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COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION

Bridge Replacement, C-13-038, I-391 over (ST 116) Chicopee Street
in the City of

CHICOPEE

Proposal No. 612187-CCCCCC

Best Value Design-Build Procurement

Federal-Aid Project No. HIP(NGB)-3912(004)

Phase 2
Request for Proposals

VOLUME II OF III

Technical Provisions

DRAFT

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APPENDIX A: TERMS AND DEFINITIONS

APPENDIX B: WAGE RATES FOR STATE AND FEDERAL PROJECTS

APPENDIX C: PROJECT REFERENCE DOCUMENTS

C.01 BASE TECHNICAL CONCEPT

- 612187_BTC Drawings – CAD.zip
- 612187_BTC Highway Plans
- 612187_BTC Bridge Plans

C.02 VALUE ENGINEERING STUDY - [NOT APPLICABLE]

C.03 CIVIL

- 612187 Accepted Right of Way Plans
- 612187 Right of Way Certificate (PENDING)
- 612187 25% Water Quality Data Form (WQDF)
- 612187 Functional Design Report
- 612187 Design Justification Workbook (DRAFT) – FINAL VERSION PENDING
- MassDOT Project Utility Coordination (PUC) Form
- City of Chicopee Water Department Construction Standards
- Existing Sidewalk Evaluation Memo
- I-391 NB & SB Pavement Cores
- Sieve Results
- MassDOT Draft Details for Pavement Markings
- Subsurface Utility Exploration (SUE) Plans from Overland Engineering dated 6/27/25
- A00816 Rumble Strip Details
- Work Zone Speed Limits-MassDOT SOP

C.04 ENVIRONMENTAL

- NEPA CE Checklist (DRAFT) – FINAL VERSION PENDING
- Section 106 Clearance Letter
- Section 6(f) Permit (PENDING)
- 612187 Environmental Review Checklist
- 612187 25% Hazardous Materials Review Memo
- 612187 Hazardous Material Assessment
- USFWS Section 7 NLAA Concurrence Verification
- 612187 Wetland Report 11-01-2024

C.05 EXISTING CONDITIONS

- Record Bridge Plans
 - C-13-038 Record Plans – 1980
 - C-13-039=H-21-059 Record Plans – 1977 (including 2024 repair plans)
 - C-13-047 Record Plans – 1980
 - H-21-060 Record Plans – 1978/1980 (including 1990 and 2023 repair plans)
- Record Highway Plans
 - Chicopee Street (Route 116) – 1995, 2001
 - Interstate 391 – 1974, 1978, 1979, 1980, 1983, 2000, 2017, 2019, 2020
- Record Utility Plans
 - Chicopee Sewer
 - Chicopee Electric
 - Eversource Gas
 - Verizon
- Record Layout Plans
 - N/A

C.06 GEOTECHNICAL

- 612187 Geotechnical Data Report – Chicopee Bridge No. C-13-038 Replacement, Chicopee, Massachusetts

C.07 [NOT APPLICABLE]**C.08 HYDRAULICS**

- [NOT APPLICABLE]

C.09 SPECIAL PROVISIONS

- A00801 Draft BTC Special Provisions
- A00810 MassDot Herbicide Report 07-18-2018
- A00811 Watering Log 06-15-2018

C.10 STRUCTURAL

- Inspection Reports
 - C-13-038 (0WR)-Routine 2024-08-19
 - C-13-038 (0WR)-Special Member 2025-08-27
 - C-13-039=H-21-059 (0WF)-Routine 2025-10-02
 - C-13-047 (0WQ)-Routine 2023-10-11
- Bridge Rating Reports
 - C-13-038 (0WR) July 2022 (Revised September 2022)
 - C-13-038 (0WR) May 2006
 - C-13-038 (0WR) 2026 Rating Memorandum
 - C-13-039=H-21-059 (0WF) July 2005
 - C-13-039=H-21-059 (0WF) 2026 Rating Memorandum
 - C-13-047 (0WQ) July 2005
 - C-13-047 (0WQ) 2026 Rating Memorandum
 - H-21-060 (0WT) April 2022
- Bridge No. C-13-038 – Bridge Type Selection Worksheet (BTSW)
- Bridge No. C-13-038 – Preliminary Structure Report Appendix C
- Bridge No. C-13-038 – Pre-Stage 1 Repair Locations

C.11 NETTCP MODEL QCP

- NETTCP Model Quality Control Plan
- MassDOT Quality Control Plan Commentary

C.12 COMMENT RESOLUTION - [NOT APPLICABLE]

C.13 ELECTRONIC DOCUMENT MANAGEMENT METHODOLOGY

- Document Control - Minimum Metadata Requirements
- SharePoint/Bluebeam DB Review Process
- Early Release Construction Submittal Process Flowchart

C.14 PUBLIC PARTICIPATION PLAN

- Public Involvement and Outreach Plan Correspondence Protocol
- Project Tracking Documents
 - Issue Complaint and Question Intake Form
 - Design Public Comments Tracking Form
 - Construction Issues/Complaints and Questions Tracking Form

C.15 ACCESSIBLE ELECTRONIC DELIVERABLES

- Accessible Contract Language and Guidelines

APPENDIX D: GENERAL CONTRACT PROGRAM AND POLICY REQUIREMENTS

DOCUMENT 00210	REQUIREMENTS OF MGL CHAPTER 30, SECTION 39R; CHAPTER 30, SECTION 39O
DOCUMENT 00331	LOCUS MAP
DOCUMENT 00439	CONTRACTOR PROJECT EVALUATION FORM
DOCUMENT 00440	SUBCONTRACTOR PROJECT EVALUATION FORM
DOCUMENT 00760	FORM FHWA-1273 REQUIRED CONTRACT PROVISIONS FOR FEDERAL-AID CONSTRUCTION CONTRACTS
DOCUMENT 00811DB	MONTHLY PRICE ADJUSTMENT FOR HOT MIX ASPHALT (HMA) MIXTURES DESIGN-BUILD
DOCUMENT 00812DB	MONTHLY PRICE ADJUSTMENT FOR DIESEL FUEL & GASOLINE DESIGN-BUILD
DOCUMENT 00813DB	PRICE ADJUSTMENTS FOR STRUCTURAL STEEL & REINFORCING STEEL DESIGN-BUILD
DOCUMENT 00814DB	PRICE ADJUSTMENT FOR PORTLAND CEMENT CONCRETE MIXES DESIGN-BUILD
DOCUMENT 00820	THE COMMONWEALTH OF MASSACHUSETTS SUPPLEMENTAL EQUAL EMPLOYMENT OPPORTUNITY, NON-DISCRIMINATION AND AFFIRMATIVE ACTION PROGRAM
DOCUMENT 00821	ELECTRONIC REPORTING REQUIREMENTS CIVIL RIGHTS PROGRAMS AND CERTIFIED PAYROLL
DOCUMENT 00859	CONTRACTOR/SUBCONTRACTOR CERTIFICATION FORM
DOCUMENT 00860	COMMONWEALTH OF MASSACHUSETTS PUBLIC EMPLOYMENT LAWS
DOCUMENT 00870	STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION CONTRACT SPECIFICATIONS
DOCUMENT A00875	POLICY DIRECTIVE P-22-001 AND POLICY DIRECTIVE P-22-002

APPENDIX E: {RESERVE FOR FUTURE USE}**APPENDIX F: QUALITY MANAGEMENT PLAN REQUIREMENTS**

- Quality Management Plan (QMP) Requirements
- Approved QMP Example (*Bridge Replacement Br. No. H-12-039 Interstate 495 (NB & SB) over the Merrimack River, Haverhill, MA*)

SECTION 1.0: PROJECT REQUIREMENTS AND PROVISIONS FOR WORK

1.1 PROJECT MANAGEMENT

1.1.1 Project Description

The Massachusetts Department of Transportation, Highway Division (MassDOT) is undertaking a project to design and construct the Bridge Replacement, C-13-038, Interstate 391 over Chicopee Street (Route 116) Design-Build Project in the City of Chicopee.

1.1.2 General

The Design-Builder shall plan, schedule, and execute all aspects of the Work and shall be responsible for coordinating its activities with all parties who are directly impacted by the Work. The Design-Builder shall document and report all Work in accordance with the requirements of the Contract Documents.

The Design-Builder shall at all times provide a Design-Builder Project Manager (“Project Manager”) who has been approved by MassDOT. The Project Manager will have full responsibility for the prosecution of the Work and will act as a single point of contact in all matters on behalf of the Design-Builder. The Design-Builder shall not change the Project Manager without the prior written approval of MassDOT in its sole discretion. In the event that the Design-Builder fails to obtain MassDOT’s approval of a replacement before the existing Project Manager leaves, the Design-Builder shall not be entitled to receive any progress payments hereunder until such time as the approved replacement has started work on the Project.

The final design and details for the Project will be the responsibility of the Design-Builder. All plans/drawings, special provisions, reports and comments are referred to as the Base Technical Concept (BTC) and are provided as a reference; however, some components are mandatory, and are defined as such within this Request for Proposal (RFP). The BTC was developed to establish the minimum baseline requirements that shall be equaled or exceeded by the Design-Builder. In the event that the Design-Builder, through design development, proposes changes to their Technical Proposal or the BTC requirements, the Design-Builder, upon approval of the Designer of Record, shall submit a Request For Information (RFI) including written justification for MassDOT’s review and concurrence before incorporating into a Design Submission. Any proposed changes to the BTC that are not demonstrated to be equal or better than the BTC will be rejected by MassDOT. The Design-Builder shall be required to provide a final, complete project design that is stamped, sealed and certified by their own Professional Engineers of Record and Land Surveyor of Record for review and approval by MassDOT and possibly third parties. The Professional Engineers and Land Surveyor must be registered in the Commonwealth of Massachusetts.

