Massachusetts Department of Transportation
Office of Transportation Planning
10 Park Plaza, Suite 4150
Boston, MA 02116

Scope of Work: Maurice J. Tobin Bridge Long-Term Strategic Planning Study

Version Date: September 21, 2023

SPR A.17 / Corridor Planning Studies

I. Introduction & Background

The Massachusetts Department of Transportation (MassDOT)'s Office of Transportation Planning (OTP) is conducting a study of long-term alternatives for the replacement of the Maurice J. Tobin Memorial Bridge ("Tobin Bridge"). The Tobin Bridge carries U.S. Route 1 over the Mystic River and connects Boston and Chelsea. The current bridge is in adequate condition for its age and is programmed to be maintained in a "State of Good Repair" through 2035, with preventative measures programmed to ensure safe operating condition. MassDOT acknowledges the eventuality that the Tobin will fulfill its useful lifespan and will need to be replaced with similar or alternative infrastructure. In tangent with developing future means for Route 1 to cross the river, this study will consider opportunities to implement and improve transit priority and multimodal travel over the future bridge or its alternative and accommodate existing and future vehicle traffic levels.

The Tobin Bridge/Route 1 corridor is typically congested in peak hours and operates at or near capacity, as detailed in the 2019 "Congestion in the Commonwealth" report. As the primary roadway linking Boston and Chelsea, the Tobin Bridge is a critical connection between North Shore communities and I-93, I-90, and the rest of the Commonwealth's transportation network. Annual Average Daily Traffic (AADT) across the Tobin totals approximately 90,000 vehicles (as of June 2023), the majority of which are passenger vehicles. From January 2020 to mid-May 2023, there were 147 crashes across the span of the Tobin from Charlestown to Chelsea. North of the Tobin, Route 1 curves in an "S" fashion through Chelsea to the Revere border (this section is colloquially known as the "Chelsea Curves") and a significant number of crashes also occur through this section. In addition to developing alternatives for the Tobin Bridge, this study should consider safety measures for the Chelsea Curves.

The bridge currently carries MBTA Bus Route 111, which is proposed to be upgraded to high-frequency service. Alternatives resulting from this study should consider accommodations to enable frequent, reliable, and timely bus service such as bus lanes and transit priority. To further enhance and encourage multimodal travel between the North Shore and Boston/southern communities, alternatives should strive to include opportunities to expand the walking and biking networks.

The Tobin Bridge Long-Term Strategic Planning Study will establish existing mobility and other travel conditions within the study area and evaluate long-term recommendations intended to address the needs of current and anticipated future travelers along the corridor, with a particular emphasis on multimodal travel. In addition to exploring alternatives for the Bridge, the study should focus on ways to reconnect surrounding communities in Charlestown and Chelsea. It is crucial this study include extensive public involvement, given the Tobin's position in the Commonwealth's transportation network and its impact on the urban landscape and quality of life in the surrounding neighborhoods and communities.

Anticipated outcomes of this effort will include, but may not be limited to:

- Alternative concepts for a new bridge or other replacement infrastructure that include capital enhancements, traffic management, strategies to encourage multimodal trips, and ensure future transit service can operate reliably regardless of traffic conditions.
- A robust public involvement and community engagement effort to collect stakeholder input.
- An implementation plan and cost estimates for recommended alternatives.
- A feasibility analysis and cost estimates for new bridge or other alternative concepts, including preliminary suggestions for construction staging, conceptual impacts, and recommendations for traffic diversions.

This project is expected to take 24 months from Notice to Proceed (NTP). The anticipated budget for this project is $1,250,000.

IA. Data

All data proposed for use in this project work must be reviewed and approved by OTP independently of this scope. OTP owns and has access to data from previous studies that can and may be used as part of this project; the selected consultant must review the data currently owned and retained by MassDOT and privilege this data over outside or additional resources. Should additional data be considered required or beneficial, all proposed data procurements must be approved by OTP, with consultation of MassDOT's Highway Division. Data requirements beyond those noted in this initial scope may be determined by OTP and the consultant.

Should a data procurement be found to be beneficial or necessary by OTP, MassDOT will retain exclusive and non-transferable ownership of the procured data beyond applications to the immediate project. The rights and privileges associated with the procured data will be at the sole discretion of OTP. This means that OTP retains the right to make use of (and have designated users make use of) any procured data for purposes deemed worthwhile for enhancing transportation planning activities in the Commonwealth of Massachusetts.

II. Project Tasks

The following sections addressing the specific tasks of the Scope of Work to be undertaken by the consultant are intended to serve as a guide for prospective consultants in preparing their respective technical proposals for this project.

