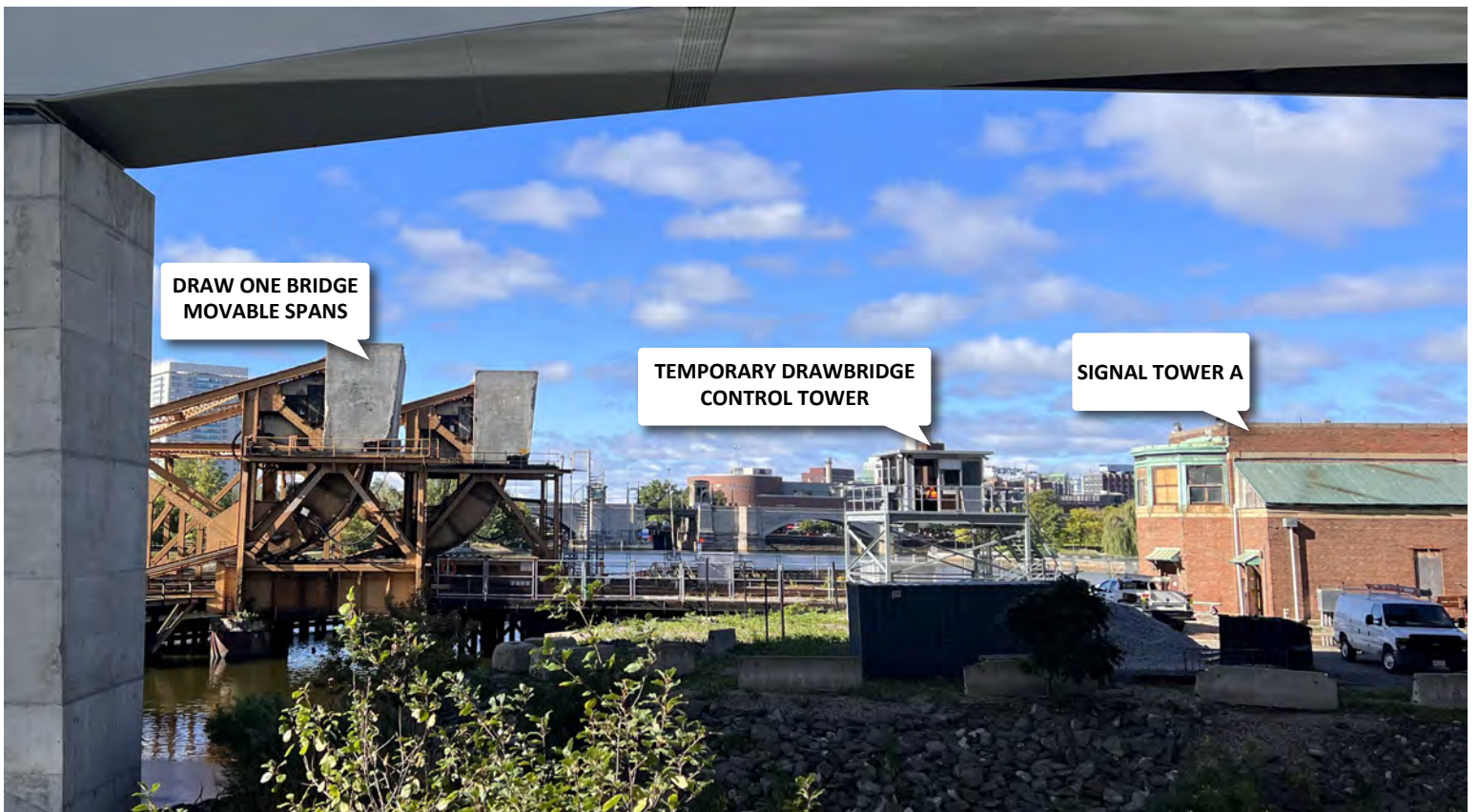
MBTA Draw One Bridge Replacement Project



1. Facing east from existing Draw One Bridge.



2. Existing Signal Tower A facing east from MBTA ROW.



3. Temporary Drawbridge Control Tower facing west from Paul Revere Park, looking beneath the Leverett Circle Connector Bridge.

Each weekday, the four MBTA commuter rail lines that operate from North Station carry a combined total of 178 trains, which includes 23 trains in the AM peak period,⁸ 23 trains in the PM peak period,⁹ and 132 trains in the off-peak periods. The current average weekday ridership on the four MBTA commuter rail lines is approximately 37,300 riders. Amtrak operates approximately ten trains over the Draw One Bridge each weekday, including one train during the AM peak period and one train during the PM peak period. Approximately 1,760 Amtrak passengers travel over the Draw One Bridge each weekday.

Residents, employees, those seeking medical care, students, and tourists visiting rail-accessible National Park Service (NPS) historical and recreational sites in Massachusetts, New Hampshire, and Maine are routinely subjected to delays. Rehabilitation of the existing Draw One Bridge would not provide adequate rail facilities during construction, as a minimum of four tracks would be required to avoid disruption; reconstruction of the existing bridge spans is required to ensure continued robust commuter and passenger rail service. Replacement of the Draw One Bridge, along with the related replacement of the trestles, track alignment improvements, and signaling system upgrades, is necessary to provide safe and efficient rail operations for this large and diverse array of users.

1.2.2.2. *Tower A Conditions*

The structural integrity of the existing Signal Tower A building is failing, and the building is at the end of its useful life. Structural problems include several cracks in the brick masonry that prohibit its rehabilitation. The building contains asbestos-containing materials (ACM) and lead-contaminated paint (LCP), which presents a safety concern for workers and prevents its use, requiring them to work from a separate temporary control tower. Signal Tower A must be replaced with a new, safe, permanent facility designed and situated to support the operations of the proposed three-span bridge structure.

1.2.3. Project Purpose

The purpose of the Proposed Project is to keep this portion of the rail system in a state of good repair and improve the reliability and safety of MBTA commuter rail and Amtrak services 1) by replacing the current two-span bridge – which is classified as both functionally and operationally obsolete and approaching the end of its useful life – with a new three-span bridge, which would stand within the same footprint as the historic bridge structures and carry two additional tracks across the Charles River, connecting to North Station; and 2) by replacing the existing signal tower and temporary control tower with a new Tower A to serve this new bridge.

1.2.4. Project Requirements and Goals

It is critical that all scheduled commuter rail services are maintained during Proposed Project construction and that the on-time performance of the trains arriving at and departing from North Station is preserved. A minimum of four active tracks over the Charles River and eight active tracks at North Station are required to be in service throughout the construction period, thereby limiting public transportation disruptions. Marine traffic beneath the bridge must also be maintained throughout the construction period. In addition, MBTA has designed the Proposed Project to meet resilience standards outlined in the MBTA

⁸ AM Peak is defined as 6:00-10:00 AM

⁹ PM Peak is defined as 3:00-7:00 PM

Flood Resiliency Design Directive and Drainage Design Directive, as described in Section 2.4.1.9, “Resilience.”

2. Alternatives Considered and Description of Proposed Project

2.1. Introduction

The CEQ implementing regulations at 40 CFR 1502.14 state that an agency must rigorously explore and objectively evaluate all reasonable alternatives, including a No Action alternative, and, for alternatives that were eliminated from detailed study, briefly discuss the reasons for their elimination. This section describes the No Action alternative, the Proposed Action (that would meet the purpose and need), and other alternatives that were considered but ultimately eliminated from further consideration.

No alternative site or location for the Proposed Project is considered, as the purpose of the Proposed Project is to address deficiencies associated with the bridge structures crossing the Charles River at this specific location in the established MBTA rail system.

2.2. No Action Alternative

The conditions in the future without the Proposed Project comprise the No Action Alternative. Most notably, the No Action Alternative does not include replacement of the existing Draw One Bridge and trestles. The four existing bridge tracks would remain in service until bridge components reach the end of their finite lives and fail outright despite ongoing maintenance and regular repairs. Bridge controls would continue to be operated from a temporary control tower structure, and the existing Signal Tower A would remain unsafe, and therefore unusable by operations staff, as it continues to deteriorate.

Steel structural elements, such as segmental girders, stringers, and floor beam members, would continue to require regular emergency inspections and repairs. As these system elements become increasingly degraded, they would disrupt rail and marine service more often and for longer periods of time while demanding limited financial and labor resources at an increasing rate. Therefore, the No Action Alternative would not meet the Proposed Project’s purpose and need to upgrade the Draw One Bridge to keep the system in a state of good repair and provide rail service reliability and safety.

2.2.1. Planned Projects in the Study Area

2.2.1.1. *Transit Projects*

Two planned MBTA projects will be implemented in the future independently of the Proposed Project. The MBTA Mainline Tracks Rehabilitation and Ancillary Improvements Project will rehabilitate and improve tracks, switches, signal systems, and drainage along the mainline tracks north of the Draw One Bridge to improve safety, reliability, and operational flexibility. Construction is expected to begin in 2025 and be complete in 2028. The MBTA North Station Platform F Extension and Ancillary Improvements Project will rehabilitate and extend Platform F at North Station and rehabilitate the two station tracks serving the platform. It will also improve platform lighting and egress to improve safety, reliability, and operational flexibility. Construction is expected to begin in 2025 and be complete in 2027.

2.2.1.2. *South Bank Park*

DCR proposes to construct a new South Bank Park on the site of a portion of an existing DCR parking lot and a portion of the Gridley Locks Footpath, generally located below the I-93 and Route 1 elevated highway on the south side of the Charles River. For the purposes of this EA, it is conservatively assumed that construction of South Bank Park would require up to five years. Therefore, given DCR's plans to begin construction as early as 2026, South Bank Park is assumed to be fully complete in 2034 with the No Action Alternative.

2.2.1.3. *South Bank Bridge*

DCR currently has plans to develop the South Bank Bridge on the south bank of the Charles River as part of a commitment pursuant to the Massachusetts General Law (MGL) Chapter 91, 310 Code of Massachusetts Regulations (CMR) 9.00 permitting process for the Massachusetts Highway Department (MHD) Central Artery Tunnel Project. The bridge would provide pedestrian and bicycle access over the MBTA ROW just west of North Station, connecting Nashua Street Park to the DCR property near the southern end of the Gridley Locks Footpath, which provides pedestrian and bicycle access across the dam and locks between the north and south sides of the Charles River. As described above, the DCR property in which the eastern end of the South Bank Bridge will be located is also planned to be redeveloped by DCR as the South Bank Park. With the No Action Alternative, the South Bank Bridge is assumed to be neither under construction nor complete in 2034, but it is considered in the assessment of potential cumulative effects (see Section 4.4, "Indirect and Cumulative Effects").

2.2.2. Other Contemplated Projects in the Study Area

2.2.2.1. *Cross River Pedestrian and Bicycle Crossing*

A project known as the "Cross River Pedestrian and Bicycle Crossing" was proposed in 1995 by the Metropolitan District Commission, the predecessor agency to DCR, as a separate Charles River crossing for cyclists and pedestrians. It is not yet designed or planned for construction, though as currently contemplated it would cross the Charles River near, and to the west of, Draw One Bridge, connecting North Point Park with Nashua Street Park and/or the proposed new South Bank Park via the proposed South Bank Bridge. With the No Action Alternative, it is assumed to be neither under construction nor complete in 2034, but it is considered in the assessment of potential cumulative effects (see Section 4.4, "Indirect and Cumulative Effects").

2.3. Conceptual Alternatives Previously Considered

Just as there is no alternative site possible for the Proposed Project, there is no alternative to a bridge structure at this location, given the established vertical and horizontal rail geometries it connects. Further, MBTA has determined that the existing Signal Tower A cannot be used safely without nearly wholesale reconstruction, and so a temporary control tower has been constructed and is in use (and would remain in use in the No Action Alternative).

As described previously in Section 1.2, "Purpose and Need," MBTA has studied the bridge in detail to determine the viability of ongoing repair (as would be required with the No Action Alternative) and the feasibility of rehabilitation (i.e., partial reconstruction), rather than replacement. MBTA determined that full replacement would be required and that four tracks would be required to maintain service through

construction, so additional temporary or permanent tracks would be required during bridge replacement to avoid service disruptions:

- A Bridge Type Selection Worksheet Report, prepared in July 2010, evaluated repair and replacement options for a four-track crossing of the Charles River that would utilize a footprint similar to the existing bridge alignment. The report recommended that the existing two bridge structures be replaced with two movable through-girder bascule spans in the same footprint.
 - In March 2020, however, before advancing the design of these two replacement bridge structures to completion, MBTA commissioned a Rail Operations Study of service into North Station, which determined that fewer than four tracks over the river would be insufficient to provide reliable service into the station in both the construction period and in the future operational condition given anticipated constraints on train movements during construction and in the event of future repair and maintenance activities.
- A Bridge Structures Evaluation Report, prepared in May 2020, determined that the south trestle piles would not support the full lifespan of the Proposed Project and, therefore, required replacement.

Therefore, MBTA developed conceptual design alternatives for a full replacement that would provide four bridge tracks in service during the construction period and more than four tracks after construction is completed. MBTA also assessed the operations and maintenance requirements, constructability, and expected lifespans of both precast concrete beams and steel stringers as potential replacement approach structure types. Pipe piles and drilled shafts were considered for the pier and abutment foundations.

2.3.1. Screening: Nine “Full Replacement” Alternatives

MBTA considered alternative track and alignment configurations, as well as different bridge types. A movable bridge (rather than fixed bridge) was determined to be the only practical solution to providing reliable MBTA service across the Charles River; a fixed span is not feasible due to allowable track grades, the required channel clearance, and elevation constraints at the adjacent station platforms and overpasses. MBTA considered three different movable span types (Bascule Rolling Lift Bridge, Bascule Heel Trunnion Bridge, and Vertical Lift Bridge), and determined that the vertical lift bridge was preferable because of its efficiency, constructability, and ease of maintenance.

Additionally, nine different track configurations were considered for the bridge (single-, double-, and triple-track bridge spans), as described in Table 1, “Bridge Track Configurations Considered,” below.

Table 1: Bridge Track Configurations Considered

#	Configuration	Description	Considerations
1A	Parallel New East Double-Track Bridge Spans	Three two-track bridge spans with a new bridge span to be constructed to the east of the existing spans	<ul style="list-style-type: none"> • Conflicts with I-93 ramp columns
1B	Skewed New East Double-Track Bridge Spans	Three two-track bridge spans with a new east bridge span skewed to avoid I-93 columns	<ul style="list-style-type: none"> • Does not provide six parallel track moves • Provides limited connectivity • Provides limited operational flexibility

Table 1: Bridge Track Configurations Considered (cont.)

#	Configuration	Description	Considerations
2A	Parallel New West Double-Track Bridge Spans	Three two-track bridge spans with a new bridge span to be constructed to the west of the existing spans	<ul style="list-style-type: none"> • Conflicts with I-93 ramp columns
2B	Parallel New West Double-Track Bridge Spans	Three two-track bridge spans with a new bridge span to be constructed to the west of the existing spans	<ul style="list-style-type: none"> • Avoids conflict with I-93 ramp columns through modified track alignment
2C	Parallel West Bridge Spans	Three two-track bridge spans with a new bridge span to be constructed to the west of the existing spans	<ul style="list-style-type: none"> • Aligns bridge Track 6 on west side of I-93 ramp columns • Impacts the DCR-owned boat launch ramp • Provides limited connectivity • Provides limited operational flexibility
3	East and West Single-Track Bridge Spans	Two single track bridge spans on east and west sides of two two-track bridge spans	<ul style="list-style-type: none"> • Provides limited connectivity • Provides limited operational flexibility • Majority of construction is between active tracks
4	Two Triple-Track Bridge Spans	Two replacement three-track bridge spans shifted to the west with bridge Track 1 alignment maintained	<ul style="list-style-type: none"> • Requires two temporary bridges • Majority of construction is between active tracks • Loss of a single bridge span’s operation suspends service to half of North Station
4A	Two Triple-Track Bridge Spans	Two replacement three-track bridge spans shifted to the west with bridge Track 1 alignment maintained	<ul style="list-style-type: none"> • Requires one temporary bridge to the west of existing spans • Provides three tracks during construction, though does not maintain current levels of service throughout the construction period • Loss of a single bridge span’s operation suspends service to half of North Station
4B	Two Triple-Track Bridge Spans	Two replacement three-track bridge spans shifted to the east	<ul style="list-style-type: none"> • Requires one temporary bridge to the east of existing spans • Provides three tracks during construction, though does not maintain current levels of service throughout the construction period • Loss of a single bridge span’s operation suspends service to half of North Station

Source: *Type Study for North Station Draw One Bridge Replacement and Associated Track and Signals Upgrades*, 2019; STV Incorporated, 2024.

2.3.2. Conceptual Design: Three “Full Replacement” Alternatives

The following three options were progressed for further design consideration as they would provide six parallel track moves and maintain current levels of service throughout the construction period and, critically, would not require the relocation of I-93 piers:

- Configuration # 2B: Parallel New West Double-Track Bridge Spans
- Configuration # 3: East and West Single-Track Bridge Spans
- Configuration # 4: Two Triple-Track Bridge Spans

2.4. Preferred Alternative (Proposed Project)

MBTA determined that the Preferred Alternative to be advanced for further project refinement and considered in the environmental review process would be Configuration #2B: Parallel New West Double-Track Bridge Spans, consisting of three standalone vertical lift bridge structures, each supporting two bridge tracks over the Charles River and providing access to at least four North Station tracks. This track alignment would not require relocation of the I-93 on- and off-ramp columns. Further, the three standalone movable bridge spans would provide enhanced operational flexibility for rail operations. During construction, one new bridge can first be constructed and commissioned, then each of the existing bridge spans can be replaced in two successive stages so that four tracks across the Charles River can remain in operation at all times. Once construction is complete, any one bridge can be removed from service for maintenance or repair, which still leaves four bridge tracks in operation and, in turn, allows access to at least eight station tracks at any time.

For the approach trestles, a steel stringer support system was selected in place of the concrete precast beam option due to life cycle cost and maintenance considerations. Given that the pier cap depths are limited by normal water elevations and require piles to be closely spaced, pipe pile foundations were selected in place of drilled shafts.

MBTA, DCR, and USCG have agreed to limit the required vertical clearance over the Charles River navigation channel to 33 feet. A low-level vertical lift structure can achieve this clearance. Additionally, the vertical lift yields a shorter span length and a more compact footprint than the other movable structure types, which provides more flexibility for track layout. The shorter span enables the tower columns to be framed together, which would reduce the size of the tower columns and, critically, allow mechanical equipment to be placed on this framing. With mechanical equipment supported by the framing, a singular drive configuration, which is considered the most maintainable and reliable operational configuration for a vertical lift bridge (compared to tower drive systems that require two sets of equipment), is possible.

In summer 2023, the design for the proposed three new vertical lift bridge structures was shared with Section 106 consulting parties, who requested that it be modified to relate more closely to the aesthetic of the existing Zakim Bridge. In response, MBTA contracted the Boston-based architecture firm Rosales + Partners to modulate the architectural presence of the proposed bridge structure, specifically modifying the apparent bulk and height of the proposed Draw One Bridge. Refer to Appendix B, “National Historic Preservation Act Section 106,” for additional information pertaining outreach to Section 106 stakeholders and proposed mitigation measures.

2.4.1. Project Elements

The Preferred Alternative, refined as described above and referred to as the “Proposed Project” in this EA, primarily comprises replacement of the existing two bascule bridges with three vertical lift bridges, replacement of the existing Signal Tower A and temporary control tower with a new Tower A, modifications to raise the North Bank Bridge to accommodate the new Draw One Bridge, and provision of six, rather than four, tracks across the Charles River to maintain service during construction and avoid impacts to operations in the case of potential future service disruptions (see Appendix C, “Engineering

Plans,” and Figure 3, “Project Elements”). These and additional Proposed Project elements are described in detail below:

2.4.1.1. Three Vertical Lift Bridges

Three new vertical lift bridge structures would replace the existing two bridge structures. The proposed bridge would have a height of 76 feet above the water level, 45-foot horizontal clearance, 5.17-foot vertical clearance in the closed position, and 32.2-foot vertical clearance when open. The existing bridge has a height of 51.5 feet above the water level, 65-foot horizontal clearance, 5.38-foot vertical clearance in the closed position, and infinite vertical clearance when open. The elevation of both the existing and proposed bridge structures is constrained by adjacent track, which is at an elevation of approximately 11 feet. Although the Design Flood Elevation (DFE) for the Proposed Project is 13.1 feet, track elevations cannot be adjusted to clear this elevation as they are constrained by platform access at North Station and connections north of the Charles River.

The foundations from the two previously demolished bascule bridges would be removed.

The north and south trestles would be replaced, as would the existing fender system, though it would be constructed along a new alignment. The new bridge and trestles would span the same critical distance of approximately 550 feet as the existing bridge infrastructure.

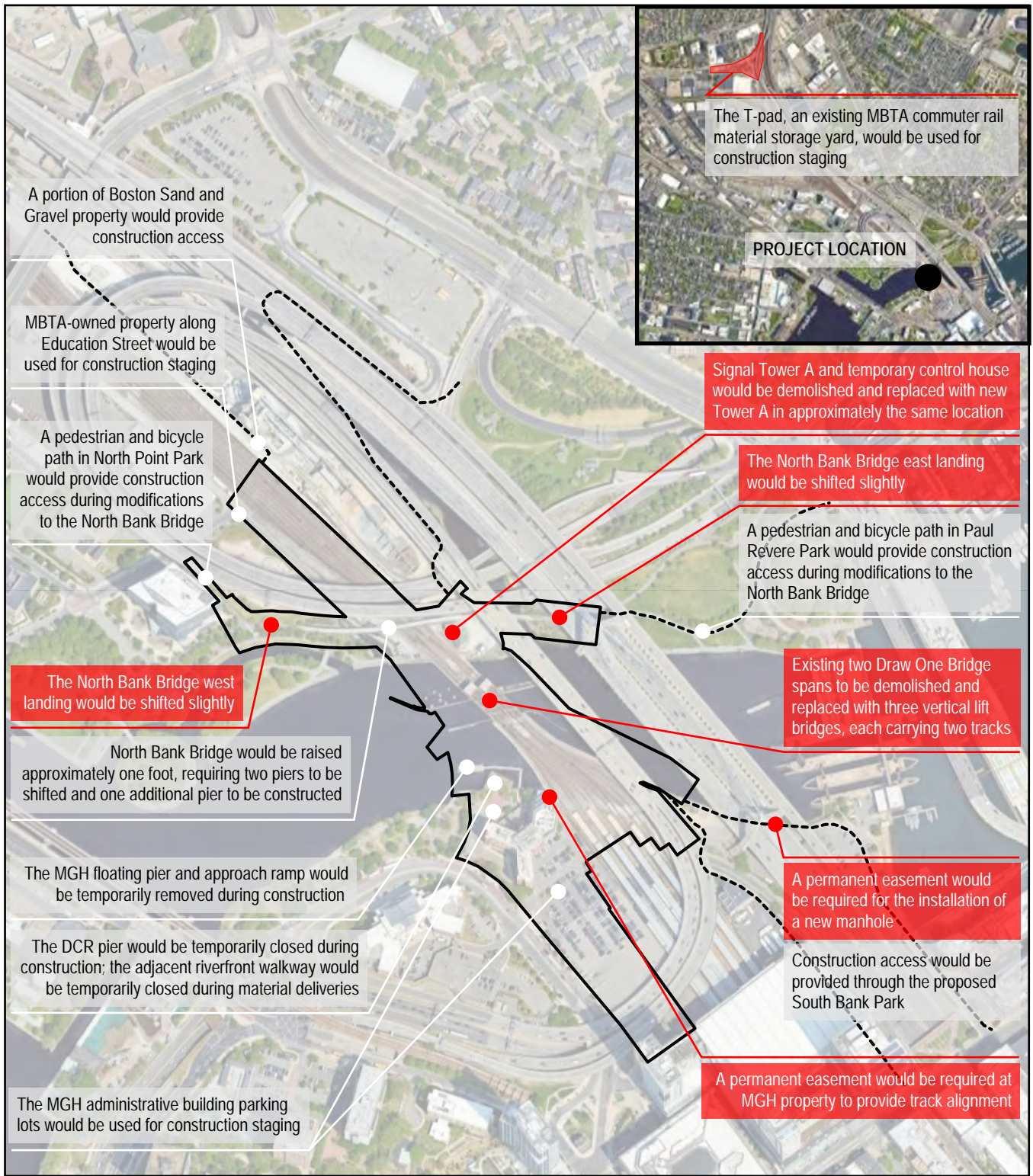
The Proposed Project would be designed to accommodate future electrification of the rail lines by providing sufficient vertical clearance for fixed catenary when the bridge spans are fully open.

2.4.1.2. Signal Tower A Replacement

A new Tower A building would be constructed along the seawall on the north bank of the Charles River, east of the mainline tracks, positioned to best serve operation of the proposed new three-span structure (see Figure 4, “Proposed Draw One Bridge and Tower A”). Existing controls would be relocated from the temporary control tower to the new Tower A building.

2.4.1.3. North Bank Bridge Modification

The North Bank Bridge would be raised approximately one foot to accommodate the new track alignment required with the new bridge structures. This would require the relocation of two bridge supports, the addition of one additional support, modification of the bridge truss structure, and modification and lengthening of the bridge landings in North Point Park and Paul Revere Park. Regrading of adjacent park pathways would require the relocation of an existing staircase in North Point Park. Landscaping at each end of the bridge would be replaced to tie into existing park infrastructure.



Source: Massachusetts Executive Office of Technology Services and Security, MassGIS; Massachusetts Department of Transportation; STV Incorporated, 2024.



Figure 3
Project Elements





Figure 4 - Proposed Draw One Bridge and Tower A

2.4.1.4. *Trackwork*

Trackwork and associated signals would also be constructed to connect the new bridge tracks to the mainline tracks north of Tower A, as the new bridge structures would carry six tracks (rather than four, as with the current bridge structures). Trackwork, including reconstruction of direct fixation and platform modifications where required, and associated signals would be constructed to connect the new bridge tracks to station tracks.

2.4.1.5. *Signal System*

The Proposed Project would replace up to three sets of Signal Instrument Houses (SIHs). The microprocessor controller equipment for each of the new SIHs would support the new track and signal system configuration. All wayside devices, cables, and infrastructure (e.g., cable troughs, signal heads, railroad switches, etc.) currently located within MBTA ROW and serving the existing Draw One Bridge would be upgraded with the Proposed Project.

2.4.1.6. *Switch Heaters*

Approximately 11 existing switch heaters would be replaced, and an additional six switch heaters would be installed to accommodate the new track alignment across the river, for a total of 17 proposed switch heaters. The types of switch heaters (e.g., gas- or electric-powered) that would be installed as part of the Proposed Project have not yet been determined.

2.4.1.7. *Drainage System*

A drainage system would be added to the north trestles to collect runoff from the proposed bridge and Tower A infrastructure and provide infiltration and detention before being returned to the Millers River at a new outfall to be installed along the west bank of the river, just south of the North Bank Bridge. Similarly, a drainage system would be added to the south trestles to collect runoff and direct it to a water quality structure that would provide sediment and other stormwater pollutant (e.g., nitrogen, phosphorous) removal before being returned to the Charles River at a new outfall to be installed along the south bank of the river, within the limits of the MBTA ROW.

2.4.1.8. *Safety and Security*

Safety and security measures would be implemented in accordance with MBTA's policies and procedures and would consist of fencing, a closed-circuit television (CCTV) system, exterior lighting located along the bridge structure, and navigational lighting to meet USCG requirements. Further, MBTA would maintain controlled access locations at the bridge stair towers, Tower A doors, and pedestrian and vehicular fence gates for MBTA's situational awareness of the bridge and Tower A.

2.4.1.9. *Resilience*

The Proposed Project has been designed in accordance with MBTA’s Flood Resiliency Design Directive and Drainage Design Directive.¹⁰ Electrical and mechanical equipment within Tower A (e.g., control desk, programmable logic controller [PLC]) would be located on the second floor, above the DFE of 13.1 feet. Flood walls and a deployable flood barrier would be provided at Tower A, and submersible equipment (e.g., junction boxes, lift span bearings, etc.) would be utilized on the bridge structure.

2.4.2. Operational Considerations

The Proposed Project would not result in any significant change in operations. The Proposed Project would replace the Draw One Bridge to keep the system in a state of good repair, improve the reliability and safety of MBTA commuter rail service and Amtrak passenger rail service, and minimize delays. The increase in the number of usable tracks and upgrades to the track alignment and signal system with the Proposed Project would improve railroad operational flexibility by allowing for universal movement of inbound and outbound trains between all MBTA commuter rail routes and all station tracks and platforms. The incorporation of improved specialty track geometry (e.g., crossovers, turnouts, etc.) would allow for marginally increased speeds (up to approximately five miles per hour [mph]) where new track would be installed, though train speeds would remain constrained by movement into and out of North Station.

2.4.3. Construction

As described in Appendix D, “Construction Methods/Construction Staging Report,” construction is expected to begin in 2026 and be complete in 2034.

A minimum of eight active station tracks and four active tracks across the river would be maintained during weekdays and a minimum of five active station tracks and two active tracks across the river would be maintained on weekends. It is anticipated that larger sections of track would be available for required work during weekends, when there is reduced service.

2.4.3.1. *Phasing*

Construction of the Proposed Project would be phased, with the sequencing of activities expected to be as follows:

¹⁰ The Flood Resiliency Design Directive requires that design for all new construction, repair, or replacement projects shall include a flood resiliency design approach that is consistent with MBTA’s priorities to minimize risk to MBTA assets from flooding events; maximize resiliency of the systems; minimize downtime and prevent disruptions to the traveling public; and protect the safety of system users, workers, and the surrounding environment from risks associated with flood hazards.

The Drainage Design Directive requires that design for all new station construction and station renovation projects shall include a drainage design that is consistent with MBTA’s priorities in order of importance: 1) Protect MBTA’s infrastructure from issues related to stormwater; 2) Protect the environment and downstream resources; 3) Maximize the simplicity of the system and minimize the number of elements that require maintenance; 4) Create a resilient and sustainable design that withstands decades of use and maintenance; and 5) Consider the wider context of resource protection and conservation including utilization of the landscape and other materials for stormwater management.

Table 2: Construction Sequence and Duration

Phase	Key Components	Estimated Duration
Site Preparation & Mobilization	Construction of signal duct banks; relocation of temporary control tower; demolition of existing bridge foundations no longer in service; construction of west temporary trestle; early track and signal work	4 months
Phase 1	Demolition of existing Signal Tower A; construction of proposed Tower A; modification of North Bank Bridge; construction of west trestles and west bridge span; track and signal work; activation of one track on the west bridge span	31 months
Phase 2	Construction of south trestles between west and center bridge spans; track and signal work; activation of second track on west bridge span	5 months
Phase 3	Construction of east temporary trestle; removal of service from center bridge span; demolition of center bridge span; construction of center trestles and center bridge span; track and signal work; activation of one track on the center bridge span	20 months
Phase 4	Construction of south trestles between center and east bridge spans; track and signal work; activation of second track on center bridge span; demolition of west temporary trestle	9 months
Phase 5	Removal of service from east bridge span; demolition of remaining structure; construction of east trestles and eastern bridge span; track and signal work; activation of tracks on east bridge span; demolition of east temporary trestle	27 months

Source: Appendix D: Construction Methods/Staging Report, 2023; STV Incorporated, 2024.

The first major activity would be construction of the first of the three new standalone bridge structures; it would be constructed west (upstream) of the existing bridge structures, within the footprint of the original railroad bridge spans removed in 1969. After this new bridge structure is tied into tracks and operational, then the remaining operational draw spans would be replaced in succession: the existing bridge span directly east of the new bridge span would be demolished and rebuilt, and then the easternmost bridge span (by then the only remaining existing bridge) would be demolished and rebuilt. The first new vertical lift span is expected to be commissioned in 2029.

2.4.3.2. Staging Areas and Access

Work areas and construction activities would be staged in the following locations, as described north to south (see Figure 3, “Project Elements”):

- **Tracks North of Draw One Bridge:** Construction would include installation of new tracks, switches, and signals; installation of new drainage; reconstruction of existing tracks for final conditions and connecting to bridge tracks and tracks north of the bridge; installation of switch heaters; and removal of the original signal house after all signals have been cut over to the new signal house currently on site. Construction would occur between active tracks and would require equipment to operate above active tracks, necessitating close coordination with train operations for the duration of the project. Construction staging areas for this work would include areas where tracks would be inactive as a result of construction phasing (i.e., tracks on the bridge not in service at the time), MBTA-owned property along Education Street, the Tower A site, and the

T-pad, an existing MBTA commuter rail material storage yard north of the bridge, beyond MBTA's Boston Engine Terminal (BET) maintenance facility.