1.1.3 Project Management Plan

Within seven (7) Days of the issuance of the Notice to Proceed, the Design-Builder shall submit a Project Management Plan based on the Technical Proposal requirements detailed in RFP Volume I: Instructions to Proposers, Section 3.3 which describes the organization, authority, reporting relationships, and procedures to be implemented to manage and control the Work. The Design-Builder shall submit the Project Management Plan for review by MassDOT and FHWA, and shall obtain MassDOT's approval thereof, and shall at all times comply with the requirements thereof. The Project Management Plan shall be consistent with the Technical Proposal.

The Project Management Plan shall identify and describe the functional relationship of the following Key Personnel:

- Project Manager (Full Time)
- Quality Control (QC) Administrator*
- Design Quality Control (QC) Manager*
- Design Manager
- Lead Structural Engineer
- Lead Geotechnical Engineer
- Construction Manager (Full Time)
- Construction Quality Control (QC) Manager* (Full Time)
- Fabrication Quality Control (QC) Manager*
- Construction Superintendent (Full Time)
- Lead Traffic Engineer

* Key Quality Control (QC) Personnel shall have the responsibilities and possess the minimum qualifications described in Section 2.4.

In addition to the key personnel listed above, the Project Management Plan shall also identify and describe the functional relationship of the following Project Team Members:

- Environmental Compliance Manager (Construction)
 - The Environmental Compliance Manager shall be an environmental practitioner with a minimum of ten (10) years of experience in construction compliance with complex roadway and bridge projects.
- Traffic Control Supervisor (TCS)
 - The TCS will be the Responsible Person in charge of the Project work site relative to all design and/or setup and maintaining temporary traffic control in the work zone. The TCS shall be certified by the American Traffic Safety Services Association (ATSSA) and shall have completed the Traffic Control Technician training as a prerequisite for the TCS training and meet all the minimum TCS certification requirements of the ATSSA Certification Board. The TCS certification must be current and remain current for the duration of the Project.
- Lead Highway Engineer
- Landscape Architect
- Safety Compliance
- Utility Coordinator
- Public Outreach Liaison
 - MassDOT is retaining the services of an independent outreach consultant. The Design-Builder shall identify a Public Outreach Liaison to interface with the MassDOT outreach consultant. The responsibilities of the Public Outreach Liaison shall include but are not limited to providing timely, accurate information needed for regular and stand-alone updates to the public, answer questions which come in form Public Officials/community members, and to relay complaints and/or concerns regarding dust, noise, traffic or other issues pertaining to the Project.
- Document Control Engineer
- Project Scheduler
- Civil Rights Compliance Manager
 - The Design-Builder's designated person who is working under the direction of the Project Manager shall be responsible for monitoring all Civil Rights Compliance requirements and achieving the EEO goals described in the Contract Documents.

1.1.4 MassDOT's Role

MassDOT will perform management oversight, design acceptance/approval and construction acceptance of the Work for the purpose of assuring that the Design-Builder Work meets the requirements of the RFP and Contract Documents approved by MassDOT. Oversight activities include design reviews, design acceptance/approval at key Design milestones (i.e. 75% and 100% Highway Design, and Bridge Design submittals; and Issued for Construction Design Submittal), and construction acceptance inspection and testing. MassDOT will also serve as a liaison with regulatory agencies in connection with the Design-Builder's application for Environmental Approvals/Clearances and/or amendments. However, none of MassDOT's oversight activities shall relieve the Design-Builder from its obligations as defined in the RFP.

MassDOT will review and respond to complete design and permit application/amendment submittals within thirty (30) days. All submissions from the Design-Builder must be complete and contain sufficient and/or required information such that the review can be completed and, as appropriate, the submission made to the environmental agencies. All submittals shall be in accordance with the Design-Builder's design quality management procedures as approved by MassDOT. MassDOT will respond within thirty (30) Days on re-submittals, provided that the re-submittal is complete and meets all terms and conditions of the design quality management procedures. Both initial and re-submittals will be returned without review if all Quality Control information is not provided in accordance with the approved Quality Management Plan.

MassDOT will be the applicant of record on all environmental permit applications unless otherwise required by statute, and all requests for permit amendments or regulatory consultations/amendments. These submissions will be made to MassDOT for initial review and comment. Once approved and signed, the Design-Builder is required to make the requests for permit amendments and regulatory approvals to the agencies. MassDOT will distribute all required copies to other parties. MassDOT will also be responsible for administering the resulting Contract, including: invoice review and approval for payment; schedule review and approval; performance evaluation; Extra Work Order negotiation; dispute resolution; and other activities indicated herein.

MassDOT will identify a MassDOT employee to serve as the MassDOT Design-Build Project Manager and may elect to retain the services of a Consultant (Designated Agent) to administer and oversee the Design-Builder's activities including engineering design services, construction, and general support to MassDOT for administration of the Project. The MassDOT Designated Agent is not authorized to:

- Direct the performance of the Work unless continued performance of the Work appears likely to endanger the health, welfare or safety of workers or the public;
- Approve deviations from applicable standards and conditions;
- Authorize changes in or Design Exceptions from the approved Design Documents, or performance by the Design-Builder of extra Work or changed Work;
- Waive any requirements or Provisions of the RFP and Contract; or
- Approve Design Documents, Extra Work Orders, or RFP and Contract amendments.

All submittals will be made electronically and by hard copy to both MassDOT and the Designated Agent (if utilized by MassDOT) simultaneously. Upon Notice to Proceed, the Design-Builder will be provided a table showing each submittal category and the appropriate MassDOT recipient. The Design-Builder shall utilize the MassDOT's SharePoint® web-based document control system to facilitate the reviews.

1.1.5 Federal Highway Administration Role

As part of its stewardship responsibilities under the State/Federal partnership of the Federal-Aid Highway Program, FHWA will perform Project oversight activity, including review and approval of Design Documents and Construction Documents. Design review activity will normally be performed concurrent with MassDOT at key Design milestones (i.e. 75% and 100% Highway and First and Second Structural Submittals, and Issued for Construction Submittal). FHWA will also perform periodic inspection of Project Construction activity including progress of Work, quality of Work, and adequacy of Quality Control. A Final Inspection will be held upon final completion of all Work to support FHWA's issuance of Project Final Acceptance.

FHWA will also conduct oversight reviews to ensure compliance with FHWA rules and requirements. FHWA reviews will consist of checks to ensure that RFP and Contract requirements and design criteria are being followed and that Quality Control activities are following the Design-Builder's approved Quality Management Plan. It is FHWA's intent to provide acceptance of the submittals which meet all Contract and RFP requirements as confirmed by the QC Administrator in order for Construction to begin on any particular element of the Work.

1.1.6 Local Agency Role

It is assumed that the majority of work will occur within the existing Right-of-Way, however, if elements of the Work involve additional properties or local roads, these efforts will be subject to review, approval, inspection, testing, and/or acceptance by local agencies. The Design-Builder shall be responsible for obtaining and paying for any needed local Governmental Approvals and for ensuring coordination with Utility Providers. The Design-Builder shall be responsible for obtaining and paying for any required local permits, licenses, or fees from the local municipalities and any other local Government agencies required.

Off-site temporary detours, proposed truck routes, and changeable message sign installations shall be coordinated with local municipalities and approved by MassDOT.

1.1.7 Railroads Role

The tracks of the Berkshire Eastern Railroad, a subsidiary of Genesee and Wyoming, Incorporated pass under a bridge immediately to the south of Bridge No. C-13-038. Amtrak service between Hartford, Connecticut and Springfield, Massachusetts also uses this line. While this unnamed overpass above the railroad tracks is not structurally part of this Project, the traffic management plans require several paving operations on its deck.

The role of Genesee and Wyoming will be to provide reviews of construction submissions to ensure that the proposed equipment and procedures meeting their requirements. Genesee and Wyoming will provide acceptance of the submittals which meet their Right-of-Entry requirements as confirmed by their Real Estate Department as confirmed by the QC Administrator in order for Construction to begin on any particular element of the Work. Acceptance of applicable submittals must be received from Genesee and Wyoming in order for paving operations to begin over their right-of-way as this constitutes operations taking place within their air rights.

Contact information for Genesee and Wyoming's Real Estate Department may be found at <https://www.gwrr.com/real-estate/accessing-property/>. It should be noted that the Real Estate Department's application fee is set at \$1,750 and standard processing time to review an application for a right-of-entry is 6-8 weeks. Expedited permitting of 1-2 weeks can be obtained at a premium of \$4,750.

1.1.8 Design-Builder Obligations

The final design and details for the Bridge Replacement, C-13-038, Interstate 391 over Chicopee Street (Route 116) will be the responsibility of the Design-Builder. All plans, special provisions, reports and comments provided are for reference only. The BTC was developed to establish the minimum baseline requirements that shall be equaled or exceeded by the Design-Builder. All Design-Builders acknowledge by receipt of such plans that they explicitly understand that while these plans have been advanced to the level identified above, the Design-Builder shall be required to provide a final, complete Project design that is stamped, sealed and certified by their own Professional Engineer of Record for review and approval by MassDOT and possibly third parties. The Professional Engineer shall be registered in the Commonwealth of Massachusetts.