The selected consultant team will be directed by OTP and the consultant's progress will be monitored by the Project Manager. Meetings between the Project Manager, project management team, and consultant will occur on a bi-weekly basis. The selected consultant will perform specific tasks as outlined below, with a summary report, presentation materials, and other products as needed for each major task.

Each task will be accomplished in coordination with a public involvement plan. However, no items in this scope shall preclude the consultant from proposing modified or additional approaches or activities to accomplish the objectives of this effort. At the same time, the selected consultant must recognize that while this scope includes most major tasks expected to be required, the consultant will be responsible for other tasks necessary to deliver the major study elements, even though not all may be explicitly referenced in this scope.

Task 1. Documenting Relevant Efforts, Study Area, Goals and Objectives, Evaluation Criteria, and Public Involvement

The purpose of this task is to develop the framework necessary to conduct the study. The consultant, in consultation with OTP and the study's Working Group, will finalize the study area and develop goals and objectives, evaluation criteria, and a public involvement plan. Evaluation criteria will be determined based on the defined goals and objectives.

A. Documenting Relevant Efforts

MassDOT looks to build on any ongoing or recently completed planning work, studies, and/or projects related to the study area. Therefore, the consultant will compile relevant information and recommendations to ensure that any and all past MassDOT, other State agency, and municipal studies and projects are examined. The consultant is expected to take into account regional demographic and transportation projections, as outlined in the Boston Region Metropolitan Planning Organization's (Boston MPO) long-range transportation plan Destination 2050 (expected to be complete in Summer 2023).

Relevant documents and efforts could include, but are not limited to:

- Tobin Memorial Bridge CY2016 - CY2035 Capital Plan
- Road Safety Audits (RSAs) including, but not limited to:
    - 2022 Everett Avenue
    - 2019 Rutherford Avenue
    - 2018 Williams Street
    - 2018 Revere Beach Parkway Chelsea
- Boston Transportation Department's Rutherford Avenue/Sullivan Square Design Project
- Chelsea Zero Carbon Action Plan
- Chelsea Mill Creek Restoration and Water Quality Improvement projects
- Chelsea Urban Heat Mitigation Project
- Chelsea Hazard Mitigation Plan
- MBTA Better Bus Project
- MBTA Bus Network Redesign
- MBTA Rail Vision
- MBTA Focus40

- GoBoston 2030
- Climate Ready Boston
- Climate Ready Charlestown & Coastal Resilience Solutions for East Boston and Charlestown
- Sumner Tunnel Restoration Project
- Report: Current and future storm surge and stormwater flood risk under climate change in Chelsea, Massachusetts (Woodwell Climate Research Center)
- Boston MPO Destination 2050
- MAPC Regional Climate Adaptation Strategy
- Island End River Flood Mitigation Project
- Tobin Bridge/Chelsea Curves Rehabilitation project
- Report: Lower Mystic Regional Working Group
- Massachusetts Decarbonization Roadmap
- BPDA Boston in Context: Neighborhoods
- Report: Climate Change Impacts and Projections for the Greater Boston Area (UMass Boston)
- Congestion in the Commonwealth Report
- North Washington Street Bridge Replacement
- Any ongoing Central Artery North Area work/projects

Product:

- Summary of any ongoing or completed planning work, studies, and/or projects relevant to the study area and their findings

B. Study Area

The local and regional study areas will be defined in this subtask. Each study area should be defined to incorporate both local and regional impacts of any alternative. The **local study area** should encompass the Tobin Bridge from I-93 in Charlestown to the end of the Chelsea Curves at the Chelsea-Revere city line. Other local roadways leading into these major intersections should be considered, including those that are part of the bicycle and transit networks.

The **regional study area** should encompass roadways, neighborhoods, or developments in the surrounding region which can affect or be affected by the development of transportation improvements in the local study area and a Tobin Bridge alternative, during construction or upon completion. Assumptions should be made with ongoing projects expected to be complete by the benchmark year in this study (2050). The municipalities included in the regional study area could include but are not limited to Chelsea, Boston, Somerville, Cambridge, Revere, Everett, Medford, and Malden. The development of the regional study area will also involve consideration of regional bus routes, transit routes, and bicycle routes. Other considerations for the development of the regional study area may be taken into account as well.

The study areas will be further refined in the initial stages of the study with input from the study's Working Group. This does not preclude the consultant from proposing modified boundaries as part of the response to this procurement. The study areas will be finalized in the initial stages of the study with input from the public, commensurate with the Public Involvement Plan (Task 1, Section E).