- **North Point Park:** Modification of the North Bank Bridge would include raising the bridge, replacing the bearings and bridge joints at the abutment and piers, increasing the wingwall and approach curb height for regrading and resetting the existing railing, relocating the existing staircase at the end of the bridge, relocating and reconfiguring existing lighting and irrigation systems adjacent to the staircase, and installing replacement landscape elements. Construction staging areas for this work would consist of MBTA-owned property along Education Street, land fenced off below the North Bank Bridge, and areas immediately surrounding the limits of North Point Park pathway reconstruction. During construction, a pedestrian and bicycle path in the park would be closed to public use and modified for use as a construction access driveway to the western portion of the North Bank Bridge.
- **Paul Revere Park:** Modification of the North Bank Bridge would include raising the bridge, replacing the bearings and bridge joints at the abutment, increasing the wingwall and approach curb height for regrading and resetting the existing railing, and reconstructing existing landscape/hardscape elements. The construction staging area for this work would consist of areas immediately surrounding the limits of Paul Revere Park pathway reconstruction. During construction, a pedestrian and bicycle path in the park would be closed to public use and modified for use as a construction access driveway to the eastern portion of the North Bank Bridge.
- **Tower A:** Construction would include relocation of the existing temporary control tower and electrical services from the existing Signal Tower A building; demolition of the existing Signal Tower A; installation of a new water line under the MBTA tracks, using jack and bore methods; construction of a new Tower A building; installation of a drainage system with a detention and infiltration system and outlet to the Millers River; relocation of existing bridge controls into the new Tower A building until both existing bridge spans are taken out of service, at which point existing electrical equipment and controls would be removed; paving of the Tower A parking lot and driveway; installation of security controls; and installation of new pier foundations for the North Bank Bridge modifications. Construction staging areas for this work would consist of the existing Signal Tower A parking lot and the tower's building footprint after demolition.
- **North Seawall and Trestles:** Construction would include construction of temporary work trestles on either side of the existing bridge; demolition of the existing north trestle and cutoff or extraction of existing piles; construction of a new north abutment in front of the existing seawall, consisting of a king pile system comprising pipe piles and sheet piles; construction of a new duct bank behind the abutment; construction of new piers supported by driven pipe piles; construction of new ballasted trestles consisting of steel stringers with a composite concrete deck; and removal of temporary trestles. Construction staging areas for this work would include temporary trestles, barges in the Charles River, areas where tracks would be inactive as a result of construction phasing, and the T-pad to the north of the bridge, beyond BET.
- **Movable Spans and Navigation Channel:** Construction would involve building a new vertical lift bridge to the west of the existing bridge prior to replacing the existing bridge spans one at a time.

The new vertical lift bridge structures would require installation of drilled shafts to support new pier caps; erection of the vertical lift towers; erection of the lift span in the “up” position or float-in of the lift span in a preassembled condition; demolition of the existing fender system, including extraction and cutoff of existing piles; demolition of the existing bridge caisson foundations; installation of the proposed fender system, including driven piles; installation of temporary fender transitions between the new and existing fender systems; demolition of existing bascule spans, including removal of existing counterweights and machinery rooms; selective cutting of truss members and float-out of the existing truss on a barge; removal of the existing submarine cable; and removal of any temporary fender system components. Work in and over the channel would require short-duration partial and full navigational channel closures during demolition and erection activities. Construction staging areas for this work would include temporary trestles, barges in the Charles River, areas where tracks would be inactive as a result of construction phasing, and the T-pad to the north of the bridge, beyond BET. Partial preassembly of the lift spans or tower framing components may be performed off-site, with assemblies brought in by barge for installation on the new bridge structures.

- **South Seawall and Trestles:** Construction would include construction of temporary work trestles on either side of the existing bridge; demolition of the existing south trestle and cutoff or extraction of existing piles; construction of a new south abutment in front of the existing seawall, consisting of a king pile system comprising pipe piles and sheet piles and micropiles where the abutment extends under the Leverett Circle Connector Bridge ramp; construction of a new duct bank behind the abutment; construction of new piers supported by driven pipe piles; construction of new ballasted trestles consisting of steel stringers with a composite concrete deck; and removal of temporary trestles. Construction staging areas for this work would include temporary trestles, barges in the Charles River, areas where tracks would be inactive as a result of construction phasing, and the T-pad to the north of the bridge, beyond BET.
- **North Station/South Seawall:** Construction between North Station and the Draw One Bridge would include reconstruction of ballasted and direct fixation tracks to the final track alignment, partial demolition and modification of existing North Station Platforms D and E, relocation of existing layover power, installation of new drainage system and outfall to the Charles River, reconstruction of portions of existing sub-ballast slab, construction of new bridge approach slabs, and removal of original signal house after all signals have been cut over to the new signal house currently on site. Construction staging areas for this work would include an area within the MGH administrative building parking lots subject to a construction easement, temporary trestles used for bridge construction, barges in the Charles River, and areas where tracks would be inactive as a result of construction phasing.

Construction access and material delivery would generally be provided by barge and rail, though truck routes would also be used, with access to the construction area provided via five access drives. From the north, access would be provided through driveways on either side of the Boston Sand & Gravel facility, one of which connects to the Bunker Hill Community College visitor parking lot access road to the east and the other, which extends to Hood Park Drive. During construction, a pedestrian and bicycle path in Paul Revere Park would be closed to public use and modified for use as a construction access driveway to the eastern portion of the North Bank Bridge. From the south, construction access would be provided via

a driveway located immediately west of Lovejoy Wharf, which leads to the Gridley Locks Footpath, the location of the future South Bank Park, and a driveway extending north from North Station.

Construction access would also be provided through the temporary use of a pedestrian and bicycle path in North Point Park extending from Education Drive to the North Bank Bridge, just east of the EF Education First Headquarters building, as well as the temporary use of a DCR-owned pier and riverfront walkway directly west of the MBTA ROW on the south bank of the Charles River.

As described above, in-water construction activities would include caisson removal, timber and steel pile removal, dredging, and installation of drilled shafts, pipe piles, micropiles, pier caps, a new fender system, and a king pile abutment.¹¹ Existing piles that do not need to be removed below the mudline would be cut at the mudline to limit sediment disturbance.

2.4.4. Property Acquisitions

2.4.4.1. *Permanent Easements*

The Proposed Project would require two permanent easements: 1) a 0.003-acre (131-sf) portion of currently unmaintained, sparsely vegetated land adjacent to the east side of the MGH administrative building in order to meet the required 12-foot horizontal clearance from track centerline, and 2) a 0.019-acre (828-sf) area in the proposed South Bank Park for the installation of a new manhole in approximately the same location as an existing manhole to provide phosphorus filtration to the existing MBTA drainage system.¹²

2.4.4.2. *Temporary (Construction) Easements*

A construction easement would also be required for a larger 0.25-acre portion of the MGH administrative building parking lots, resulting in the temporary loss of up to approximately 30 MGH parking spaces during construction of the Proposed Project. This area would be used to provide construction area access and construction equipment storage and/or materials staging; it would be reconstructed by MBTA (as part of the Proposed Project) for continued future use as MGH parking following construction completion.

In total, the Proposed Project would require five temporary construction easements, including one as noted above for the use of MGH administrative building parking lots, three at existing DCR parklands, and one at the future DCR South Bank Park, in order to stage construction equipment and materials and provide construction access, as described previously in Section 2.4.3, "Construction" (see Figure 5, "Property Acquisitions"). The two permanent easements and the five construction easements required for the Proposed Project are described below in Table 3, "Permanent and Temporary Easements."

In addition, MBTA would temporarily use Boston Sand & Gravel property for construction access pursuant to a license agreement, executed in 2001, granting MBTA the right to enter their property for access to and egress from Signal Tower A and MBTA ROW. Further, as described in Section 2.4.1.3, "North Bank Bridge Modification," modifications to the DCR-owned North Bank Bridge required as part of the Proposed

¹¹ If determined necessary, cofferdams, comprising sheet piling and rock, would be installed to support the removal of caissons that supported the bridge piers no longer in service. Cofferdam installation would be conducted from a barge prior to the construction of the temporary trestles and would be removed following caisson removal.

¹² While the existing manhole is located within property currently owned by MBTA, the new manhole would be located just north, on DCR-owned property.

Project would include the relocation of two existing piers currently located within MBTA ROW as well as the construction of one additional pier. All three new bridge piers would also be located within MBTA ROW. As such, alteration to the existing DCR/MBTA property use agreement for the North Bank Bridge would be required.

Table 3: Permanent and Temporary Easements

ID No.	Location	Property Owner	Property Description	Size of Affected Area	Purpose	Acquisition Mechanism
1	City of Boston	DCR	Paul Revere Park	1.08 acre	Required during construction	Temporary (construction) easement
2	City of Cambridge & City of Boston	DCR	North Point Park	0.84 acre	Required during construction	Temporary (construction) easement
3	City of Boston	DCR	Proposed South Bank Park*	0.514 acre	Construction access	Temporary (construction) easement
4				0.019 acre (828 sf)	Installation of new manhole	Permanent easement
5	City of Boston	DCR	Pier & Riverfront Walkway	0.11 acre	Construction access	Temporary (construction) easement
6	City of Boston	MGH	Parking Lots	0.25 acre	Construction staging and access	Temporary (construction) easement
7			Unmaintained, sparsely vegetated land**	0.003 acre (131 sf)	Track alignment and required clearance	Permanent easement

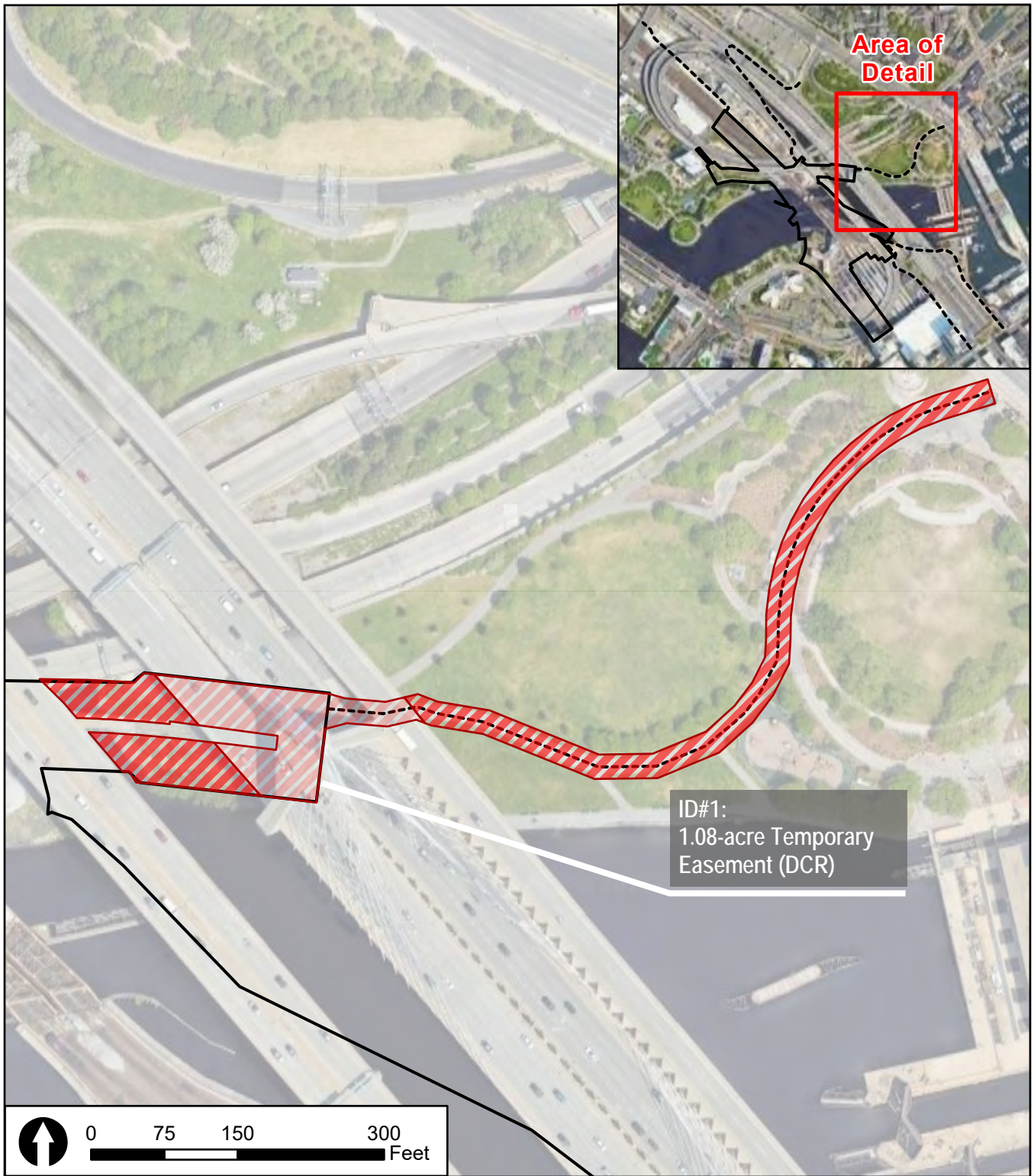
Notes:
 * As it is assumed that DCR will have completed all or part of the proposed South Bank Park in advance of the Proposed Project (see Section 2.2, “No Action Alternative”), construction of the Proposed Project would require temporary use of a portion of the newly constructed South Bank Park for access during construction.
 ** Land to be acquired is located between existing MBTA ROW and the MGH administrative building; a chain-link fence is currently in place for safety and security purposes.

Source: STV Incorporated, 2024; TRC Companies, Inc., 2024.

2.4.4.3. Temporary Closures

Temporary Closure of the DCR North Point Park Boat Launch Ramp. Modifications to the North Bank Bridge undertaken as part of the Proposed Project may require multiple temporary closures of the boat launch ramp located in North Point Park, just west of the MBTA ROW, which is used by DCR, the State Police, and the Boston Duck Tours Company. The boat launch ramp is not accessible to the public. If closures of the ramp are determined necessary, MBTA will coordinate these closures with each affected party during construction to avoid impacts to their use of the ramp.

Temporary Closure and Removal of the MGH Floating Dock. The Proposed Project would also remove the MGH floating dock and approach ramp to facilitate construction access throughout the construction duration. The MGH-owned floating dock and approach ramp formerly served the prior owner (Spaulding Rehabilitation). As part of the Proposed Project, MBTA would reinstall the MGH floating dock and approach ramp in coordination with MGH when the area is no longer required for construction access.



Source: Massachusetts Executive Office of Technology Services and Security, MassGIS; Massachusetts Department of Transportation; STV Incorporated, 2024.




	Project Limits	<i>Note: Easement would comprise land beneath elevated roadway infrastructure.</i>
	Construction Access	
	Temporary Easement	

Figure 5a
Property Acquisitions





Source: Massachusetts Executive Office of Technology Services and Security, MassGIS; Massachusetts Department of Transportation; STV Incorporated, 2024.




	Project Limits	<i>Note: Easement would comprise land beneath elevated roadway infrastructure.</i>
	Construction Access	
	Temporary Easement	

Figure 5b
Property Acquisitions





Source: Massachusetts Executive Office of Technology Services and Security, MassGIS; Massachusetts Department of Transportation; STV Incorporated, 2024.





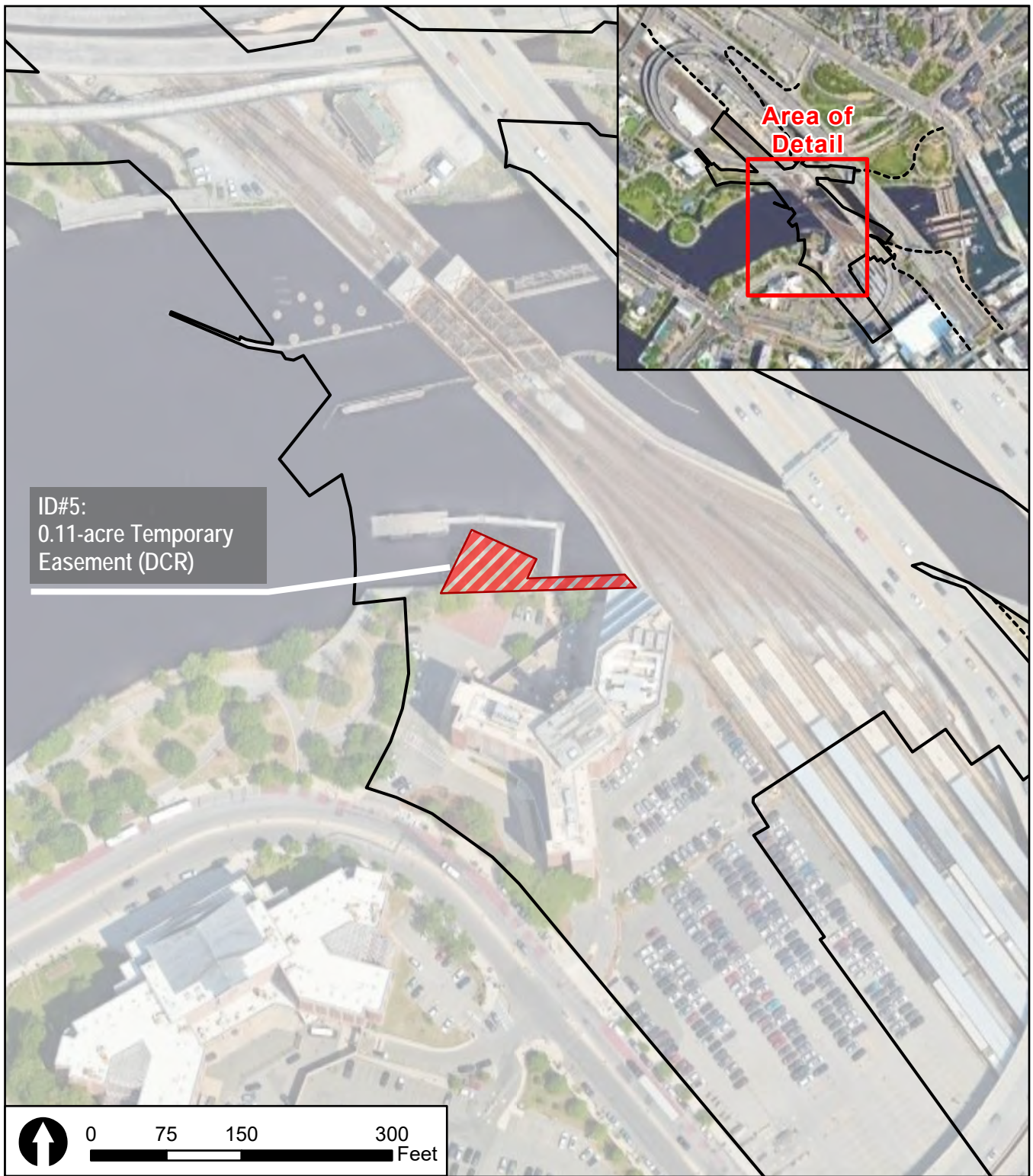
	Project Limits	<i>Note: Easement would comprise land beneath elevated roadway infrastructure.</i>
	Construction Access	
	Permanent Easement	
	Temporary Easement	

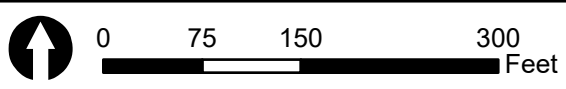
Figure 5c
Property Acquisitions





ID#5:
0.11-acre Temporary
Easement (DCR)

Area of
Detail



Source: Massachusetts Executive Office of Technology Services and Security, MassGIS; Massachusetts Department of Transportation; STV Incorporated, 2024.




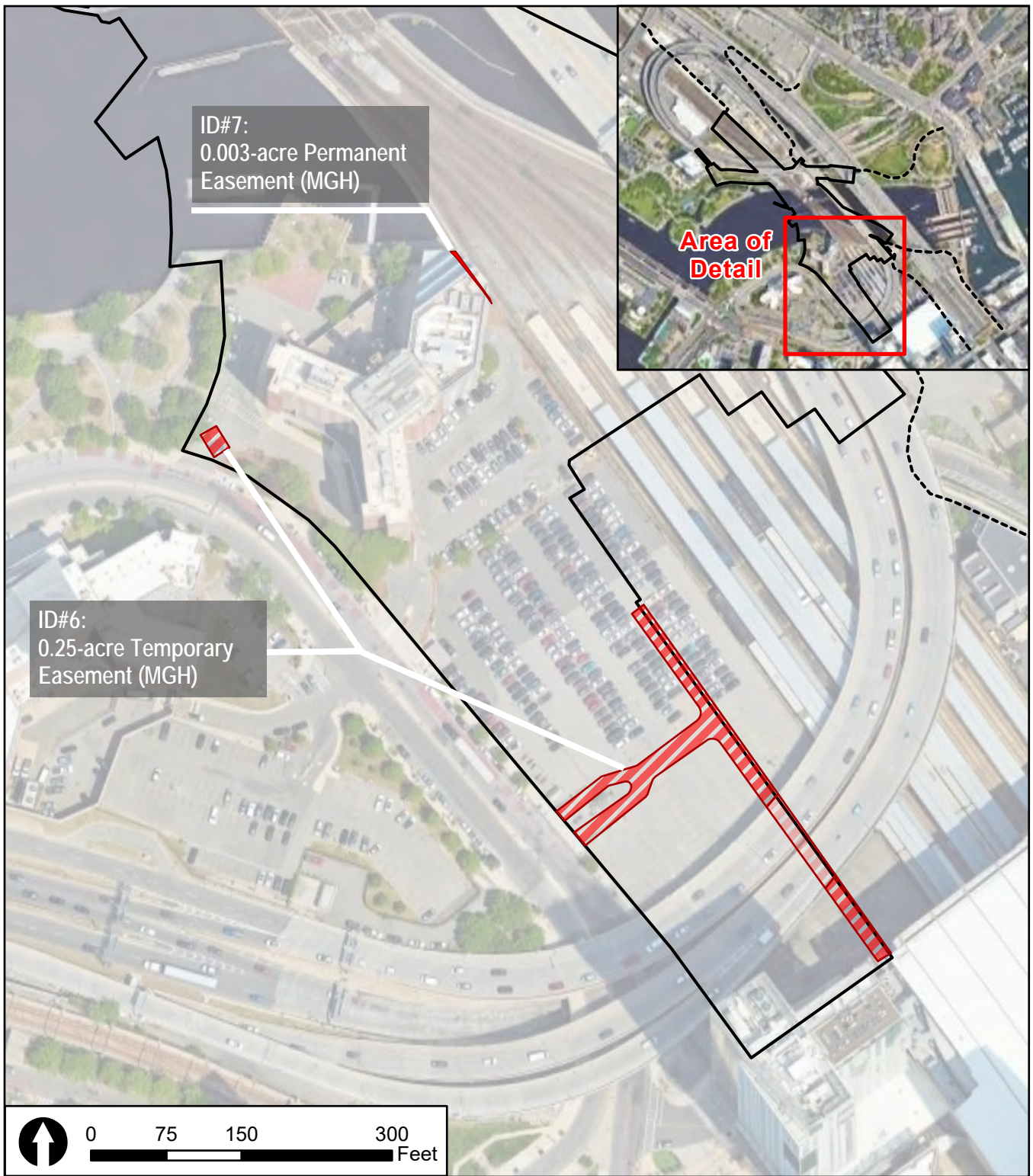
-  Project Limits
-  Construction Access
-  Temporary Easement

Figure 5d
Property Acquisitions





Source: Massachusetts Executive Office of Technology Services and Security, MassGIS; Massachusetts Department of Transportation; STV Incorporated, 2024.





 Project Limits	<i>Note: Easement would comprise land beneath elevated roadway infrastructure.</i>
 Construction Access	
 Permanent Easement	
 Temporary Easement	

Figure 5e
Property Acquisitions



2.4.5. Project Limits

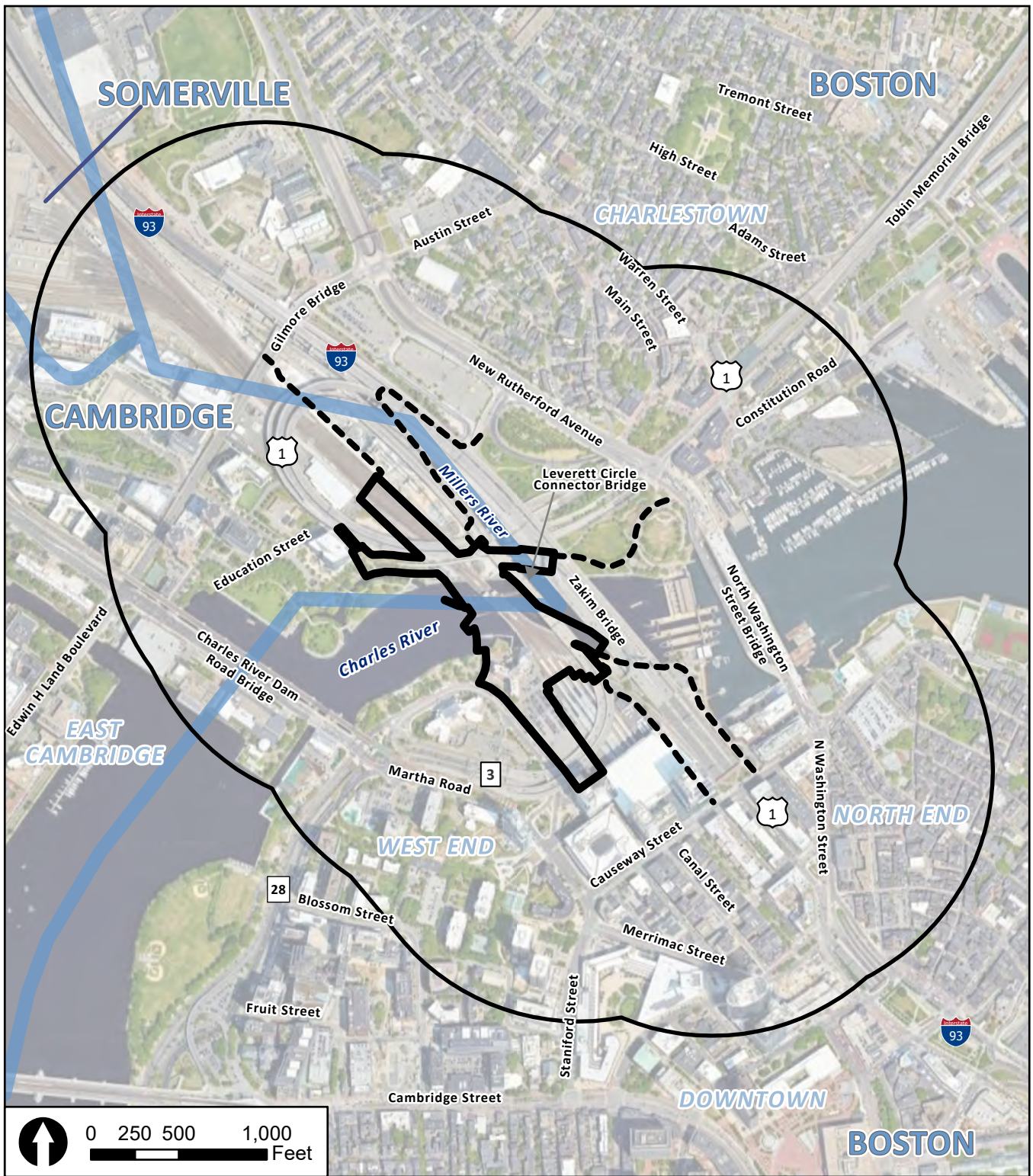
For the purposes of analyses presented in Section 3, “Affected Environment,” and Section 4, “Probable Consequences of the Proposed Project,” a project site, referred to herein as the “Project Limits,” has been defined. It encompasses the areas where the replacement bridge and new Tower A building and any other permanent infrastructure will be located, as well as any existing infrastructure to be removed as part of the Proposed Project. The Project Limits include the entirety of the North Bank Bridge, which would be modified as part of the Proposed Project.

The Project Limits also include the two permanent acquisitions and all five temporary construction easements on property outside MBTA ownership, which were described in Section 2.4.4, “Property Acquisitions.” As currently contemplated, the Project design features and construction activities will be managed in accordance with any applicable easements, including agreements in place between MBTA and Boston Sand & Gravel, as appropriate.

The construction access drives are not included as part of the Project Limits, though they were used to inform the quarter-mile study area, and they are considered in the assessment of construction-period effects (see Figure 6, “Project Limits and Study Area”).

2.4.6. Build Year (Full Operations)

Construction is expected to last approximately eight years, beginning in 2026, and be completed in 2034. Therefore, analyses of operational conditions (permanent conditions) assume that the Proposed Project has been fully constructed and is operational, and 2034 serves as the analysis year. However, for the assessment of construction-period effects, the entire construction period (2026 – 2034) is considered.



Source: Massachusetts Executive Office of Technology Services and Security, MassGIS; Massachusetts Department of Transportation; STV Incorporated, 2024.





-  Project Limits (Limits of Construction)
-  Construction Access
-  1/4 Mile Study Area
-  Municipal Boundaries

Figure 6
Project Limits and Study Area



3. Affected Environment

3.1. Introduction

Each technical analysis provided in this section considers the Project Limits, as described in Section 2.4.5, “Project Limits,” and a quarter-mile study area. The quarter-mile study area has been defined conservatively as the geographic extent within which potential effects may occur or be experienced by nearby populations who may rely on access to and use of the community facilities and resources in the vicinity of the Proposed Project, both during and after its construction. It also allows for reasonable consideration of potential indirect and cumulative effects.

Technical analyses begin with descriptions of existing conditions within the Project Limits and study area, followed by a description of the No Action Alternative, i.e., the conditions in the future if the Proposed Project were not implemented. The No Action Alternative is compared to existing conditions to provide a clearer picture of the future conditions that may be altered with the implementation of the Proposed Project. The technical analyses then describe whether and how the Proposed Project may result in effects during its construction, or once it is fully operational, as of 2034. The anticipated effects of the Proposed Project are compared to the No Action Condition and characterized as permanent or temporary.

3.2. Existing Conditions

3.2.1. Land Use and Zoning

This section describes the existing land uses and zoning districts within the Project Limits and study area, based on a review of land use and zoning data available online and produced by the Massachusetts Bureau of Geographic Information (MassGIS) and the Boston Planning and Development Agency (BPDA), as well as field observation.

3.2.1.1. *Land Use*

The Project Limits include portions of both the City of Cambridge and the City of Boston. Figure 7, “Land Use,” identifies the existing land uses within the study area.

The Project Limits, defined to include both permanent infrastructure and construction limits of disturbance for the Proposed Project (refer to Section 2.4.5, “Project Limits”), comprise MBTA ROW as well as portions of adjacent property owned by DCR and MGH and the Charles River.

The area immediately surrounding the Project Limits is characterized by waterfront parks along both the north and south banks of the Charles River, which provide pedestrian and bicycle paths, playgrounds, and scenic views of the river. Directly adjacent to the Project Limits on the north side of the Charles River are North Point Park to the west (in Cambridge) and Paul Revere Park to the east (in Boston), which are connected to one another by North Bank Bridge (pedestrian and bicycle bridge), which crosses over the MBTA ROW. (North Bank Bridge is included within the Project Limits.) North Point Park also includes a boat launch ramp used by DCR, the State Police, and the Boston Duck Tours Company. The area adjacent to the east side of the Project Limits north of the Charles River is developed with a mix of roadways and highway infrastructure, including the I-93 on- and off-ramps, the Leverett Circle Connector Bridge, which crosses the Charles River approximately 100 feet east of the Draw One Bridge, and the Zakim Bridge,

which crosses the Charles River just east of the Leverett Circle Connector Bridge, rising vertically as the most notable visual feature of the surrounding landscape.

The remainder of the study area north of the river includes portions of Cambridge to the west and Boston to the north and east. North of the river, in Cambridge, the study area is characterized by mixed-use development, including the 43-acre Cambridge Crossing, which includes both local and destination retail and restaurants. Large-scale, name-brand regional clothing and coffee retailers are among the occupants. The development also includes high-rise residential and office buildings, with space provided specifically for the life sciences, as well as approximately 11 acres of open space. South of Cambridge Crossing are the Massachusetts Water Resources Authority (MWRA) Prison Point Combined Sewer Overflow (CSO) Facility (water treatment plant) and the Hult International Business School Boston Campus. Directly west of the Project Limits in Cambridge are the EF Education First Headquarters, situated west of the U.S. Route 1 ramp, adjacent to North Point Park. North of the river, in Boston, the Charlestown neighborhood is characterized by residential uses, neighborhood commercial establishments, and neighborhood parks. Institutional uses, including Bunker Hill Community College, northwest of the Project Limits, are scattered throughout the study area. A large industrial use (a Boston Sand & Gravel aggregate facility) is also located north of the river in Boston, abutting the Project Limits.

The southernmost portion of the BET, which is in Somerville and is the only facility for major repairs and replacement of MBTA commuter rail equipment for trains serving the north side of the commuter rail network, extends slightly into the study area from the north. The area just beyond the quarter-mile study area to the north is characterized by transportation and industrial uses, including the BET and the Bunker Hill Industrial Park, which comprises facilities for waste management, wholesalers, electrical supplies, self-storage, etc.

On the south side of the Charles River, west of the MBTA ROW, the Project Limits are adjacent to, and include a portion of, property owned by MGH. This parcel is developed with a building containing MGH administrative offices;¹³ a floating dock and approach ramp, extending into the Charles River from the MGH property, is currently owned by MGH and formerly served the prior owner (Spaulding Rehabilitation). West of the MGH property within the study area is another institutional use (Suffolk County Sheriff's Office's Nashua Street Jail). The Leverett Circle Connector Bridge and Zakim Bridge are to the east of the Project Limits; DCR owns currently vacant land beneath them, as well as land directly east that is developed with a parking lot serving the Charles River Dam and Locks, as well as the Gridley Locks Footpath, which provides pedestrian access between the north and south sides of the Charles River. The Project Limits extend south along the MBTA ROW to within approximately 450 feet of North Station, directly above which is TD Garden, a 19,600-seat multi-purpose arena. Adjoining TD Garden and North Station to the south is The Hub on Causeway, a mixed-use development featuring high-rise residential and office buildings, a food hall, a hotel, and destination retail. Commercial uses dominate the portion of the study area directly south of North Station. Multi-family high-rise residences, including the Avalon North Station Apartments, Alcott Apartments, West End Place, and the Amy Lowell Apartments, are located in the southwest portion of the study area in the West End neighborhood of Boston, while the North End

¹³ The existing MGH building comprises only administrative offices, not medical uses; this will be confirmed prior to construction.

neighborhood to the southeast is characterized by residential uses, neighborhood commercial establishments, and neighborhood parks.