The Design-Builder shall design and construct the Project as designed, in accordance with all professional engineering principles and construction practices, and in accordance with all standards identified in Section 1.2.2 and in Volume III: Draft Contract for State Highway Work, in a good and workmanlike manner, and free from defects in accordance with the terms and conditions of the Contract Documents. Except as otherwise specifically provided in the Contract Documents, all materials, services and efforts necessary to achieve Substantial Completion and Final Acceptance on or before the deadlines provided herein, shall be the Design-Builder's responsibility; and the cost of all such materials, services and efforts shall be included in the Design-Builder's Price Proposal.

The Design-Builder is required to design and construct the Project in accordance with Government approvals, Environmental Approvals/Clearances, environmental permits, the accepted Project schedule, the approved Project Management Plan, the approved Quality Management Plan (QMP), the Site Control Plan, the approved Construction Staging Plan, accepted Noise and Dust Control Plans, and the accepted Health and Safety Plan and all other applicable Laws, negotiations, regulations, ordinances, and other requirements, taking into account the Right-of-Way and other physical constraints affecting the Project, so as to achieve Substantial Completion and Final Acceptance by the deadlines specified herein.

To the extent not already obtained by or on behalf of MassDOT, the Design-Builder shall obtain and pay the cost of obtaining all Governmental Approvals, and/or amendments to Environmental Approvals/Clearances or permits. The Design-Builder shall undertake and perform all actions required by and all actions necessary to maintain in full force and affect all Governmental Approvals and Environmental Approvals/Clearances and/or permits, including the performance of all environmental mitigation measures required by the Contract Documents, Environmental Approvals/Clearances and/or permits and applicable Law.

The Design-Builder shall coordinate all work with utilities, including, but not limited to the protection of underground Chicopee Electric Light Department (CELD) Electric conduits, overhead CELD Electric conduits, underground Verizon and Charter Communication conduits, overhead Verizon and Charter Communication wires, Eversource 6-inch Gas Main, City of Chicopee Sewer Mains, And City of Chicopee Water Mains. The Design-Builder shall be responsible for the costs of any required permits necessary to construct the utilities as shown on the BTC Plans. The Design-Builder shall monitor and protect existing utility infrastructure that could potentially be impacted by construction activities. See Section 6.0 for specific utility requirements.

The Design-Builder shall cooperate with MassDOT in connection with all matters relating to the Project, including review of the design of the Project and conducting inspections during the construction of the Project. This may include but not be limited to, over the shoulder design reviews and other design review meetings that appear appropriate based on schedule or contract issues as they arise, all shop tests and shop assembly checks as well as typical shop inspection access and participation in construction and erection meetings.

The Design-Builder shall mitigate delay to the Project and mitigate damages due to delay in all circumstances, including re-sequencing, reallocating or redeploying its forces as appropriate.

The Design-Builder is required to submit a work plan to MassDOT for approval of the specific work hours. Any work between 9:00 PM and 6:00 AM requires the prior approval of MassDOT and is subject to work restrictions. The Design-Builder's attention is called to the Noise Control Draft BTC Special Provision provided in Appendix C for additional requirements related to construction noise control, construction noise monitoring, and noise complaint procedures.

The Design-Builder shall submit a Construction Staging Plan to MassDOT for approval. At a minimum, the Construction Staging Plan shall identify construction staging areas with anticipated durations of use, proposed work hours, and employee parking areas.

The Design-Builder will be required to coordinate with District 2 for a highway access permit for staging and laydown areas.

The Design-Builder shall submit a Designated Truck Route(s) Plan to MassDOT for approval. The Design-Builder shall coordinate with City of Chicopee prior to submitting this Plan. The Designated Truck Route shall utilize state-owned roadways to the maximum extent practicable and shall avoid residential streets to the maximum extent practicable. This Route shall be utilized by all construction-related trucks, including material delivery trucks.

The Design-Builder shall provide the complete design for this Bridge Replacement Project in collaboration with MassDOT and develop and complete the following documents and work efforts. Submission dates shall be noted in the Design-Builder's Schedule. Note that this list is not to be considered all inclusive:

- Project Schedule
- Project Management Plan
- Quality Management Plan
- Construction Quality Control Plans
- Data to support MassDOT's public involvement consultant in the production of graphics, presentation materials, and a construction period revision to the project website
- Review for accuracy of transcripts or meeting minutes of presentations made to elected officials, project stakeholders and the public at-large as drafted by MassDOT's public involvement consultant
- Public Participation Plan
- Graphics, presentation materials, and transcripts or meeting minutes for presentations to elected officials, Project stakeholders, and the public at large.

- Project Webpage
- Hazardous Materials Management Plan
- Health and Safety Plan
- Groundwater and Soil Management Plan
- Pavement Design Report
- Construction Staging Plan
- Temporary Traffic Control Plans
- Lead Abatement Plan
- Proposed Work Plan for approval of non-standard work hours (as applicable)
- Portable Changeable Message Sign Plan
- Designated Truck Route Plan
- Utility Plans in accordance with the submittal requirements of Engineering Directive E-19-004 to accompany the 75% and 100% Highway, First and Second Structural Bridge, and Issued for Construction Design Submittals
- Stormwater Management Plan
- Responses to MassDOT comments on the Formal 75% and 100% Highway, First and Second Structural Bridge, and Issued for Construction Design Submittals
- Any and all environmental permits, coordination plans, schedules, and supporting documentation to support the design and/or to allow any construction work to begin
- Construction Zone Safety Plans
- Structural Monitoring Plan
- Noise Control Plans
- Dust Control Plans
- Applications and supporting documentation for any required municipal permits for work in local streets/thoroughfares in the City of Chicopee.
- Excavated Material Management Plan (EMMP)
- Stormwater Pollution Prevention Plan (SWPPP)/ Construction Period Pollution Prevention Plan (CP/PPP)
- Invasive Species Management Plan
- Environmental Monitoring Plan
- Landscape Material Procurement Plans
- Coordination with the local municipal fire departments for training related to emergency response
- Coordination with abutters, landowners, emergency services, local schools, environmental agencies, utilities, local boards and officials, and any other party with an interest in or impact from the Project. Coordination will be done in conjunction with MassDOT.

- Coordination with Genesee and Wyoming's Real Estate Office and such coordination as they may direct with their local subsidiary, Berkshire Eastern
- Coordination with Pioneer Valley Transit Authority (PVTA), including but not limited to the temporary relocation of bus stop(s)
- Special Provisions
- Final Geotechnical Report
- 75% and 100% Design Submittal of all plans and highway designs
- First and Second Structural Bridge Design Submissions
- Issued for Construction Design Submittal of all plans, including bridge and highway designs
- Construction of all aspects of the final design, including any mitigation required from permits obtained by MassDOT in advance of Notice-to-Proceed to the Design-Builder.
- Construction Procedures as described in Section 10.15
- Shop Drawings as described in Section 10.16
- As-built drawings as described in Section 10.18 and/or required by Environmental Approvals/Clearances
- Bridge Structure Rating Reports as described in Section 4.10.2.2 and 10.19
- Contingency Plans as described in Section 10.20
- Materials and Workmanship Quality Certificate

1.1.9 Ownership and Management of Documents

The ownership and management of the Project documents produced by the Design-Builder is as follows: (a) Design Documents shall become the property of MassDOT upon preparation; (b) Construction Documents shall become the property of MassDOT upon delivery to MassDOT; and (c) information obtained or produced by the Design-Builder in connection with the performance of its obligations under this Contract, including studies, technical and other reports and the like, shall become the property of MassDOT upon the Design-Builder's preparation or receipt thereof.

In addition, permit applications for environmental permits and clearance documents issued by Local, State, or Federal agencies shall become the property of MassDOT upon delivery to MassDOT.

Shop Drawings shall become property of MassDOT upon delivery to MassDOT.

Copies of all such information shall be furnished to MassDOT upon preparation or receipt thereof by the Design-Builder. The Design-Builder shall furnish MassDOT with the original working drawings, final as-built drawings, and all maintenance and operation manuals for the Project as a condition of Final Acceptance.

As-built drawings shall be completed by the Design-Builder within thirty (30) days after final placement of work and shall be turned over to MassDOT upon completion.

Any patents granted related to elements or details shown in the Design Documents or to construction methodologies employed during the execution of the work under this Contract shall have their rights transferred to MassDOT upon completion. The Design-Builder shall utilize the MassDOT SharePoint® web-based site to upload/download all project-wide submittals, including major milestone packages. This site will serve as a document management control system for the Design-Builder.

1.1.10 Electronic Document Management Methodology (EDMM)

The Design-Builder shall utilize the Department's SharePoint® web-based document control software and records retention system to perform document control functions, from NTP until completion of the Project. The requirements in this Subsection are in addition to the document control requirements provided elsewhere in the Contract and do not replace any requirements for generating hardcopies and/or other submittal requirements. In addition to the requirements of this Subsection, all costs associated with the development, processing, organization, delivery, printing, transferring, and filing of all Project documents is to be included in the Contract price at no additional cost to the Department.

The Design-Builder shall appoint a Document Control Engineer to act as the Project's main point of contact for electronic document management. It should be anticipated that this will be a dedicated position for the duration of the Project. Any personnel changes to the Document Control Engineer shall be approved in writing by the Department prior to the replacement to ensure continuous administration of Project documents.

The Design-Builder shall be prepared to generate the Metadata for all aspects of all project documents and load that data onto the Department's SharePoint® site, on a daily basis, and in a timely manner to support the project schedule. Metadata is the detailed digital information that is used to describe the content and the context of all of the project documents. Refer to Appendix C – Minimum Metadata Entry Requirements for examples. Once entered and verified by the Design-Builder, the Metadata and all of the relevant project documentation will be processed on the Department's SharePoint® site and will include, but not be limited to: correspondence, design submittals, extra work orders, non-conformance reports, requests-for-information, inspections, field changes, as-built drawings, schedule submissions, claims, material certifications, punchlists, and all other project documentation as directed by MassDOT.