Products:

- Local and regional study area definitions
- Definition of any supplemental study areas
- Mapping and other supporting documentation for the study areas

C. Goals and Objectives

Goals and objectives, which define the purpose of the study and its guiding principles, will be developed for this project in close coordination with the study Working Group and the public. The goals and objectives provide a "mission statement" for the study as a whole, and for addressing a particular issue or set of issues. The goals and objectives should shape the framework for the entire study. The goal of improving transportation conditions in the study area will serve as a base but will not preclude modifications or additional goals and objectives from being developed.

The overarching goals of this study should be to develop long-term replacement alternatives for the Tobin Bridge and to improve safety, reliability, mobility, accessibility, economic opportunity, and efficiency; mitigate climate change and environmental impacts (e.g. greenhouse gas emissions reduction, flood impacts, urban heat islands, and others), with a significant focus on flood vulnerability; reduce life cycle cost; encourage multimodal transportation options (walking, biking, transit) and reduce single occupancy vehicle (SOV) use; and minimize temporary and permanent impacts to surrounding communities. It is crucial the consultant consider goals and objectives that seek to contribute to the State's goals of net zero carbon emissions and 2050 targets, as well as any relevant targets of involved municipalities and agencies. When it comes to bicycle and pedestrian infrastructure, the consultant should consider a goal of integrating facilities with any surrounding networks to ensure connectivity that will facilitate movements in a non-piecemeal fashion and should align with guidelines and goals set by the City of Chelsea, City of Boston, MassDOT, and other relevant agencies and municipalities. Relevant municipal, state, and agency goals to improve transit priority and reliability should also be considered. Additional consideration should be given to goals and objectives that consider other elements of the study area, such as placemaking, the environment (ecosystems, impacts, permitting, etc.), historic preservation, public health, and others.

Product:

- Goals and Objectives

D. Evaluation Criteria

The evaluation criteria are specific considerations or measures of effectiveness used to assess benefits and impacts of alternatives developed during the study. The evaluation criteria will be based on the

defined objectives and must support the ultimate goals of the study. Such criteria include, but are not limited to, those that fall in the following categories:

- Mobility and accessibility in all transportation modes, including access to destinations and ADA considerations, person throughput, and roadway volumes
    - This criterion should include consideration of vessel traffic underneath and in the vicinity of the Tobin Bridge, particularly as it relates to freight operations.
- Cost and cost effectiveness, including capital, maintenance, operating, and life cycle costs
- Economic and land use impacts
- Climate change resilience and mitigation, with a significant focus on flood vulnerability and heat
- Safety for all transportation modes
- Social equity
- Environmental effects, including air quality and greenhouse gas impacts
- Public health effects, including promotion of healthy transportation options, as well as other public health factors e.g., air quality, noise, heat effects
- Support of policy, including supporting local, regional, or state policies not addressed by other criteria
- Feasibility of construction, construction staging, and high-level construction impacts

The evaluation criteria finalized by the project team should be consistent with MassDOT's performance measures and align with Capital Investment Plan scoring and with state policy directives such as MassDOT's Complete Streets Policy, the Massachusetts Healthy Transportation Compact, and MassDOT's Healthy Transportation Policy Directive. These initiatives embrace opportunities to accommodate and promote multimodal transportation options, and non-SOV travel.

The evaluation criteria will be used for Task 4 (alternatives analysis) of the study. The criteria should be logically related to objectives and, wherever possible, be quantitatively measured and directly derived from either previously developed information or analysis techniques used in the study. All evaluation criteria – containing both quantitative or more subjective, qualitative measures of effectiveness – should be used to determine the best solutions for the defined goals and objectives.

Product:

- Evaluation criteria and measurement methods

E. Public Involvement Plan

The study's Public Involvement Plan will be developed by the consultant with guidance from OTP. It is anticipated that, at a minimum, it will have three components: 1) meetings with the project management team; 2) meetings with the study's Working Group; and 3) general public informational meetings and outreach workshops at key project milestones.

For the purposes of this study there will be a MassDOT/MBTA project management team for cross-departmental coordination and collaboration. Project management team meetings will be held on a bi-weekly basis for the duration of the project.

A study Working Group will also be established comprising key stakeholders, including representatives from the City of Chelsea, City of Boston, Massachusetts Port Authority, U.S. Army Corps of Engineers, Metropolitan Area Planning Council, U.S. Coast Guard, Boston Harbor Pilots Association, emergency response teams, advocacy groups, and community organizations.

Working Group meetings will be scheduled at key project milestones with input from the members and will be conducted by OTP and the consultant. Following consultant selection, the first study Working Group meeting will be scheduled to discuss the study area limits; to discuss the goals, objectives, and evaluation criteria for the project; and to give the Working Group the opportunity to comment on these elements. This meeting will also determine the frequency of study Working Group meetings during the project.