3.2.1.2. Zoning

The existing land uses throughout the study area are consistent with the applicable zoning.

The portion of the Project Limits and the remaining portion of the study area north of the Charles River that is within the City of Cambridge are located in an Industry A (IA) district and the North Point (NP) district. The IA district permits most types of residential uses, most institutional uses, offices and laboratories, some retail uses, most light industrial uses, and some heavy industrial uses. The NP district allows certain residential, office, laboratory, retail, and institutional uses. The portion of the Project Limits north of the Charles River within the City of Boston is located in a Local Industrial (LI) district, which permits rail facilities.

The southern portion of the Project Limits and study area encompasses the New Economy Development Area and the New Boston Garden Development Area, as well as various Open Space, Residential, and Commercial zoning districts and Special District Plans (e.g., Bulfinch Triangle District) (see Figure 8, “Zoning”). Transportation uses such as subway stations or railroad passenger stations are permitted in the New Economy Development Area and the New Boston Garden Development Area as a conditional use, requiring a special permit from the Board of Appeal.

3.2.1.3. Public Policy

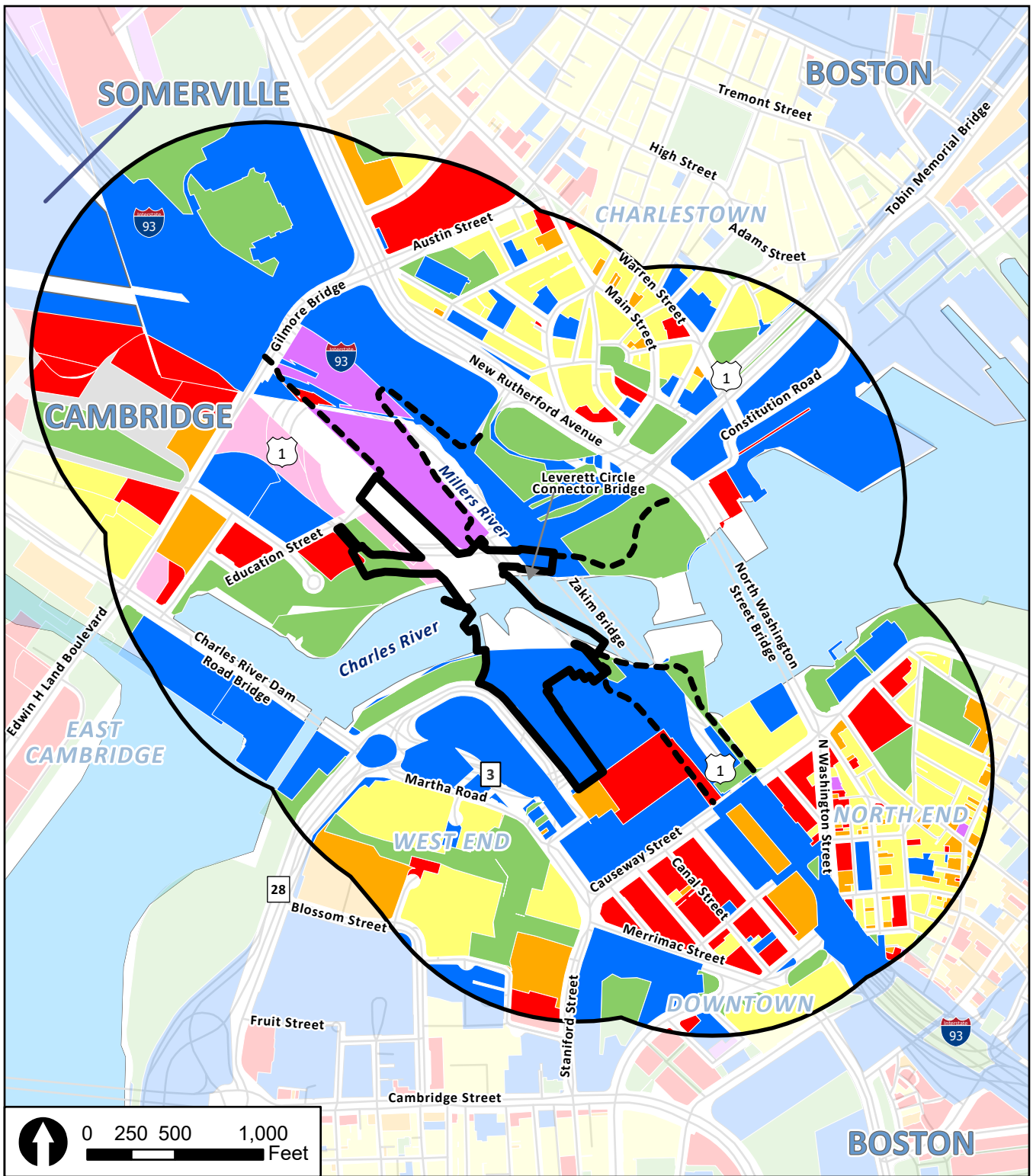
Imagine Boston 2030: A Plan for the Future of Boston,¹⁴ adopted in 2017, sets goals around affordable housing development, driving economic opportunities, enhancing open spaces, and investing in transportation infrastructure, among others. *Climate Ready Boston*¹⁵ is the city’s initiative to prepare for the effects of climate change and outlines strategies to address extreme heat, stormwater flooding, and coastal flooding from sea-level rise and storms. Similarly, *Resilient Boston Harbor*¹⁶ focuses on improving Boston’s resilience to climate change by creating resilient, accessible open spaces and better preparing coastal buildings and infrastructure. The city’s most recent long-term transportation plan, *Go Boston 2030 ReVisioned*,¹⁷ builds on the original 2017 plan and includes strategies for improving safety, expanding access to public transit, and reducing emissions.

¹⁴ <https://www.boston.gov/civic-engagement/imagine-boston-2030>

¹⁵ <https://www.boston.gov/environment-and-energy/climate-ready-boston>

¹⁶ <https://www.boston.gov/environment-and-energy/resilient-boston-harbor>

¹⁷ <https://www.boston.gov/departments/transportation/go-boston-2030>



Source: Massachusetts Executive Office of Technology Services and Security, MassGIS; Massachusetts Department of Transportation; STV Incorporated, 2024.

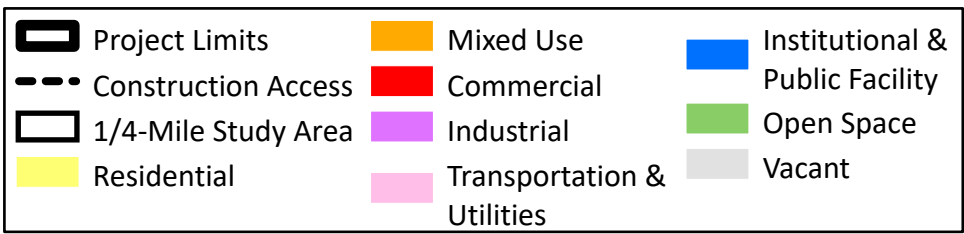


Figure 7
Land Use



3.2.2. Socioeconomics

The U.S. Census Bureau provides data on population, housing, and income at the Census block group level to describe socioeconomic conditions. The most current published data are the American Community Survey (ACS) 5-Year Estimates for years 2018-2022, published in 2023. Socioeconomic conditions were characterized by evaluating the Census data available for the Census block groups that fall either fully or partially within the quarter-mile study area.

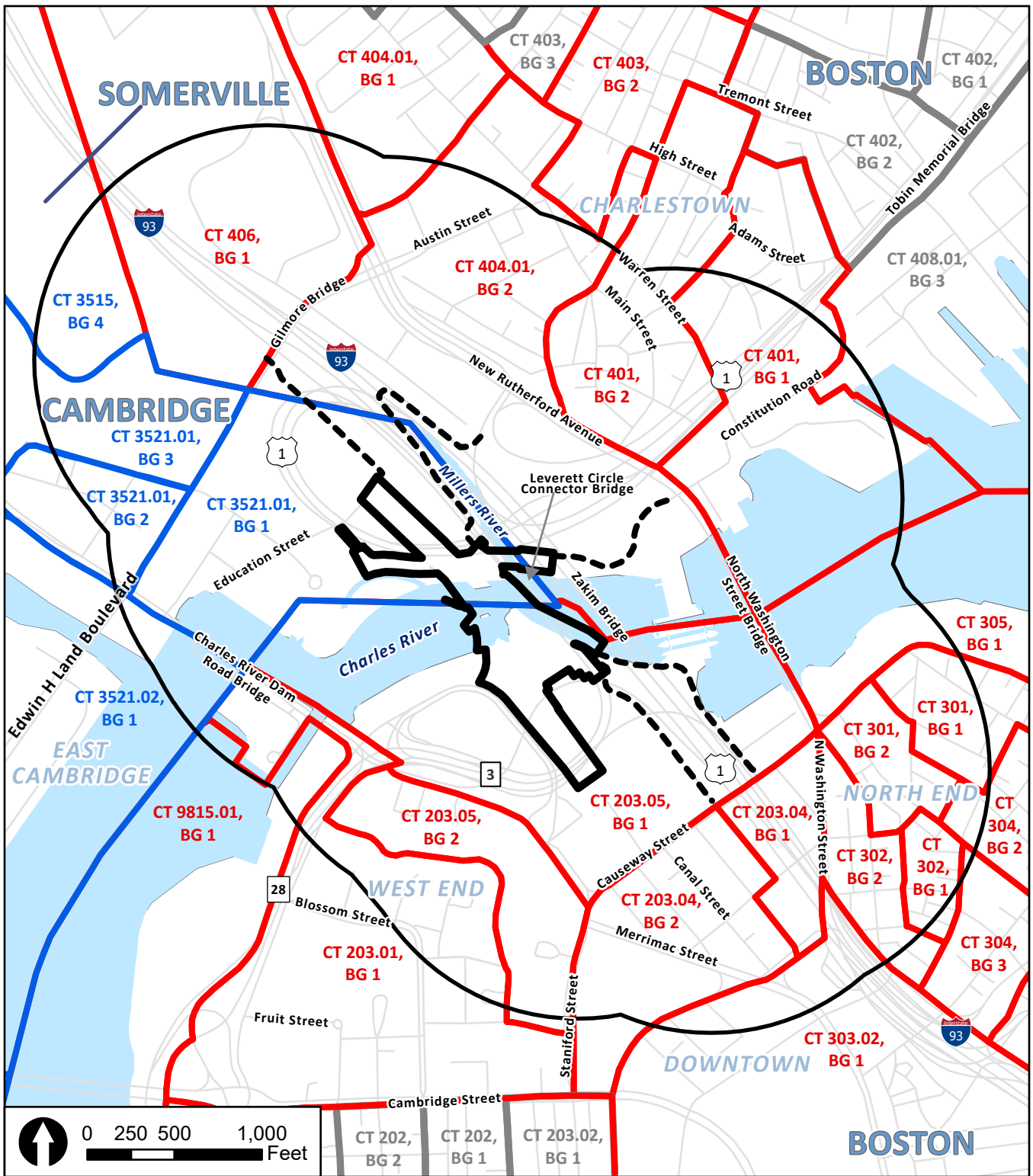
3.2.2.1. *Population*

Based on U.S. Census data, the study area contains a total of 28,087 residents, 23,321 of whom live in the Cambridge portion of the study area, north of the Charles River, and 4,766 of whom live in the Boston portions of the study area north and south of the Charles River (see Figure 9, “Census Block Groups”). As shown in Table 4, “Residential Population Trends – 2013 to 2022,” this represents an increase of over 100 percent in the Cambridge portion of the study area and 55 percent in the Boston portion of the study area since 2013. The cities of Cambridge and Boston have total populations of 117,962 and 665,945 residents, respectively, representing more modest increases of 12 percent in Cambridge and six percent in Boston since 2013.

Table 4: Residential Population Trends – 2013 to 2022

Geography		Total Population (2013)*	Total Population (2022)	Percent Increase
Study Area	Cambridge	11,585	23,321	101%
	Boston	3,079	4,766	55%
Study Area		14,664	28,087	92%
Cambridge		105,737	117,962	12%
Boston		629,182	665,945	6%
<i>Notes:</i>				
<i>* ACS does not provide population data at the block group level for the previous decade (i.e., year 2012); as such, the year 2013 is used for comparison.</i>				

Source: ACS 5-Year Estimates, 2018-2022 & 2009-2013.



Source: Massachusetts Executive Office of Technology Services and Security, MassGIS; BostonMaps; Massachusetts Department of Transportation; STV Incorporated, 2024.

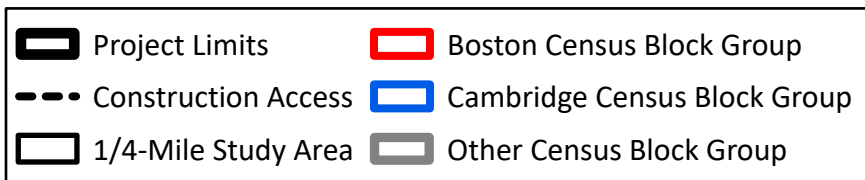


Figure 9
Census Block Groups



3.2.2.2. *Households*

Within Cambridge, there are a total of approximately 49,475 households,¹⁸ of which approximately 40.1 percent and approximately 59.9 percent are Family^{19,20} and Non-Family²¹ households, respectively. Within Boston, there are a total of approximately 276,053 households, of which approximately 46.5 percent and approximately 53.5 percent are Family and Non-Family households, respectively.

The average household size is approximately 2.08 persons per household in Cambridge and approximately 2.26 persons per household in Boston.

3.2.2.3. *Demographics and Income*

Within the Cambridge portion of the study area, 24.1 percent of residents are considered minority populations, 10 percent of households are below the poverty threshold, and 23.6 percent of households are considered low-income households;²² these percentages are less than those in Cambridge, Suffolk County, and the state as a whole.

Within the Boston portion of the study area, 53.7 percent of residents are considered minority populations, 25 percent of households are below the poverty threshold, and 44.3 percent of households

¹⁸ The U.S. Census Bureau defines a household as consisting of “all the people who occupy a housing unit. A house, an apartment or other group of rooms, or a single room, is regarded as a housing unit when it is occupied or intended for occupancy as separate living quarters; that is, when the occupants do not live with any other persons in the structure and there is direct access from the outside or through a common hall. A household includes the related family members and all the unrelated people, if any, such as lodgers, foster children, wards, or employees who share the housing unit. A person living alone in a housing unit, or a group of unrelated people sharing a housing unit such as partners or roomers, is also counted as a household. The count of households excludes group quarters. There are two major categories of households, ‘family’ and ‘nonfamily.’” (<https://www.census.gov/programs-surveys/cps/technical-documentation/subject-definitions.html>)

¹⁹ The U.S. Census defines a family as “a group of two people or more (one of whom is the householder) related by birth, marriage, or adoption and residing together; all such people (including related subfamily members) are considered as members of one family. Beginning with the 1980 Current Population Survey, unrelated subfamilies (referred to in the past as secondary families) are no longer included in the count of families, nor are the members of unrelated subfamilies included in the count of family members. The number of families is equal to the number of family households, however, the count of family members differs from the count of family household members because family household members include any non-relatives living in the household.” (<https://www.census.gov/programs-surveys/cps/technical-documentation/subject-definitions.html>)

²⁰ The U.S. Census defines a family household as “a household maintained by a householder who is in a family (as defined above), and includes any unrelated people (unrelated subfamily members and/or secondary individuals) who may be residing there. The number of family households is equal to the number of families. The count of family household members differs from the count of family members, however, in that the family household members include all people living in the household, whereas family members include only the householder and his/her relatives.” (<https://www.census.gov/programs-surveys/cps/technical-documentation/subject-definitions.html>)

²¹ The U.S. Census defines a non-family household as consisting of “a householder living alone (a one-person household) or where the householder shares the home exclusively with people to whom he/she is not related.” (<https://www.census.gov/programs-surveys/cps/technicaldocumentation/subject-definitions.html>)

²² In accordance with Massachusetts guidance, low-income households are defined as households with income equal to or less than 65 percent of the statewide annual median household income. The Massachusetts annual median household income is approximately \$62,728; as such, the ACS income band for household income below \$60,000 was used in this analysis.

are considered low-income households; these percentages are generally comparable to those for Boston, but greater than those in Middlesex County and the state as a whole.

Refer to Section 7, “Environmental Justice,” and Appendix K, “Environmental Justice,” for more detailed demographic data and identification of environmental justice communities in the study area.

3.2.2.4. *Transit-Dependent Populations*

Elderly and youth populations, zero-car households, and those with a disability are potential indicators for transit dependency.²³ There are large concentrations of zero-car households in both the Cambridge and Boston portions of the study area: 11 of 19 Census block groups in the Cambridge portion of the study area and four of five Census block groups in the Boston portion of the study area have large concentrations of zero-car households.

3.2.2.5. *Commercial Activities*

As described in Section 3.2.1, “Land Use and Zoning,” large commercial uses in the study area comprise Cambridge Crossing, north of the Project Limits, and the Hub on Causeway, directly south of and adjoining TD Garden and North Station. Additional commercial uses are concentrated in the area just south of North Station. As described further in Section 3.2.8, “Transportation Systems,” commercial navigation on the Charles River is generally limited to sightseeing tours by the Charles River Boat Company and the Boston Duck Tours Company.

3.2.3. Community Facilities and Services

Community facilities comprise public or publicly funded facilities, including schools, health care facilities, early childhood programs, libraries, and police and fire protection services. The Proposed Project would not introduce new populations that would use these facilities and services, and so this analysis focuses on the potential for physical alteration or displacement of a community facility or its property and potential changes to service delivery methods or programs that may result with the Proposed Project. MassGIS land use data were supplemented by a review of Google Maps to identify community facilities in the study area.

The study area contains a mix of community facilities, including a jail facility and a State Police facility, as well as educational institutions, medical facilities, and places of worship (see Figure 10, “Community Facilities, Parks and Open Spaces, and Cultural Resources”). The educational institutions and medical facilities in the study area serve regional populations that may depend upon MBTA and Amtrak rail service to provide access to these resources.

²³ Environmental Justice, Title VI, Non-Discrimination, and Equity. U.S. Department of Transportation Federal Highway Administration (https://www.fhwa.dot.gov/environment/environmental_justice/equity/).

Figure Key

Historic Resources ●

- 1. Boston and Maine Railroad Signal Tower A
- 2. Draw One Bridges

Historic Districts ●

- 3. Harvard Street Area
- 4. Hoosac Stores 1, 2, and 3
- 5. Charles River Basin Historic District
- 6. Charles River Esplanade
- 7. Charter Street - Commercial Street Area

Hospitals ●

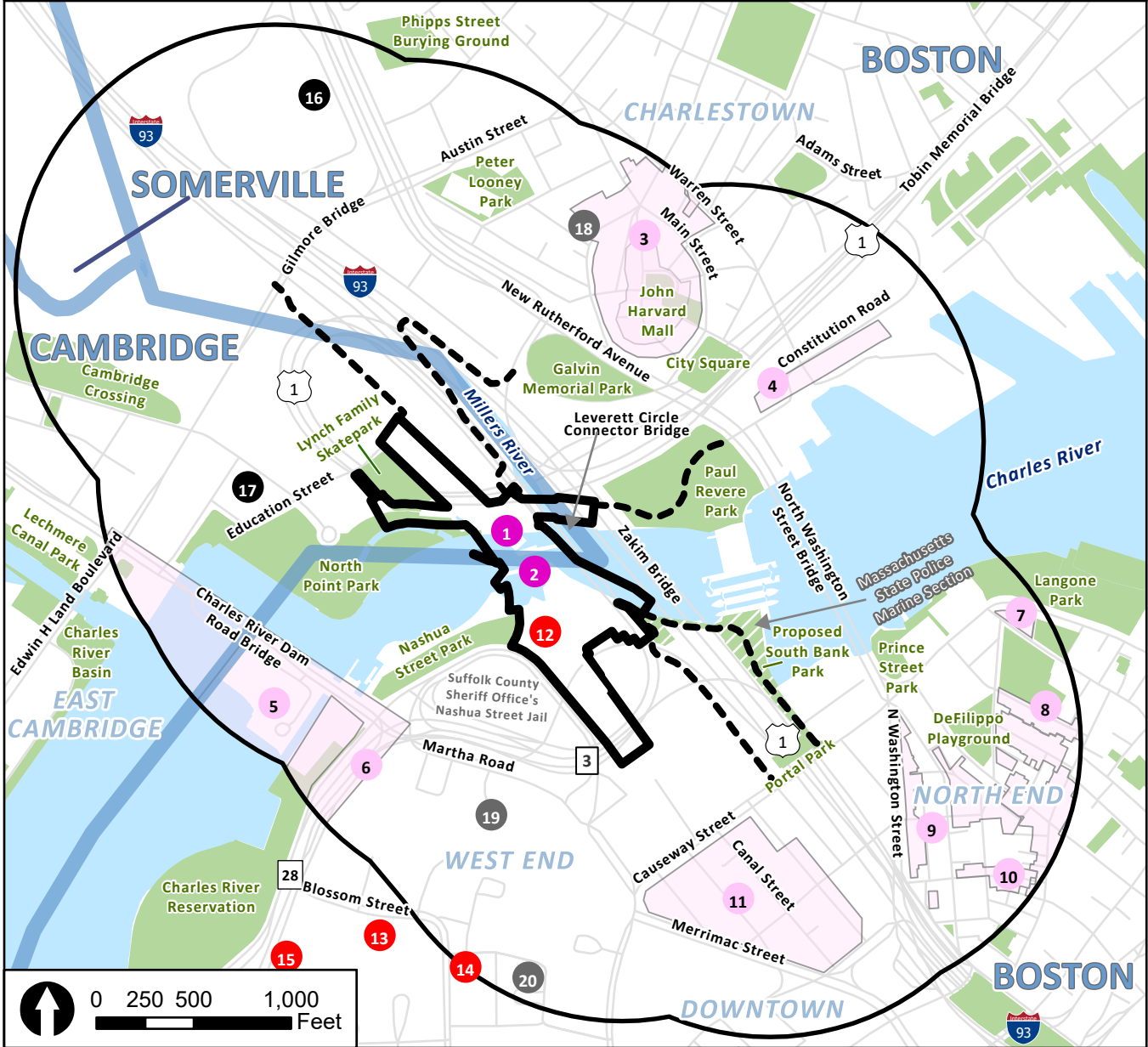
- 8. Hull Street Area
- 9. North Washington Street, 45-183
- 10. Cooper Street Area
- 11. Bulfinch Triangle Historic District
- 12. Mass General Hospital: Global Health and Human Rights
- 13. Massachusetts General Hospital
- 14. Shriners Hospital for Children - Boston
- 15. Massachusetts Eye and Ear Infirmary

Schools ●

- 16. Bunker Hill Community College
- 17. Hult International Business School

Places of Worship ●

- 18. St. John's Church
- 19. The Boston Synagogue
- 20. Saint Joseph



Source: Massachusetts Executive Office of Technology Services and Security, MassGIS; Massachusetts Department of Transportation; STV Incorporated, 2024.

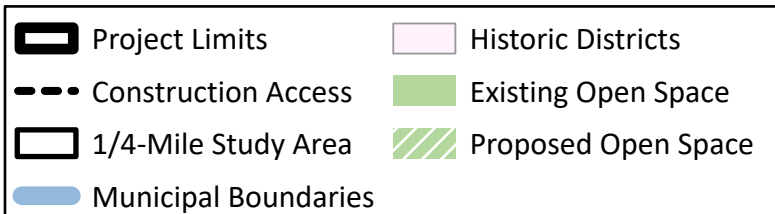


Figure 10
Community Facilities,
Parks and Open Spaces,
and Cultural Resources



Immediately west of and adjacent to the Project Limits is the Suffolk County Sheriff's Office's Nashua Street Jail, which houses approximately 700 pre-trial detainees in 13 different housing units. The Massachusetts State Police Marine Section is located approximately 500 feet east of the Project Limits, though a construction access driveway would be directly adjacent to the police facility. As described in Section 2.4.4.3, "Temporary Closures," the State Police use a DCR-owned boat launch ramp in North Point Park (located within the Project Limits) and typically have a boat docked beneath the Zakim Bridge along the south bank of the Charles River.

On the south bank of the Charles River, the MGH Global Health and Human Rights building (previously known as the Spaulding Rehabilitation Hospital and currently used as an administrative building) is within the Project Limits, immediately west of the existing tracks. Shriners Children's Boston is approximately one-quarter mile southwest of the Project Limits. MGH's main campus, which includes nearly 30 buildings housing inpatient and ambulatory care services, and Massachusetts Eye and Ear's main campus are southwest of the Project Limits, outside of the quarter-mile study area.

North of the Charles River, the Hult International Business School Boston Campus is approximately 350 feet west of the Project Limits, just beyond the I-93 and U.S. Route 1 on-ramp. The Bunker Hill Community College (BHCC) main campus, located at the Community College Station on the MBTA Orange Line, is approximately 650 feet northeast of the Project Limits. A construction access driveway would be provided connecting to the school's visitor parking lot access road.

St. John's Episcopal Church is approximately 1,300 feet northwest of the Project Limits, though at its closest point, the construction access driveway that would connect to the BHCC campus would extend to within approximately 800 feet of the church. South of the Charles River, the Boston Synagogue and St. Joseph Catholic Church are approximately 700 feet and one-quarter mile southwest of the Project Limits, respectively.

3.2.4. Parks and Recreational Resources, and Pedestrian and Bicycle Facilities

For federally funded transportation projects, federal protection of publicly owned and accessible parklands and recreation areas is provided under Section 4(f) of the U.S. Department of Transportation Act. Section 8, "Section 4(f)," provides a summary of the Section 4(f) evaluation for the Proposed Project. Public parklands and recreation areas in the study area were identified in consultation with DCR and through MassGIS-produced data available online. However, the parks and recreational resources presented on Figure 10, "Community Facilities, Parks and Open Spaces, and Cultural Resources," and listed in Table 5, "Parks and Recreational Resources in the Study Area," comprise all identified parks and recreational resources within the quarter-mile study area, including but not limited to the Section 4(f) resources. Per regulatory authority and guidance, Section 4(f) resources are more narrowly defined as those within the direct footprint of the work area or within the Section 106 Area of Potential Effects (APE).

Email correspondence with DCR on December 19, 2022, confirmed that there are no parks, recreational areas, or open space resources that have been funded with Land and Water Conservation Fund (LWCF) monies in the study area. Therefore, there are no Section 6(f) properties within the study area.

3.2.4.1. *Parkland*

As described in Table 5, “Parks and Recreational Resources in the Study Area,” there are several parks and recreational areas along the north and south banks of the Charles River and within the quarter-mile study area.

Table 5: Parks and Recreational Resources in the Study Area

Parks & Open Space Resource	Features
North Bank Bridge	Approximately 690-foot pedestrian and bicycle bridge carrying users under the Zakim Bridge and over the MBTA commuter rail tracks that lead into North Station; it connects North Point Park in Cambridge and Paul Revere Park in Boston
North Point Park	Approximately eight acres featuring a playground, boat docks, green space, walking/biking pathways, and a waterfront promenade
DCR Boat Launch Ramp	DCR-owned ramp within North Point Park extending from an MBTA access roadway into the Charles River Basin; used by DCR, the State Police, and the Boston Duck Tours Company (not available for public use)
Paul Revere Park	Approximately 7.5-acre playground and walking/biking pathways, as well as an oval meadow used as an amphitheater and hosts various exhibits
Nashua Street Park	Approximately 2.5 acres of accessible shoreline, walking/biking pathways connecting the park to other locations, and open lawns with landscaping
DCR Pier and Riverfront Walkway	A small pier with plantings that extends from and appears as part of an adjacent approximately 250-foot bicycle path and pedestrian walkway
MGH Floating Dock and Approach Ramp	Approximately 75-foot by 20-foot floating dock and associated approach ramp adjacent to the MGH administrative building
Gridley Locks Footpath	Approximately 670 feet of walking path on the Charles River through the Gridley Locks system
DCR Parking Lot and Adjacent Vacant Parcel	Approximately 1.67-acre parcel (mostly vacant) featuring a recreational pedestrian and bicycling path along the bank of the Charles River, between and under the Leverett Circle Connector Bridge and the Zakim Bridge
Lynch Family Skatepark	Approximately one-acre park with skateboarding amenities and walking/biking pathways
Galvin Memorial Park	Approximately two acres featuring walking/biking pathways and dense vegetation with a grassy open area
Millers River Littoral Way	Approximately 2,000-foot pedestrian and bicycle walkway along the east bank of the Millers River leading from the north shore of the Charles River under the Zakim Bridge to New Rutherford Avenue
Cambridge Crossing	Approximately 11 acres of open space featuring walking/biking pathways, open space, landscaping, and benches
Peter Looney Park	Sports facility, tennis, playground and play structure for children
John Harvard Mall	Historic brick square featuring stone benches in an open quiet area surrounded by large shady trees
City Square	Historic park on the Freedom Trail consisting of grassy areas, historic markers, sculptures, and a fountain
Prince Street Park	Small park featuring two tennis courts and walking paths
Langone Park/ Puopolo Playground	Waterfront park with bathhouse, playground, sports fields, swimming pool, wading pool, and bocce courts

Table 5: Parks and Recreational Resources in the Study Area (cont.)

Parks & Open Space Resource	Features
DeFilippo Playground	Park featuring a basketball court, street hockey rink, and racquetball court
Steriti Memorial Rink	Public indoor ice rink with harbor views

Source: STV Incorporated, 2024.

3.2.4.2. Pedestrian and Bicycle Facilities

Pedestrian and bicycle facilities within the study area provide regional access to North Station and both sides of the Charles River. Within the study area, pedestrian and bicycle facilities are generally integrated with the extensive parkland that characterizes the portion of the study area along the Charles River.

While the Draw One Bridge does not accommodate pedestrian and bicycle traffic, pedestrian walkways along the east and west sides of the south trestles terminate just before the navigable Charles River channel. These sidewalks, approximately eight feet wide and approximately 255 feet in length on the west side and 420 feet in length on the east side, were constructed as part of a commitment for the MHD Central Artery Tunnel Project. The two sidewalks do not connect to provide cross-river access; the westerly sidewalk connects to the Nashua Street Park on the south bank of the Charles River and the easterly sidewalk connects to DCR property that provides access to the Charles River Dam, Gridley Locks Footpath, and Lovejoy Wharf.

3.2.5. Historic and Cultural Resources (Section 106 Consultation)

Section 106 of the National Historic Preservation Act of 1966, as amended (16 USC 470f) requires that federally funded or permitted projects consider the effects of their undertakings on historic and archaeological resources listed in or eligible for listing in the National Register of Historic Places (NRHP). Therefore, an analysis of the Proposed Project’s potential effects on historic and archaeological resources has been prepared in accordance with both Section 106 and the provisions of MGL Chapter 9, Section 26-27C (codified in 950 CMR 71), under which any projects that require funding, licenses, or permits from any state agency be reviewed by the State Historic Preservation Office (SHPO), which in Massachusetts is MHC. For details related to the Section 106 consultation process, including a copy of the ~~Draft~~ executed Memorandum of Agreement (MOA) developed in this process, refer to Appendix B, “National Historic Preservation Act Section 106.”

3.2.5.1. Archaeology

The APE is limited to areas of proposed ground disturbance, including the site of the existing Draw One Bridge and adjoining areas, as well as the site of the proposed Tower A building. The Proposed Project is located within a heavily developed area of fill land, subjected over many years to extensive construction and dredging in conjunction with continuous railroad and highway building; as such, the APE contains no known archaeological resources.

3.2.5.2. Historic Architectural Resources

FTA conducted a survey to identify historic architectural resources age 50 years or older in the APE for historical architectural resources. Two historic architectural resources were identified within the APE: the Draw One Bridge and Signal Tower A. The Draw One Bridge is eligible for listing in the NRHP under

Criterion C in the areas of Engineering and Transportation, as it comprises two of the last surviving Scherzer-type rolling lift bascule railroad bridges in the state. Signal Tower A is eligible for listing in the NRHP under Criterion C in the areas of Architecture, Engineering, and Transportation as a substantially intact and significant surviving example of railroad architecture dating to the period of the B&MRR's large BET improvement program, carried out between 1928 and 1932.

3.2.5.2.1. Section 106 Consultation

FTA began consultation with the SHPO and other Section 106 stakeholders in February 2020 to provide a project overview and to determine the Proposed Project's APE. (Refer to Appendix B, "National Historic Preservation Act Section 106," for the full list of consulting parties and information shared, as well as comments and information received in return.) See Section 4.2.6, "Historic and Cultural Resources," for a detailed description of the Section 106 consultation process as it relates to the demolition of these historic resources that would be required with implementation of the Proposed Project; mitigation developed through the Section 106 process is described in Section 6, "Summary of Impacts, Commitments, and Required Mitigation Measures."

3.2.6. Visual and Aesthetic Resources

Pursuant to Section 4(f) of the U.S. Department of Transportation Act, the visual effects on publicly owned parks and recreation areas and historically significant cultural resources must be considered when undertaking transportation improvements. Such effects may be considered a Constructive Use of Section 4(f) property when no other physical use of that property occurs. Visual effects on historically significant cultural resources must also be evaluated pursuant to Section 106 of the National Historic Preservation Act.