The exchange and proper revision/change management of all of these documents are to be made available to key members of the project team, including members of MassDOT-Highway groups (District/Boston Construction, Bridge, Traffic Engineering, Project Controls, Environmental, Materials, Project Management, Design-Build, and District Project Development Section), as well as key members of MassDOT's Design Consultant, the Design-Builder, and the Design-Builder's Subconsultants/Contractors.

Data Backup and Redundancy - The Design-Builder will be responsible to develop and routinely maintain a back-up filing system that consists of hardcopies and will also be required to submit all project documents, as a searchable PDF, prior to the declaration of Substantial Completion. This requirement is in addition to the requirements of this Subsection and elsewhere in the Contract.

Administration - The Design-Builder will be required to utilize the Department's naming convention, workflow, and formatting as part of this document control system. The Design-Builder shall also provide routine administrative support to make changes, modifications, and/or updates, as required by MassDOT, and will be required to attend periodic meetings for the document control system.

Review Times - Reviews shall start on the day of notification, when notification is received prior to 12:00 PM (noon), otherwise review times shall commence the following day. Notifications shall only be sent out on MassDOT Business Days, and any notification of new or resubmitted document for review sent out after 12:00 PM (noon) on a Friday will have the associated review time commence on the next business day.

Date Stamped - In addition to the Metadata provided, all Project documents shall be date stamped on the digital record and the hard copies.

SharePoint/Bluebeam DB Review Process - The SharePoint/Bluebeam DB Review Process provided in Appendix C shows MassDOT's current review process for Design-Build Projects.

The Design-Builder agrees not to rely upon the Department's document control system and agrees not to make claim for any slow speed or lack of access.

Other Documents requiring Design-Builder Metadata entry include but are not limited to the following:

- Design Reports
- Project Correspondence
- Special Provisions
- Design Submittals
- Quality Management Plan (QMP)
- Construction QC Plans
- Early Release for Construction Submittals
- Approved Shop Drawings
- Construction Submittals
- Issued for Construction Documents
- Working drawings
- Existing conditions inspection reports
- Materials Ledger (RMS 360)
 - Certificate of Compliances
 - Certificate of Analyses
 - Independent Test Reports
 - Mill Certifications
 - Mix Designs
 - Technical Data Sheets
- Quality Control inspection reports
- Quality Control sampling and testing reports
- Requests for Information (RFIs)
- Non-conformance Reports (NCRs)
- Deficiency Reports (DRs)

- Field Design Change (FDCs)
- Design Change Notices (DCNs)
- Utility Coordination Reports
- Baseline Schedules
- Monthly Progress Schedules
- 3- Week Look Ahead Schedule for Design and Construction
- Meeting Minutes
- Environmental Submittals
 - Permits/Approvals/Orders of Conditions
 - Mitigation Monitoring Reports
 - Environmental Compliance Tracking
- As-built Plans
- Other Project Documents as detailed in Document Library of the MassDOT Document Control Site

1.1.11 Additional Document Control Support

The Design-Builder shall provide 7 new Microsoft Surface Pro (latest model) or equal tablet computers and maintain as specified in Draft BTC Special Provision Item 740.3, Engineer's Field Office and Equipment, for MassDOT construction staff to use from the NTP of the Contract to the completion of the Contract. It will be the responsibility of the Design-Builder to provide updates and maintenance as needed. The purpose of those tablet computers will be to have remote or direct access to all construction drawings and documents (issued for construction, early start of construction, shop, and working).

It will be the responsibility of the Design-Builder to maintain the new Microsoft Surface Pro (latest model) or equal new tablet computers with hotspot, and ensure that the latest information is contained within the memory of the tablet computer. The tablet computer will be a touch-screen device with a minimum diagonal screen dimension of 12.3", and a minimum of 128 gigabytes of storage. The tablet computer will include a minimum of a 1 gigahertz dual-core processor, and include gyroscope, accelerometer, and ambient light sensor. The tablets should be equipped with internet connection (Wi-Fi and LTE), all applicable software applications, and a mobile / data plan (LTE connection or higher with unlimited monthly data) with a capability to allow connection to the Project documents with or without the presence of a Wi-Fi connection. The tablets should be capable of taking digital photographs and videos at a resolution comparable with a standard digital camera. These tablets shall all be furnished with protective cases. These cases shall be waterproof and shock resistant. The tablets shall also have backup chargers and external keyboards.

A docking station shall be provided for each of the seven (7) tablet computers to connect the tablet computer to monitors using USB-C connectors. Each docking station shall accommodate two (2) monitors.

The Design-Builder will be responsible for repairing or replacing any damaged tablets within 24 hours of being notified of the tablet not functioning properly.

Upon completion of the Project, the tablet computers will become the property of the Design-Builder.

1.2 REFERENCE DOCUMENTS AND STANDARDS

1.2.1 Reference Documents

Refer to Table of Contents Appendix C: Project Reference Documents for a complete listing of Project-specific reference documents. MassDOT will furnish a secured Dropbox link with Project specific reference documents to the Design-Builder as part of the RFP package. All plans, special provisions, reports, and comments are provided for reference use only. The BTC was developed to establish the minimum baseline requirements that must be equaled or exceeded by the Design-Builder. In the event that the Design-Builder, through design development, proposes changes to their Technical Proposal or the BTC requirements, the Design-Builder shall submit a Request for Information (RFI) including written justification for MassDOT's review and concurrence before incorporating into a Design Submission. Any proposed changes to the BTC that are not demonstrated to be equal or better than the BTC will be rejected by MassDOT. The Design-Builder acknowledges by receipt of such plans that they explicitly understand that while these plans have been advanced to the level shown by MassDOT, the Design-Builder will be required to provide a final, complete project design that is stamped and sealed by its own designer of record, for review and approval by MassDOT, FHWA and possible third parties. Revisions or additions to information in the reference plans being provided may be necessary based on comments received during the on-going MassDOT, FHWA plan review and permitting. MassDOT makes no representations as to the accuracy or completeness of information contained in any documents and will not be responsible in any way for the Design-Builder's reliance on or utilization of the contents of such documents. The Design-Builder shall perform supplemental testing, data collection, survey, borings, etc. as necessary.

The BTC Structural and Highway Plans have been developed to various stages of preliminary design. The Design-Builder shall independently develop their own CAD drawings in conformance with MassDOT Standards to provide the necessary design intent and design details required for the final design. The Design-Builder shall be solely responsible for the content and the accuracy of their drawings, including the verification by field survey of any critical existing dimensions. See Section 4.8.2 for details on field survey.

The Special Provisions included with the BTC are in draft form. The Design-Builder shall be responsible for developing final Special Provisions that are consistent with their design.

1.2.2 AASHTO, MassDOT, and Other Applicable Standards and Codes

AASHTO, MassDOT, and other reference standards are applicable to the final design and construction documents to be developed by the Design-Builder, including, but not limited to the list below. Access MassDOT Highway Information related to Construction, Design/Engineering, Contractor/Vendor Information, Approved Materials and Fabricators, Manuals, Publications and Forms at: <https://www.mass.gov/orgs/highway-division>

Please note: the list below is not intended to represent a comprehensive list of all required documents. Additional standards may apply). All work performed under this Contract and Contract Amendments shall be in conformance with AASHTO and MassDOT standards, except to the extent that the Contract specifically allows exceptions there from. (This Project must be designed in English units.)

In the case of a conflict between MassDOT and AASHTO standards, the more stringent standards shall apply. Where dates are not specified, the most current version at the time of the proposal submission shall apply. If standards or requirements in a newer version or directive published after the Technical & Price Proposal submission conflicts with the Design Builder's approved bid, exceptions to said standards shall be discussed and resolved between all parties prior to any enforcement.

- The MassDOT Design Build Procurement Guide, 2012 <https://www.mass.gov/doc/design-build-procurement-guide/download>
- 2023 MassDOT Project Development and Design Guide (PDDG) with latest online chapter revisions (<https://www.mass.gov/manual/massdot-project-development-and-design-guide>)
- MassDOT Right of Way Manual
- MassDOT English Bid Item Nomenclature List, latest edition
- Commonwealth of Massachusetts Department of Transportation (MassDOT) Standard Specifications for Highways and Bridges, 2026 Edition
- MassDOT Supplemental Specifications (latest issued)
- 1996 MassHighway Survey Manual
- MassHighway Schedule for Sampling and Testing Materials Guide (2005)
- All current MassDOT Engineering Directives
- MassDOT Bridge Manual - Hundredth Anniversary Edition: <https://www.mass.gov/manual/massdot-bridge-manual-hundredth-anniversary-edition>
- AASHTO LRFD Bridge Construction Specifications, 4th edition, Includes Errata (2018) and 2020 Interim Revision 1 and 2022 Interim Revision 2.
- AASHTO Guide Specifications for LRFD Seismic Bridge Design, 2nd Edition, 2011 with 2012, 2014, 2015, and 2022 Interim Revisions. For the purpose of conducting Seismic Analysis, the 2011 AASHTO Guide Specifications for LRFD Seismic Bridge Design (LRFD GS) shall be used instead of the AASHTO LRFD Bridge Design Specifications (AASHTO LRFD), except as noted in the MassDOT Bridge Manual.
- AASHTO Standard Specifications for Transportation Materials and Methods of Sampling and Testing and Provisional Standards
- AASHTO/AWS D1.5 Bridge Welding Code, 8th Edition, 2020 with current AASHTO interim revisions
- AASHTO Guide Specifications for Design and Construction of Segmental Concrete Bridges, 2nd Edition, with 2003 Interim Revisions
- AASHTO Guide Design Specifications for Bridge Temporary Works, Latest Edition with Interim Revisions