MassDOT and the consultant will conduct public informational meetings at major project milestones. Public meetings will be scheduled and publicized by MassDOT and the consultant, and in conjunction with the MBTA and municipal and agency partners in the study area. The consultant will be expected to provide support for all elements of the public meetings, including but not limited to meeting content, meeting minutes, discussion facilitation, and virtual platform management. Informal outreach workshops may be held throughout the study process to provide the opportunity for additional public engagement with MassDOT and select Working Group members. MassDOT and its partners may be responsible for organizing, facilitating, and staffing outreach workshops and their components, although the consultant should develop and provide materials for these workshops. Development of the public involvement plan should consider non-traditional outreach paths to gather community input, in the consideration that typical weekday evening events may not provide an equitable opportunity for all members of the public to attend.

All Working Group and public meetings are subject to virtual participation depending on the guidelines for in-person meetings and large gatherings mandated by the Commonwealth of Massachusetts. Congruent with the scale of the study, in-person engagement is expected. OTP will work with the consultant to determine when meetings should take a hybrid format, to accommodate maximum participation by members of the public.

The consultant will be principally responsible for the preparation of presentation and display materials for Working Group meetings, public informational meetings, and visual representation and information materials for any outreach workshops. All such materials shall be prepared and submitted at least three weeks in advance to OTP to allow adequate time for review and approval by MassDOT. At OTP's discretion, the consultant may be required to present materials in advance of working group or public informational meetings.

A project website will be created, maintained, and updated by MassDOT. The consultant will be responsible for providing content data for the development of this website. The consultant will also be responsible for providing relevant historical documents, task deliverables, and both pre- and post-meeting materials to the MassDOT project manager for posting in a timely manner. MassDOT will organize a means to collect public questions and comments, be it through a comment form, designated project email address, or another method, as deemed appropriate.

All elements of the Public Involvement Plan must include specific communication strategies to provide continuous and meaningful opportunities for involvement by the public throughout the study process, taking specific account of barriers encountered because of income and/or language. These strategies must actively seek and facilitate the full and fair participation by all potentially affected communities, as well as mitigate against potential discrimination based on race, color, national origin, English proficiency, income, religious creed, ancestry, disability, age, gender, sexual orientation, military service, or gender identity or expression. The consultant should utilize MassDOT's Public Participation Plan and Engage (MassDOT's mapping tool for outreach) to guide the public participation process. All public materials produced as part of this study, including those posted to the project website, must be in an accessible format consistent with MassDOT guidelines. It is vital the project teams make an effort to provide translation services through all public outreach efforts be it meetings, documents, or otherwise, including in the following languages: Spanish, Portuguese, Arabic, Haitian Creole, and others as recommended.

Please refer to the following web address for additional information on accessibility:
https://www.mass.gov/web-accessibility-statement

Products:

- Public Involvement Plan detailing the project management team, Working Group and public meeting approach, including schedules and project milestones
- Public communications as determined necessary by OTP (including, but not limited to, website information, newsletters, press releases)
- Designated project email address and means for the public to submit questions/comments

FINAL PRODUCTS FOR TASK 1:

1. Draft report/chapter containing the following:
    a. Ongoing or recently completed studies and/or projects
    b. Study areas, including mapping and other supporting documentation
    c. Goals and objectives
    d. Evaluation criteria and measurement methods
2. Public Involvement Plan
3. Materials for project management team, Working Group, and public meetings

Task 2. Existing Conditions, Future No-Build Conditions, and Issues Evaluation

Existing transportation conditions and anticipated future year conditions will be inventoried and evaluated. Existing and future land use and environmental constraints will be examined and documented, with careful attention to those that could affect significant structures in the area, such as the LNG terminal and leased properties adjacent to the existing Tobin Bridge. Other issues raised by the project management team and Working Group may be evaluated, if feasible.

A. Existing Conditions and Data Collection

Current year (2023) transportation conditions will be analyzed for the study area. Existing data from

MassDOT, regional planning agencies/commissions, municipalities, regional transit authorities, and other sources will be used. This includes transit service availability, frequency, and ridership; access to destinations and mode infrastructure connectivity; traffic volume, turning movements, and crash data; bicycle connections and volumes; pedestrian volumes; and any other data required for a complete understanding of transportation conditions in the study area. Any relevant data collected as part of existing conditions reports for nearby developments should also be consulted.

The study area will be analyzed for bus level of service, traffic volumes and levels of service, safety, bicycling and pedestrian conditions including levels of comfort/traffic stress, adherence to Americans with Disabilities Act (ADA) standards, and other conditions as necessary. Other transportation issues as suggested in the public involvement process may be evaluated, as appropriate. Dynamic transportation projects should be taken into consideration, such as the MBTA Bus Network Redesign. The consultant will utilize microsimulation software such as SYNCHRO and/or VISSIM as required to perform the analysis of current year transportation conditions, as well as other analyses outlined in Tasks 3 and 4.