Given the visual relationship of the Draw One Bridge to the Leverett Circle Connector Bridge and the Zakim Bridge directly to the east of the Project Limits, and to correctly anticipate potential effects associated with the Proposed Project, the general one-quarter-mile study area is suitable for this analysis. Particular attention is given to the relatively unobstructed and direct views from parkland to the south of the Draw One Bridge.

3.2.6.1. *Study Area Landscape, View Corridors, and Visual Resources*

The aesthetic conditions of the study area may be characterized in accordance with the major land use types in the area, comprising transportation infrastructure (including three bridges over the Charles River), parklands, and commercial uses. The most definitive feature of the landscape in the study area is the Charles River, which together with its surrounding land comprises a relatively flat topography, resulting in view corridors across the river (toward the north and south) in the study area that are unobstructed on either side (to the east or west of) the group of three bridges. Rail passengers and automobile drivers on the bridges are afforded limited views of the riverbanks, but at points more expansive distant views of the cities of Cambridge and Boston to the north and south are available. People walking along the northern or southern banks of the Charles River in the study area have generally unimpeded views to the opposite bank.

Viewers to the west of the bridges have views of all three bridges, with the Draw One Bridge in the foreground being the shortest in overall height. The Leverett Circle Connector Bridge just to the east has

limited vertical elements, and the Zakim Bridge behind these two stands the tallest. Viewers to the east of the bridges have clearest views of the Zakim Bridge, though the lower portions of the Leverett Circle Connector Bridge and Draw One Bridge may be visible from some locations, if not entirely discernable from the overall collective massing. Together, the three bridges impede clear views to the east of them from vantage points in the western portion of the study area, and to the west of them from vantage points in the eastern portion of the study area. Notably, while the bridges supporting highway and rail infrastructure limit views along the river, they also define the aesthetic character of the Charles River basin in the study area as they are such prominent features in the landscape.

Rising to approximately 320 feet, its height alone makes the Zakim Bridge one of the most character-defining features of the study area landscape, and its modernist styling, with prominent obelisk tower forms and repetitively placed cables, further characterize the viewshed. Section 106 consultation, as well as Section 4(f) coordination, have confirmed the Zakim Bridge be considered a character-defining feature of the area, and thus a visual resource.

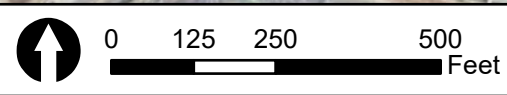
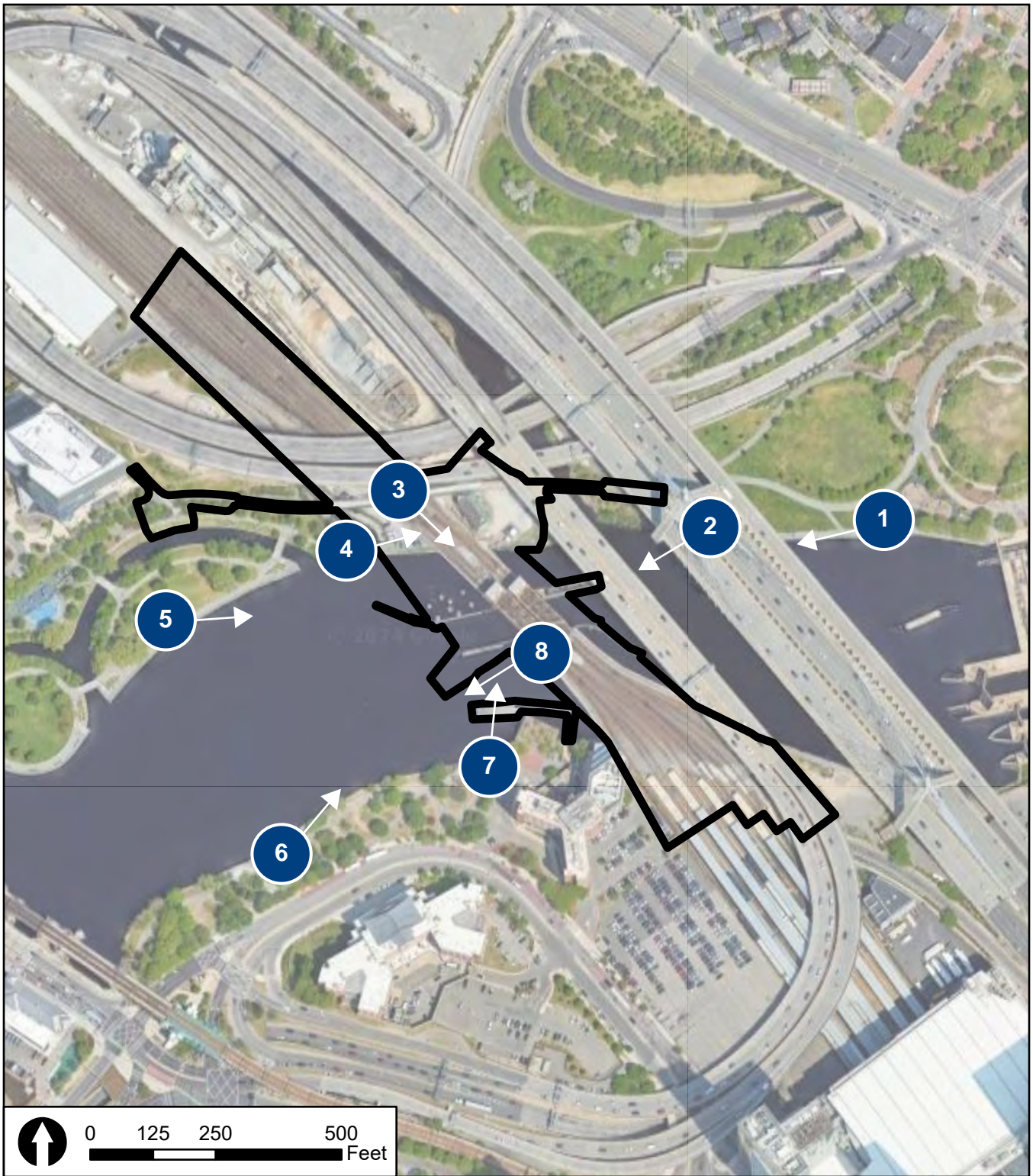
The Leverett Circle Connector Bridge is largely hidden from view given its position between the Draw One Bridge on the west and the Zakim Bridge on the east, particularly as it is a typically streamlined highway bridge that lacks notable vertical elements. As such, the Leverett Circle Connector Bridge does not contribute substantially to the visual character of the group of bridges or otherwise contribute to the aesthetic character of the area.

Though it is both the oldest and the shortest of the three bridges, the Draw One Bridge is visible as the frontmost bridge from vantage points west of it. Given its particular form as a Scherzer-type rolling lift bascule bridge, the Draw One Bridge is distinctive among the group. Likewise, Signal Tower A, which stands east of the Draw One Bridge on the northern side of the river, also represents the history of the rail crossing, though views of it from most vantage points to the west are generally obstructed by the Draw One Bridge. Signal Tower A and the Draw One Bridge are indicative of historic rail infrastructure in the area that facilitated the development on both sides of the river; as listed historic resources, both are considered visual resources in this analysis.

There are several commercial and institutional uses on the north and south sides of the Charles River, including the EF Education First Headquarters and Cambridge Crossing to the north in Cambridge, and the MGH administrative building and The Hub on Causeway to the south in Boston, which provide additional vertical massing to limit or contain views that people would experience in the study area. Otherwise, the banks of the Charles River in the study area are characterized by publicly accessible open space and parkland.

As show on Figure 11, “View Corridors,” and in photos 1 through 8, visitors to parklands have varied but generally clear views of the Draw One Bridge and the Zakim Bridge rising behind it when viewing from the west, and limited views of the Draw One Bridge and Project Limits from vantage points east. As shown in Photo 3, pedestrians crossing the North Bank Bridge have direct views of the bridges, as the North Bank Bridge crosses over the tracks directly north of the Draw One Bridge. In addition, limited pedestrian access is available via a walkway installed onto the southern Draw One trestles, which is accessible from Nashua Street Park, affording pedestrians unobstructed views from a point over the water westward along the Charles River (see Photo 8).

The Draw One Bridge is also visible from the Gridley Locks Footpath to the east, though views are interrupted by the Leverett Circle Connector Bridge and the Zakim Bridge. The Craigie Drawbridge and Charles River Dam Road Bridge to the west provide views of both the Draw One Bridge and Signal Tower A.



Source: Massachusetts Executive Office of Technology Services and Security, MassGIS; Massachusetts Department of Transportation; STV Incorporated, 2024.



	Project Limits
	Photo View

Figure 11a
View Corridors



Photo 1
View of Draw One Bridge from Paul Revere Park, looking west from Cambridge



Photo 2
View of Draw One Bridge underneath Zakim Bridge, looking west from Cambridge.



Figure 11b
View Corridors

Photo 3

View from MBTA ROW of Draw One Bridge and north timber pile trestle, looking southeast from Cambridge.



Photo 4

View of Signal Tower A, looking east at the west (trackside) elevation with temporary timber shoring, from Cambridge.

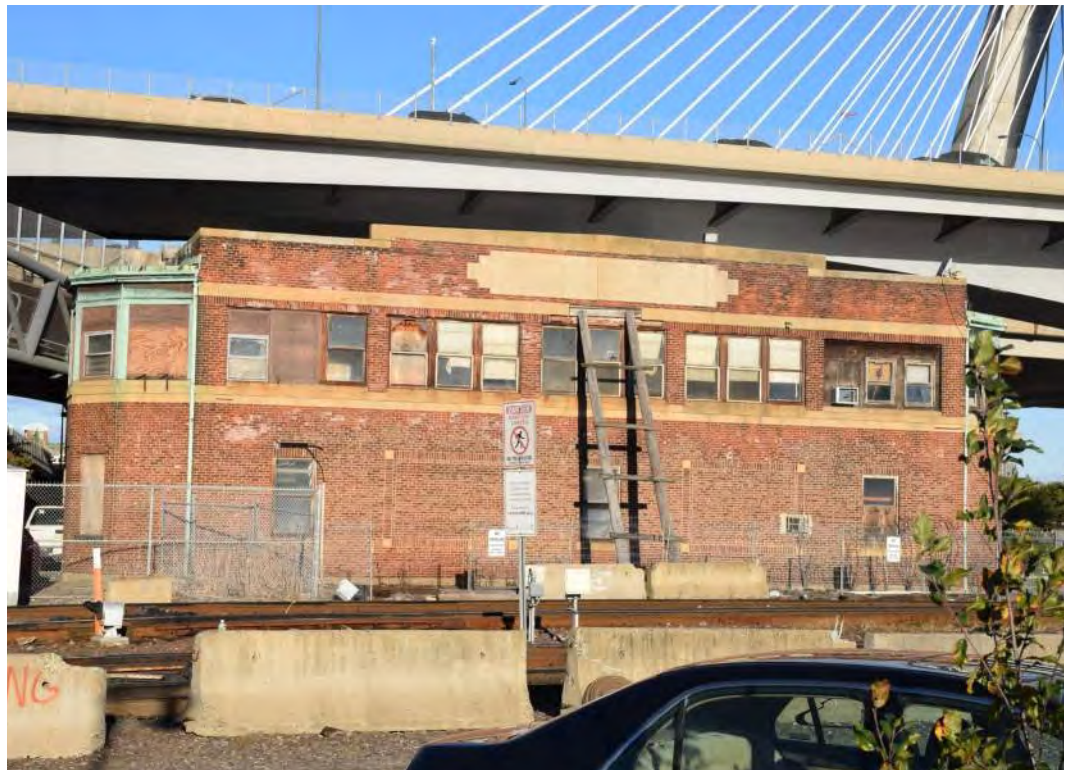


Photo 5
View of Draw One Bridge from North Point Park, looking east from Cambridge.



Photo 6
View of existing bridge in partially open position from Nashua Street Park from Boston.



Figure 11d
View Corridors

Photo 7
View from Nashua Street Park/
DCR Pier from Boston.

Note: Views of Signal Tower A
obscured by passing trains.



Photo 8
View of MGH floating dock and
Charles River from Draw One
Bridge sidewalk, looking west.



3.2.7. Natural Resources

Existing conditions in the study area were characterized on the basis of existing information available from federal and state resources.

Section 307 of the 1972 Coastal Zone Management Act requires federal actions within (or outside of, but with the potential to affect) the coastal zone to be consistent with the enforceable policies of a state's federally approved coastal management program. The Massachusetts Office of Coastal Zone Management (CZM) is responsible for managing the state's coastal program.

3.2.7.1. *Soils*

The Project Limits are within a geologic region known as the Boston Basin. Subsurface conditions may be generally characterized as man-placed fill material overlying organic silt and intermixed fill and silt, which in turn overlie silty sand; marine clays; glaciomarine till; and highly weathered, partially lithified and fractured argillite, and finally, argillite bedrock.

3.2.7.2. *Wetlands and Water Resources*

Two perennial streams were identified and delineated, including portions of the Charles River and the Millers River, which are assumed to be Traditional Navigable Waters (TNW) (see Figure 12, "Natural Resources"). As described in Section 3.2.8, "Transportation Systems," the Millers River has largely been covered, with just a small segment of estuary remaining. Additional consultation with USACE and Massachusetts Department of Environmental Protection (MassDEP) is necessary to determine the official jurisdictional status of the perennial streams, as well as to coordinate Section 10, 401, and 404 permitting prior to construction.

The Project Limits are situated in the lower portion of the Charles River Basin, which separates Boston and Cambridge. Although historically tidal, the Basin has been cut off from the ocean by a system of locks and dams – the Charles River Dam and Locks. The locks are approximately 900 feet downstream of the Project Limits, near the North Washington Street (Route 99) bridge. There are no tidal flows that reverse the general downstream passage of water from the Charles River upstream of the Charles River Dam and Locks, including within the Project Limits. However, depending on tides, when the locks are opened, there is an upstream incursion of salt water along the bottom of the river, which extends into the lower Basin of the Charles River to varying degrees. Water salinity varies with the tides and seasonally, depending upon the amount of freshwater outflow from the Charles River.

The river bottom sediment in the vicinity of the Project Limits is primarily loose, black organic silt with traces of sand, clay, shells, and other debris to a thickness of approximately five to 10 feet.

3.2.7.3. *Floodplains*

Portions of the Project Limits are located within the within the 100-year floodplain (1 percent annual-chance flood event), which is at an elevation of 3.5 feet. The Project is also within Special Flood Hazard Area Zone AE and Zone VE.

3.2.7.4. Coastal Zone

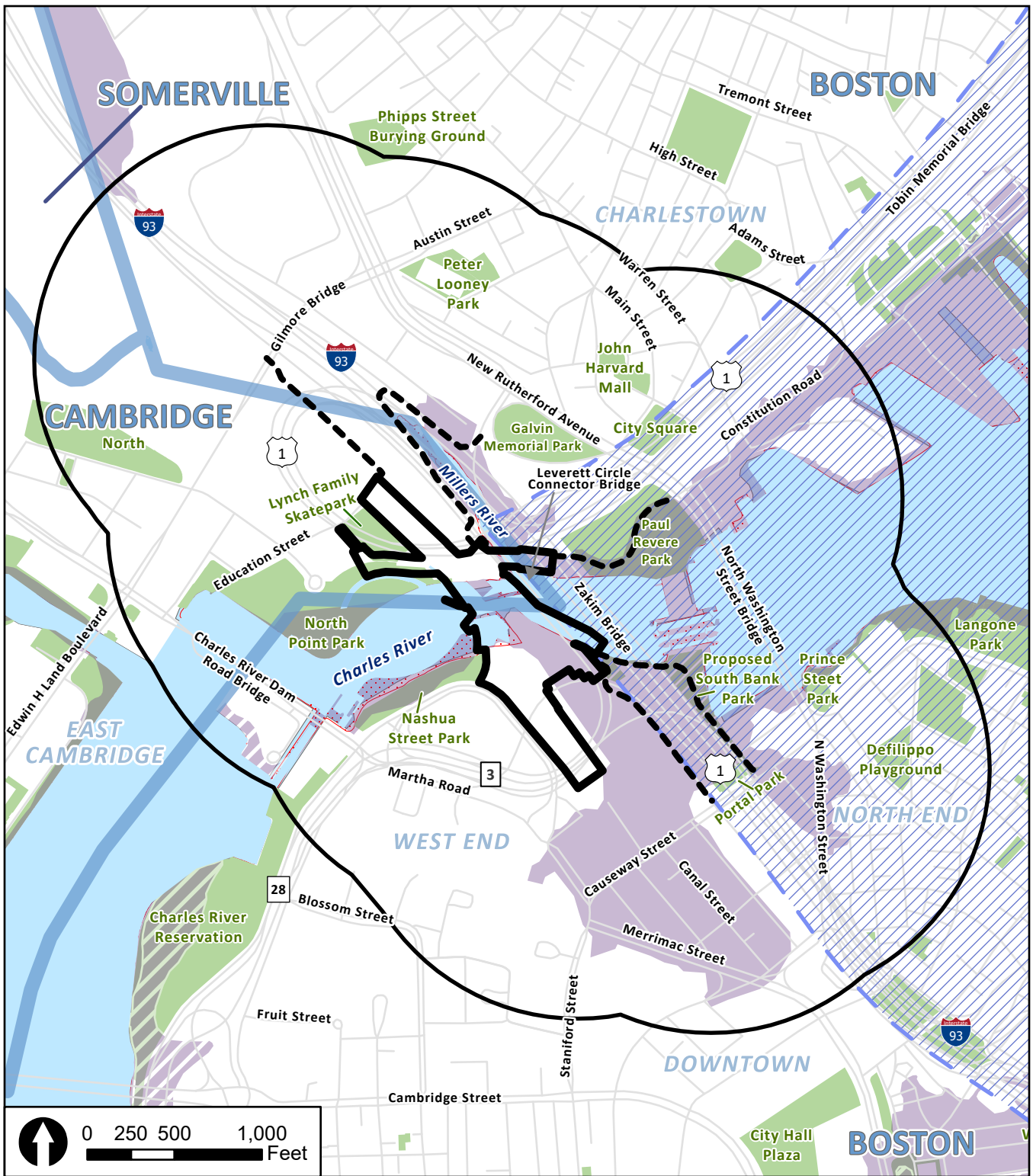
A small portion of the Project Limits – the east end of the North Bank Bridge at Paul Revere Park – is located within the Massachusetts Coastal Zone; therefore, the Proposed Project is subject to Federal Consistency Review under the Massachusetts Office of Coastal Zone Management’s (CZM) coastal program.

3.2.7.5. Ecological Resources

The Project Limits and adjacent terrestrial areas are densely developed urban land. There are vegetated (landscaped) upland areas within North Point Park and Nashua Street Park, though outside of these parks, the study area contains limited vegetation. Upland vegetated habitats within the study area are consistent with highly disturbed urban settings and transportation corridors and contain degraded resources, which have been colonized by numerous invasive species and other species common in such disturbed areas. Field reviews indicated that no bald or golden eagles or their nests are present within the Project Limits. There are no Priority Habitats of Rare Species, Estimated Habitats of Rare Wildlife, or Natural Communities, nor are there Wild or Scenic Rivers, Coastal Barrier Resources, National Marine Sanctuaries, or Marine Protected Areas within the Project Limits.

The Project Limits are, however, located in an area designated as Essential Fish Habitat (EFH) for numerous New England/Mid-Atlantic and Highly Migratory species, though given the coastal river environment and the presence of the Charles River Dam and Locks immediately downstream, the Project Limits do not provide appropriate habitat conditions (i.e., open water) for many fish species. A Habitat Area of Particular Concern (HAPC) for juvenile cod is identified in the Boston Inner Harbor downstream of the Project Limits and the Charles River Dam and Locks.

The USFWS Information for Planning and Consultation (IPaC) System identifies the endangered northern long-eared bat (*Myotis septentrionalis*) and the roseate tern (*Sterna dougallii*), the proposed endangered tricolored bat (*Perimyotis subflavus*), and the monarch butterfly (*Danaus plexippus*), a candidate species for listing as either endangered or threatened, as potentially affected by activities in the vicinity of the Project Limits. However, the IPaC data report did not identify any critical habitats in the vicinity of the Project Limits, nor did it identify birds of conservation concern protected under the Migratory Bird Treaty Act or Bald and Golden Eagle Protection Act that have the potential to occur within the vicinity of the Project Limits. Several species listed as threatened and endangered under the jurisdiction of NOAA Fisheries may also be present in the vicinity of the Project Limits, including the Atlantic sturgeon (*Acipenser oxyrinchus*) and shortnose sturgeon (*Acipenser brevirostrum*), the North Atlantic right whale (*Eubalaena glacialis*) and fin whale (*Balaenoptera physalus*), and four sea turtle species including leatherback (*Dermochelys coriacea*), loggerhead (*Caretta caretta*), Kemp’s ridley (*Lepidochelys kempii*) and green sea turtle (*Chelonia mydas*). However, given the presence of the Charles River Dam and Locks between the Boston Harbor and the Project Limits, it is unlikely that marine species are found within the freshwater river.



Source: Massachusetts Executive Office of Technology Services and Security, MassGIS; Massachusetts Department of Transportation; STV Incorporated, 2024.

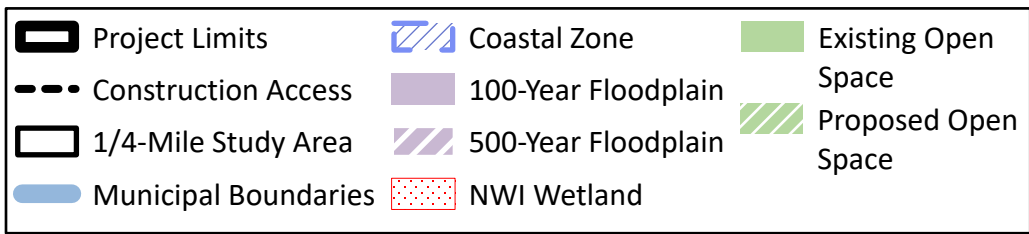


Figure 12
Natural Resources



3.2.8. Transportation Systems

3.2.8.1. *Rail Transportation*

As noted in Section 1.2.2, “Need for the Proposed Project,” the Draw One Bridge is a crucial rail link between Boston and greater New England. It is the last crossing before trains terminate at North Station, the fifth-largest transit station in New England and a critical connection point for Amtrak’s *Downeaster* rail passenger service as well as MBTA rapid transit and bus lines. Information about the Draw One Bridge and MBTA Commuter Rail and Amtrak services was obtained from current reports prepared by MBTA and Amtrak,²⁴ as well as through coordination with MBTA.

3.2.8.1.1. *Commuter Rail Service*

The Draw One Bridge carries four MBTA commuter rail lines – the Fitchburg Line, Haverhill Line, Lowell Line, and Newburyport/Rockport Line (see Figure 13, “Transportation Systems”). Each weekday, these four lines carry a combined total of 178 trains, which includes 23 trains in the AM peak period,²⁵ 23 trains in the PM peak period,²⁶ and 132 trains in the off-peak periods. The current average weekday ridership on these four MBTA commuter rail lines is approximately 37,300 riders per day.

In addition, the BET, located in Somerville and partially extending within the northern portion of the study area, is MBTA’s primary train maintenance and repair facility for its commuter rail system.

3.2.8.1.2. *Intercity Rail Service*

North Station is one of three Amtrak stations in the City of Boston. It serves the *Downeaster*, which links Boston, Massachusetts with Brunswick, Maine via New Hampshire. The *Downeaster* is a 145-mile regional passenger train service operated by Amtrak and managed by the Northern New England Passenger Rail Authority (NNEPRA), an agency of the State of Maine. It operates five daily round trips between North Station and Brunswick, Maine, with ten intermediate stops. Amtrak operates approximately ten trains over the Draw One Bridge each weekday, including one train during the AM peak period and one train during the PM peak period. Approximately 1,760 Amtrak passengers travel over the Draw One Bridge each weekday.

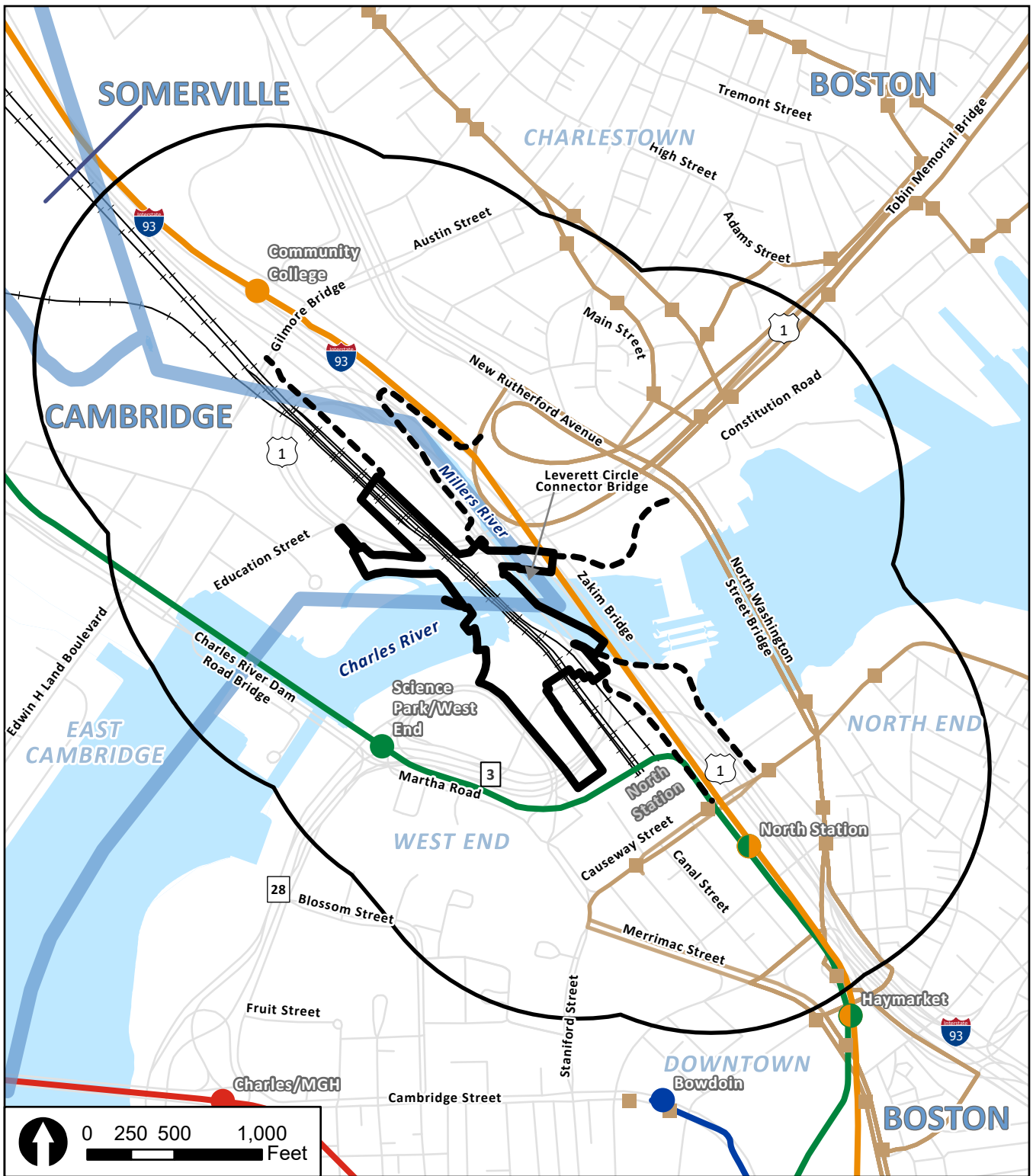
3.2.8.1.3. *Freight Rail Service*

The base of operations for Boston Sand & Gravel is located along the rail line north of the Charles River and immediately east of the Project Limits, with a connection to CSX Corporation (CSX) freight rail service to the north. Boston Sand & Gravel provides ready-mix products to both residential and commercial customers throughout the region. In addition, CSX occasionally utilizes the BET, approximately 1,500 feet north of the Project Limits, for maintenance and repairs.

²⁴ MBTA Rail Vision MPO Presentation, December 2019; Amtrak *Downeaster* Schedule, October 2022; Northern New England Passenger Rail Authority *Downeaster* Monthly Ridership History, 2009-2022; Amtrak *Service & Assets Line Plans*, FY2022-2027.

²⁵ AM Peak is defined as 6:00 – 10:00 AM

²⁶ PM Peak Period is defined as 3:00 – 7:00 PM



Source: Massachusetts Executive Office of Technology Services and Security, MassGIS; BostonMaps; Massachusetts Department of Transportation; STV Incorporated, 2024.

	Project Limits		Bus Stops		MBTA Transit Lines
	Construction Access		MBTA Bus Routes		BLUE
	1/4-Mile Study Area		MBTA Commuter Rail		GREEN
	Municipal Boundaries				ORANGE
					RED

Figure 13
Transportation Systems



3.2.8.2. *Marine Transportation*

Per the Rivers and Harbors Act of 1894, USCG is responsible for establishing the procedures and practices for vessel movements through the Draw One Bridge, including authorizing vertical and horizontal navigational clearances. A Navigation Impact Report was prepared for the Proposed Project and reviewed by USCG.²⁷

The Charles River is the longest river wholly within the State of Massachusetts, flowing more than 80 miles. It is navigable for about 10 miles between Boston Harbor and Watertown and is primarily used for recreation. It is dammed near its mouth, with navigation locks (Gridley Locks) providing access to the harbor.

The Millers River is an approximately 750-foot segment of estuary between the Zakim Bridge and the rail lines that flows into the Charles River from the north. It originally comprised wetlands and open waters but has since been covered, leaving just a small surviving section that stretches along and beneath Interstate 93. The Millers River Littoral Way is a bicycle path and pedestrian walkway along its east bank, featuring graphics, paving designs, and lighting.²⁸

The Project Limits are adjacent to the Millers River and span the Charles River, with dense urban development on both sides. Several marine facilities, including public boat ramps, marinas, major docking facilities, and boat repair facilities, are within three miles. Constitution Marina is northeast of the Project Limits, along the north bank of the river. Lovejoy Wharf is on the south bank of the river, just east of the I-93 and U.S. Route 1 highway infrastructure. The Massachusetts State Police Marine Section is in Boston, on the south side of the Charles River Dam adjacent to the southern entrance to the Gridley Locks Footpath, and provides routine marine patrol on the Charles River; the majority of State Police vessels are typically docked east of the dam in the Boston Harbor. State Police operations do not always require opening of the Draw One Bridge, as the bridge's existing 5.38-foot vertical clearance in the closed position is sufficient for their smaller vessels. Vessels from the cities of Boston and Cambridge and the Massachusetts Port Authority conduct search, rescue, and firefighting operations.

Commercial navigation on the Charles River is generally limited to sightseeing tours by the Charles River Boat Company and the Boston Duck Tours Company. Each month between April and October, approximately 15 to 20 of the Charles River tour boats require an opening of the Draw One Bridge. Boston Duck Tours Company sightseeing tours begin on land at several locations; upon entering the water, Boston Duck Tours Company boats typically travel upstream and do not pass under the Draw One Bridge. Other commercial navigation includes occasional barges supporting construction activities along the Charles River. Construction barge passage accounts for approximately 20 to 30 annual bridge openings.

In accordance with federal regulations, the Draw One Bridge movable spans are opened by a signal from the bridge operator when required to allow marine traffic to pass, except from 6:15 AM to 9:10 AM and 4:15 PM to 6:30 PM, Monday through Friday (with the exception of holidays), to minimize service disruptions during rush hour. From January 2012 through January 2019, there were an average of 3,365 bridge openings per year. Approximately 83 percent of bridge openings were for recreational navigation. The majority of recreational navigation occurs from April to October, with the heaviest usage during prime

²⁷ STV Incorporated *Navigation Impact Report MBTA/Amtrak Bridge, Mile Post 0.8*, November 2020.

²⁸ <https://walkboston.org/sites/default/files/Charles%20river-Nstation8.pdf>

summer months. The remaining 17 percent of bridge openings were for work boats, barges, tugs, police, fire, harbor master, commercial tour operators, and maintenance and test operations. Many smaller pleasure craft do not require a bridge opening.

3.2.8.3. *Transit, Traffic, and Parking*

This section describes the transit routes, roadways, and parking facilities in the study area and the potential effects of the Proposed Project on these routes and facilities. Map data was obtained from online sources, including MassGIS, the City of Boston's BostonMaps database, and Google Maps.

3.2.8.3.1. [MBTA Rapid Transit \(Subway\) Service](#)

North Station serves MBTA's Green and Orange subway lines, two of MBTA's four lines in Boston. The Orange Line extends from Forest Hills in Jamaica Plain, Boston to the south to Oak Grove, Malden to the north. The Orange Line connects with Amtrak service at Back Bay and North Station, and with MBTA commuter rail service at Back Bay, North Station, Forest Hills, Ruggles Station in Roxbury, and Malden Center in Malden. The Green Line runs through downtown Boston between Kenmore Square and Medford. Outside of the central subway, the Green Line has four western surface branches that operate from Kenmore Square to Boston College Station in Newton, Cleveland Circle Station in the Brighton neighborhood of Boston, and Riverside Station in Newton, as well as from Copley Station in the Back Bay neighborhood of Boston to Heath Street Station on the border of Boston's Mission Hill and Jamaica Plain neighborhoods.

3.2.8.3.2. [MBTA Bus Service](#)

MBTA operates local bus service connections at North Station, including one local bus route at North Station and three additional routes one block away at North Washington Street: MBTA Route 4 departs from North Station, and MBTA Routes 92, 93, and 111 include stops at North Washington Street. Additionally, the EZRide Shuttle, operated by the Charles River Transportation Management Association, provides service from North Station to the Massachusetts Institute of Technology (MIT), with connectivity to the Lechmere and Kendall/MIT MBTA stations.