- PCI MNL-116 Manual for Quality Control for Plant and Production of Structural Precast Concrete Products, 5th Edition
- PCI MNL 135-00 Tolerance Manual for Precast and Prestressed Concrete Construction, 1st Edition
- FHWA Publication No. FHWA-IF-09-010 – “Connection Details for Prefabricated Bridge Elements and Systems” dated 3/30/2009 (Please note MassDOT standard details are included as Part III of the MassDOT Bridge Manual)
- FHWA Publication No. FHWA-HIF-17-019 – “Engineering Design, Fabrication, and Erection of Prefabricated Bridge Elements and Systems” dated June 2013.
- FHWA Publication No. FHWA-HIF-17-020 – “Contracting and Construction of Accelerated Bridge Construction Projects with Prefabricated Bridge Elements and Systems” dated June 2013
- FHWA Publication No. FHWA-NHI-15-044 – “Engineering for Structural Stability in Bridge Construction” latest edition.
- FHWA Post-Tensioned Box Girder Design Manual June 2016 FHWA-HIF-15-016
- FHWA Post-Tensioning Tendon Installation and Grouting Manual vers. 2.0 May 2013 FHWA-NHI-13-026.
- ACI 318-19 Building Code Requirements for Structural Concrete and Commentary
- PTI M50.3-12: Guide Specification for Grouted Post-Tensioning (June 2012)
- PTI M55.1-12(13): Specification for Grouting of Post-Tensioned Structures with Addendum #1 (June 2013)
- PTI M50.2-00: Anchorage Zone Design
- All current MassDOT Policy Directives
- AASHTO Standard Specifications For Structural Supports For Highway Signs, Luminaires and Traffic Signals – 2013 edition with the 2015 interim revisions.
- AISC Steel Construction Manual 16th Edition
- MassDOT Construction Standard Details, dated January 2026 or the latest version
- 11th Edition Manual on Uniform Traffic Control Devices (MUTCD) and the January 2026 Massachusetts Amendments to the MUTCD
- 1968 Standard Drawings for Traffic Signals and Highway Lighting
- 1990 Standard Drawings for Signs and Supports
- Notes on Walks and Wheelchair Ramp for designers and Construction Engineers, dated March 2012
- MassDOT Standard Traffic Control Plans for the Development of Traffic Management Plans (Latest approved version)
- 2016 Transportation Research Board’s Highway Capacity Manual (HCM), 6th Edition
- NCHRP Web Only Document 326 – Design Guidelines for Test Level 3 through Test Level 5 Roadside Barrier Systems Placed on Mechanically Stabilized Earth Retaining Walls (2022)
- American Standard for Nursery Stock (ANSI Z-60.1-2014) or latest edition

- AASHTO A Policy on Design Standards – Interstate Systems, 6th Edition
- 2018 AASHTO A Policy on Geometric Design of Highways and Streets, 7th Edition
- 2011 AASHTO Roadside Design Guide, 4th Edition (w/Errata)
- 2012 AASHTO Guide for the Development of Bicycle Facilities, 4th Edition
- MassDOT Separated Bike Lane Planning & Design Guide
- 2016 AASHTO Manual for Assessing Safety Hardware, (MASH), 2nd Edition
- Americans with Disabilities Act Accessibility Guidelines (ADAAG)
- Massachusetts Architectural Access Board Regulations (521 CMR)
- US Access Board Public Right-of-Way Accessibility Guidelines (PROWAG)
- MEC (Massachusetts Electrical Code) in accordance with the National Electrical Code (NEC) 2023
- Section 248 of the Commonwealth of Massachusetts Regulations (248 CMR): General Provisions Governing the Conduct of Plumbing and Gas Work Performed in the Commonwealth
- American National Standard Practice for Roadway and Area Lighting Equipment, ANSI/IESNA RP-8-14
- AASHTO Roadway Lighting Design Guide (October 2005 or Latest Edition)
- 2008 MassDEP Stormwater Handbook
- MassDOT, Stormwater Design Guide, 2023 Edition
- Massachusetts Wetlands Protection Act (WPA) regulations (310 CMR 10.00)
- FHWA Current and latest editions of the Hydraulic Publications, from this site: https://www.fhwa.dot.gov/engineering/hydraulics/library_listing.cfm
- FHWA HDS 7, Hydraulic Design of Safe Bridges, 2012
- FHWA HEC 18, Evaluating Scour at Bridges, 5th Edition, 2012
- FHWA HEC 20, Stream Stability at Highway Structures, 4th Edition, 2012
- FHWA HEC 23, Bridge Scour and Stream Instability Countermeasures, Experience, Selection and Design Guidance, Volumes 1 and 2, 3rd Edition, 2009
- FHWA HEC 25, Highways in the Coastal Environment, 3rd Edition, 2020
- FHWA HEC 22 Urban Drainage Design Manual (Gutter Flow Analysis)
- National Environmental Policy Act
- Section 106 of the National Historic Preservation Act
- Clean Water Act
 - Section 401 - Water Quality Certifications
 - Section 404 - USACE Permits and Wetlands
- American Iron and Steel Institute (AISI)
- American National Standards Institute (ANSI)

- American Society for Testing and Materials (ASTM)
- American Society of Civil Engineers (ASCE)
- American Welding Society (AWS)
- Crane Manufacturers Association of America (CMAA)
- International Electrical Code (IEC)
- Occupational Safety and Health Administration (OSHA)
- Steel Structures Painting Council (SSPC)
- National Electrical Code (NEC)
- National Electrical Manufacturers Association (NEMA)
- Underwriters Laboratory, Inc. (UL)
- ANSI/IESNA Recommended Practice for Roadway Lighting (RP-8)
- CIE Division 4 Visibility Design for Roadway Lighting
- NFPA 70 – National Electrical Code (NEC)
- IESNA Recommended Lighting for Walkways and Class 1 Bikeways (DG-5)
- IES Lighting for Exterior Environments RP-33
- IES Lighting Handbook – 10th Edition
- MassDOT Utility Accommodation Policy

1.2.3 Federal Highway Administration Standards

All federal standards applicable to Federal-Aid Highway Program projects must be met on this Project, including, but not limited to the following (Please note: the list below is not intended to represent a comprehensive list of all required documents. Additional standards may apply):

- Code of Federal Regulations
 - 23 CFR 625 – Design Standards for Highways
 - 23 CFR 626 – Pavement Policy
 - 23 CFR 630 – Preconstruction Procedures
 - 23 CFR 634 – Worker Visibility
 - 23 CFR 635 – Construction and Maintenance
 - 23 CFR 636 – Design-Build Contracting
 - 23 CFR 637 – Construction Inspection and Approval
 - 33 CFR Part 118.25 – Application Procedure, Approval of Lights and Other Signals

1.3 ADMINISTRATION AND COORDINATION

1.3.1 Briefings for Community Groups, MassDOT, and Others

Public involvement and communications are essential to the Project's development and construction phases. MassDOT will be conducting an extensive public outreach for this project with the general public, (regional and local), local municipalities, neighborhood groups, local conservation commissions, adjacent business owners and elected officials. To fulfill commitments made during the public outreach process, MassDOT anticipates that extensive coordination and public outreach will be required during the final design and construction of this Project, which are reflected in the BTC.

MassDOT has separately engaged the service of a public engagement consultant. The Design-Builder will provide a public outreach consultant to support MassDOT and their public engagement consultant to provide effective communication of Project information to abutters, travelers, and the general public. MassDOT will use all available resources to communicate Project information including, but not limited to, broadcast and print media, variable message signs, a dedicated Project webpage, mobile media, existing MassDOT websites and other Commonwealth websites, fliers, fact sheets, social media, newsletters, GovDelivery e-mails, presentations, briefings, meetings, and signs. The Design-Builder will have an important role in public involvement and communications and shall support MassDOT and its consultant by supplying the needed materials for presentations, providing content to MassDOT to update the Project webpage, and any other media required for communicating Project information to all interested parties. All materials, where appropriate, shall incorporate the Project's message points, which will be prepared in collaboration with MassDOT. The Design-Builder shall not be compensated by MassDOT for the preparation of these materials. The Design-Builder public involvement activities shall include, at minimum:

- Assign a Public Outreach Coordinator to support MassDOT's public outreach activities throughout design and construction.
- Attend meetings and briefings as needed with MassDOT, FHWA, State Police, Local Municipalities and their Emergency Services departments, local elected officials, the community, Pioneer Valley Transit Authority, utility owners, state and local commissions and others. The Design-Builder shall be responsible for attending presentation review meetings to finalize the presentation and participating in answering questions at any meeting at the appropriate time and in accordance with MassDOT requirements.