Recent traffic count data will be used to the greatest extent possible, including those collected by permanent stations, although historical data may be used to demonstrate trends in traffic changes. Additional traffic counts (automatic traffic recorder and/or turning movements) may be required to properly assess the current year conditions within the study area. If needed, these counts will be undertaken by MassDOT's Traffic Data Collection section.

Crash data will also be analyzed as appropriate for the study. The selected consultant will initially use the data from the MassDOT Crash Records database (developed from the Registry of Motor Vehicles crash data) to provide a preliminary review. The actual crash reports from both state and local police may need to be obtained by the selected consultant, for the three most recent years available, to ensure a thorough understanding of the existing safety conditions and future impacts to safety.

Existing land use/economic development, environmental, and public health data will also be reviewed and assembled for the study area from existing sources to the degree feasible. This includes the Massachusetts Department of Public Health, the Central Transportation Planning Staff/Boston Region MPO, GIS data layers that are available from municipal or regional GIS sources, and MassGIS sources. The consultant should also identify historical resources based on a review of the MHC MACRIS website (and other relevant sources) and identify areas of significance that might be impacted by or need to be taken into consideration in the study area.

Land use and economic development data collected may include, but is not limited to:

- Local comprehensive planning documents
- Previous conceptual planning studies
- Land-use patterns
- Zoning regulations
- Designated Port Area boundaries
- Chapter 91 boundaries
- Rights-of-way
- Property values

- Tax revenue data
- Car and truck access
- Freight flow data
- Marine vessel traffic
- Roadway network
- Transit access
- Access to destinations
- Bicycle facilities
- Pedestrian facilities
- Parking data/information
- Regional employment
- Labor market conditions
- Elevation and visibility information
- Emergency response
- Public facilities and utilities
- Historic Districts and Assets

Environmental data collected may include, but are not limited to:

- Wetlands
- Floodplain information
- Surface geology
- Protected and recreational open space
- Areas of Critical Environmental Concern (ACECs)
- Environmental justice community data and maps
- Essential fish habitats and fisheries
- Rare species
- Navigability of waterways
- Hazardous materials sites/contaminants
- Dredging projects
- Heat islands
- Noise levels
- Air quality
- Cultural, historical, and archaeological resources

Public health data collected may include, but are not limited to:

- Hospitalization (inpatient) data for asthma, myocardial infarction, congestive heart failure, stroke, and hypertension
- Levels of pediatric and adult obesity
- Levels of pediatric and adult depression and anxiety
- Levels of pediatric and adult diabetes (including Type II)
- Levels of pediatric asthma
- Injuries and fatalities related to crashes
- EMS calls and responses in the study area
- Impact of COVID-19 on populations within the study area

- Findings from the Department of Public Health Environmental Justice Tool

Recent and proposed commercial/industrial developments, major residential and mixed-use projects, and other proposed projects with significant trip generation in the study area will be identified and mapped. Examples include proposed developments at Bunker Hill Community College, expansion of the Encore Casino Campus, 213 Everett Avenue, and the Bunker Hill Housing Redevelopment.

MassDOT will provide available aerial photography files and any previously existing maps for the development or update of base maps by the consultant as necessary. Final resolution/scales of photographs and base maps will be determined jointly by MassDOT and the consultant team and will be based on available data files.

Using the above collected data, a base map will then be assembled in a GIS format for use in the current and future tasks. The consultant team will identify all potential land use and environmental constraints that could affect the feasibility of any alternatives developed during the study. The data will be used for other analytical purposes as well.

The consultant shall also be responsible for obtaining or collecting other data and information that is needed to execute the study scope.

Products:

- Existing transit services, availability, and ridership for study area
- Existing traffic volumes, turning movements, levels of service, and crash data (with collision diagrams and crash rates)
- Existing bicycle and pedestrian conditions and levels of comfort/traffic stress
- Existing land use, economic development, environmental, and public health data
- Technical documentation and data
- Other data and information, as needed

B. Future Year Conditions/No-Build Scenario

Transportation conditions in the study area will be forecast for the horizon year of 2050, consistent with the Boston Region MPO's Destination 2050 long-range regional transportation plan. Traffic projections will be developed based upon information in Destination 2050, as well as information provided by the Statewide Travel Demand Model. Travel demand modeling work will be conducted as a part of this effort to demonstrate future constraints and demands on capacity of the Bridge and roadways in the study area(s). Such conditions will be considered as a No-Build Scenario and used during Task 4, Alternatives Analysis. The selected consultant will be expected to provide OTP with processed and balanced traffic count data to facilitate the model calibration. The expectation is that any traffic modeling will be carried out by the Boston Region MPO/Central Transportation Planning Staff (CTPS), who will participate in providing relevant data and modeling results to the consulting team. If necessary, the consultant may be expected to perform additional/supplementary modeling.