3.2.8.3.3. [Vehicular Traffic](#)

The Leverett Circle Connector Bridge and the Zakim Bridge carry vehicular traffic over the Charles River just east of the Draw One Bridge. The Leverett Circle Connector Bridge, located between the Draw One Bridge and the Zakim Bridge, is a highway bridge carrying two lanes each of northbound and southbound traffic. It connects to Interstate 93 in Somerville at the north end and splits at the south end, providing direct access to both Storrow Drive and Leverett Circle in Boston.

The main portion of the Zakim Bridge carries four lanes each of northbound and southbound traffic along I-93 and U.S. Route 1 between the Thomas P. "Tip" O'Neill Jr. Tunnel and the elevated highway to the north. Two additional lanes are cantilevered outside the cables and carry northbound traffic from the Sumner Tunnel and North End on-ramp. These lanes merge with the main highway north of the bridge. I-93 extends toward New Hampshire as the "Northern Expressway," and U.S. Route 1 splits from I-93 and extends northeast toward Massachusetts' North Shore communities. U.S. Route 1 ramps cross the Project Limits at two locations, both north of the Charles River.

Local roadways in the study area include the Gilmore Bridge north of the I-93 on- and off-ramps, which carries two lanes each of eastbound and westbound traffic, connecting the Charles River Dam Road Bridge in Cambridge to New Rutherford Avenue in Boston. Just north of the Project Limits, Education Street provides one lane each for eastbound and westbound traffic and extends from Museum Way in Cambridge to a termination point just west of the MBTA ROW; it also provides access to the DCR boat launch ramp in North Point Park. South of the Project Limits, Causeway Street carries two lanes each of eastbound and westbound traffic adjacent to North Station and the TD Garden arena in Boston. Nashua Street – carrying one lane of vehicular traffic and a dedicated bus lane to the west and two lanes of vehicular traffic to the east – connects the North Station parking facility (North Station Garage) to Leverett Circle and Storrow Drive by looping out toward the south bank of the Charles River.

3.2.8.3.4. Parking

There are four parking lots in the immediate vicinity of the Project Limits. Just south of the Project Limits and abutting the MBTA railroad tracks to the west are two MGH administrative building parking lots, one to the south of the building that provides approximately 500 parking spaces and one to the north of the building, adjacent to the river, that provides just 19 parking spaces. Directly west of these lots is a smaller parking lot for the Suffolk County Sheriff’s Office’s Nashua Street Jail. The North Station Garage, located directly underneath TD Garden, is open daily from 5:00 AM to 1:00 AM and provides 1,275 covered parking spaces. Southeast of the Draw One Bridge is a small DCR-owned parking lot, directly adjacent to the Zakim Bridge, that provides access to the Gridley Locks Footpath and the Charles River Dam and Locks.

3.2.9. Air Quality and GHG Emissions

The Federal Clean Air Act (CAA) regulates air quality in the United States. Among other things, it requires the U.S. Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS), identify areas not in attainment of the NAAQS, and review/approve State Implementation Plans (SIPs) for achieving those standards. In addition to the CAA, other major regulations applicable to the Project Limits that pertain to the potential air quality impacts of transportation projects include:

- The General Conformity Rule, 40 CFR Part 93 Subpart B; and
- Air Pollution Control, Code of Massachusetts Regulations (CMR) 310 CMR 7.00.

Given that the Project Limits²⁹ span both Middlesex and Suffolk counties, and that each falls within a different EPA-designated area,³⁰ the attainment classifications for both are provided in Table 6, “Middlesex County and Suffolk County Air Quality Attainment Classifications for Project Limits.” Background concentrations of pollutants for the Project Limits based on air quality monitoring from 2020 to 2022 are presented in Table 7, “Regional Background Air Quality Concentrations, 2020-2022.” The

²⁹ The state of dispersion science and health effects of greenhouse gas (GHG) emissions have not sufficiently advanced to accurately consider the microscale level of mobile sources. For this reason, this analysis does not determine a local study area for GHG emissions for mobile sources and only considered them on a regional scale. GHG emissions from the Proposed Project would be due to fossil fuel combustion of vehicles, diesel trains, potential change in GHG emissions from implementation of the project is calculated for the same sources and categories as identified for the analysis of local operational emissions.

³⁰ EPA, Green Book for Middlesex and Suffolk Counties, MA, <https://www.epa.gov/green-book>.

values describe the air quality status of a given location relative to the NAAQS. These values provide a way to designate and classify nonattainment areas and to assess progress toward meeting the NAAQS. The monitoring locations were selected for the most conservative representation of background levels for each of the NAAQS within the Project Limits.

Table 6: Middlesex County and Suffolk County Air Quality Attainment Classifications for Project Limits

NAAQS	Attainment	Nonattainment	Maintenance
Ozone (1-hour, 1979) – Revoked			X
Ozone (8-hour, 1997) – Revoked			X
Ozone (8-hour, 2008) – Revoked	X		
Ozone (8-hour, 2015)	X		
PM10 (1987)	X		
PM2.5 (2012)	X		
CO (1971)			X

Note: Classifications are identical for Middlesex and Suffolk Counties.

Source: EPA Greenbook, 2024.

Table 7: Regional Background Air Quality Concentrations, 2020-2022

Pollutant	Units	Averaging Period	2020	2021	2022	Monitoring Location	NAAQS
CO	ppm	8-hour	1.1	1.0	1.0	Boston ¹ , MA	9
CO	ppm	1-hour	1.6	1.5	1.6	Boston ¹ , MA	35
Pb	μ/m ³	3-month	0.0072	0.0042	0.0091	Boston ¹ , MA	0.15
NO ₂	ppb	1-hour	42	44	46	Boston ¹ , MA	100
NO ₂	ppb	Annual	9.3	9.6	10.0	Boston ¹ , MA	53
O ₃	ppm	8-hour	0.057	0.060	0.060	Boston ¹ , MA	0.070
PM _{2.5}	μ/m ³	Annual	5.8	7.9	6.5	Boston ¹ , MA	9
PM _{2.5}	μ/m ³	24-hour	14.3	18.2	14.7	Boston ¹ , MA	35
PM ₁₀	μ/m ³	24-hour	25	30	31	Boston ¹ , MA	150
SO ₂	ppb	1-hour	2.0	2.1	3.1	Boston ¹ , MA	75

¹Boston, MA Monitor, Harrison Avenue (EPA ID 25-025-0042)
Note: (ppm) – parts per million; (ppb) parts per billion; (μ/m³) micrograms per meter cubed

Source: Massachusetts Air Quality Reports from 2019-2021, Massachusetts Department of Environmental Protection – Air Assessment Branch.

3.2.10. Noise and Vibration

Noise- and vibration-sensitive land uses include, but are not limited to, residences where people normally sleep (e.g., homes, hospitals, and hotels), institutional land uses with primarily daytime and evening use (e.g., schools, libraries, theaters, and churches), certain historic sites and parks, manufacturing facilities, and some research operations.

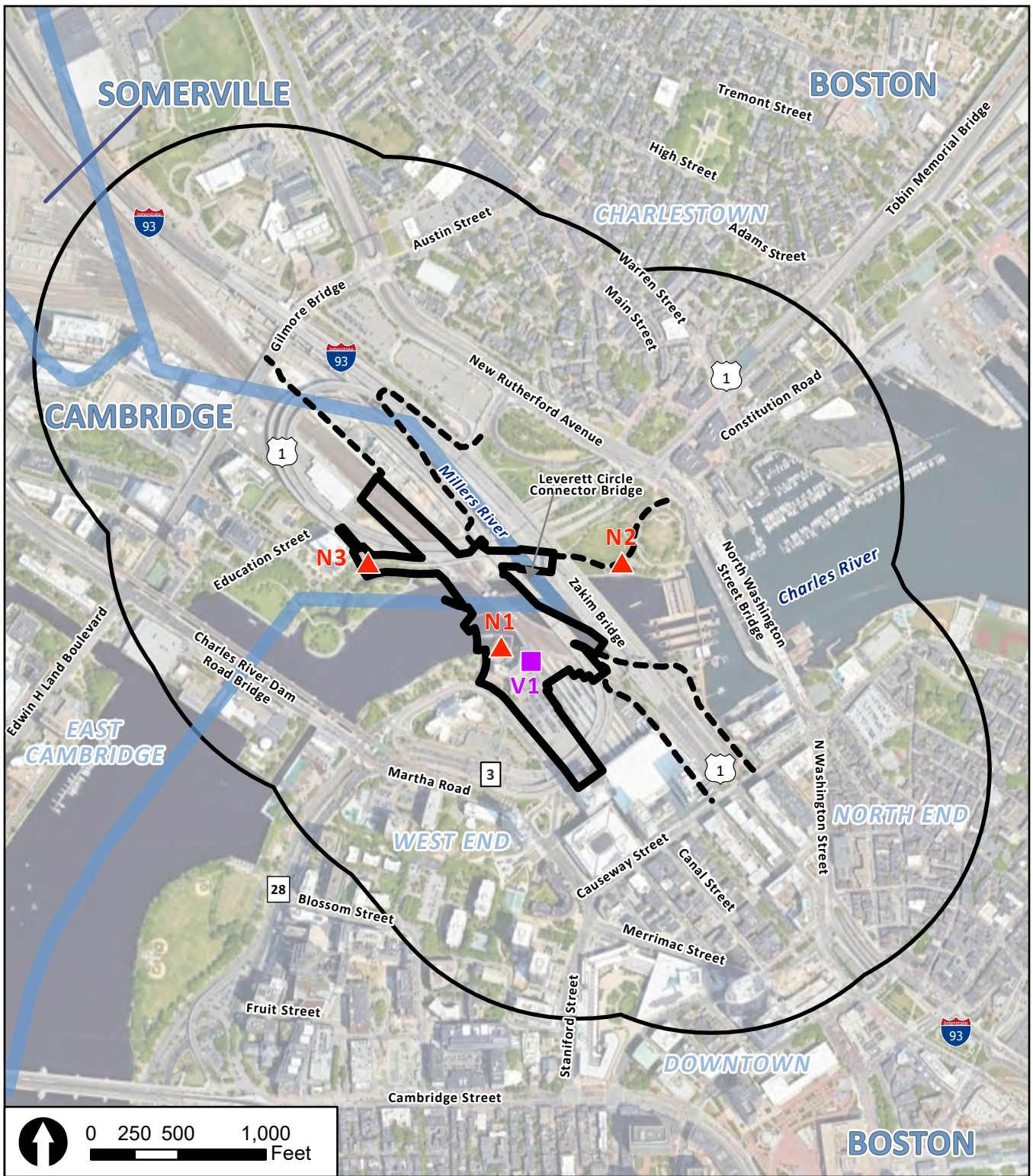
Noise- and vibration-sensitive land uses near the Project Limits include parks (that are used for passive recreation and are therefore considered sensitive to noise) and offices. Five sensitive uses are located near the Project Limits, specifically:

- North Point Park
- Paul Revere Park
- Nashua Street Park
- Cells at the Suffolk County Sheriff's Office's Nashua Street Jail
- MGH administrative building

North Point Park, Paul Revere Park, and Nashua Street Park all have passive features such as park benches; therefore, these uses are considered Category 3 FTA uses. The cells at the Suffolk County Sheriff's Office's Nashua Street Jail are considered Category 2 FTA uses because people sleep in the cells. The MGH administrative building is not considered noise-sensitive given that it does not function as a hospital or provide medical services, but rather comprises only administrative offices; however, the office building is considered in the vibration assessment because its primary use is office space.

Measurements to characterize the existing noise environment in the study area were conducted at three representative noise-sensitive receptors. Long-term (24-hour) measurements provide a direct measurement of both L_{dn} and peak transit-hour L_{eq} . One-second time histories of sound levels were measured along with audio recordings of events to identify noise from train activity. These measurements allowed the separation of noise generated from trains from other ambient sources.

One vibration measurement of existing commuter and Amtrak trains was conducted to provide detail on vibration generated by these sources (see Figure 14, "Noise and Vibration Monitoring Sites"). This information is used to characterize the levels of vibration experienced at sensitive structures throughout the corridor. The ground vibration measurement was conducted with a high-sensitivity accelerometer mounted in the vertical direction on top of steel stakes driven into soil.



Source: Massachusetts Executive Office of Technology Services and Security, MassGIS; Massachusetts Department of Transportation; STV Incorporated, 2024.

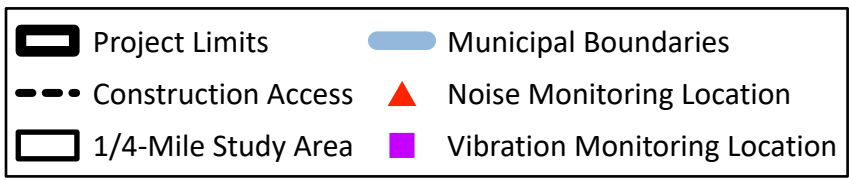


Figure 14
Noise & Vibration
Monitoring Sites



3.2.11. Hazardous and Contaminated Materials

Hazardous and contaminated materials are potentially harmful substances which may be present in soil, groundwater, or building materials and may pose a threat to human health or the environment. The two main statutes that regulate materials of primary concern are the Resource Conservation and Recovery Act of 1976 (RCRA) and the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and their respective amendments. RCRA regulates generators, transporters, and the treatment, storage, and disposal facilities of hazardous materials. RCRA defines these materials as having ignitability, corrosivity, reactivity, or toxicity. CERCLA provides a process to correct those sites already contaminated with hazardous substances.

3.2.11.1. *Phase I Environmental Site Assessment (ESA)*

An American Society for Testing and Materials (ASTM) Phase I Environmental Site Assessment (ESA) was conducted in February 2020 to identify any Recognized Environmental Concerns (RECs) within the Project Limits (see Appendix E, "Hazardous Materials"). An Environmental Database Report (EDR) Radius search did not identify any records/listings in the vicinity of the Project Limits as RECs. The Draw One Bridge and Signal Tower A were not listed in any database within the EDR Report, and no details of noncompliance with CERCLA and/or RCRA were observed within the Project Limits. However, there are potential environmental concerns with the sediment in the Charles River and soil along the riverbanks in North Point Park and Nashua Park. Tests on collected samples indicated the presence of polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), and lead, among other organic and inorganic contaminants, above MassDEP and USACE reporting limits. Further investigations will be required to understand the type and extent of potential contaminants that may be encountered during construction activities.

3.2.11.2. *Lead, Asbestos, and PCB-Containing Materials*

Limited hazardous materials inspections and sampling of the existing Signal Tower A building and Draw One Bridge were performed in December 2019, January 2020, and October 2020.³¹ The inspections found ACM and LCP at both Signal Tower A and the Draw One Bridge. Based on the age of the existing bridge, PCB-containing electrical equipment is also likely present.

3.2.12. Public Utilities and Services

The area around the Draw One Bridge is serviced by utilities typical of an urban setting. A Massachusetts Water Resource Authority (MWRA) sewer and a Cambridge Water Department waterline are located below-ground within MBTA ROW in the Project Limits. The Cambridge Water Department waterline services Signal Tower A. In addition, MBTA controls the signal system that supports the movement of MBTA Commuter Rail and Amtrak trains in and out of North Station, and which is located within the MBTA ROW within and in the immediate vicinity of the Project Limits.

³¹ MBTA *Bridge Structures Evaluation Report - Bridge No. B-16-479*, May 2020; MBTA *Hazardous Materials Inspection Report*, December 2020.

3.3. Future Without the Proposed Project (No Action Alternative)

The No Action Alternative, as described in Section 2.2, “No Action Alternative,” represents conditions in 2034 assuming that the Proposed Project would not be implemented. It provides a baseline for understanding how the Proposed Project may affect such conditions in the future (Section 4, “Probable Consequences of the Proposed Project”).

With the No Action Alternative, conditions are generally expected to resemble existing conditions, as described previously in Section 3, “Affected Environment.” There would be improvements to parklands and visual resources with the implementation of South Bank Park, though it would also result in some minor adverse effects related to community facilities and services, cultural and historic resources, commuter and passenger rail service, and marine transportation.

With the No Action Alternative, the deterioration of the Draw One Bridge would not affect land use and zoning in the study area. Existing land use and development patterns and zoning would remain in place. No major developments are expected in the study area, so with the No Action Alternative there would be no effects to socioeconomic conditions, including population and housing characteristics and economic activities. No improvements to traffic or parking infrastructure are planned with the No Action Alternative; a slight reduction in public parking is associated with the planned park project, but this does not represent a substantial change. Noise and vibration levels would resemble existing conditions. Public utilities and services would not change. Contaminated materials within the Project Limits would remain unaffected; while the hazardous and contaminated materials associated with the existing Draw One Bridge and Signal Tower A would not be addressed, there would be no new impacts.

Therefore, there would be no adverse effects to land use and zoning; socioeconomic conditions; traffic and parking; noise and vibration levels; public utilities and services; or hazardous and contaminated materials with the No Action Alternative.

3.3.1. Community Facilities and Services

No changes to existing community facilities and services are planned, so while conditions would resemble existing conditions, continued disruptions to rail service would be likely to impede access to regional community facilities in the study area for those who rely on MBTA service.

3.3.2. Parks and Recreational Resources, and Pedestrian and Bicycle Facilities

In the No Action Alternative, no adverse impacts to existing parks and recreational resources or bicycle and pedestrian facilities in the study area are expected in 2034. The development of South Bank Park would instead expand park and recreational resources in the study area.

3.3.3. Cultural and Historic Resources (Section 106 Consultation)

The No Action Alternative would not result in the demolition of the existing Draw One Bridge and Signal Tower A, so there would be no impacts to archaeological or historic architectural resources. Ongoing deterioration of the bridge and building, however, could require remedial measures that might be considered to diminish their integrity of materials and design and thereby cause an adverse impact.

3.3.4. Visual and Aesthetic Resources

With DCR's planned development of the new South Bank Park, the No Action Alternative would include improvements to the existing visual and aesthetic character of the area by transforming existing surface parking to parkland and enhance cyclists' and pedestrians' experience of the public realm on the south bank of the Charles River. With South Bank Park developed, pedestrian accessibility in the vicinity of Gridley Locks will have expanded toward the Project Limits, with direct views of the Project Limits from nearer locations.

3.3.5. Natural Resources

As part of the "MBTA North Station Platform F Extension and Ancillary Improvements Project," a drainage system would be implemented to accommodate stormwater at North Station's Platform F and the two station tracks serving the platform. This system will tie into the existing drainage system at the adjacent MGH property.

In addition, current projections for sea level rise suggest that the Boston Harbor elevation will reach the Charles River Dam elevation between 2080 and 2100, which would pose a flood risk to the existing Draw One Bridge and Signal Tower A with the No Action Alternative.³²

3.3.6. Transportation

Current marine conditions would not be altered, but as the bridge ages, required maintenance and repairs are likely to increase the number and duration of channel restrictions and closures, affecting commuter and passenger rail service and marine transportation through the navigational channel.

Facilitating mode shift away from single-occupancy vehicles and toward transit is identified as a goal in long-term planning documents for both the City of Boston (*Go Boston 2030*³³) and the City of Cambridge (*Envision Cambridge*³⁴), as well as in MassDOT's 2050 Transportation Plan, *Beyond Mobility*.³⁵ With the No Action Alternative, the deterioration of the Draw One Bridge would likely disrupt rail service with greater frequency and longer durations than in existing conditions and, therefore, would detract from the quality and reliability of the transportation network that would support local and State goals related to mode shift.

MBTA's planned mainline track and North Station Platform transit improvements will, however, represent an improvement in transit services over existing conditions in 2034.

³² ResilientMA.org

³³ https://www.boston.gov/sites/default/files/file/document_files/2019/06/go_boston_2030_-_full_report.pdf

³⁴ <https://www.cambridgema.gov/-/media/Files/CDD/compplan/envisioncambridgefinalplan/envisioncambridgefinalreport1.pdf>

³⁵ <https://www.mass.gov/doc/massdot-beyond-mobility-full-plan/download>

4. Probable Consequences of the Proposed Project

4.1. Introduction

As the Proposed Project is not intended to change operations substantially, consideration of construction-period effects constitutes the bulk of analysis required for this EA; for that reason, and because the construction period precedes the Proposed Project's fully operational or "permanent" condition, which is assessed in Section 4.3, "Operational (Full Build) Effects," discussion of construction-period effects is provided first, followed by a brief description of operational effects.

4.2. Construction-Period Effects

4.2.1. Introduction

As described in Section 2.4, "Preferred Alternative (Proposed Project)," Proposed Project construction would begin in 2026 and be complete in 2034. This section presents an assessment of potential effects that may result from construction activities during this approximately eight-year construction period. The various activities that would occur during the construction period are generally distinct, relying on different equipment in different locations; as such, the effects of respective construction activities are also typically temporary, though they may also be permanent when resulting in lasting changes to resources. For example, as described in this section, the construction of the Proposed Project would require the demolition of two historic structures; this demolition activity, though a relatively brief part of construction, may produce temporary impacts associated with the temporary use of demolition equipment (e.g., temporary dust and noise effects), and it also would result in the permanent adverse impacts associated with the removal of two historic resources from the landscape (which would in this case be mitigated, as described below).

As described in Section 2.2.1, "Planned Projects in the Study Area," the early years of Proposed Project construction would overlap with the construction periods for other identified projects adjacent to and partly within the Project Limits for the Proposed Project, including two MBTA improvement projects and the DCR South Bank Park. The potential for combined or cumulative effects associated with this overlap in construction periods is examined in Section 4.4, "Indirect and Cumulative Effects."

4.2.2. Land Use and Zoning

4.2.2.1. *Land Use*

In contrast with the No Action Alternative, with the Proposed Project construction activities would result in some temporary direct impacts to land use features within and adjacent to the Project Limits. As described in Section 2.4, "Preferred Alternative (Proposed Project)," the construction activities would require use of certain non-MBTA properties adjacent to the Project Limits, as follows:

- Temporary use of a portion of Boston Sand & Gravel property;
- Multiple temporary closures of North Bank Bridge;
- Multiple temporary closures of three walkways (100 feet) within Paul Revere Park;
- Multiple temporary closures of three walkways (140 feet) within North Point Park;
- Multiple potential temporary closures of the DCR boat launch ramp in North Point Park;

- Temporary closure of a DCR riverfront walkway and pier (extending from and appearing as part of the adjacent riverfront walkway);
- Temporary use of a portion of the MGH administrative building parking lots;
- Temporary removal of the MGH floating dock and approach ramp; and
- Temporary use of a portion of the future South Bank Park parking and driveway area.

Further, as described in Section 2.4.3, “Construction,” access to the construction area would be provided via five access drives, two of which would extend through Paul Revere Park and the future South Bank Park. The other access drives would be provided through driveways on either side of the Boston Sand & Gravel facility, as well as a driveway extending north from North Station. The construction-period use of these access drives would be temporary and infrequent. The access drives would see up to approximately ten round trips per day, with trips concentrated in the morning and early afternoon during construction worker arrivals and departures. Each access drive would be in use for just a portion of the construction period; most would be used during three construction phases (i.e., up to approximately 56 months in total), though the access drive that extends through Paul Revere Park would only be used during Phase 1 of construction (i.e., up to approximately 31 months).

All of these properties would be restored to their original condition as part of the Proposed Project and the temporary impact would cease. Protective measures would be in place to limit public access to the Project Limits, including properties not owned by MBTA. Proposed Project construction activities would not directly affect parkland property outside the Project Limits, and the use of this parkland, which would remain open to the public, would not be significantly affected by construction activities.

In addition, MBTA would temporarily use Boston Sand & Gravel property for construction access pursuant to a license agreement executed in 2001; MBTA will continue to coordinate with Boston Sand & Gravel prior to construction and throughout the construction period to minimize impacts to its operations.

4.2.2.2. *Zoning*

The Proposed Project construction would require no changes to zoning.

4.2.2.3. *Public Policy*

The Proposed Project would be consistent with existing public policy governing the Project Limits and surrounding area.

4.2.3. Socioeconomics

4.2.3.1. *Population*

Construction of the Proposed Project would not introduce new population to the study area, though it would temporarily bring additional workers to the study area. However, the Proposed Project is intended to facilitate a more reliable and safe rail system serving the existing and future populations in the study area and beyond, as well as the regional population dependent upon MBTA and Amtrak service.

4.2.3.2. *Households*

While project construction would bring additional workers to the study area, they would not change its household characteristics as this increase in employees would be temporary and limited to work hours during the construction period.

4.2.3.3. *Demographics and Income*

While project construction would bring additional workers to the study area, they would not change its demographic or income-related characteristics as this increase in employees would be temporary and limited to work hours during the construction period.

4.2.3.4. *Transit-Dependent Populations*

Construction of the Proposed Project would not result in significant adverse effects to transit-dependent populations. As described in Section 4.2.9, "Transportation Systems," MBTA is committed to maintaining current levels of MBTA and Amtrak train service at North Station throughout Proposed Project construction, and has specified requirements that enable meeting this objective as fundamental to Proposed Project design and construction. While occasional weekend diversions to MBTA subways and buses may be required, MBTA would notify the public of any unavoidable closures and provide alternate routes for weekend rail service diversions in these instances.

4.2.3.5. *Commercial Activities*

Construction of the Proposed Project would not result in significant adverse effects to local businesses in the study area. While project construction would bring additional workers to the study area, they would not be so numerous as to significantly increase the local demand for goods or services, nor would they change its demographic characteristics. The Proposed Project would instead provide temporary benefits to the local economy through new construction jobs and construction-related spending.

Access to surrounding businesses would be maintained throughout the duration of project construction. The contractor would also coordinate with USCG to notify mariners as needed, which would minimize disruptions to commercial navigation and sightseeing tours.

4.2.4. Community Facilities and Services

With appropriate coordination and measures in place, construction of the Proposed Project would result in no significant adverse impacts to facilities and services, either within or outside the study area. Pedestrian access to all community facilities would be maintained. Temporary minor construction-period effects on community facilities and services would include the following:

- Construction of the Proposed Project would necessitate the temporary use of a portion of the MGH administrative building parking lots southwest of the Project Limits, though MBTA would coordinate with MGH regarding required easements and temporary access during construction to avoid disruption to hospital operations.
- Modifications to the North Bank Bridge may require multiple temporary closures of the boat launch ramp used by DCR, the State Police, and the Boston Duck Tours Company. If closures of the ramp are determined necessary, MBTA would coordinate these closures with each affected party to avoid impacts to their use of the ramp.

- The floating dock and approach ramp, which are owned by MGH though currently unused, would be temporarily removed for the duration of construction to allow access to the Draw One Bridge, though they would be reinstalled and restored to existing conditions following completion, in coordination with MGH.

Disruption to the Massachusetts State Police Marine Section, the Charles River Boat Company and Boston Duck Tours Company, and other commercial boaters would be minimized through close coordination with USCG to notify mariners as needed throughout the construction period.

4.2.5. Parks and Recreational Resources, and Pedestrian and Bicycle Facilities

4.2.5.1. *Parkland*

With appropriate coordination and measures in place, Proposed Project construction activities would result in no significant adverse impacts to parkland. (Refer to Section 8, "Section 4(f)," for additional information.)

Three pier foundations for the North Bank Bridge are located on MBTA property, and one (Pier 3) conflicts with the proposed railroad track construction and realignment along the MBTA ROW. To allow for construction of the Proposed Project, the North Bank Bridge would be permanently modified by increasing its height by one foot. This would require the relocation of two bridge supports, the addition of one additional support, modification of the bridge truss structure, and modification and lengthening of the bridge landings in North Point Park and Paul Revere Park. This work would require multiple closures of the pedestrian bridge of up to two weeks, totaling one month over a six-month period.

Temporary disturbance of and access to Paul Revere Park would be required for modifications to the North Bank Bridge east landing. Construction at the North Bank Bridge abutment would require the temporary use of approximately 1.08 acre of pedestrian and bicycle pathways as a construction access drive, while jacking at the abutment and regrading would result in disturbance to just a 0.08-acre area. Temporary disturbance of and access to North Point Park would also be required for modifications to the west landing. Construction would require the temporary use of approximately 0.84 acre of pedestrian and bicycle pathways for construction access, while construction activities would result in disturbance to just a 0.17-acre area. Overall, the North Bank Bridge modification would require multiple temporary closures of three walkways (100 feet) within Paul Revere Park and three walkways (140 feet) within North Point Park for up to two weeks at a time, totaling one month over a six-month period.

Some trees and shrubs within both Paul Revere Park and North Point Park would be temporarily removed during construction. A detour from North Point Park to access Paul Revere Park would be developed in coordination with DCR.

A 0.514-acre temporary easement would be required at the proposed South Bank Park, on the southern bank of the Charles River, for use as a construction access drive for approximately three years. The walkway along the riverfront would be closed during delivery of construction materials.

Further, construction of the Proposed Project would require the temporary closure of the DCR pier (extending from and appearing as part of the adjacent riverfront walkway) southwest of the Draw One Bridge for construction access to the south trestle. Trees on the pier would be removed during

construction. The adjacent riverfront walkway would also be temporarily closed during material deliveries.

4.2.5.2. *Pedestrian and Bicycle Facilities*

Demolition of the existing south trestle would require the permanent removal of the public sidewalks located along both the east and west sides of the Draw One Bridge south trestles. As described in Section 3.2.4.2, “Pedestrian and Bicycle Facilities,” these sidewalks are eight feet wide and approximately 255 feet in length on the west side and 420 feet in length on the east side and terminate just before the navigable Charles River channel.

The required modification of the North Bank Bridge would also require multiple closures of up to two weeks, totaling one month over a six-month period. Given that the North Bank Bridge landings are located within North Point Park to the west and Paul Revere Park to the east, modification of the bridge would also result in multiple temporary closures of three walkways (100 feet) within Paul Revere Park and three walkways (140 feet) within North Point Park for up to two weeks at a time, totaling one month over a six-month period. A detour from North Point Park to access Paul Revere Park would be developed in coordination with DCR.

A 0.11-acre temporary easement would be required at the DCR pier (extending from and appearing as part of the adjacent riverfront walkway) north of the MGH administrative building and Nashua Street Park for access to the existing Draw One Bridge south trestle for approximately five years, resulting in the temporary closure of the pier to pedestrians and cyclists. The riverfront walkway between the DCR pier and the fence on the west side of the MBTA tracks would be briefly and temporarily closed during material deliveries. Multiple deliveries could occur each day through this access point. No detour is proposed during these intermittent closures given that the walkway ends at a fence at the western edge of the MBTA property.

4.2.6. Historic and Cultural Resources

4.2.6.1. *Archaeology*

While the potential for intact archaeological deposits within the APE is considered to be low, MBTA will develop an Unanticipated Discoveries Plan that will be followed if any unanticipated archaeological and/or human remains are encountered during construction. The Unanticipated Discoveries Plan will be included in construction contract specifications and documentation.

4.2.6.2. *Historic Architectural Resources*

As described in Section 2.4, “Preferred Alternative (Proposed Project),” construction of the Proposed Project would require the demolition of the NRHP-eligible Draw One Bridge and Signal Tower A, resulting in a permanent adverse effect to historic resources that would continue throughout the operational (full-build) condition of the Proposed Project.

4.2.6.2.1. [Section 106 Consultation and Determination of Adverse Effect](#)

Under Section 106 of the NHPA, the proposed full demolition of the bridge and signal tower would constitute an adverse effect on a historic property because it would result in the “physical destruction of

or damage to all or part of the property.” The SHPO concurred with this finding in a letter dated June 12, 2023.

Most recently, FTA met with the Section 106 consulting parties on May 2, 2024, May 30, 2024, and September 5, 2024, to discuss the proposed mitigation measures in the draft MOA, described in Section 6.2.1.1, “Section 106 Memorandum of Agreement.”

4.2.7. Visual and Aesthetic Resources

Construction of the Proposed Project would include the use of barges, cranes, and other water surface equipment that would be visible to park users on either side of the Charles River. It would also introduce construction equipment, trucks, fencing, and lighting at the proposed construction staging and laydown areas. Construction activities may result in an adverse visual impact to some users of the nearby waterfront parks and North Bank Bridge looking toward the river, as well as to recreational boaters, but this effect would be momentary, and the construction condition would be temporary. Therefore, the construction-period effects to visual and aesthetic resources would not be significant.

4.2.8. Natural Resources

4.2.8.1. *Soils*

Construction of the Proposed Project would require excavation and grading that would alter local topography. In-water activities would include removal of existing timber piles, removal of existing steel and concrete caissons and piers, installation of timber and steel piles and drilled shafts, and minor riverbed sediment dredging.

4.2.8.2. *Wetlands and Water Resources*

Construction would require both dredging and filling within the Charles River, which would result in sediment disturbance and the production of dredge spoil. Filling would consist primarily of installation of drilled shafts and tremie pour³⁶ behind “king” pile abutments along the riverbanks. The estimated total temporary surface area disturbance of the riverbed associated with demolition and construction is approximately 30,912 square feet (0.71 acre), and the estimated total area of permanent fill in the riverbed would be approximately 11,411 square feet (0.26 acre). If determined necessary, cofferdams would be installed to support the removal of caissons supporting the former bridge piers and minimize disturbance and dispersal of river sediments. Cofferdam installation would be conducted from a barge prior to the construction of the temporary trestles, and any cofferdams would be removed following caisson removal.

Given the slow water flow velocities and the impounding nature of the river’s lock and dam system, it is not anticipated that the Boston Inner or Outer harbors would experience elevated total suspended sediment levels. Multiple discrete dredging events would occur over the construction duration, but no single dredging event is expected to generate a significant amount of sediment.