- Public Information Meetings whether in person or virtual.
 - The Design-Builder will be required to attend the 75% Highway Design public information meeting.
 - The Design-Builder will be required to attend meetings for the community with the first occurring thirty (30) days prior to the commencement of any construction activities.
 - Thirty (30) days before construction begins, the Design-Builder will be required to attend briefing to discuss construction management plans with abutters and other project participants as determined by MassDOT.
 - The Design-Builder will be required to attend a public meeting thirty (30) days prior to any major traffic changes through Full Beneficial Use, as well as fourteen (14) days prior to a long term, partial, or complete closure of any Project roadway, and seven (7) days prior to the commencement of all short duration closures. The need for these meetings will be determined by MassDOT.
- Meetings may be required with community members, neighborhood associations, business groups and affected agencies throughout the duration of the final design and the construction period. The Design-Builder may be required to attend these meetings as determined by MassDOT. These meetings may be either in person or virtual.
- Support the preparation of Project updates, graphics and other visual aids as needed for use by MassDOT. All material submitted shall be in an accessible format to those who are sight and hearing impaired. MassDOT will finalize all outreach material including, but not limited to, meeting presentations, Project flyers, Project fact sheets, FAQs, Project webpage, etc. The Design-Builder will be required to provide the following to support the creation of outreach material:
 - Information for bi-weekly construction e-mail updates (to be sent by MassDOT), including 90-day look ahead schedules, detailed updates for the upcoming three weeks; including any traffic phase changes, anticipated issues, and any changes in information to be provided to the public. The Design-Builder will provide metrics needed by MassDOT for Project reporting.
 - Photographs and video footage of Project activities for posting on the Project website and social media (such as completion of superstructure demolition and erection, major traffic shifts, etc.). Photos and videos shall be available for MassDOT's use throughout the Project.
 - Presentation slides, presentation boards, and graphics.
 - Daily traffic updates and alerts as conditions change.
 - Detour Maps of each detour route for use on the website and distribution to media, stakeholder groups, etc.
 - Written content and graphics for project newsletters and the website.

- Prepare meeting minutes for any public information meeting or briefing the Design-Builder attends in accordance with Section 1.1.2 Meeting Minutes.
- Provide a dedicated Project hotline telephone number for receiving and tracking comments, complaints, and questions from the public and stakeholders. As the hotline is intended to address unsafe or other immediately problematic conditions, it may not be substituted with another form of communication. The Project hotline shall be activated 30 days prior to the start of construction. Comments, complaints, and questions received via the hotline will be logged, responded to, and tracked for resolution by the Design-Builder. All responses will be coordinated with and approved by MassDOT prior to responding to the inquiry. The protocol, sample forms, and tracking logs will be provided to the Design-Builder once MassDOT has finalized the Public Participation Plan.
- Support MassDOT's public involvement consultant in coordinating with Chicopee's Veterans' Services Administrator to ensure that the ceremony which takes place the Saturday evening of Memorial Day weekend can take place as normal through cleaning the park site, visually screening stockpiled construction materials or demolition debris, and placing gravel or other clean, dry, walkable surfaces over any mud which may be in the ceremonial area. Both MassDOT's public involvement consultant and Design-Build staff are encouraged to make themselves available to Veterans' Services Administrator to support this commemorative event in recognition of the service of the deceased Vietnam Veterans honored at the park at their still-living relatives and fellow service members.

1.3.1.1 Police, Fire, and Emergency

The Design-Builder shall coordinate through the MassDOT Resident Engineer project work and informational updates, which will be forwarded to MassDOT District 2 for formal coordination with State Police, local Police, Fire, and Emergency Response. The Design-Builder shall provide up to date information on all detours, traffic restrictions, and lane closures to State Police, local Police, Fire, and Emergency Response.

1.3.2 Meeting Minutes

The Design-Builder shall attend all meetings involving the Design-Builder, MassDOT or its Designated Agent, FHWA, and third parties including, but not limited to, utility companies, municipalities, stakeholders, and regulatory agencies as appropriate. For all meetings at which the Design-Builder is in attendance, the Design-Builder shall submit to MassDOT objective draft meeting minutes within five (5) business days after the meeting. The Design-Builder shall submit final meeting minutes incorporating any MassDOT comments within five (5) business days after receipt of MassDOT's approval or comments on such draft meeting minutes, as applicable. Meeting minutes shall be submitted to MassDOT electronically.

The Design-Builder shall be responsible for the distribution of final MassDOT-approved meeting minutes to all meeting attendees. Excluded from this requirement are internal meetings between the Design-Builder's Team Members.

At a minimum, all meeting minutes shall contain a complete list of attendees (including their affiliations, email addresses, and telephone numbers), descriptions of issues discussed, decisions made, direction given, and remaining open issues (including identification of the party responsible for follow-up and the target date for resolution).

1.3.3 Coordination with Other Projects

During the construction phase of the Project, the Design-Builder shall be required to coordinate the Design-Builder's efforts with local and government agencies, community groups, adjacent landowners, utility companies and other planned MassDOT projects that may be under design and/or construction during the construction phase of the Project. The coordination will include, but is not limited to providing sufficient notice of roadway closures and/or other significant operations prior to their occurrence. The Design-Builder shall review design plans, coordinate and monitor adjacent work or any entity performing or proposing work adjacent to this Project. The Design-Builder must anticipate allocating responsible personnel to this component of the Project.

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The following are some of the potential adjacent MassDOT projects:

<u>ACTIVE PROJECTS</u>
CHICOPEE – LUDLOW – WILBRAHAM – Resurfacing & Related Work on I-90 (MM 50.0 – 59.0). Notice to proceed issued 7/20/2023. Proposal No. 607693-121541.
HOLYOKE – WEST SPRINGFIELD – Rehabilitation of Route 5 (Riverdale Road), from I-91 (Interchange 13) to Main Street in Holyoke & from Elm Street to North Elm Street in West Springfield. Notice to Proceed Issued 12/05/2023. Proposal No. 604209-123409.
HOLYOKE – Resurfacing and related work on Cabot Street and Race Street (Center City Connector). Notice to proceed issued 11/25/2025. Proposal No. 609065-132399.
CHICOPEE – SOUTH HADLEY – Resurfacing and related work on Route 33. Notice to proceed not yet issued. Proposal No. 612109-131226 (Advertised 7/12/2025).
CHICOPEE – HOLYOKE – NORTHAMPTON – SPRINGFIELD – WEST SPRINGFIELD – Bridge preservation of 26 bridges along I-91. Notice to proceed not yet issued. Proposal No. 613219-132950 (Advertised 11/8/2025).
<u>ANTICIPATED PROJECTS</u>
CHICOPEE – Intersection improvements at Montgomery Street, Granby Road, and McKinstry Avenue. Project No. 609061 (Advertising 202X).
SPRINGFIELD – CHICOPEE – Guide and traffic sign replacement on a section of interstate 291. Project No. 611953 (Advertising 2026).
HOLYOKE – Bridge replacements, H-21-014, Route 141 (Appleton Street) over Second Level Canal & H-21-020 over First Level Canal. Project No. 600935 (Advertising 2027).
CHICOPEE – Deck replacement, C-13-019 (4J1 & 4J2), I-90 EB/WB over Montgomery Street. Project No. 613543 (Advertising 202X).
CHICOPEE – Hugh Scott Streiber Elementary School improvements (SRTS). Project No. 612079 (Advertising 2026).
HOLYOKE – Intersection improvements at Beech Street, Resnic Boulevard, and West Franklin Street. Project No. 611965 (Advertising 2027).
HOLYOKE – Corridor improvements on High and Maple Streets. Project No. 613320 (Advertising 2029).
HOLYOKE – H.B. Lawrence Elementary School improvements (SRTS). Project No. 613442 (Advertising 2028).
CHICOPEE – Superstructure replacement of C-13-003, Route 116 over BMRR. Project No. 613135 (Advertising 2029).
<u>UTILITY PROJECTS</u>
N/A

The Design-Builder will be responsible for coordinating with any other potential adjacent projects during the execution of their work. The Design-Builder shall periodically contact MassDOT to obtain an updated list of adjacent projects.

1.3.4 Coordination of Traffic Officers

The Design-Builder shall coordinate all requirements for traffic officers or road flaggers through the MassDOT Highway Division District 2 construction offices, in accordance with Volume III: Draft Terms and Conditions. Traffic control shall adhere to MassDOT specifications, 701 CMR 7.00 and the Road Flagger and Police Detail Guidelines. Police details shall be compensated by MassDOT in accordance with Subsection 7.11 of the MassDOT Standard Specifications for Highways and Bridges, 2026 Edition. The Design-Builder shall submit all Construction Zone Safety Plans to the local law enforcement agency having primary responsibility for the patrol and enforcement of vehicular law on the Public Road within which the Construction Zone is located.

1.3.5 Railroad Coordination

Coordination with Berkshire Eastern and their various operations and safety departments are covered under Section 7. Coordination with these railroad entities by the Design-Builder will be required for design aspects of the Project, as well as for construction activities.

1.3.6 Comments, Complaints, Questions and Tracking.

The Design-Builder shall support MassDOT's public involvement consultant in tracking comments, complaints, questions from the public and stakeholders. This shall include but not be limited to the following:

- A dedicated project hotline will be provided by MassDOT
- A dedicated e-mail address has been created by MassDOT and managed by the public involvement consultant under the direction of MassDOT staff with the support of the Design-Builder.
- The project hotline will be activated prior to the start of major construction
- Comments, complaints, and questions received via the hotline and e-mail will be logged, responded to and tracked for resolution. The protocol, sample forms and tracking logs are outlined and provided in Appendix C.

1.4 RISK IDENTIFICATION

The Design-Builders shall perform a Risk Assessment on the proposed Project, identifying risks to both budget and schedule. The Design-Builders shall address in their Technical Proposal how they will mitigate the risks below and also identify any other significant Project risks and propose mitigation as applicable:

- Traffic Management
- Site Access and Work Areas
- Staged Demolition / Construction
- Complex Bridge Construction
- Deep and Shallow Foundations
- Utilities
- Environmental

1.4.1 Traffic Management

1.4.1.1 Maintenance and Protection of Traffic

This Project involves traffic management of Interstate I-391, associated ramps, and Chicopee Street (Route 116). The construction staging proposed in the BTC is based on providing four lanes of traffic (two northbound and two southbound) on I-391 mainline and one lane of traffic on all I-391 ramps for the full duration of construction. For Chicopee Street (Route 116), two lanes of traffic (one eastbound and one westbound) shall be provided at all times during construction. See Section 4 for further details.