The consultant team is expected to conduct scenario planning that takes into account the current projected lifespan of the bridge and its future maintenance life. This should be considered in the no-build model where the Tobin continues to undergo maintenance. The scenario planning will be incorporated into the cost analysis during alternatives analysis to provide a point of comparison for the costs of (a) new alternative(s) and maintaining the existing bridge/a no-build scenario. Part of the scenario planning will include a focus on long-term economic development in the area, such as in the vicinity of the former ExxonMobil site in Everett and projected changes and continuations in marine land use and vessel traffic upstream of the Tobin Bridge.

Anticipated development, socioeconomic, environmental, and land use changes in the study area will be analyzed to measure their effect on future study area conditions. As a part of this, the consultant will consider major specific planned developments in the study area. Any traffic studies conducted for new developments should also be examined. Transportation projects programmed in local, regional, and statewide plans will also be considered for their effect on future conditions. Examples include: GoBoston 2030, the Massachusetts Pedestrian Plan, the Massachusetts Bicycle Plan, and the MBTA Bus Network Redesign. Other examples are listed under Task 1, Section A.

Anticipated environmental changes such as climate change (e.g., flooding, heat) must be considered for future year conditions. Chelsea and Boston's plans and projections for climate change will be considered as a part of this effort alongside relevant efforts from other municipalities and agencies in the study area (e.g., MAPC Metro Boston Regional Climate Change Adaptation Strategy Report). Further examples are named, but not limited to, those under Task 1, Section A.

The consultant will also be expected to work with OTP and other appropriate parties to identify appropriate assumptions for future year infrastructure and development as necessary.

Products:

- Forecasted traffic levels and conditions
- Forecasted transit ridership and services
- Socioeconomic projections
- Environmental projections
- Land use projections
- Technical documentation

C. Definition and Evaluation of Issues and Opportunities

Based on the existing and future conditions analysis, the consultant shall identify, quantify, and evaluate a comprehensive catalog of current and future transportation and environmental deficiencies and issues in the study area. Wherever feasible, issues and constraints will be presented in graphical or map form suitable for presentation to the project management team and Working Group.

Deficiencies and issues in the study area will be identified, quantified, and evaluated for use in subsequent tasks. Opportunities for new connections and improvements to infrastructure, access, mobility, connectivity, and economic development will also be identified, quantified, and evaluated.

As part of defining transportation and environmental issues in the study area, the following elements should be considered: current and future traffic congestion, safety, climate change, health determinants, community effects, economic development, land use, access (including vehicle, transit, bicycling, pedestrian, and marine use), connectivity, and other factors as determined appropriate by OTP or working group input. Additionally, the consultant should identify any existing transportation effects on minority or low-income populations which are disproportionate, high, and adverse. Wherever feasible, the defined issues and opportunities will be presented in graphical or map form suitable for presentation at public informational meetings.

Product:

- Inventory and definition of issues and opportunities, including assumptions, methods, and approach

D. Constraints Identification

MassDOT and the consultant will identify a set of project constraints related to environmental impacts, engineering/design feasibility (including designated port areas and Marine Traffic), business and residential effects, cost, transit services, historic preservation, and other factors as appropriate. Constraints for engineering feasibility will be based on appropriate MassDOT Highway Division, MBTA, Massport, Federal, and U.S. Army Corps of Engineers guidelines, as applicable.

Product:

- Inventory of project constraints

FINAL PRODUCT FOR TASK 2:

Completed draft chapter/section containing the following:

- Existing site conditions
- Existing transit services, availability, performance data, and ridership
- Existing traffic volumes, turning movements, levels of service, and crash data (with collision diagrams and crash rates)
- Existing bicycle and pedestrian conditions
- Existing land use, economic development, environmental, and public health data
- Public perspectives regarding existing conditions, problems, opportunities, etc.
- Other data and information as needed
- Forecasted traffic levels and conditions
- Forecasted transit ridership and services
- Forecasted environmental changes, including sea level rise
- Socioeconomic projections
- Land use projections
- Inventory and definition of issues and opportunities
- Inventory of project constraints

Task 3. Alternatives Development

In consultation with the project management team and the Working Group, MassDOT and the consultant team will develop alternatives and refine a selection of alternatives for detailed analysis in Task 4. When appropriate, visual imaging tools (ranging from maps and graphics to the use of three-dimensional display techniques) are strongly encouraged as part of this task.