These temporary and permanent construction activities will require a USACE Section 404 permit and a MassDEP Section 401 Water Quality Certification (WQC).

³⁶ Tremie pour is a method to pour concrete underwater to lessen concrete washout from the surrounding water.

4.2.8.3. *Floodplains*

Construction of the Proposed Project would not result in temporary or construction-related significant adverse effects related to floodplains. The Draw One Bridge and Signal Tower A are just upstream of the Charles River Gridley Locks, making them vulnerable to coastal storms. As such, construction trestles would be built above the current 500-year flood elevation, and any construction equipment and materials stored temporarily within the floodplain would be removed in the event of a flood warning.

4.2.8.4. *Coastal Zone*

Construction of the Proposed Project is not anticipated to result in temporary or construction-related significant adverse effects related to the coastal zone, given that it would be consistent with Massachusetts coastal program policies (e.g., to reduce threats related to coastal hazards). A Federal Consistency Review will be prepared and submitted to CZM during the Proposed Project's final design phase to facilitate CZM's review and concurrence prior to construction.

4.2.8.5. *Ecological Resources*

No construction-related impacts to or loss of significant upland habitat are anticipated. The removal of some scrub/shrub vegetation along the existing railroad embankment may be necessary to accommodate construction access, but these areas have little value as terrestrial habitat and, as such, any permanent impacts from construction activities to terrestrial natural resources are expected to be minor. Impacts to vegetation at the North Bank Bridge within North Point Park and Paul Revere Park would be temporary, as approach walkway grades are adjusted.

The Proposed Project has been designed and construction methods have been selected to minimize impacts (e.g., drilled shafts that limit sediment disturbance, existing piles below the mudline to remain undisturbed, as possible, etc.). Most existing piles would be cut at the mudline to limit sediment disturbance associated with many small sediment disturbance events if the piles were cut below the mudline. Construction activities would adhere, to the extent practicable, to time-of-year restrictions set by fisheries agencies for certain in-water activities and maintenance of pathways for fish passage. Construction would also require a Sediment and Water Quality Monitoring Plan with turbidity action levels. Therefore, the Proposed Project is anticipated to result in only minor impacts to migratory fish species and would not affect population levels of any species. As described in Appendix F, "Endangered Species Act Section 7 Permitting," and Appendix G, "Essential Fish Habitat (EFH) Assessment," construction of the Proposed Project would not likely result in adverse impacts to water quality, aquatic habitat, or aquatic biota.

~~FTA is in coordination with federal (USACE, NOAA Fisheries, USFWS) and state (MassDEP, Massachusetts Division of Marine Fisheries [DMF]) agencies to determine potential impacts to federally and state-listed rare, threatened, and endangered species and critical habitat. However, Construction of the Proposed Project is not expected to result in temporary or construction-related significant adverse effects to these species or critical habitat, given that all work would be completed within previously disturbed, highly developed areas with a low likelihood of species or habitat presence. In a letter dated January 10, 2025, NOAA Fisheries provided concurrence with FTA's conclusion that the Draw One Bridge Replacement Project would not be likely to adversely affect any ESA-listed species or designated critical habitat (refer to Appendix F). Similarly, in a letter dated January 13, 2025, NOAA Fisheries indicated that the EFH~~

assessment for the Proposed Project included sufficient minimization and avoidance measures (refer to Appendix G).

4.2.9. Transportation Systems

4.2.9.1. *Rail Transportation*

4.2.9.1.1. *Commuter and Intercity Rail Service*

As described in Section 1.2.4, “Project Requirements and Goals,” and Section 4.2.3.4, “Transit-Dependent Populations,” MBTA is committed to maintaining current levels of MBTA and Amtrak train service at North Station throughout Proposed Project construction, and has specified requirements that enable meeting this objective as fundamental to Proposed Project design and construction. MBTA studies in preparation for the design and construction planning confirmed that 1) maintaining weekday service on four active bridge tracks over the Charles River and eight active tracks at North Station, and 2) maintaining weekend service on two active tracks over the Charles River and five active tracks at North Station would accommodate current MBTA and Amtrak rail service throughout the construction period.

The Proposed Project has been expressly designed to facilitate construction staging that 1) maintains weekday service and operations on four bridge tracks over the Charles River and eight active tracks at North Station, and 2) maintains two active tracks over the Charles River and five active tracks at North Station on weekends. Therefore, with current levels of service maintained throughout construction, MBTA and Amtrak rail passengers served by North Station are not expected to experience any substantial disruptions (e.g., schedule changes, delays) as a result of the Proposed Project. As connections are made between the new tracks and existing mainline tracks for signal testing, temporary disruptions to MBTA and Amtrak rail service may occur, which could require occasional weekend diversions to MBTA subways and buses; however, MBTA would notify the public of any unavoidable closures and provide alternate routes for weekend rail service diversions in these instances.

4.2.9.1.2. *Freight Rail Service*

Freight rail service in the study area is limited to Boston Sand & Gravel and CSX, which may occasionally utilize the BET, though any freight activity would be north of the Project Limits. Track cutovers and signal work would be scheduled to avoid interruptions to freight service.

4.2.9.2. *Marine Transportation*

Construction activities and sequencing in the Charles River would minimize conflicts with navigational traffic. The navigation channel may be temporarily closed, or its width reduced, to allow for staging of construction barges at least five times throughout construction; these closures would be up to approximately one week at a time, totaling up to approximately two months. However, MBTA would coordinate the timing and length of these temporary channel closures with USCG and DCR, and mariners would be notified as needed. Safety measures (e.g., lighting on barges) would be implemented in coordination with USCG.

4.2.9.3. *Transit, Traffic, Parking*

4.2.9.3.1. MBTA Rapid Transit (Subway) Service

Construction of the Proposed Project would not result in subway service outages on the Green or Orange lines, nor would it affect weekday service. However, occasional weekend-only interruptions to MBTA and Amtrak commuter rail service would be accommodated, in part, through reliance on these existing subway services. As interruptions would be infrequent and limited in duration, any increase in subway service utilization associated with these weekend diversions is anticipated to be minimal and would not result in significant adverse impacts.

4.2.9.3.2. MBTA Bus Service

Given that construction of the Proposed Project would not require traffic detours or changes to roadway configurations (as described further below), it would not affect weekday service on local bus routes or EZRide Shuttle operations. However, weekend-only interruptions to MBTA and Amtrak commuter rail service with construction of the Proposed Project would be accommodated, in part, through reliance on the existing public bus service (i.e., MBTA Routes 4, 92, 93, and 111). Any increase in public bus service utilization associated with these weekend diversions is anticipated to be minimal and would not result in significant adverse impacts.

4.2.9.3.3. Vehicular Traffic

The Proposed Project would not require traffic detours, nor would it result in modifications to existing roadway configurations. As described in Section 2.4.3, "Construction," construction-period access and material delivery would generally be provided by barge and rail, though truck routes would also be used, with access to the construction area provided via five access drives. Two of these access drives would extend through parks adjacent to the Project Limits, while the others would be provided through driveways on either side of the Boston Sand & Gravel facility as well as a driveway extending north from North Station.

Traffic and transportation operations in the study area may be affected by the daily movement of construction equipment, materials, and construction workers to and from the Project Limits. While there could be limited short-term increased congestion in the study area, the construction-period use of the access drives would be temporary and infrequent. The access drives would see up to approximately ten round trips per day, with trips concentrated in the morning and early afternoon during construction worker arrivals and departures. Further, to avoid unnecessary construction-related traffic, construction vehicles would be limited to designated routes and kept in a designated staging area.

4.2.9.3.4. Parking

Construction of the Proposed Project would not result in impacts to on-street parking. However, a 0.25-acre temporary easement would be required at the MGH administrative building parking lots for construction staging for approximately 2.5 years, which would result in the temporary displacement of up to approximately 30 of 512 parking spaces. A 0.514-acre temporary easement would be required at the proposed South Bank Park for construction access for approximately three years, which would result in the temporary displacement of approximately six of seven boat trailer parking spaces, as well as the displacement of all ten car parking spaces that would be provided at the proposed park.

4.2.10. Air Quality and GHG Emissions

Construction of the Proposed Project would generate emissions from diesel- and gasoline-powered construction equipment, diesel-powered generators, diesel trucks, marine-based diesel equipment and tugboats, and heavy-duty trucks transporting excavated material and delivering construction materials. Building demolition, ground clearing, site preparation, grading, transportation and stockpiling of materials, and on-site equipment movement could result in fugitive dust emissions.

The peak year of construction (defined as the year in which the largest amount of pollutant emissions occurs) would be 2027. An assessment compared the emissions inventory of peak-year construction to *de minimis* thresholds to evaluate whether a General Conformity determination, if required, would indicate potential air quality effects adverse to NAAQS attainment (see Appendix H, “Technical Report: Air Quality”). Based on this analysis, MBTA estimates that fewer than 10,000 tons per year of CO₂ would be generated from construction activities. The EPA major source threshold for CO₂ is 100,000 tons per year.

As such, Proposed Project construction emissions are well below the EPA major source thresholds for greenhouse gases (GHGs). Given this small contribution, GHG emissions associated with construction of the Proposed Project would have a negligible impact on climate change and would not represent a significant adverse impact to air quality compared to the No Action Alternative.

4.2.11. Noise and Vibration

The broad steps outlined in FTA’s Transit Noise and Vibration Impact Assessment Manual (FTA 2018) were followed to evaluate the Proposed Project, and construction noise for each stage was calculated using specific source levels and methods provided in the Federal Highway Administration Roadway Construction Noise Model (RCNM). The screening procedure was used to identify which noise- or vibration-sensitive uses could potentially be affected by the Proposed Project and the detailed noise/vibration impact assessment procedures were used to identify potential noise and vibration impacts. The construction noise criteria applicable to the Proposed Action are based on City of Boston noise limits.³⁷ The Proposed Project construction activities are conservatively analyzed in four stages for each of which it is would be constructed in four stages. ~~The analysis conservatively assumed~~s that all construction equipment, except for pile driving, ~~for each stage~~ would operate simultaneously at the construction location closest to each receptor point. Pile driving is allowed as long as it occurs during weekdays between the hours of 7:00 AM and 6:00 PM. Based on the results of the analysis, the Proposed Project would result in construction noise impacts that would require mitigation.

Temporary construction vibration levels were predicted for the most vibration-intensive equipment used in each project stage, such as pile drivers. The analysis conservatively assumes that all buildings are Category III for the damage assessment.³⁸ Annoyance thresholds are 80 VdB for places where people

³⁷ While Cambridge regulates construction noise via their noise ordinance, which limits construction noise to certain time periods that vary for weekends, Saturdays and holidays, and Sundays, the City of Boston’s criteria are associated with quantitative impact threshold metrics and are therefore more readily applicable to analysis. However, the City of Boston does not regulate pile driving.

³⁸ Vibration Category 3 comprises institutional uses, including buildings with primarily daytime and evening use. This category includes schools, libraries, and churches.

sleep, 83 VdB for institutional uses, and 84 VdB for offices. Construction vibration predictions indicate that impacts would occur during all construction stages and would require mitigation.

However, as described in Appendix I, “Technical Report: Noise and Vibration,” while the analysis assumptions are conservative, the primary cause of noise and vibration impacts would be the use of heavy equipment and pile driving, which would progress across the Project Limits and would not occur continuously throughout the construction period.

4.2.12. Hazardous Materials

Construction of the Proposed Project would involve demolition of the existing Draw One Bridge and Signal Tower A building, excavation, ground disturbance, and removal and disposal of soil and river sediments. Construction activities would be performed in accordance with an Excavated Materials Management Plan, a Groundwater Management Plan, and a Health and Safety Plan (HASP).

Areas of contaminated soil and/or groundwater may be encountered during construction. Adverse effects would be avoided by ensuring that construction activities are performed in accordance with an Excavated Materials Management Plan, a Groundwater Management Plan, and a HASP. These plans will be included in construction contract specifications and would be prepared by the contractor and reviewed and approved by MBTA prior to the start of construction. Potentially contaminated materials would be characterized and disposed of in accordance with applicable regulations. If any residual contaminated materials remain on-site following construction, these materials will be managed in accordance with the Massachusetts Contingency Plan (MCP) and/or other applicable federal, state, and/or local regulations.

With the implementation of these plans, the Proposed Project’s construction activities would address issues related to hazardous and contaminated materials that may be encountered during construction within the Project Limits, and therefore, like the No Action Alternative, the Proposed Project would not result in adverse effects associated with contaminated materials during construction.

4.2.13. Public Utilities and Services

The Proposed Project is not anticipated to require temporary construction-period relocations of any public or private utilities. Any disruption of utilities, if determined necessary as design advances, will be coordinated with appropriate parties in advance of construction activities to prevent service interruptions.

4.2.14. Summary of Construction-Period Effects and Comparison to No Action Alternative

Therefore, in contrast with the No Action Alternative, the Proposed Project may result in construction-period impacts to land use, socioeconomic conditions, community facilities and services, parks and recreational resources, pedestrian and bicycle facilities, visual and aesthetic conditions, natural resources, rail transportation and transit, marine transportation, noise and vibration, vehicular traffic, parking, and hazardous materials; however, any of these Proposed Project construction-period impacts would be minor and temporary, not significant or permanent. The demolition of the historic Draw One Bridge and Signal Tower A, which would occur as part of and to facilitate construction of the Proposed Project, would be a permanent impact that would not otherwise occur with the No Action Alternative. (See Section 6, “Summary of Impacts, Commitments, and Required Mitigation Measures,” for proposed avoidance and minimization measures.)

4.3. Operational (Full Build) Effects

4.3.1. Introduction

The Proposed Project would not result in any permanent direct effects to land uses or zoning within the Project Limits in 2034, similar to the No Action Alternative. It would continue existing transportation land uses and be consistent with existing zoning regulations. It would not introduce new residents or employees to the study area, so as with the No Action Alternative, existing conditions related to its socioeconomic character would remain the same. The Proposed Project would not directly affect existing community facilities or emergency or medical services in the study area, though it would require permanent acquisition of an approximately 0.003-acre (131-sf) portion of currently unmaintained, sparsely vegetated land directly adjacent to the MGH administrative building. The APE contains no known archaeological resources, so there would be no effects with the Proposed Project.

Because the proposed bridge would be designed to exceed current 100-year and 500-year flood elevations in both the closed and open positions, and its design would reflect MBTA's drainage criteria for projected precipitation frequencies and amounts, adverse impacts to the floodplain and displacement of flood waters to areas adjacent to the Project Limits are not anticipated. Where feasible and practicable, all electrical and mechanical equipment would be located above the DFE, submersible equipment would be used, and flood walls would be erected to protect the proposed new Tower A building.

No adverse impacts to marine transportation would occur with the Proposed Project. It would not result in any permanent impacts to the Charles River Boat Company or the Boston Duck Tours sightseeing tours, other commercial navigation, or recreational navigation. Rather, it would allow maritime traffic to proceed along the river unimpeded. The Proposed Project would not result in permanent impacts to the Massachusetts State Police Marine Section operations; their smaller vessels would continue to be able to pass beneath the Draw One Bridge without requiring a bridge opening.

The Proposed Project would result in no permanent direct effects to roadways, transit (subway) routes or parking facilities or on-street parking in the study area. It would introduce no permanent modifications to existing roadway configurations or permanent off-site impacts to traffic and parking. While it would improve safety and reliability, the Proposed Project would make no significant changes to train operations and would therefore not result in any air quality impacts due to operational emissions.

In its operational condition, the Proposed Project would not be expected to result in any adverse impacts related to contaminated materials, as it would not involve any activities such as ground disturbance or demolition that would disturb and expose such materials.

The Proposed Project would replace rail infrastructure and Signal Tower A within the MBTA ROW and would not require permanent relocations of any public or private utilities.

4.3.2. Parks, Recreational Resources, and Pedestrian and Bicycle Facilities

The Proposed Project would result in minor permanent impacts to parks and recreational resources. (Refer to Section 8, "Section 4(f)," and Appendix J, "Section 4(f)," for additional information.)

The existing North Bank Bridge landings in North Point Park and Paul Revere Park would be shifted slightly, though would remain within DCR-owned property and serve the same recreational use. Approximately

0.019 acre (828 sf) of the proposed South Bank Park would be required for the installation of a new manhole in approximately the same location as an existing manhole. However, the Proposed Project would not impede access to North Point Park, Paul Revere Park, or the proposed South Bank Park, nor would it result in any permanent indirect significant adverse impacts to these parks.

The Proposed Project would require the permanent removal of the public sidewalks along both the east and west sides of the existing Draw One Bridge south trestles, though these sidewalks terminate just before the navigable Charles River channel and, therefore, do not provide access to pedestrian or bicycle facilities north of the river. Additionally, three pier foundations for the North Bank Bridge are located on MBTA property, and one (Pier 3) conflicts with the proposed railroad track construction and realignment along the MBTA ROW. To allow for construction of the Proposed Project, the North Bank Bridge would be permanently modified by increasing the bridge height by one foot; however, with the Proposed Project the function of the North Bank Bridge and its general structure, form, and appearance would be fundamentally the same as they would be without the Proposed Project.

4.3.3. Historic and Cultural Resources

As described in Section 4.2, “Construction-Period Effects,” construction of the Proposed Project would include demolition of the NRHP-eligible Draw One Bridge and Signal Tower A, which would constitute an adverse effect to historic resources because it would result in the “physical destruction of or damage to all or part of the property.” The SHPO concurred with this finding in a letter dated June 12, 2023. Given the permanent nature of this effect, it would continue throughout the operational (full-build) condition of the Proposed Project.

See Section 6, “Summary of Impacts, Commitments, and Required Mitigation Measures,” for a description of proposed mitigation measures.

4.3.4. Visual and Aesthetic Resources

The Proposed Project would require the demolition of both the historic Draw One Bridge and Signal Tower A; as such, these landscape elements would no longer be present in the landscape, nor would they be components of existing views in the study area. The Proposed Project would introduce a new rail bridge where the historic Draw One Bridge currently exists and a new signal tower in approximately the same position as the existing Signal Tower A. Thus, the Proposed Project would introduce similar types of landscape elements in approximately the same locations as they would exist in the No Action Alternative, thereby changing the appearance of the Project Limits but not substantially altering viewsheds.

The viewsheds providing views of the Project Limits from public park areas in the western portion of the study area, as described for existing conditions and the No Action Alternative, would continue to afford views of the newly constructed Draw One Bridge and the Zakim Bridge behind it. Views from the east of and toward the Project Limits would continue be limited by the Zakim Bridge, though new publicly accessible parkland (South Bank Park) will have introduced expanded publicly accessible views toward the Project Limits. All of the viewsheds that would exist in the future without the Proposed Project would remain in the future with the Proposed Project. However, the pedestrian walkways along the southern trestles of the existing Draw One Bridge would no longer be present to afford westward pedestrian views along the river from above the water; the Proposed Project would not include similar pedestrian access at this location.

The opportunity to appreciate the aesthetic environs characterized by the Charles River and the bridges that cross it at this location would not be significantly altered for any park visitor, mariner or boater, or for rail passengers or automobile drivers, whose views would be minimally altered given the brevity of available views while moving.

Finally, FTA and MBTA have worked with the Section 106 consulting parties to develop a bridge design that is intended to complement the Zakim Bridge and to contribute to a shared aesthetic character. Therefore, although the visible form and details of the new bridge and signal tower introduced with the Proposed Project would differ from existing conditions and the No Action Alternative, the Proposed Project would introduce aesthetic unity to the group of bridges that, together with the Charles River, define the aesthetic conditions of the study area landscape. In addition, Section 106 mitigation measures (see Section 6.2.1, “Mitigation for the Loss of Historic Architectural Resources”) may offer further opportunities to enrich visitors’ understanding of the history of the landscape and its ongoing evolution.

4.3.5. Natural Resources

Local soils and topography would be permanently altered by the excavation and grading required to construct the proposed Draw One Bridge and rail approaches. Removal of existing timber piles (mostly at the mudline), removal of existing steel and concrete caissons and piers (several feet below the mudline), installation of timber and steel piles and drilled shafts, and minor riverbed sediment dredging, all within the footprint of the existing and former Draw One Bridge spans, would permanently alter the bed of the Charles River, but given the history of disturbance and development in this location, no significant adverse impacts are anticipated.

In addition, the drainage system implemented in the No Action Alternative as part of the “MBTA North Station Platform F Extension and Ancillary Improvements Project” would be incorporated into the Proposed Project’s drainage system for the south trestles, with a new outfall along the south bank of the Charles River.

As portions of the Project Limits are located within the 100-year floodplain (1 percent annual-chance flood event), the Proposed Project is subject to the provisions of Executive Order 11988 and USDOT Order 5650.2 on Floodplain Management. The Proposed Project would not be considered a significant encroachment onto the floodplain because it comprises the replacement of MBTA infrastructure already located within a floodplain and would not result in adverse impoundment, diversion, higher flood levels, or contamination of floodwaters. Further, given the minor modifications to the floodplain that would result with the Proposed Project, and its location within the already lock-controlled Charles River basin and upstream of the Gridley Locks, adverse impacts to the floodplain or flooding of areas adjacent to the study area are not expected.

Although the Proposed Project has been designed in accordance with MBTA’s Flood Resiliency Design Directive and Drainage Design Directive, and with a DFE of 13.1 feet, sea level rise would remain a flood risk to the proposed new Draw One Bridge and Signal Tower A given track profile limitations.

4.3.6. Noise and Vibration

As described in Section 4.2.11, “Noise and Vibration,” the steps described in FTA’s Transit Noise and Vibration Impact Assessment Manual (FTA 2018) were followed to evaluate the Proposed Project.

Changing the railroad alignment would shift commuter and Amtrak trains closer to some noise-and vibration-sensitive receptors (e.g., the MGH administrative building, which comprises only administrative offices, not medical uses), though this change in alignment is not expected to result in exceedances of the applicable impact criteria. As described in Appendix I, “Technical Report: Noise and Vibration,” predicted operational noise levels at receptors included in this analysis are provided, with a comparison to the moderate and severe impact thresholds identified based on the existing sound level at each receptor. Similarly, predicted operational vibration levels at receptors included in this analysis are provided with a comparison to the impact thresholds based on the use at each receptor. Based on these results, the Proposed Project would not result in operational noise or vibration impacts.

4.3.7. Summary of Operational (Full Build) Effects and Comparison to No Action Alternative

Therefore, in contrast with the No Action Alternative, the Proposed Project would introduce changes to views, small portions of existing parklands, soils and topography within the Project Limits, and the proximity of rail lines to some noise-and vibration-sensitive receptors, though these changes would not constitute significant adverse impacts. As with the No Action Alternative, however, the South Bank Park would expand park and recreational resources in the immediate vicinity of the Proposed Project, thus improving the visual and aesthetic character of the area.

The APE contains no known archaeological resources, so as with the No Action Alternative, there would be no effects with the Proposed Project. However, in contrast to the No Action Alternative that would retain the existing Draw One Bridge and Signal Tower A, the Proposed Project would result in a significant adverse effect to these historic architectural resources through their demolition. This significant adverse effect is mitigated through Section 106 consultation, which concluded with the development of an MOA among FTA, MBTA, SHPO/MHC, the Boston Office of Historic Preservation, the Cambridge Historical Commission, and DCR. The final executed draft MOA, ~~which is being circulated for signature,~~ is included in both Appendix B, “National Historic Preservation Act Section 106,” and ~~The final executed MOA will be included in the NEPA decision document.~~

In its operational condition, the Proposed Project would result in no adverse impacts related to land use and zoning; socioeconomic conditions; community facilities and services; stormwater management in the floodplain; traffic and parking; marine transportation; air quality and GHG emissions; hazardous and contaminated materials; or public utilities and services.

The Proposed Project would enhance the reliability of MBTA and Amtrak rail service and provide more reliable access to employment centers, educational institutions, cultural and tourism sites, and commercial centers throughout New England, compared to either existing conditions or the No Action Alternative, thereby supporting the region’s economy with greater efficiency. It would better secure permanent, long-term benefits to local communities than can be achieved without the Proposed Project. Further, the Proposed Project would improve reliability for maritime traffic, which would benefit local water-dependent businesses and regional trade. These effects would improve socioeconomic conditions in the study area relative to the No Action Alternative.

Contrary to the No Action Alternative, the Proposed Project would have a positive permanent impact on rail service. It would benefit commuter and intercity rail service by replacing the Draw One Bridge to keep the system in a state of good repair, improving the reliability and safety of rail service and minimizing delays. Therefore, conditions with the Proposed Project would represent an improvement over existing

conditions and the No Action Alternative, both of which represent a continuation of infrastructure deterioration, operational deficiencies, and safety concerns.

The Proposed Project would decrease the current unlimited Draw One Bridge clearance to a minimum vertical clearance of 32.2 feet and a 45-foot horizontal clearance, consistent with clearances provided both upstream and downstream of the Draw One Bridge. The United States Coast Guard (USCG) has made a preliminary determination that the replacement bridge with the proposed clearances will meet the current and future navigation needs. Therefore, the proposed replacement spans would provide sufficient vertical and horizontal clearance for marine traffic and improve reliability of navigation beneath the bridge, and thus, the future with the Proposed Project would represent an improvement over existing conditions and the No Action Alternative, both of which represent a continuation of infrastructure deterioration, operational deficiencies, and safety concerns.

The Proposed Project has the potential to reduce future regional vehicle miles traveled (VMT) compared with existing conditions by facilitating a more reliable rail system that could persuade current drivers to use rail. MBTA projects that service improvements facilitated by the Proposed Project could generate more than three million additional annual commuter passenger trips by 2040, thereby reducing regional vehicle trips and associated emissions.

The Proposed Project is intended to replace and improve MBTA infrastructure, including power (e.g., new generator adjacent to Tower A, new power feeder to connect to Tower A) and signal equipment, as well as Signal Tower A itself, allowing for the relocation of existing controls and electrical equipment from the temporary control house to the new building. The signal system, including all wayside devices, cables, and infrastructure, would be updated and/or modified to support the new track and signal system configuration. It would also improve the stormwater drainage system within the MBTA ROW by collecting runoff from the bridge and Tower A and directing it through an infiltration and detention system, tying into new outfall locations at the Charles River and the Millers River. Contrary to the No Action Alternative, the Proposed Project would improve both the MBTA signal system and stormwater drainage system in the MBTA ROW. With these improvements to the stormwater drainage system, the Proposed Project is not expected to result in adverse impacts to water quality. This would be an improvement over existing conditions that allow runoff from the trestles to drain directly into the Charles River.

The Proposed Project would introduce a new bridge structure and Tower A building free of asbestos, lead, PCBs, and other hazardous materials. This is in contrast to the No Action Alternative, with which issues related to hazardous and contaminated materials within the Project Limits continue as in existing conditions. Beyond addressing the existing hazardous and contaminated materials within the Project Limits, however, the Proposed Project, like the No Action Alternative, would result in no new adverse effects related to hazardous and contaminated materials.

Permanent relocations of public or private utilities would not be required with the Proposed Project; the Cambridge Water Department waterline would continue to service the new Tower A. As such, like the No Action Alternative, the Proposed Project would have no significant permanent impact on public utilities and infrastructure.

4.4. Indirect and Cumulative Effects

The CEQ regulations implementing NEPA, set forth in 40 CFR Part 1500-1508, require federal agencies to consider the environmental consequences of their actions, including not only direct effects, but also indirect and cumulative effects.³⁹

Indirect effects are those that are “caused by an action and are later in time, or farther removed in distance, but are still reasonably foreseeable” (40 CFR 1508.8). Cumulative effects result from the incremental consequences of an action (the project) when added to other past, present and reasonably foreseeable future actions (40 CFR 1508.7). The cumulative effects of an action may be undetectable when viewed in the individual context of direct and even indirect impacts, but when added to other actions can eventually lead to a measurable environmental change. Cumulative effects are the net result of both the project and the other improvements planned in, near, and around the project.

4.4.1. Indirect Effects

As stated in Section 1.2.3, “Project Purpose,” the purpose of the Proposed Project is to replace the current two-span bridge – which is classified as both functionally and operationally obsolete and approaching the end of its useful life – with a new three-span bridge in approximately the same location, thus providing an additional two tracks across the Charles River connecting to North Station, as well as to replace the existing signal tower with a new Tower A to serve this new bridge. The Proposed Project is intended to keep this portion of the rail system in a state of good repair and improve the reliability and safety of MBTA Commuter Rail and Amtrak services while maintaining these services during construction.

The Proposed Project would not result in increased train frequency, capacity, or ridership. It would not induce development or result in indirect effects related to population or employment increases, nor would the Proposed Project create new permanent jobs. The presence of temporary workers during the construction period would likely cause a short-term demand for services in the area, including increased demand at nearby restaurants and gas stations, which may represent a short-term benefit to surrounding businesses. However, The construction period would be temporary and would not contribute to permanent growth-related effects in the area, including neither increased pollutant emissions nor demand for municipal services.

The replacement of the Draw One Bridge, as proposed, would require modification of the North Bank Bridge. However, this modification is being designed and planned, and will be funded, as part of the Proposed Project, as described in Section 2.4, “Preferred Alternative (Proposed Project).” As such, MBTA continues to coordinate with DCR to minimize and avoid adverse impacts to the North Bank Bridge and its users, and the technical analyses presented in Section 3, “Affected Environment,” fully assess the potential for impacts related to this aspect of the Proposed Project; likewise the Section 4(f) evaluation summarized in Section 8 and presented in Appendix J, “Section 4(f),” fully considers the modification of the North Bank bridge as part of the Proposed Project. Section 6, “Summary of Impacts, Commitments, and Required Mitigation Measures,” describes measures that will avoid or minimize the potential for direct as well as indirect effects to the North Bank Bridge and parklands.

³⁹ The implementing regulations for NEPA use the terms “effect” and “impact” interchangeably; this analysis of indirect and cumulative effects uses the term “effect.”

Therefore, the Proposed Project would not result in unmitigated significant adverse indirect effects to the North Bank Bridge or parklands, nor would it result in any other indirect effects.

4.4.2. Cumulative Effects

Potential cumulative effects may result from the incremental consequences of an action when added to other past and reasonably foreseeable future actions (40 CFR §1508.7). The cumulative effects of an action may be undetectable when viewed in the individual context of direct or indirect impacts, but nevertheless can eventually lead to a measurable environmental change when considered collectively.

4.4.2.1. *Planned Projects in the Study Area*

4.4.2.1.1. [Transit Projects](#)

As described in Section 2.2, “No Action Alternative,” two planned MBTA projects will be implemented in the future without the Proposed Project: the “Mainline Tracks Rehabilitation and Ancillary Improvements” project, construction of which is expected to begin in 2025 and be complete in 2028, and the “North Station Platform F Extension and Ancillary Improvements” project, construction of which is expected to begin in 2025 and be complete in 2027. Given that construction of the Proposed Project is expected to begin in 2026 and be completed in 2034, the early years of construction for the Proposed Project would overlap with the anticipated construction of these two MBTA projects. The Proposed Project, the “Mainline Tracks Rehabilitation and Ancillary Improvements” project, and the “North Station Platform F Extension and Ancillary Improvements” project have been designed in coordination with each other, and MBTA will coordinate the construction of each project with the specific intent to ensure that there are no interruptions or significant impacts to MBTA commuter rail or Amtrak service. Ultimately, the Proposed Project, in combination with these two planned transit projects, would enhance service reliability and resilience.

4.4.2.1.2. [South Bank Park](#)

Similarly, the early years of construction for the Proposed Project would overlap with the anticipated construction of the South Bank Park, which, as described in Section 2.2.1.2, “South Bank Park,” will be under construction as early as 2026 through approximately 2031. As such, there is the potential for concurrent construction activities resulting in temporary cumulative effects (the potential for effects on the South Bank Park is assessed in Section 4, “Probable Consequences of the Proposed Project”). To minimize the potential for adverse cumulative impacts of multiple construction projects within close proximity of each other, activities would be coordinated to avoid disruption to either construction program. Code requirements and best management practices would be employed to minimize or avoid any potential adverse effects related to air quality and noise and vibration during construction periods. Concurrent construction activities for the Proposed Project and the South Bank Park may result in the displacement of parking spaces adjacent to the Gridley Locks Footpath for a more extended period of time than would otherwise be required, though access to the footpath would be maintained throughout the duration of construction activities.

In its permanent operational condition, as described in Section 4.3, “Operational (Full Build) Effects,” the Proposed Project would not directly affect the South Bank Park but would provide improved rail access to the area served by the South Bank Park, thereby contributing to the array of safe and reliable travel

options to and within the study area and improving local and regional accessibility to the South Bank Park, as well as other parklands in the study area.

4.4.2.1.3. South Bank Bridge

As described in Section 2.2.1.3, “South Bank Bridge,” DCR currently has plans to develop the South Bank Bridge on the south bank of the Charles River, though it is assumed to be neither under construction nor complete in 2034. The Proposed Project would not preclude the implementation of the South Bank Bridge; however, construction activities supporting the latter could not begin until after the substantial completion of the construction for the Proposed Project, assuming that the limits of construction for the two areas overlap. It is anticipated that throughout its design and construction planning, the implementation of the South Bank Bridge would be undertaken in coordination with agencies responsible for the properties it affects to avoid or minimize potential for cumulative effects that its implementation may introduce.