The Design-Builder should carefully plan the Temporary Traffic Control Plan (TTCP) to account for narrow lanes, reduced speed through the work zone, minimum gutter spread requirements, median crossover of mainline traffic and incident management. Also, establishing temporary work zone speed limit on I-391 mainline for the construction duration will require State Traffic Engineer approval prior to implementation. Refer to Section 4.9.1. for detailed requirements. In addition, the Design-Builder should be aware that advance notice and coordination with the City of Chicopee officials will be required for traffic management along local, City owned, roadways.

1.4.2 Site Access and Work Areas

1.4.2.1 Limited Laydown Space

The Project is located within a dense urban environment with limited available laydown space adjacent to the existing and proposed bridges. The Design-Builder shall be responsible for obtaining the necessary rights for staging and laydown areas.

1.4.2.2 Storage of Contaminated Soils

Due to the limited available laydown space, the Design-Builder should be aware that if contaminated soils are encountered during excavation, storage at offsite locations may be required. The Design-Builder shall store contaminated soils in accordance with all applicable environmental regulations. Additional information regarding hazardous materials at the Project site is provided in Appendix C.04.

1.4.2.3 Material Deliveries through Dense Urban Neighborhood

The Design-Builder should be aware that delivery of large, potentially oversized, bridge elements will be required to complete the Project. These deliveries may be required to occur through the dense street network of the City of Chicopee and will likely require additional traffic control measures, special permits, and may be restricted to nighttime hours at the discretion of the City of Chicopee.

1.4.2.4 Bridge No. C-13-039 = H-21-059 Modifications

The proposed work on Bridge No. C-13-039 = H-21-059 will be performed within a constrained location within the Interstate I-391 median and at a high elevation above the Connecticut River. Access to the work zone will be limited due to the restricted space available for median reconstruction adjacent to live traffic. No access to the underside of the bridge from the river or river banks will be permitted. All access must be from I-391. The Design-Builder shall account for and mitigate the risks associated with these working conditions.

The work also includes modifications to an existing bridge structure in both temporary and permanent configurations. The Design-Builder is advised that the exact as-built configuration and condition of the existing bridge may differ from that shown in the record plans and inspection reports. The Design-Builder shall evaluate and address the inherent risks associated with performing modifications to an existing structure.

1.4.3 Staged Demolition and Construction

1.4.3.1 Condition of Bridge No. C-13-038

The Project involves staged demolition of the existing bridge structures and staged construction of the new bridge structure. The Design-Builder will need to carefully saw-cut and remove portions of the existing bridge superstructures and substructures to facilitate the staged construction of the new bridge. Portions of the existing bridge superstructures and substructure will be required to support of traffic on Interstate I-391 in a partially demolished state. Due to the poor condition of the existing bridges, strengthening measures and repairs to the existing bridge superstructures are required to facilitate staged demolition. Repairs/strengthening of the existing substructure may also be required to meet the requirements of RFP Section 4.10.2.2. Temporary shoring may also be required. The Design-Builder shall be fully responsible for ensuring the structural integrity and stability of the partially demolished bridge structure through all phases of construction and shall carefully evaluate the appropriate demolition methods based on the condition, and structure type. The Design-Builder will need to install a limited deflection temporary barrier on existing bridge decks to remain for maintenance of traffic. The Design-Builder will need to verify that the existing deck is in good structural condition and that the existing deck is capable of carrying the loads (both the dead loads and the potential loads from a vehicular impact) that may be transmitted to it from the limited deflection temporary barrier.

1.4.3.2 Work Zone Safety

The Project will require major construction operations to occur in close proximity to the general public within a dense urban environment. The Design-Builder shall be responsible for maintaining work zone safety throughout all phases of construction.

1.4.4 Complex Bridge Construction

1.4.4.1 MassDOT Reviews

The Design-Builder is encouraged to participate in Over the Shoulder (OTS) meetings to the maximum extent possible to streamline the review process of major design submissions.

1.4.5 Deep and Shallow Foundations

1.4.5.1 Subsurface Obstructions and Conditions

Available subsurface information is included in Appendix C. The Design-Builder shall be aware of the risks associated with subsurface design and construction in an urban area and shall take additional steps to mitigate these risks. Actions may include test pits, ground penetrating radar, additional soil borings and testing, and other activities to support the Design-Builder's proposed design and construction approach. Any soil which is disturbed through these activities shall be backfilled in lifts and properly compacted.

Portions of the proposed bridge structure will be constructed within the footprints of the existing bridge. Therefore, excavations for some foundation elements for the new bridge may encounter existing and potentially abandoned substructures. The Design-Builder shall design the new structures with consideration of the possible presence of deep foundations and substructures and evaluate the impact of unsuitable materials below the bottom of wall footings.

MassDOT has used the 1980 drawings of the existing Bridge No. C-13-038 (OWR) as a basis for depicting the layouts of the below-grade elements of the existing structure. These drawings are provided in Appendix C. The Design-Builder is responsible for reviewing the as-built drawings to ensure that the proposed abutment and pier foundation design, and the proposed retaining wall foundation design, considers the existing substructures and identify additional locations where conflicts may arise. Note in particular that the 1980 drawings show that the abutments of the existing Bridge No. C-13-038 (OWR) and some piers are supported on batter piles. It is noted that the new South Abutment location proposed by the BTC design overlaps a portion of the existing South Abutment and foundation.

The exact location of potential obstructions cannot be guaranteed. It shall be the responsibility of the Design-Builder to perform additional field investigations that they deem necessary for their proposed structures to mitigate potential conflicts.

1.4.6 Utilities

1.4.6.1 Existing Subsurface Utilities

The network of city streets surrounding Bridge No. C-13-038 (0WR) contains numerous subsurface utilities that may be sensitive to surcharge loading during demolition or construction activities. The Design-Builder shall plan and execute all work in a manner which prevents damage to existing utilities. Coordination with utility owners shall be performed as required. Refer to Section 6.0, Utilities, for additional requirements.

1.4.7 Environmental Restrictions

1.4.7.1 Contaminated Soils

The Design-Builder shall be aware that the work requires handling, on-site reuse and/or off-site disposal of potentially contaminated soils. A potential site/source of contamination has been identified at a former dry cleaner which operated at 749 Chicopee Street between the years of 1969 to 1972 (See Appendix C.04 for additional information). Contaminated soils shall be managed in accordance with the Design-Builder's Soil and Groundwater Management Plan (SGMP) requiring oversight by a Licensed Site Professional (LSP), including sampling, analysis and characterization of potentially contaminated soil, and preparation of plans and reports to comply with the Massachusetts Contingency Plan (310 CMR 40.000) and/or other state and federal regulations. Refer to Section 5.7 – Subsurface Hazardous Materials. The Design-Builder shall be aware that contaminated groundwater may be encountered during dewatering activities. It will be the responsibility of the Design-Builder to ensure that contaminated water, if encountered and removed during dewatering operations is treated and disposed of in accordance with all applicable local, state and federal laws and regulations. Refer to Section 5.7 – Subsurface Hazardous Materials. The Design-Builder shall be responsible for obtaining the necessary rights for staging and laydown areas beyond what is shown in the construction contract. Specifically, the Design-Builder's attention is drawn to the recently enacted MassDOT Policy Directives P-22-001 and P-22-002. The first establishes new mandatory requirements before soils excavated on MassDOT projects can be moved to temporary off-site storage locations. The second requires contractors to obtain Access Permits to use MassDOT property for staging, laydown, storage or other construction-related operations that are not specifically defined in the Contract.

1.4.7.2 Rivers Park and Vietnam Veterans Park

The close proximity of Vietnam Veterans Park to Bridge No C-13-038 (0WR) and its associated reconstruction will create a constraint for the bridge replacement. The Design-Builder shall carefully sequence the bridge replacement and park reconstruction work to ensure the park remains in a useable state throughout the duration of construction acceptable to the City of Chicopee. The Design-Builder shall not schedule major construction activities on Memorial Day to avoid interference with the City of Chicopee's annual event.

Public access to Rivers Park via the Margaret Street entrance must be maintained at all times. The Design-Builder shall note the construction activity limitations discussion in RFP Section 5.3.4.

1.4.7.3 Residential Access

The proposed bridge replacement will occur within a densely populated urban area with numerous adjacent residential streets. Maintaining residential access during major construction operations may impose constraints on performing select demolition and construction operations. The Design-Builder shall anticipate these conditions and develop appropriate plans and measures to manage this risk in accordance with the Contract requirements.

1.4.7.4 Public Parking Beneath Structure

The proposed bridge replacement will require maintaining public parking facilities located beneath the structure throughout all demolition and construction operations. This requirement may impose constraints on the execution of the work and limit available space for staging and access. The Design-Builder shall anticipate these conditions and develop appropriate plans and measures to manage this risk in accordance with the Contract requirements.

1.4.7.5 Noise Mitigation

The Design-Builder's obligations with respect to noise during construction are described in Section 5.6.6, Noise, and in Draft BTC Special Provision Subitem 119.5 – Construction Noise Control, provided in Appendix C. Evaluation of the potential noise impact of departures from the BTC plans and the design and construction of mitigation measures shall be the responsibility of the Design-Builder, incidental to the Work.