The consultant will develop distinct potential long-term alternatives based on the transportation deficiencies, issues, and constraints identified in Task 2. Alternatives will be developed for the Tobin Bridge, Chelsea Curves, and any appropriate connecting roadways, separately or combined. Alternatives should consider transitions between freeway conditions and local roadways to reduce the operating speeds within Chelsea and Revere. As each alternative is developed, the consultant must consider designs which improve connections to the local and regional roadway network, enhance transit, improve and introduce bicycle and pedestrian connections, mitigate climate change impacts, advance placemaking and reconnect communities, and other criteria determined in Task 1. Alternatives may consider infrastructure improvement strategies including, but not limited to, roadway changes, managed lanes, access management techniques, and extension of existing and proposed pedestrian/bicycle corridors. Alternatives which include Transportation Systems Management and Operations (TSMO) strategies, if relevant, should also be considered and developed. Throughout alternatives development, consideration must be given for accommodating necessary marine traffic in the study area in the area an alternative would be situated.

OTP encourages the consultant to strive for "out-of-the-box" thinking when considering alternatives. It is crucial that each alternative developed balances vehicle operations and other transportation modes, while also considering state, municipal, agency, and other stakeholder goals for future mobility. Alternatives should maintain a lens of encouraging mode shift to non-SOV travel by providing accommodations for transit, walking, and bicycling (although should be proposed in such a way that would limit hazardous access).

FINAL PRODUCT FOR TASK 3:

Draft section/chapter containing the following:

- Descriptions of long-term alternatives
- Maps, graphics, and other visualizations showing alternatives
- Technical documentation and datasets

Task 4. Alternatives Analysis

A refined selection of alternatives will be analyzed based on the evaluation criteria from Task 1. Any necessary mitigation for impacts related to each alternative should also be considered in the analysis. The consultant will analyze the alternatives developed in Task 3 based on the set of evaluation criteria developed in Task 1 with feedback from the project management team, the Working Group, and the public. At a minimum, the consultant should evaluate each alternative relative to multimodal mobility

and connectivity, access, safety, environment (including climate change and resilience), land use and economic development, community benefits or impacts, constructability, cost, public health, equity, and other effects.

A. Mobility and Accessibility Analysis

The consultant will analyze the impacts of alternatives on mobility (based on goals and objectives developed in Task 1) in the study area. Mobility as it relates to the bus, vehicular, bicycle, and pedestrian systems should be considered. Accessibility standards conforming to ADA regulations must be considered. Transit services to analyze include the MBTA's Commuter Rail and local and regional Bus Routes, as well as any other transit routes which are determined to be included in the study area. Any relevant executed or proposed changes to transit services and routes in the study area should be included in the alternatives analysis. The roadway system to be analyzed includes local roads and intersections, related highway interchanges, and bicycle and pedestrian infrastructure and other facilities in the local and regional study areas.

Analysis using appropriate methods will be undertaken to analyze the impact of alternatives on bicycle, pedestrian, and transit access in the immediate study area, with a focus on the users' ability to comfortably and safely reach any destination by these modes. The ability of alternatives to support and facilitate movement of priority services (e.g., transit, EMS) should be considered. Bicycle and transit impacts should be analyzed for the local and regional study areas. This analysis should assess the connectivity of proposed and existing dedicated bicycle, pedestrian, and transit infrastructure. If appropriate, the consultant should conduct a Bicycle Level of Comfort (BLOC) and Pedestrian Level of Comfort (PLOC) analysis of the proposed alternatives in the local study area (and other new proposed facilities, as relevant) to assess the stress level of the proposed bicycle and pedestrian improvements and whether alternatives will contribute to a more comfortable, safe, and connected network.

Product:

- Alternatives analysis for transit ridership, transit routing, transit amenities, roadway network, roadway volumes, access to destinations, infrastructure connectivity, traffic operations, and bicycle and pedestrian conditions, including BLOC and PLOC for each alternative.

B. Safety Analysis

The consultant will analyze the traffic safety impacts in the study area for each alternative to the degree feasible, including examining the impacts on bicycle and pedestrian, vehicular, and bus movements in the study area. The analysis will follow the MassDOT Safety Alternatives Analysis Guide and FHWA's Highway Safety Manual to provide a quantitative analysis to identify the impacts to safety across all modes to the extent possible. Each of the alternative designs should refer to the crash expectations within the alternatives proposed according to nationally published factors.

Product:

- Alternatives analysis for traffic safety

C. Environmental Effects Analysis

The consultant will analyze the environmental impacts for each alternative to the degree feasible, examining: climate change mitigation and adaptation (resilience), wetlands, floodplains, surface geology, protected and recreational open space, ACECs, hazardous materials sites, air quality, greenhouse gas impacts, noise, cultural, historical and archaeological resources, and other constraints as necessary to fully analyze each alternative.