4.4.2.2. Other Contemplated Projects in the Study Area

4.4.2.2.1. Cross River Pedestrian and Bicycle Crossing

As described in Section 2.2.2.1, “Cross River Pedestrian and Bicycle Crossing,” a project known as the “Cross River Pedestrian and Bicycle Crossing” is envisioned as a separate Charles River crossing for cyclists and pedestrians. It is not yet designed or planned for construction, and it is assumed to be neither under construction nor complete in 2034. The Proposed Project would not preclude the implementation of the Cross River Pedestrian and Bicycle Crossing; however, construction activities supporting the latter could not begin until after the substantial completion of the construction for the Proposed Project, assuming that the limits of construction for the two areas overlap. It is anticipated that throughout its design and construction planning, the implementation of the Cross River Pedestrian and Bicycle Crossing would be undertaken in coordination with agencies responsible for the properties it affects to avoid or minimize potential for cumulative effects that its implementation may introduce.

4.4.2.3. Other Recently Completed Projects in the Study Area

As described in Section 3.2.1, “Land Use and Zoning,” two large development projects have recently been completed in the study area. Given that both Cambridge Crossing and The Hub on Causeway have been completed (2023 and 2021, respectively), they are considered part of the potentially affected environment, and so the potential for impacts to residents or workers associated with either of these recently completed projects has been assessed in Section 4, “Probable Consequences of the Proposed Project.” The Proposed Project would not directly affect these developments either during its construction or during its permanent operational condition. However, the Proposed Project would support the increased residential population and commercial activity associated with both the Cambridge Crossing and the Hub on Causeway by providing for safe and reliable train service in the future.

4.4.2.4. Summary

The Proposed Project, considered in combination with other recently completed or reasonably foreseeable projects in the area, would not result in any cumulative effects beyond contributing to safe and efficient transportation access in the study area. The Proposed Project would contribute to improvements in regional connectivity to the localized benefits afforded by the other planned and

contemplated projects in the study area. The potential for adverse cumulative effects is greatest during the construction of the Proposed Project, particularly during the earlier phases of Proposed Project construction that may overlap with other construction activities in the same area supporting the development of the South Bank Park. MBTA will continue consultation with DCR to coordinate Proposed Project construction and avoid potential construction conflicts. Assuming that construction activities necessary to support the construction of the South Bank Park will also take measures to address temporary construction-period effects, such as controlling noise, fugitive dust, and exposure to hazardous or contaminated materials, any such effects considered cumulatively among the projects would remain minor and temporary, and not amount to a substantial increase in intensity or duration of such effects.

4.5. Safety and Security

The new Draw One Bridge would improve safety and security from both rail and marine transportation perspectives. The operational redundancy provided through the construction of three independent spans would minimize the potential for rail operation disruptions, and the increased reliability of the new bridge would improve marine navigation.

Further, the Proposed Project would incorporate a number of safety and security measures, including fencing, a CCTV system, exterior lighting located along the bridge structure, and navigational lighting to meet USCG requirements. The CCTV system would provide for increased security relative to operations (e.g., bridge, navigation channel, boat traffic) and surveillance (e.g., Tower A, access locations).

Section 2.4.1.9, “Resilience,” identifies resilience measures that would be incorporated into the new bridge and Tower A designs and operation; these measures would provide safety and security in the event of natural hazards.

During construction, safety measures (e.g., installation of lighting on barges) would be implemented in coordination with USCG. The contractor would also coordinate with USCG to provide notification to mariners as needed throughout the duration of construction. These measures will be coordinated with DCR, the State Police, and any other required entities and would protect recreational and other boaters in this area of the Charles River. Additionally, as described in Section 4.2.12, “Hazardous Materials,” construction activities would be performed in accordance with an Excavated Materials Management Plan, a Groundwater Management Plan, and a HASP to minimize the potential for adverse effects to the surrounding communities and construction workers. These plans will be included in construction contract specifications and would be prepared by the contractor and reviewed and approved by MBTA prior to the start of construction.

5. Resource Commitments

5.1. Irreversible and Irretrievable Commitment of Resources

Irreversible resource commitments involve the use or destruction of a specific resource that cannot be replaced. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored due to the action. In both cases, permanent loss of the resource occurs.

The No Action Alternative would not require an immediate increase in irreversible and irretrievable commitment of resources, including natural, human, and monetary resources, beyond those resources currently required for the ongoing operation and maintenance of the Draw One Bridge, Signal Tower A, and the temporary control tower. Due its age and deteriorating conditions, the commitment of human and monetary resources toward the operation of the bridge will likely increase over time, ultimately leading to increased investment in facilities that, despite such investment, will become irreparable and require replacement at a later date.

The Proposed Project would constitute an irreversible and irretrievable destruction of the existing Draw One Bridge and Signal Tower A, both of which are historic resources eligible for listing in the National Register of Historic Places. FTA, MBTA, the SHPO, and Section 106 consulting parties have developed and agreed upon mitigation measures ~~will be developed with and agreed upon by FTA, MBTA, the SHPO, and Section 106 consulting parties~~ to ameliorate this loss, as described in Section 4.2.6, “Historic and Cultural Resources.”

As proposed, federal and state funds would be required for the construction of the Proposed Project. State funds would be required for continued operation and maintenance of the Proposed Project for the extent of its useful life. These monetary resources are irretrievable. Construction materials that would be required for the Proposed Project include steel, concrete, wood, and composite plastic. Labor, energy, and natural resources would be required to produce construction materials. These resources are irretrievable; however, they are not in short supply, and their use would not adversely impact their continued availability.

5.2. Relationship between Short-Term uses of the Environment and Maintenance and Enhancement of Long-Term Productivity

For the purposes of this analysis, “short-term” is defined as the construction period, which is the time period during which the majority of environmental impacts will occur. “Long-term” is defined as the lifespan of the Proposed Project. Long-term effects also relate to the sustainability of the Proposed Project and its consistency with local, regional, and statewide planning and policies.

The No Action Alternative would not involve any project-related construction, and therefore would not incur short-term uses of the environment. However, the ongoing maintenance of the existing Draw One Bridge would not extend its useful life; therefore, it would not enhance the long-term productivity of the structure.

The Proposed Project’s construction-period use of the environment is presented in Section 4.2, “Construction-Period Effects.” The work in the Charles River, including demolition of the existing bridge, minor riverbed sediment dredging, and excavation of sediments would create short-term impacts. Land-based construction activities, including the replacement of Signal Tower A, would also create temporary impacts.

However, the Proposed Project would result in substantial long-term benefits to MBTA and Amtrak rail service, which is important to the region’s economy because it provides reliable access to employment centers, educational institutions, cultural destinations, and commercial centers. As it would enhance the reliability of this rail service, the Proposed Project would result in permanent long-term benefits to local and regional communities. The Proposed Project’s improvements to marine transportation would also

positively affect users of the Charles River, the cities of Boston and Cambridge, and the State of Massachusetts through improved marine-based recreation and commerce.

6. Summary of Impacts, Commitments, and Required Mitigation Measures

6.1. Comparison of the Proposed Project and the No Action Alternative

While the No Action Alternative would not result in the demolition of the historic Draw One Bridge and Signal Tower A, ongoing deterioration of the bridge and building could require remedial measures that might be considered to diminish their integrity of materials and design and thereby cause an adverse impact. Additionally, hazardous and contaminated materials associated with the existing Signal Tower A would not be addressed. Required maintenance and repairs of deteriorating infrastructure with the No Action Alternative are likely to disrupt rail service with greater frequency and longer durations, as well as increase the number and duration of channel restrictions and closures, affecting marine transportation through the navigational channel. These disruptions would be likely to impede access to regional community facilities in the study area for those who rely on MBTA service.

The Proposed Project would require two permanent easements and five temporary (construction) easements. It may result in construction-period impacts to land use, socioeconomic conditions, community facilities and services, parks and recreational resources, pedestrian and bicycle facilities, visual and aesthetic conditions, natural resources, rail transportation and transit, marine transportation, noise and vibration, vehicular traffic, parking, and hazardous materials; however, any of these construction-period impacts would be minor and temporary, not significant or permanent.

Local soils and topography would be permanently altered by the excavation and grading required to construct the proposed Draw One Bridge and rail approaches. The Proposed Project would result in minor permanent impacts to parks and recreational resources and would require the permanent removal of the public sidewalks along both the east and west sides of the existing Draw One Bridge south trestles, though these sidewalks do not provide access to pedestrian or bicycle facilities north of the river. The introduction of new bridge infrastructure would permanently change the views of the Project Limits from the river and surrounding waterfront parks. Further, changing the railroad alignment would shift commuter and Amtrak trains closer to some noise-and vibration-sensitive receptors, though this change in alignment is not expected to result in exceedances of the applicable impact criteria.

Most notably, the Proposed Project would include demolition of the NRHP-eligible Draw One Bridge and Signal Tower A, resulting in permanent adverse effects to two historic architectural resources. As described in Section 6.4, “Unavoidable Significant Adverse Impacts,” the adverse effect to historic resources would be unavoidable but mitigated.

There would be no unmitigated adverse impacts with the Proposed Project.

6.2. Required Mitigation Measures

Mitigation measures have been identified and are recorded in agreements with respective entities having jurisdictional oversight, as described below:

6.2.1. Mitigation for the Loss of Historic Architectural Resources

As described in Section 4.2.6, “Historic and Cultural Resources,” construction of the Proposed Project would include demolition of the historic Draw One Bridge and Signal Tower A, which was determined to be an adverse effect pursuant to Section 106 of the NHPA.

6.2.1.1. *Section 106 Memorandum of Agreement*

An MOA ~~will be~~ has been executed among FTA, MBTA, SHPO/MHC, the Boston Office of Historic Preservation, the Cambridge Historical Commission, and DCR that ~~will identify~~ identifies the measures to be taken to address adverse effects to these historic architectural resources. The final draft MOA, ~~which is currently being refined and finalized by FTA in coordination with the Section 106 consulting parties,~~ contains the following mitigation measures:

- Historic American Engineering Record (HAER) documentation for Draw One Bridge, including interpretive narratives describing the history of the bridge spans, focusing on construction, and detailed descriptions of engineering and functional elements, historic plans, photographs, and other documents meeting the appropriate HAER archival standards;
- Historical Architectural Building Survey (HABS) documentation for Signal Tower A, including drawings, history, and photographs;
- two Interpretive Displays, one on the Draw One Bridge and one on Signal Tower A, in both Cambridge and Boston; a video, available for public viewing online, showing trains crossing the Draw One Bridge and the bridge structures being raised and lowered. The video of the trains crossing and the bridges being raised and lowered shall be linked to a QR code that will be linked from the interpretive displays;
- a historic context study of bridges across the Charles River, potentially coordinated with Boston’s Museum of Science to host an exhibit;
- the potential salvage of significant architectural and engineering features of the Draw One Bridge and Signal Tower A; and
- provision of design plans to SHPO/MHC, the Boston Office of Historic Preservation, the Cambridge Historical Commission, and DCR for review and comment.

The mitigation measures comprising salvage materials and/or interpretive displays will be designed in consultation with DCR, and though they likely will result in visible changes to the aesthetic and visual environs of the Proposed Project (e.g., salvage, restoration, and display of items within MBTA ROW or DCR parkland), such changes would not be adverse. Rather, such changes to the aesthetic and visual environs would be positive, as any such displays would be designed to reflect the demolished historic resources and their role in the immediate context, thereby providing opportunities for parkland visitors to learn about and appreciate their surroundings in a meaningful way. Any salvaged materials would be carefully restored to address any potential hazardous or contaminated materials associated with them in their original condition, and their use and position within publicly accessible spaces will be undertaken in accordance with applicable public safety standards, and any permits or approvals that may be necessary will be secured.

6.2.2. Mitigation for the Use of Section 4(f) Properties

Per the Section 4(f) regulations, if a feasible and prudent alternative exists that avoids all Section 4(f) resources, it must be selected. If there is no feasible and prudent avoidance alternative, FTA may only approve the alternative that causes the least overall harm in light of Section 4(f)'s preservation purpose. As described in Section 8, "Section 4(f)," there are no feasible and prudent alternatives that would avoid all Section 4(f) resources.

DCR concurred with the Federal Transit Administration (FTA) on January 8, 2025, that the Proposed Project would not adversely affect the recreational activities, features, or attributes of Section 4(f) resources that qualified the properties for Section 4(f) protection.

~~Coordination with DCR is ongoing for their review and comment on the Proposed Project's use of Section 4(f) parks and recreational resources.~~ Measures to minimize harm to parklands and public recreation areas in the vicinity of the Proposed Project ~~will be~~ have been developed with and agreed upon by MBTA and DCR. Potential measures to minimize harm may include signed detours for pedestrians and bicyclists posted for each walking/biking path affected during construction activities. Regrading; seeding; planting trees, shrubs, and other permanent plantings; and/or general landscaping are other possibilities for areas disturbed by construction.

6.3. Summary of Potential Impacts and Proposed Measures to Avoid, Minimize, or Mitigate

This section summarizes the required mitigation measures described above, together with all other measures MBTA commits to incorporating into the Proposed Project, both in its final design and its construction, with all appropriate measures provided by MBTA as contractor requirements in construction contract documents.

Table 8, "Summary of Potential Project Impacts and Benefits and Proposed Measures to Avoid, Minimize, or Mitigate," summarizes the findings of the environmental analyses, including potential impacts and benefits of the Proposed Project and any associated avoidance, minimization, or mitigation measures that MBTA would implement to address the identified impacts.

6.4. Unavoidable Significant Adverse Impacts

As described in Section 4.2.6, "Historic and Cultural Resources," construction of the Proposed Project would include demolition of the historic Draw One Bridge and Signal Tower A, which was determined to be an adverse effect pursuant to Section 106 of the NHPA. This significant adverse impact to these historic architectural resources would be permanent, and it would be unavoidable. As described in Section 6.2.1, "Mitigation for the Loss of Historic Architectural Resources," however, mitigation will be required and implemented as part of the Proposed Project.

Table 8: Summary of Potential Project Impacts and Benefits and Proposed Measures to Avoid, Minimize, or Mitigate

Environmental Resource	Potential Benefits		Potential Impacts		Proposed Project Avoidance, and Minimization, and Mitigation Commitments Measures
	No Action Alternative	Proposed Project	No Action Alternative	Proposed Project	
Land Use and Zoning					
Land Use	N/A	<ul style="list-style-type: none"> The Proposed Project would increase reliability of train service and improve travel for residents, employees, those seeking medical care, students, and tourists traveling to and from Boston. 	N/A	<ul style="list-style-type: none"> A permanent easement (0.019 acre [828 sf]) would be required at the Proposed South Bank Park for the installation of a manhole. A permanent easement (0.003 acre [131 sf]) would be required along the east side of the MGH administrative building on currently unmaintained, sparsely vegetated land to accommodate required MBTA track alignment and required clearance. Construction easements to accommodate construction staging and access would be required at: <ul style="list-style-type: none"> Paul Revere Park (1.08 acre); North Point Park (0.84 acre); Proposed South Bank Park (0.514 acre); DCR pier and riverfront walkway (0.11 acre); and MGH administrative building parking lots (0.25 acre). MBTA would temporarily use Boston Sand & Gravel property for construction access pursuant to a license agreement, executed in 2001, granting MBTA the right to enter their property for access to and egress from Signal Tower A and MBTA ROW. The MGH floating dock and approach ramp would be temporarily removed throughout the duration of project construction to facilitate access to the Draw One Bridge. The boat launch ramp used by DCR, the State Police, and the Boston Duck Tours Company may experience multiple temporary closures. North Bank Bridge, as well as three walkways (100 feet) within Paul Revere Park and three walkways (140 feet) within North Point Park, would experience multiple temporary closures. The DCR pier (extending from and appearing as part of the adjacent riverfront walkway) would experience temporary closure for the duration of project construction. The riverfront walkway between the DCR pier and the fence on the west side of the MBTA tracks would be briefly and temporarily closed during material deliveries. 	<ul style="list-style-type: none"> MBTA will conduct outreach to local neighborhoods, provide a 24-hour hotline and email address (DrawOne@MBTA.com) for emergencies and construction complaints, and notify the public about construction status and upcoming activities. Protective measures would be in place to limit public access to the Project Limits during the construction period, including properties not owned by MBTA. All properties not owned by MBTA that would be used during project construction would be restored to their original condition as part of the Proposed Project. MBTA will coordinate with Boston Sand & Gravel prior to construction and throughout the construction period to minimize impacts to business and other operations. Following construction completion, the MGH floating dock and approach ramp would be reinstalled and restored to existing conditions. If closures of the boat launch ramp are determined necessary, MBTA will coordinate with DCR, the State Police, and the Boston Duck Tours Company during construction to avoid impacts to their use of the ramp.
Zoning	N/A	N/A	N/A	N/A	N/A
Public Policy	N/A	N/A	N/A	N/A	N/A
Socioeconomics					
Population	N/A	N/A	N/A	N/A	N/A
Households	N/A	N/A	N/A	N/A	N/A
Demographics and Income	N/A	N/A	N/A	N/A	N/A
Transit-Dependent Populations	N/A	N/A	N/A	<ul style="list-style-type: none"> Temporary disruptions to MBTA and Amtrak rail service may occur, which could require occasional weekend diversions to MBTA subways and buses. 	<ul style="list-style-type: none"> MBTA would notify the public of any unavoidable closures and provide alternate routes for weekend rail service diversions.
Commercial Activities	N/A	<ul style="list-style-type: none"> The Proposed Project would enhance the reliability of MBTA and Amtrak rail service, which is important to the region's economy because it provides 	N/A	<ul style="list-style-type: none"> The Charles River navigation channel may be temporarily closed, or its width reduced, to allow for staging of construction barges at least five times throughout construction; these closures would be up to 	<ul style="list-style-type: none"> The contractor would coordinate with USCG to provide notification to mariners as needed throughout the duration of construction, which would minimize disruptions to commercial navigation and sightseeing tours.

Environmental Resource	Potential Benefits		Potential Impacts		Proposed Project Avoidance, and Minimization, and Mitigation Commitments Measures
	No Action Alternative	Proposed Project	No Action Alternative	Proposed Project	
		<p>reliable access to employment centers, educational institutions, and commercial centers, and therefore would result in permanent, long-term benefits to local communities.</p> <ul style="list-style-type: none"> • The Proposed Project would improve reliability for maritime traffic, which would benefit local businesses that rely on maritime vessels. • The Proposed Project would provide temporary benefits to the local economy through new construction jobs and construction-related spending. 		<p>approximately one week at a time, totaling up to approximately two months.</p>	
Community Facilities and Services					
Community Facilities	N/A	<ul style="list-style-type: none"> • The Proposed Project would improve reliability of train service and allow for safe operations and maintenance. • The Proposed Project would increase reliability of MBTA and Amtrak commuter rail service, as well as improve travel for those seeking medical care and access to other community facilities in Boston. 	<ul style="list-style-type: none"> • Continued disruptions to rail service would be likely to impede access to regional community facilities in the study area for those who rely on MBTA service. 	<ul style="list-style-type: none"> • A permanent easement would be required along the east side of the MGH administrative building on currently unmaintained, sparsely vegetated land. • A portion of the MGH administrative building parking lots would be used during project construction to provide construction staging and access. • The MGH floating dock and approach ramp would be temporarily removed throughout the duration of project construction to facilitate access to the Draw One Bridge. • The DCR-owned boat launch ramp used by the State Police (and the Boston Duck Tours Company) may experience multiple temporary closures. 	<ul style="list-style-type: none"> • MBTA would coordinate with MGH regarding required easements and temporary access during construction to avoid disruption to hospital operations. • Following construction completion, the MGH floating dock and approach ramp would be reinstalled and restored to existing conditions. • If closure of the boat launch ramp is determined necessary, MBTA will coordinate with DCR, the State Police, and any other required entities during construction to avoid impacts to their use of the ramp.
Parks and Recreational Resources, and Pedestrian and Bicycle Facilities					
Parkland	<ul style="list-style-type: none"> • The development of South Bank Park would expand park and recreational resources in the immediate vicinity of the Proposed Project. 	<ul style="list-style-type: none"> • Same as No Action Alternative 	N/A	<ul style="list-style-type: none"> • The existing North Bank Bridge landings in North Point Park and Paul Revere Park would be shifted slightly, though would remain within DCR-owned property and provide the same recreational use. • A new manhole would be installed permanently at the Proposed South Bank Park in approximately the same location as an existing manhole. • Trees and shrubs in the vicinity of construction activities within both Paul Revere Park and North Point Park would be temporarily removed during construction. • A portion of the proposed South Bank Park would be used during project construction to provide construction access. • (See also "Pedestrian and Bicycle Facilities" located within parkland, described below.) 	<ul style="list-style-type: none"> • <u>DCR concurred with FTA on January 8, 2025, that the Proposed Project would not adversely affect the recreational activities, features, or attributes that qualified the properties for Section 4(f) protection.</u> Mitigation measures for permanent impacts to parks resources <u>have been</u> will be developed <u>and agreed upon by</u> between MBTA and DCR. Examples of mitigation could include regrading, seeding, and planting of trees and/or landscaping for areas disturbed by construction within the DCR park areas. • The temporary closure of the DCR riverfront walkway and pier (extending from and appearing as part of the adjacent riverfront walkway) would be coordinated with DCR and the local community.
Pedestrian and Bicycle Facilities	N/A	N/A	N/A	<ul style="list-style-type: none"> • Public sidewalks along both the east and west sides of the existing Draw One Bridge south trestles would be permanently removed. • North Bank Bridge would be permanently modified by increasing the bridge height by one foot, requiring the relocation of two bridge supports, the addition of one additional support, the modification of the bridge truss structure, and the modification and lengthening of the bridge landings in North Point Park and Paul Revere Park. North 	<ul style="list-style-type: none"> • A detour from North Point Park to access Paul Revere Park would be developed in coordination with DCR. • Temporary closures of pedestrian walkways and bicycle paths, as well as detours, would be coordinated with DCR and the local community.

Environmental Resource	Potential Benefits		Potential Impacts		Proposed Project Avoidance, and Minimization, and Mitigation Commitments Measures
	No Action Alternative	Proposed Project	No Action Alternative	Proposed Project	
				<p>Bank Bridge would experience multiple closures of the pedestrian bridge of up to two weeks, totaling one month; these closures would take place over a six-month period. Temporary disturbance and access to Paul Revere Park would be required for modifications to the North Bank Bridge east landing. Construction at the North Bank Bridge abutment would require the temporary use of approximately 1.08 acre of pedestrian and bicycle pathways for construction access, while jacking at the abutment and regrading would result in disturbance to just a 0.08-acre area.</p> <ul style="list-style-type: none"> • Temporary disturbance and access to North Point Park would be required for modifications to the North Bank Bridge west landing. Construction would require the temporary use of approximately 0.84 acre of pedestrian and bicycle pathways for construction access, while construction activities would result in disturbance to just a 0.17-acre area. • North Bank Bridge modification would require multiple temporary closures of three walkways (100 feet) within Paul Revere Park and three walkways (140 feet) within North Point Park for up to two weeks at a time, totaling one month. These closures would take place over a six-month period. • The DCR pier (extending from and appearing as part of the adjacent riverfront walkway) would experience temporary closure for the duration of project construction; trees on the pier would be removed during construction. The adjacent riverfront walkway would also be temporarily closed during material deliveries. 	
Historic and Cultural Resources					
Archaeology	N/A	N/A	N/A	<ul style="list-style-type: none"> • The potential for intact archaeological deposits within the APE is considered to be low. 	<ul style="list-style-type: none"> • MBTA will develop an Unanticipated Discoveries Plan that will be followed if any unanticipated archaeological and/or human remains are encountered during construction. The Unanticipated Discoveries Plan will be included in construction contract specifications and documentation.
Historic Architectural Resources	<ul style="list-style-type: none"> • The historic Draw One Bridge and Signal Tower A would be retained. 	N/A	<ul style="list-style-type: none"> • Ongoing deterioration of the bridge and building could require remedial measures that might be considered to diminish their integrity of materials and design and thereby cause an adverse impact. 	<ul style="list-style-type: none"> • The Proposed Project would include demolition of the NRHP-eligible Draw One Bridge and Signal Tower A, resulting in permanent adverse effects to two historic architectural resources. 	<ul style="list-style-type: none"> • An MOA will be <u>was</u> executed <u>on December 18, 2024</u>, among FTA, MBTA, SHPO/MHC, the Boston Office of Historic Preservation, the Cambridge Historical Commission, and DCR that will identify <u>identifies</u> the measures to be taken to address adverse effects to these historic architectural resources (e.g., salvage materials, interpretive displays, video documentation, etc.).
Visual and Aesthetic Resources					
Visual and Aesthetic Resources	<ul style="list-style-type: none"> • Existing surface parking would be transformed to 	<ul style="list-style-type: none"> • Same as No Action Alternative 	N/A	<ul style="list-style-type: none"> • Construction activities would introduce construction equipment (e.g., barges, cranes, fencing, etc.) to the Charles River and other staging areas, which may result in an adverse visual impact to some users of 	<ul style="list-style-type: none"> • FTA and MBTA have worked with the Section 106 consulting parties to develop a bridge design that is intended to complement the Zakim Bridge and to contribute to a shared aesthetic character.

Environmental Resource	Potential Benefits		Potential Impacts		Proposed Project Avoidance, and Minimization, and Mitigation Commitments Measures
	No Action Alternative	Proposed Project	No Action Alternative	Proposed Project	
	parkland as part of the proposed South Bank Park and, therefore, would enhance cyclists' and pedestrians' experience of the public realm on the south bank of the Charles River.			<p>the nearby waterfront parks and North Bank Bridge looking toward the river, as well as to recreational boaters, but this effect would be momentary, and the construction condition would be temporary.</p> <ul style="list-style-type: none"> The Proposed Project would require the demolition of both the historic Draw One Bridge and Signal Tower A; as such, these landscape elements would no longer be present in the landscape, nor would they be components of existing views in the study area. The pedestrian walkways along the southern trestles of the existing Draw One Bridge would no longer be present to afford westward pedestrian views along the river from above the water; the Proposed Project would not include similar pedestrian access at this location. 	<ul style="list-style-type: none"> As part of the MOA to address adverse effects to the historic Draw One Bridge and Signal Tower A, salvage materials and/or interpretive displays would likely be introduced within MBTA ROW or DCR parkland, the design of which would reflect the demolished historic resources and their role in the immediate context, thereby providing opportunities for parkland visitors to learn about and appreciate their surroundings in a meaningful way.
Natural Resources					
Soils	N/A	N/A	N/A	<ul style="list-style-type: none"> Construction of the Proposed Project would require excavation and grading that would alter local soils and topography. 	N/A
Wetlands and Water Resources	<ul style="list-style-type: none"> A drainage system would be implemented to accommodate stormwater at North Station's Platform F and the two station tracks serving the platform. 	<ul style="list-style-type: none"> The Proposed Project would further improve the stormwater drainage system within the MBTA ROW, adding features to collect runoff from the bridge and Tower A and direct it through an infiltration and detention system, tying into new outfall locations at the Charles River and the Millers River. 	N/A	<ul style="list-style-type: none"> The estimated total temporary surface area disturbance of the riverbed associated with demolition and construction is approximately 30,912 square feet (0.71 acre), and the estimated total area of permanent fill in the riverbed is approximately 11,411 square feet (0.26 acre). 	<ul style="list-style-type: none"> Temporary and permanent construction activities will require a USACE Section 404 permit and a MassDEP Section 401 WQC. Mitigation measures to address the required fill within the riverbed will be completed prior to construction as part of the USACE permitting process.
Floodplains	N/A	<ul style="list-style-type: none"> The proposed bridge would be designed to exceed current 100-year and 500-year flood elevations in both the closed and open positions, and its design would respond to MBTA's drainage criteria for projected precipitation frequencies and amounts. 	<ul style="list-style-type: none"> Sea level rise would pose a flood risk to the existing Draw One Bridge and Signal Tower A. 	<ul style="list-style-type: none"> Sea level rise would pose a flood risk to the proposed new Draw One Bridge and Tower A. 	<ul style="list-style-type: none"> Construction trestles would be built above the current 500-year flood elevation, and any construction equipment and materials stored temporarily within the floodplain would be removed in the event of a flood warning. Where feasible and practicable, all electrical and mechanical equipment would be located above the DFE, submersible equipment would be used, and flood walls would be erected to protect the proposed new Tower A building.
Coastal Zone	N/A	N/A	N/A	N/A	N/A
Ecological Resources	N/A	N/A	N/A	<ul style="list-style-type: none"> Trees and shrubs in the vicinity of construction activities within both Paul Revere Park and North Point Park would be temporarily removed during construction. 	<ul style="list-style-type: none"> <u>In a letter dated January 10, 2025, NOAA Fisheries provided concurrence with FTA's conclusion that the Draw One Bridge Replacement Project would not be likely to adversely affect any ESA-listed species or designated critical habitat.</u> <u>In a letter dated January 13, 2025, NOAA Fisheries indicated that the EFH assessment for the Draw One Bridge Replacement Project included sufficient minimization and avoidance measures.</u> The Proposed Project has been designed and construction methods have been selected to minimize impacts to e (e.g., drilled shafts that limit sediment disturbance, existing piles below the mudline to remain undisturbed, as possible, etc.); <u>in accordance with the conservation measures and best practices described in the EFH assessment and Section 7 consultation, including:</u> <ul style="list-style-type: none"> Construction activities would adhere; <u>Adherence</u> to the extent practicable, to time-of-year restrictions set by fisheries agencies for certain in-water activities and maintenance of pathways for fish passage;

Environmental Resource	Potential Benefits		Potential Impacts		Proposed Project Avoidance, and Minimization, and Mitigation Commitments Measures
	No Action Alternative	Proposed Project	No Action Alternative	Proposed Project	
					<ul style="list-style-type: none"> ○ <u>Full removal of piles from the riverbed in the area where new portions of the bridge structures would be installed;</u> ○ <u>Cut piles within the navigational channel three feet below the defined bottom of the channel;</u> ○ <u>Use of drilled shafts that limit sediment disturbance;</u> ○ <u>Leave existing piles below the mudline undisturbed, to the extent possible;</u> ○ <u>Use of silt curtains to minimize turbidity and siltation in the river, as appropriate;</u> ○ <u>Development of a Project-specific National Pollutant Discharge Elimination System (NPDES) Stormwater Pollution Prevention Plan (SWPPP);</u> ○ <u>Provision of readily available spill kits on boats, barges, and construction equipment; and</u> ○ <u>Implementation of ramp-up procedures for impact hammers, etc.</u> <ul style="list-style-type: none"> ● A Sediment and Water Quality Monitoring Plan would be implemented during project construction. ● Invasive species would not be included in plantings or seed mixes in an effort to reduce the spread of invasive species.
Transportation Systems					
Rail Transportation	N/A	<ul style="list-style-type: none"> ● The Proposed Project would improve reliability and safety of rail service and minimize delays. ● The Proposed Project would improve railroad operational flexibility. 	<ul style="list-style-type: none"> ● Required maintenance and repairs of deteriorating infrastructure are likely to disrupt service with greater frequency and longer durations. 	<ul style="list-style-type: none"> ● As connections are made between the new tracks and existing mainline tracks for signal testing, temporary disruptions to MBTA and Amtrak rail service may occur that could result in weekend diversions to MBTA subways and buses. 	<ul style="list-style-type: none"> ● MBTA would notify the public of any closures and provide alternate routes for weekend rail service diversions during construction. ● Track cutovers and signal work would be scheduled to avoid interruptions to Boston Sand & Gravel freight service.
Marine Transportation	N/A	<ul style="list-style-type: none"> ● The Proposed Project would improve reliability of operations for maritime traffic. 	<ul style="list-style-type: none"> ● Required maintenance and repairs are likely to increase the number and duration of channel restrictions and closures, affecting marine transportation through the navigational channel. 	<ul style="list-style-type: none"> ● The Charles River Navigation Channel would be permanently altered to match the clearances of the controlling bridges upstream and downstream of the Draw One Bridge. ● The Charles River navigation channel may be temporarily closed, or its width reduced, to allow for staging of construction barges at least five times throughout construction; these closures would be up to approximately one week at a time, totaling up to approximately two months. 	<ul style="list-style-type: none"> ● Construction activities and sequencing in the Charles River would be designed to minimize conflicts with navigational traffic. ● MBTA would coordinate temporary channel closures with USCG and DCR, and notifications to mariners will be provided, as needed. ● Construction-period safety measures (e.g., installation of lighting on barges) would be implemented in coordination with USCG.
Traffic, Transit, and Parking	<ul style="list-style-type: none"> ● MBTA's planned mainline track and North Station Platform transit improvements will represent an improvement in transit services. 	<ul style="list-style-type: none"> ● The Proposed Project, in combination with MBTA's planned transit projects, would represent an improvement in transit services. ● Increased reliability of rail service would result in improved connection to subway and bus service at North Station. 	<ul style="list-style-type: none"> ● The development of South Bank Park would result in a slight reduction in public parking adjacent to the Gridley Locks Footpath. 	<ul style="list-style-type: none"> ● As with the No Action Alternative, the development of South Bank Park would result in a slight reduction in public parking adjacent to the Gridley Locks Footpath. ● Project construction may result in limited short-term increased congestion in the study area. ● Weekend-only interruptions to MBTA and Amtrak commuter rail service may occur during the construction period. 	<ul style="list-style-type: none"> ● To avoid unnecessary construction-related traffic within the study area, construction vehicles would be limited to designated routes and kept in the designated staging areas. ● Weekend-only interruptions to MBTA and Amtrak commuter rail service during construction of the Proposed Project would be accommodated through reliance on the existing subway and public bus services for passengers that may be affected during these limited periods.