Product:

- Alternatives analysis for environmental effects

D. Public Health Analysis

The consultant will analyze the public health impacts for each alternative to the degree feasible, including examining hospitalization (inpatient) data for asthma, myocardial infarction, congestive heart failure, stroke, and hypertension, levels of pediatric and adult obesity, levels of pediatric and adult depression and anxiety, levels of pediatric and adult diabetes (including Type II), levels of pediatric asthma, injuries and fatalities related to crashes, and the impact of COVID-19 on populations within the study area.

Product:

- Alternatives analysis for public health impacts

E. Land Use and Economic Development Analysis

The consultant will analyze land use, economic development and business impacts for each alternative to the degree feasible, including examining: rights-of-way, property values, tax base, planned and potential zoning changes, planned developments (including Chapter 40B and Transit-Oriented Developments), parking, car and truck access to existing or planned parcels, visibility, labor force impacts, regional and local employment, and other elements as necessary to fully analyze each alternative. This analysis should also consider the impacts of alternatives on marine traffic and whether alternatives would impede the operations thereof.

Product:

- Alternatives analysis for land use, economic development, and business impacts

F. Community Effects/Title VI/Environmental Justice Analysis

As part of the evaluation of effects on the community, the consultant shall analyze the alternatives and identify the potential social equity impacts of the alternatives, including how they may impact or benefit the minority and low-income populations that now reside in or are adjacent to the study area. Special consideration should be given to the project's impacts on access to community resources, assets (including historic ones), and industries. The consultant should also analyze the possible equity impacts of the alternatives analyzed and how they may impact or benefit the minority and low-income (please refer to Executive Order 12898 on Environmental Justice), limited-English proficiency (please refer to Executive Order 13166), and Title VI protected populations (please refer to Title VI of the Civil Rights Act of 1964 for additional information).

Product:

- Alternatives analysis for community effects/environmental justice

G. Cost Analysis

Approximate construction, operations and maintenance, life cycle cost, rights-of-way, and mitigation costs will be estimated at a conceptual level for each alternative. Other information (project implementation scenarios, construction schedules, temporary construction impacts, preliminary transportation diversion routes etc.) will be estimated to the extent possible. The cost analysis should also compare the costs of no-build bridge maintenance to relevant build alternatives.

Product:

- Analysis of conceptual costs associated with each alternative

FINAL PRODUCT FOR TASK 4:

Draft report section/chapter evaluating the proposed long-range alternatives and comparing them to a no-build scenario based on Task 1 criteria and projected future conditions, including:

- Mobility in all transportation modes
- Accessibility and access, including ease of movement for EMS services
- Connectivity
- Safety
- Environmental effects, including climate change mitigation and adaptation, and air quality and greenhouse gas impacts
- Health effects, including promotion of healthy transportation options as well as discussion of other public health factors, such as air quality and noise
- Land use and economic development
- Social equity and fairness
- Conceptual-level capital, operations, life cycle, and maintenance costs

Task 5. Findings and Recommendations

The recommendations should include long-term improvements as a result of the analysis completed in the previous tasks. The feasibility of each improvement should be detailed, including construction costs and potential impacts. The findings shall also be presented in the form of an implementation plan that identifies key stakeholders, issues, milestones, regulatory and procedural requirements, appropriate digital renderings of alternatives, potential funding sources, and other relevant issues. The findings should reflect the public input attained and documented through the public participation plan. The consultant and project management team will work with the identified stakeholders to outline the steps necessary to implement improvements.

FINAL PRODUCT FOR TASK 5:

Draft report section/chapter on findings containing:

- Tables of long-term alternatives
- Feasibility narrative and improvement implementation plan
- Alternatives maps, graphics, and displays, including preliminary concept designs
- Recommended alternative(s)

Task 6. Final Report

A Final Report will be prepared consisting of revised versions of the report chapters developed under Tasks 2 through 5, with an introductory chapter discussing the overall project, process, and the goals-related material developed in Task 1. The report will also include an executive summary and appendices. The final report should be made available in an accessible PDF format (in adherence to Section 508 of the Rehabilitation Act) and provided to MassDOT. All electronic files (Word, PowerPoint, GIS Data layers, traffic analysis software, etc.) should also be provided to MassDOT upon completion of this study. The consultant will also deliver a minimum of seven (7) hard copies of the final report to MassDOT. Any data collected or used in the study will be considered the property of MassDOT and transferred to relevant parties accordingly.

FINAL PRODUCTS FOR TASK 6:

- Draft final report
- PowerPoint document of findings
- Revised final report
- Online version of final report
- 7 hard copies of the report
- Datasets