Environmental Resource	Potential Benefits		Potential Impacts		Proposed Project Avoidance, and Minimization, and Mitigation Commitments Measures
	No Action Alternative	Proposed Project	No Action Alternative	Proposed Project	
				<ul style="list-style-type: none"> • Temporary use of a portion of the MGH administrative building parking lots would result in the temporary displacement of up to approximately 30 of 512 parking spaces. • Temporary use of a portion of the proposed South Bank Park would result in the temporary displacement of approximately six of seven boat trailer parking spaces, as well as the displacement of all ten car parking spaces that would be provided at the proposed park. 	
Air Quality and GHG Emissions					
Air Quality and GHG	N/A	<ul style="list-style-type: none"> • The Proposed Project has the potential to reduce future regional VMT compared with existing conditions by facilitating a more reliable rail system that could persuade current drivers to use rail; MBTA projects that service improvements facilitated by the Proposed Project could generate more than three million additional annual commuter passenger trips by 2040, thereby reducing regional vehicle trips and associated emissions. 	N/A	<ul style="list-style-type: none"> • MBTA estimates that fewer than 10,000 tons per year of CO₂ would be generated from project construction activities. 	<ul style="list-style-type: none"> • Strategies to minimize and mitigate air emissions during construction could include: <ul style="list-style-type: none"> ○ Applying water suppression at least twice a day to all active construction areas to minimize dust; ○ Tarping all trucks hauling soil, sand, and other loose materials or require that all trucks maintain at least two feet of freeboard; ○ Paving, applying water daily, or applying (non-toxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas at construction sites; ○ Using water sweepers to sweep all paved access roads, parking areas, and staging areas at construction sites daily; using water sweepers to sweep all streets daily if visible soil material is carried onto adjacent public streets; ○ Hydroseeding or applying (non-toxic) soil stabilizers to inactive construction areas (previously graded areas inactive for ten days or more); ○ Enclosing, covering, watering twice daily or applying (non-toxic) soil binders to exposed stockpiles (dirt, sand, etc.); ○ Limiting traffic speeds on unpaved roads to 15 mph; ○ Complying with MassDEP's idling regulations [310 CMR 7.11(1)(b)], requiring that engines idle for no more than five minutes. Posting idling restriction signage on project construction sites; ○ Complying with MassDEP's Diesel Retrofit Program (DRP), which promotes the use of such engine emission controls as oxidation catalysts or particulate filters for diesel engines to the maximum extent practicable; ○ Complying with the State's Low Sulfur Diesel standards (301 Code of Massachusetts Regulations [CMR] 7.05) and EPA's Clean Air Non-road Diesel Rule; and ○ Replanting vegetation as quickly as possible to minimize erosion in disturbed areas. • <u>The MBTA is working with Keolis, the MBTA's commuter rail operator, to address EPA's concerns regarding compliance with 310 CMR 7.11(2) as well as the elements of the Consent Decree, of which Keolis is contractually required to comply as Operator. To the extent this project potentially disrupts the existing infrastructure (10 layover stations at North Station) to operate compliantly, a plan to address and maintain compliance by way of</u>

Environmental Resource	Potential Benefits		Potential Impacts		Proposed Project Avoidance, and Minimization, and Mitigation Commitments Measures
	No Action Alternative	Proposed Project	No Action Alternative	Proposed Project	
					<p>auxiliary power sources will be planned accordingly, to include calculating any additional emissions that may result therefrom. Should locomotives need to idle during construction of the project beyond the allowable duration in accordance with 310 CMR 7.11, and existing layover infrastructure is not available for such use, MBTA will require that its contractors utilize auxiliary power sources to comply with the regulatory requirements.</p>
Noise and Vibration					
Noise	N/A	N/A	N/A	<ul style="list-style-type: none"> The Proposed Project would result in construction noise impacts that would require mitigation. 	<ul style="list-style-type: none"> An acoustical engineer will prepare a Noise Control Plan in conjunction with the contractor's specific equipment, schedule and methods of construction, maximum noise limits for each piece of equipment, prohibition on certain types of equipment during the nighttime hours and engineering noise control measures. Noise control measures will be used to reduce noise emissions and potential impact to sensitive receptors where feasible. These measures could include: <ul style="list-style-type: none"> Shields, shrouds or intake and exhaust mufflers; Noise deadening materials adhered to chutes or storage bins; Temporary noise barriers; Acoustic enclosures; Specialized back-up alarms; Limiting the size of generators and the duration of their use; and Truck routes that minimize exposure to sensitive receptors.
Vibration	N/A	N/A	N/A	<ul style="list-style-type: none"> Construction vibration predictions indicate that impacts would occur during all construction stages and would require mitigation. 	<p>The following measures will be applied where feasible:</p> <ul style="list-style-type: none"> Using alternative construction methods to minimize the use of impact and vibratory equipment (e.g., pile drivers and compactors) Truck routes that minimize exposure to sensitive receptors and maintaining smooth roadway surfaces Avoiding nighttime construction in residential neighborhoods (i.e., use of construction access drives in vicinity of residences)
Hazardous Materials					
Hazardous Materials	N/A	<ul style="list-style-type: none"> The Proposed Project would introduce a new bridge structure and Tower A building free of asbestos, lead, PCBs, and other hazardous materials. 	<ul style="list-style-type: none"> Hazardous and contaminated materials associated with the existing Signal Tower A would not be addressed. 	<ul style="list-style-type: none"> Construction of the Proposed Project would involve demolition of the existing Draw One Bridge and Signal Tower A building, excavation, ground disturbance, and removal and disposal of soil and river sediments. Areas of contaminated soil and/or groundwater may be encountered during construction of the Proposed Project. 	<ul style="list-style-type: none"> MBTA will conduct additional soil and groundwater sampling, as well as additional hazardous and contaminated materials investigations, as appropriate, including survey and testing of the Signal Tower A building and bridge structures, prior to construction. Construction activities would be performed in accordance with an Excavated Materials Management Plan, a Groundwater Management Plan, and a HASP. These plans will be included in construction contract specifications. Potentially contaminated materials would be characterized and disposed of in accordance with applicable regulations. If any residual contaminated materials remain on-site following construction, these materials will be managed in accordance with the MCP and/or other applicable federal, state, and/or local regulations.

Environmental Resource	Potential Benefits		Potential Impacts		Proposed Project Avoidance, and Minimization, and Mitigation Commitments Measures
	No Action Alternative	Proposed Project	No Action Alternative	Proposed Project	
Public Utilities and Services					
Public Utilities and Services	N/A	<ul style="list-style-type: none"> The signal system, including all wayside devices, cables, and infrastructure, would be updated and/or modified to support the new track and signal system configuration. The Proposed Project would add a drainage system to both the north and south trestles of the Draw One Bridge to collect runoff from the bridge and Tower A and direct it through an infiltration and detention system, tying into new outfall locations at the Charles River and the Millers River. 	N/A	<ul style="list-style-type: none"> The Proposed Project is not anticipated to require temporary construction-period relocations of any public or private utilities. 	<ul style="list-style-type: none"> Any disruption of utilities, if determined necessary as design advances, will be coordinated with appropriate parties to ensure no interruptions or significant impacts to service.
Safety and Security					
Safety and Security	N/A	<ul style="list-style-type: none"> The Proposed Project would improve safety and security from both rail and marine transportation perspectives. The operational redundancy provided through the construction of three independent spans would minimize the potential for rail operation disruptions, and increased reliability of the new bridge would improve marine navigation. The Proposed Project would include the provision of fencing, a CCTV system, exterior lighting located along the bridge structure, navigational lighting to meet USCG requirements, and controlled access locations at Tower A and the Draw One Bridge. The Proposed Project has been designed in accordance with MBTA's Flood Resiliency Design Directive and Drainage Design Directive, which would provide safety and security in the event of natural hazards. 	N/A	<ul style="list-style-type: none"> The Charles River navigation channel may be temporarily closed, or its width reduced, to allow for staging of construction barges at least five times throughout construction; these closures would be up to approximately one week at a time, totaling up to approximately two months. Areas of contaminated soil and/or groundwater may be encountered during construction of the Proposed Project. 	<ul style="list-style-type: none"> During construction, safety measures (e.g., installation of lighting on barges) would be implemented in coordination with USCG. The contractor would coordinate with USCG to provide notification to mariners as needed throughout the duration of construction. Construction activities would be performed in accordance with an Excavated Materials Management Plan, a Groundwater Management Plan, and a HASP to minimize the potential for adverse effects to the surrounding communities and construction workers. These plans will be included in construction contract specifications.
Indirect and Cumulative Effects					
Indirect Effects	N/A	<ul style="list-style-type: none"> <u>N/A The presence of temporary workers during the construction period may represent a short-term benefit to surrounding businesses.</u> 	N/A	<ul style="list-style-type: none"> The presence of temporary workers during the construction period would likely cause a short-term demand for services in the area, including increased demand at nearby restaurants and gas stations. The replacement of the Draw One Bridge would require the modification to the North Bank Bridge. 	<ul style="list-style-type: none"> MBTA continues to coordinate with DCR to minimize and avoid adverse impacts to the North Bank Bridge and its users.
Cumulative Effects	N/A	<ul style="list-style-type: none"> The Proposed Project, in combination with MBTA's two additional planned 	N/A	<ul style="list-style-type: none"> The early years of construction for the Proposed Project would overlap with the anticipated construction of two planned MBTA 	<ul style="list-style-type: none"> MBTA will coordinate the construction of the Proposed Project and other planned projects in the vicinity to ensure that there are no

Environmental Resource	Potential Benefits		Potential Impacts		Proposed Project Avoidance, and Minimization, and Mitigation Commitments Measures
	No Action Alternative	Proposed Project	No Action Alternative	Proposed Project	
		<p>transit projects, would enhance service reliability and resilience.</p> <ul style="list-style-type: none"> The Proposed Project would provide improved rail access to the area served by the South Bank Park, thereby contributing to the array of safe and reliable travel options to and within the study area and improving local and regional accessibility to the South Bank Park, as well as other parklands in the study area. The Proposed Project would support the increased residential population and commercial activity associated with both the Cambridge Crossing and the Hub on Causeway by providing for safe and reliable train service in the future. 		<p>projects: the “Mainline Tracks Rehabilitation and Ancillary Improvements” project and the “North Station Platform F Extension and Ancillary Improvements” project.</p> <ul style="list-style-type: none"> The early years of construction for the Proposed Project would overlap with the anticipated construction of the South Bank Park. Concurrent construction activities for the Proposed Project and the South Bank Park may result in the displacement parking spaces adjacent to the Gridley Locks Footpath for an extended period of time longer than would otherwise be required, though access to the footpath would be maintained throughout the duration of construction activities. The Proposed Project would not preclude the implementation of the South Bank Bridge or the Cross River Pedestrian and Bicycle Crossing; however, construction activities for these two projects could not begin until after the substantial completion of the construction for the Proposed Project, assuming that the limits of construction for the two areas overlap. 	<p>interruptions or significant impact to MBTA commuter rail or Amtrak service and to avoid disruption to each construction program.</p> <ul style="list-style-type: none"> Construction of the Proposed Project would be coordinated with DCR to minimize effects to construction or safe operations of the South Bank Park. Measures required by code and best management practices would be employed to minimize or avoid any potential adverse effects related to air quality and noise and vibration during construction periods.

Source: STV Incorporated, 2024.

7. Environmental Justice

7.1. Methodology and Study Area

The most recent federal guidance on environmental justice, Executive Order 14096, *Revitalizing Our Nation's Commitment to Environmental Justice for All* (April 21, 2023),⁴⁰ defines “environmental justice” as:

the just treatment and meaningful involvement of all people, regardless of income, race, color, national origin, Tribal affiliation, or disability, in agency decision-making and other Federal activities that affect human health and the environment so that people:

(i) are fully protected from disproportionate and adverse human health and environmental effects (including risks) and hazards, including those related to climate change, the cumulative impacts of environmental and other burdens, and the legacy of racism or other structural or systemic barriers; and

(ii) have equitable access to a healthy, sustainable, and resilient environment in which to live, play, work, learn, grow, worship, and engage in cultural and subsistence practices.

Both Executive Order 14096 and Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (February 11, 1994), require specific and meaningful engagement with members of environmental justice communities as part of the environmental review process. CEQ has developed guidance to assist federal agencies with NEPA procedures so that environmental justice concerns are effectively identified and addressed (*Environmental Justice Guidance under the National Environmental Policy Act* [December 1997]). Federal agencies are permitted to supplement this guidance with more specific procedures tailored to their particular programs or activities, as USDOT has done.⁴¹

MBTA has also considered the defined environmental justice principles and populations outlined in the Massachusetts Environmental Policy Act's (MEPA) Public Involvement Protocol for Environmental Justice Populations,⁴² which was developed pursuant to the requirements in former Massachusetts Governor Charlie Baker's *An Act Creating a Next Generation Roadmap for Massachusetts Climate Policy*⁴³ and the resulting *Environmental Justice Policy of the Executive Office of Energy and Environmental Affairs*.⁴⁴ As described further in Appendix K, “Environmental Justice,” the Massachusetts guidance for defining

⁴⁰ <https://www.whitehouse.gov/briefing-room/presidential-actions/2023/04/21/executive-order-on-revitalizing-our-nations-commitment-to-environmental-justice-for-all/>

⁴¹ FTA guidance includes FTA Circular 4703.1, *Environmental Justice Policy Guidance for Federal Transit Administration Recipients* (August 15, 2012), and FTA Circular 4702.1B, *Title VI Requirements and Guidelines for Federal Transit Administration Recipients* (October 1, 2012).

⁴² <https://www.mass.gov/doc/final-mepa-public-involvement-protocol-for-environmental-justice-populations-effective-date-of-january-1-2022/download>

⁴³ <https://malegislature.gov/Laws/SessionLaws/Acts/2021/Chapter8>

⁴⁴ <https://www.mass.gov/doc/environmental-justice-policy6242021-update/download>

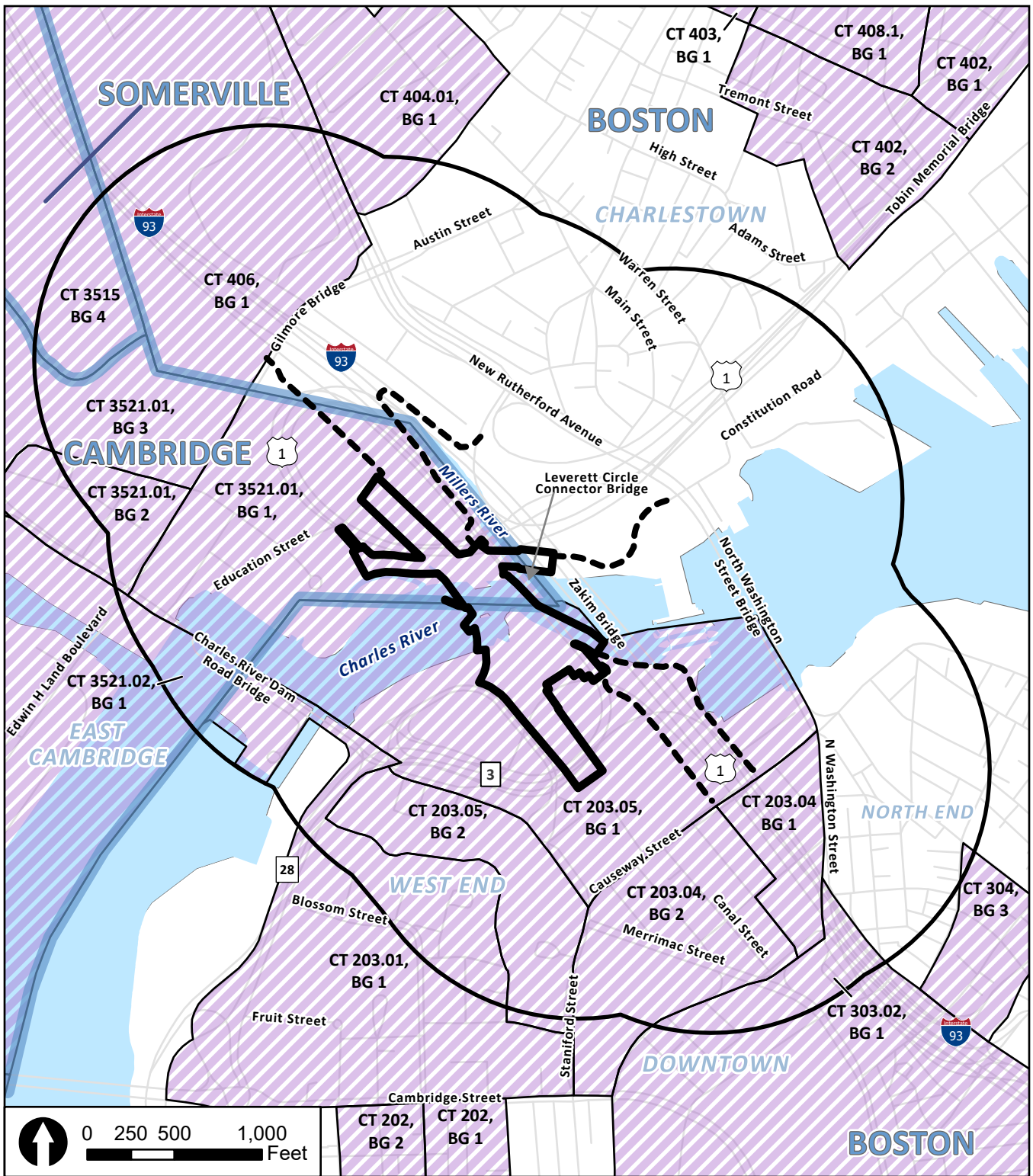
environmental justice communities differs slightly from the Federal definition; because the State guidance is both more stringent and provides a broader definition, it requires consideration of potential impacts to a larger segment of the population.

Consistent with both Federal and State guidance documents, this analysis involved four basic steps:

1. Identify the area where the Proposed Project may cause adverse impacts (i.e., the study area);
2. Compile race and ethnicity and income data for the Census block groups in the study area and identify minority and low-income populations;
3. Identify the Proposed Project's potential adverse impacts on minority and low-income populations; and
4. Evaluate the Proposed Project's potential adverse effects on minority and low-income populations relative to its effects on non-minority and non-low-income populations to determine whether it would result in any disproportionately high and adverse effects on minority or low-income populations.⁴⁵

The study area for environmental justice encompasses the area that could be affected by the Proposed Project and considers the area where potential impacts resulting from construction and operation of the Proposed Project could occur (see Appendix K, "Environmental Justice"). The study area for environmental justice follows the quarter-mile study area used for the analyses of land use and socioeconomic conditions (see Figure 15, "Environmental Justice Populations").

⁴⁵ Figure 15, "Environmental Justice Populations," was developed using the Massachusetts Bureau of Geographic Information (MassGIS) EJ Maps Viewer.



Source: Massachusetts Executive Office of Technology Services and Security, MassGIS; Massachusetts Department of Transportation; STV Incorporated, 2024.

	Project Limits		Municipal Boundaries
	Construction Access		Environmental Justice Population
	1/4-Mile Study Area		

Figure 15
Environmental Justice
Populations



7.2. Environmental Justice Communities

In accordance with Massachusetts guidance, an environmental justice population is defined as a Census block group that includes one or more of the following demographic characteristics:

- **Income:** The annual median household income is not more than 65 percent of the statewide annual median household income;
- **Minority:** Minorities (i.e., individuals who identify themselves as Latino/Hispanic, Black/African American, Asian, Indigenous people, and people who otherwise identify as non-white) comprise 40 percent or more of the population;
- **Minority and Income:** Minorities comprise 25 percent or more of the population and the annual median household income of the municipality in which the neighborhood is located does not exceed 150 percent of the statewide annual median household income; or
- **English Language Isolation:** 25 percent or more of households lack English language proficiency.

Additionally, the Massachusetts Executive Office of Energy and Environmental Affairs can designate a geographic portion of a neighborhood as an EJ population.

The Project Limits touch both the City of Cambridge and the City of Boston and are located entirely in an area that can be considered an environmental justice community based on State guidance. All block groups in the portion of the study area within the City of Cambridge are considered environmental justice communities, as well as a number of those within the City of Boston, specifically those extending southeast of the Project Limits into Downtown Boston. EPA's environmental justice mapping and screening tool, EJScreen, also identifies potential environmental justice communities along the eastern edge of the study area. Therefore, any adverse effects from the construction or operation of the Proposed Project would occur in an environmental justice community.

7.3. Identification of Disproportionate Adverse Effects

As defined in FTA's guidance, based on the USDOT Order, a disproportionate adverse effect on an environmental justice population is an adverse effect that is predominantly borne by a minority and/or low-income population, or will be appreciably greater for the minority and/or low-income population than for the non-minority and/or non-low-income population. Effects that may occur as a result of a proposed action may be considered in the context of associated mitigation measures and offsetting benefits when determining whether disproportionate adverse effects may be likely to occur.

The Proposed Project would not disproportionately impact EJ communities. The Proposed Project would replace an existing bridge on an existing rail corridor and would represent an overall benefit to the entire community. It is important to the region's continued economic prosperity. The improved safety and reliability of the Draw One Bridge would benefit environmental justice communities, which comprise a substantial portion of the local community. The long-term benefits of the Proposed Project would accrue not only to the local environmental justice communities working, living near, or commuting to/from North Station, but also to environmental justice communities throughout the region that depend on the regional rail accessibility provided by the Draw One Bridge and the regional economic benefits accruing from its continued usage.

7.4. Public Participation

The importance and value of early and meaningful public participation are clearly recognized in CEQ regulations.⁴⁶ MBTA is committed to fostering equitable engagement with EJ populations – communities often underrepresented in decision-making processes – including low-income residents, communities of color, and individuals with LEP. This aligns with both Federal and MEPA requirements, the Title VI Civil Rights Act, and MBTA’s broader goals for accessibility, transparency, and inclusion through MBTA’s 2023 Public Engagement Plan.⁴⁷

The most common types of public engagement that MBTA uses are in-person and virtual public meetings, including public hearings as well as community meetings, open houses and breakout sessions, stakeholder meetings, station pop-ups, virtual community drop-in sessions, and one-on-one interactions. MBTA also deploys street outreach teams, intercept and periodic surveys, and interviews or question-and-answer sessions at stations or bus stops. While MBTA is committed to in-person public engagement, virtual public engagement methods have been proven to make participation more accessible and convenient for the public and continue to be a key public engagement strategy at MBTA. Refer to Appendix A, “Public Outreach and Agency Coordination,” and Appendix K, “Environmental Justice,” for additional information.

8. Section 4(f)

8.1. Section 4(f) Protections and Definitions

Pursuant to Section 4(f) of the U.S. Department of Transportation (USDOT) Act of 1966 (23 USC §138 and 49 USC §303), USDOT agencies may not approve transportation projects that require use of: 1) publicly owned parks and recreational areas of national, state, or local significance; 2) publicly owned wildlife and waterfowl refuges of national, state, or local significance; or 3) historic sites of national, state, or local significance regardless of ownership such resources unless a determination is made that there is no feasible and prudent alternative and that all possible planning has been done to minimize harm to Section 4(f) land(s) resulting from such use, or that the use of the property, taking into account avoidance, minimization and mitigation measures, will have a *de minimis* impact.

8.2. Section 4(f) Resources

This section summarizes the Section 4(f) impact assessment and identifies potential impacts of the Proposed Project on parklands and public recreation areas and historic resources within the direct footprint of the work area, as presented in Appendix J, “Section 4(f).”

8.2.1. Parklands and Public Recreation Areas

There are nine publicly owned parks and recreational areas – each of which is considered a Section 4(f) resource – in the immediate vicinity of the Project Limits, including Galvin Memorial Park, the Lynch Family Skatepark, Paul Revere Park, North Point Park, and the North Bank Bridge to the north of the Charles River, as well as Nashua Street Park, the Gridley Locks Footpath, the proposed-but-not-yet-constructed South Bank Park, and a pier and riverfront walkway on the southern bank of the Charles River. The

⁴⁶ <https://www.energy.gov/nepa/articles/environmental-justice-guidance-under-nepa-ceq-1997>

⁴⁷ <https://cdn.mbtta.com/sites/default/files/2023-06/2023-06-Public-Engagement-Plan-English.pdf>

Proposed Project would not affect Galvin Memorial Park, the Lynch Family Skatepark, Nashua Street Park, or the Gridley Locks Footpath.

Consistent with the requirements of 23 CFR 774.5(b)(2)(i), FTA used ~~is using~~ the public comment period associated with the review of ~~this~~ the Draft EA to seek comments from the public on its intent to make a *de minimis* determination for the minor Section 4(f) use of the following publicly-owned public parks under the jurisdiction of DCR: Gridley Locks Footpath and Parcel (Proposed South Bank Park), Vacant Parcel (Proposed South Bank Park), North Bank Bridge, Pier and Riverfront Walkway, Paul Revere Park, and North Point Park. The details of the proposed minor Section 4(f) use of these properties are discussed in Appendix J, “Section 4(f).”

~~After considering any comments received from the public, FTA will request concurrence from DCR to concur in writing that the Proposed Project will not adversely affect the recreational activities, features, or attributes that qualified the properties for Section 4(f) protection.~~

8.2.2. Historic and Archaeological Resources

The Proposed Project comprises the replacement of the existing NRHP-eligible Draw One Bridge spans and Signal Tower A and would result in the demolition of both of these historic resources. As such, the Proposed Project would result in an adverse effect to historic properties under Section 106. However, consistent with 23 CFR 774.13(a)(2), both of these properties are excepted from Section 4(f) consideration as 4(f) resources because the Proposed Project comprises the replacement of line elements for existing railroad and commuter rail system operations.

8.3. Ongoing Coordination

DCR concurred with FTA on January 8, 2025, that the Proposed Project would not adversely affect the recreational activities, features, or attributes that qualified the properties for Section 4(f) protection (refer to Appendix J). Coordination with DCR is ongoing for their review and comment on the Proposed Project’s use of Section 4(f) parks and recreational resources. Measures to minimize harm and mitigation measures for potential impacts have been ~~will be~~ set forth in an agreement between DCR and MBTA. These measures may include signed detours for pedestrians and bicyclists posted for each walking/biking path affected during construction activities. Regrading; seeding; planting trees, shrubs, and other permanent plantings; and/or general landscaping are also possibilities for areas disturbed by construction.

9. Federal, State, and Local Permits and Approvals

The Proposed Project is subject to federal and state permits and approvals, as identified in Table 9, “Permits and Approvals Required for the Proposed Project.” Though exempt from local permitting and approvals, MBTA would comply with local noise regulations to the extent practicable. The Proposed Project qualifies for the Massachusetts Footprint Bridge Exemption (Chapter 79, Section 24 of the Acts of 2014) given that the project comprises the replacement of existing bridge spans that are substantially the functional equivalent of the original rail bridge structures.⁴⁸ Further, the Proposed Project would maintain a similar track alignment to existing conditions. As such, the Proposed Project would be exempt from

⁴⁸ <https://malegislature.gov/Laws/SessionLaws/Acts/2014/Chapter79>

Chapter 91 authorization. The Proposed Project would also be exempt from the Massachusetts Wetlands Protection Act (WPA) and the Massachusetts Environmental Policy Act (MEPA).

Table 9: Permits and Approvals Required for the Proposed Project

Law/Regulation	Agency	Activity
Federal		
Section 4(f) of the United States Department of Transportation Act (49 USC §303) and implementing regulations (23 CFR Part 774)	Federal Transit Administration (FTA)	Evaluation of Section 4(f) property use
33 CFR Part 114 and 115	U.S. Coast Guard (USCG)	Bridge permit
National Historic Preservation Act (54 USC §306101 et seq.) and implementing regulations (36 CFR Part 800)	Advisory Council on Historic Preservation; Massachusetts Historical Commission; Consulting Parties	Section 106 consultation regarding effects on historic resources
Endangered Species Act (ESA) of 1973 (16 USC §1531-1544) and implementing regulations (50 CFR Part 402)	U.S. Fish and Wildlife Service (USFWS), National Oceanic and Atmospheric Administration (NOAA)	Section 7 coordination/consultation regarding presence of federally threatened and endangered species
Migratory Bird Treaty Act (16 USC §703-712)	U.S. Fish and Wildlife Service (USFWS)	Review and consultation regarding migratory birds
Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 USC §1801 et seq) and implementing regulations (50 CFR 600)	National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service (NOAA Fisheries)	Review and consultation regarding Essential Fish Habitat (EFH)
Marine Mammal Protection Act (MMPA) (16 USC §1361 et seq) and implementing regulations 50 CFR Part 18	National Marine Fisheries Service (NOAA Fisheries)	Review and consultation regarding marine mammals
Section 404 of the Clean Water Act (CWA) (33 USC 1344); Section 10 of the Rivers and Harbors Act (33 USC 403)	U.S. Army Corps of Engineers (USACE)	Section 404 permit for placement of dredged or fill material into waters of the United States; Section 10 permit for construction of any structure in or over any navigable waters of the United States
Section 402 of the Clean Water Act (CWA) (33 USC 1342)	U.S. Environmental Protection Agency (EPA)	National Pollutant Discharge Elimination System (NPDES) General Permit for Construction Activities and Point Source Discharge Individual Outfall Permit

Table 9: Permits and Approvals Required for the Proposed Project (cont.)

Law/Regulation	Agency	Activity
State		
302 CMR 11.08	Massachusetts Department of Conservation and Recreation (DCR)	Construction Access Permit
Section 8(m) of Chapter 372 of the Acts of 1984	Massachusetts Water Resources Authority (MWRA)	Section 8(m) Permit
Section 401 of the Clean Water Act (CWA) (33 USC 1341)	Massachusetts Department of Environmental Protection (MassDEP)	Water Quality Certification
Massachusetts Endangered Species Act (MESA) 321 CMR 10.00	Massachusetts Division of Fisheries & Wildlife; Natural Heritage and Endangered Species Program (NHESP)	Consultation regarding presence of state rare, threatened, and endangered species
Coastal Zone Management Act (CZMA) (16 USC 1451 et seq) and implementing regulations (15 Part 923)	Massachusetts Office of Coastal Zone Management (CZM)	Determination of consistency with the State CZM coastal program

Source: TRC Companies, Inc, 2024; STV Incorporated, 2024.

9.1. Federal Uniform Act Compliance

The Uniform Relocation Assistance and Real Property Acquisitions Policies Act of 1970 (the “Uniform Act”), as amended, and its implementing regulations (49 CFR 24) will be followed for property acquisitions required to construct the Proposed Project. The Proposed Project would not result in any residential or commercial displacements; therefore, relocation assistance services are not required.

10. List of Preparers

10.1. FTA

Jonathan Schmidt, Environmental Protection Specialist

10.2. MBTA

Karl Eckstrom, PE, Senior Director – Bridge/Structures Program

Tess Paganelli, Director of Environmental Review and Permitting

Jeremy Fontaine, MA, ENV SP, Environmental Compliance Officer

10.3. Consultants

10.3.1. STV

J. Mark Ennis, PE, Project Manager – Master of Science (M.S.), Civil Engineering. More than 35 years of experience involving new and rehabilitated bridge design, bridge confirmatory inspection and capacity ratings, retaining walls, and building design.

Heather Moulton, PE, Deputy Project Manager – Master of Science (M.S.), Civil Engineering. More than 10 years of experience in developing designs for bridges, rail stations, and transportation facilities.

William Goulet, SE, PE, Project Engineer, Bridge Structures Lead – Master of Science (M.S.), Civil Engineering. More than 15 years of experience in structural and seismic analysis, concrete and steel design, and structural dynamics.

Cade Hobbick, AICP, LEED AP, Environmental Lead – Master of Urban Planning (M.U.P.), Urban Planning, Land Use and Environmental Planning, and Urban Design. More than 25 years of technical and project management experience for environmental impacts analyses, environmental assessments, and other documentation compliant with NEPA.

Samantha Bromberg, AICP, Environmental Analyses – Bachelor of Science (B.S.), Environmental Science. Experience performing a variety of analyses in support of NEPA-compliant documentation for transit and planning initiatives in the New York metropolitan area.

Linda McIntyre, AICP, Environmental Analyses and Quality Control – Master of Urban Planning (M.U.P), Land Use and Environmental Planning, and Juris Doctorate (J.D.). More than 15 years of experience in transportation and infrastructure, as well as technical writing.

10.3.2. TRC

Jeff Brandt, Environmental Permitting – Master of Arts (M.A.), Environmental Studies. Over 35 years of experience environmental permitting for transportation infrastructure and energy generation projects across the country.

Stacy Schimmoeller, NEPA Coordination and Review – Bachelor of Science (B.S.), Biology, Restoration Ecology. More than 18 years of technical and project management experience in environmental impact

analyses, NEPA project development, management, and construction inspection, biology, and waterway permitting.

10.3.3. HDR

Meghan Langley, Communications Project Manager – Master of Science (M.S.), Political Science. Five years of experience in urban and environmental planning communication, with specialization in virtual public meeting solutions and EJ engagement.

Martin Nee, Public Outreach Director – Bachelor of Arts (B.A.), Political Science. Over 30 years of experience working closely with public agencies to build consensus with neighborhood residents on a broad range of design and construction projects.

Adair Gregory, Communications Lead – Bachelor of Science, Bachelor of Arts (B.S.B.A), Business. Two years of experience on public sector transportation projects, specifically in building grassroots support for public infrastructure projects.

10.3.4. HMMH

Scott Noel, AICP, INCE, Noise and Vibration Lead – Bachelor of Arts, Environmental Planning and Geography. Over 24 years of technical, project management, and task management experience on noise and vibration studies for major infrastructure projects in support of NEPA permitting efforts.

Tara Cruz, Noise and Vibration Technician – Bachelor of Science, Meteorology. Nearly 10 years of noise and vibration technical expertise in support of major infrastructure projects proceeding through the NEPA process.

Hayden Jubera, Noise and Vibration Technician – Bachelor of Science, Acoustics. Nearly 10 years of noise and vibration technical expertise in support of major infrastructure projects proceeding through the NEPA process.

11. References

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