SECTION 2.0: PROJECT QUALITY ASSURANCE

2.1 QUALITY ASSURANCE PROGRAM ELEMENTS

As defined by AASHTO, FHWA, and the Transportation Research Board, “Quality Assurance” (QA) is an overarching “umbrella term” that refers to the collective quality activities performed by all parties to assure Quality. Quality Assurance is the responsibility of both the Design-Builder and MassDOT. This includes Quality Control (QC) activities by the Design-Builder as well as Acceptance activities by MassDOT. To ensure that goals for project quality will be met, MassDOT has established a Design QA Program to address quality in the design process and a Construction QA Program to ensure the quality of construction, comprised of the elements below.

2.1.1 Design QA Program

The Design QA Program for DB Projects includes the following two elements:

- Design Quality Control (QC) system by the Design-Builder
- Design Acceptance system by MassDOT

2.1.2 Construction QA Program

The Construction QA Program for DB Projects includes the following six core elements:

- Construction Quality Control (QC) system by the Design-Builder
- Construction Acceptance system by MassDOT
- Independent Assurance (IA) by MassDOT
- Dispute Resolution system
- Qualified/Accredited Laboratories (The Design-Builder and MassDOT)
- Qualified/Certified Inspection & Testing Personnel (The Design-Builder and MassDOT)

2.2 QUALITY ASSURANCE PROGRAM RESPONSIBILITIES

2.2.1 Design-Builder Responsibilities

The Design-Builder shall establish and implement a Quality Control (QC) System to ensure that the performance of the Work fulfills the design and construction requirements of the Contract. The QC System shall address the Design-Builder's Quality Control organization and roles, document management procedures, Design QC activities, Construction QC activities, qualified/accredited QC laboratories, and qualified/certified QC inspection & testing personnel.

The QC System shall be implemented by the Design-Builder including all Subconsultants, Subcontractors, Producers, Fabricators, and Manufacturers.

The Design-Builder shall be proactive and use its QC System to control its design and construction processes to ensure that work conforms to the requirements of the Contract and specifications. The Design-Builder shall not rely on MassDOT's Acceptance reviews, inspection or testing results in order to keep their processes in control. The Design-Builder will complete its own separate Quality Control reviews, inspection and testing.

2.2.2 MassDOT Responsibilities

MassDOT will be responsible for Design Acceptance and Approval actions, Construction Acceptance actions, an Independent Assurance (IA) system, and a Dispute Resolution system. During construction, MassDOT's role on the DB Project is to provide verification of the quality of materials and workmanship through Acceptance inspection, sampling and testing. MassDOT is also responsible for IA inspection, sampling and testing to periodically evaluate the reliability of MassDOT's Acceptance personnel and equipment and the Design-Builder's QC personnel and equipment.

MassDOT has an interest and a duty to perform due diligence on behalf of the public to verify the quality of the design and construction and accept all elements of the work. MassDOT's Acceptance inspection and testing, monitoring of the Design-Builder's Quality Control activities, and periodic IA evaluations are necessary and shall be accommodated by all members of the Design-Builder's organization and its agents. While MassDOT will be performing Acceptance inspection and testing of the work, independent of the Design-Builder's QC System, the Design-Builder maintains the sole responsibility for quality, safety, compliance with all applicable Laws, and other components both direct and indirect to the work.

At all points in performance of the Work at which specific Acceptance reviews, inspections, testing, or approvals by MassDOT are required, the Design-Builder shall not proceed beyond that point until MassDOT has completed such review, inspection, testing, or approval or waived its right in writing has been provided.

MassDOT reserves the right to check QC laboratory testing equipment, personnel procedures and techniques for compliance with specified standards under the Independent Assurance (IA) system. MassDOT also reserves the right to access the QC laboratory facilities, at no additional cost to MassDOT, to witness QC testing, and to verify compliance of the testing procedures, testing techniques, and test results with the Contract requirements and the Design-Builder's approved Quality Control (QC) System.

2.3 QUALITY CONTROL SYSTEM OBJECTIVES

The Design-Builder's Quality Control System is a critical component of this Project. It is intended to provide the Design-Builder with real-time information to control the quality of all work. The Quality Control System is intended to achieve the following objectives:

- Place the responsibility for achieving design quality and construction quality on the Design-Builder.
- Establish procedures for coordinating and ensuring consistency and quality of work performed by Subconsultants or Joint Venture firms, Subcontractors, Producers, Fabricators, and Manufacturers.
- Ensure that all Design Documents and Construction Documents developed by the Design-Builder are prepared in accordance with all standards identified in the RFP and the Contract.
- Ensure that the quality of the materials and workmanship of all completed construction work meets the quality requirements set forth by the RFP and the Contract.

2.4 QUALITY CONTROL ORGANIZATION

2.4.1 Quality Control Lead Personnel

The Design-Builder's QC System shall be developed and implemented by a formal Quality Control Team led by a QC Administrator, a Design QC Manager, and a Construction QC Manager. These QC personnel shall have the responsibilities and possess the minimum qualifications described below. In the event that one of these QC Team Members is temporarily absent, the Design-Builder shall have contingency plans indicating the delegation of authority in their absence.

2.4.1.1 Quality Control Administrator

- The Quality Control (QC) Administrator is considered one of the Project's Key Personnel. The QC Administrator shall be responsible for overall management of the QC System. The QC Administrator shall possess, at a minimum, a B.S. in Civil Engineering and be a Registered Professional Engineer currently licensed in the Commonwealth of Massachusetts and shall have a minimum of ten (10) years of experience in transportation design or construction. ***The QC Administrator shall be a certified NETTCP Quality Assurance Technologist.***
- The QC Administrator shall report directly to the Design-Builder's Project Manager or Project Executive and shall be involved throughout all stages of the Project and be available for in person meetings and job site walkthroughs, as needed. The QC Administrator will keep MassDOT informed of all Project QC issues in a timely manner. The specific duties of the QC Administrator shall be outlined in the QMP.
- The Design-Builder shall not replace the QC Administrator without prior written approval by MassDOT. The Design-Builder's request to replace the QC Administrator shall name a proposed replacement manager who shall be available within fifteen (15) business days of MassDOT approval. The replacement QC Administrator shall meet all of the same qualification requirements listed above.

2.4.1.2 Design Quality Control Manager

- The Design Quality Control (QC) Manager shall be responsible for leading a Design QC Team to implement all “Formal QC” procedures and activities for design. The Design QC Manager shall be a Civil Engineer with, at a minimum, a B.S. in Civil Engineering and be a Registered Professional Engineer currently licensed in the Commonwealth of Massachusetts with experience on Design-Build and/or accelerated construction projects and with a minimum ten (10) years of experience in highway and/or bridge design and shall report directly to the Design-Builder's QC Administrator. ***The Design QC Manager shall be a certified NETTCP Quality Assurance Technologist and located with front-line design personnel.***

2.4.1.3 Construction Quality Control Manager

- The Construction QC Manager shall be an Engineer with, at a minimum, a B.S. in Engineering and shall have experience on Design-Build and/or accelerated construction projects and with a minimum ten (10) years of experience in highway and/or bridge construction. In lieu of a B.S. in Engineering, the Construction QC Manager shall have an additional five (5) years of management or materials testing experience in highway and/or bridge construction. **The Construction QC Manager shall be certified as a NETTCP QA Technologist** and shall report directly to the Design-Builder's QC Administrator.
- The Construction Quality Control (QC) Manager shall be responsible for leading a Construction QC Team to implement all “Formal QC” procedures and activities for construction.
- The Construction Quality Control Manager shall be independent from the MassDOT Consultant Inspector assigned to the Project’s fabricator(s). If a consultant company is used to provide the Construction QC Manager, that consultant company:
 - Shall not be employed by MassDOT to provide services at the same facility.
 - Shall not be employed by MassDOT to provide services at another location for this same Project (#612187).
 - May not be employed by MassDOT to provide services on any other project where the Design-Builder is under contract with MassDOT.
- Companies that are currently under contract to provide inspection services for MassDOT who wish to provide an individual to act as the Construction QC Manager for the Design-Builder are advised that there are potential conflict of interest concerns. The consultant company will be asked to provide additional details to MassDOT to determine to what extent this situation would present an actual conflict.

2.4.1.4 Fabrication Quality Control Manager(s)

- The Fabrication Quality Control (QC) Manager(s) shall be certified as a CWI by the American Welding Society (AWS) or certified as a Level I by the Precast/Prestressed Concrete Institute (PCI), as applicable. The Fabrication QC Manager(s) shall have a minimum of ten (10) years of bridge fabrication experience and be responsible for reviewing and approving fabrication procedures for MassDOT acceptance and assuring that the fabricator is following their QSM and the project specifications. The Fabrication QC Manager(s) shall report directly to the Design-Builder's Construction QC Manager. The Fabrication QC Manager(s) shall be independent from the MassDOT Consultant Inspector assigned to the Project's fabricator(s). If a consultant company is used to provide the Fabrication QC Manager(s), that consultant company:
 - Shall not be employed by MassDOT to provide services at the same facility.
 - Shall not be employed by MassDOT to provide services at another location for this same project (#612187).
 - May not be employed by MassDOT to provide services on any other project where the Design-Builder is under contract with MassDOT.
- Companies that are currently under contract to provide inspection services for MassDOT who wish to provide an individual to act as the Fabrication QC Manager for the Design-Builder are advised that there are potential conflict of interest concerns. The consultant company will be asked to provide additional details to MassDOT to determine to what extent this situation would present an actual conflict.

2.4.2 Project Design and Construction Personnel Role in Quality Control

- All Design and Construction "Production Personnel" (i.e. staff performing design and construction work activity) on the Project, including the Environmental Permitting Manager, Design Manager, Construction Manager, Construction Superintendent(s), and all personnel working under their direction, shall have responsibility to perform "Frontline QC" activities to ensure the quality of their work. Production Personnel are expected to apply QC "self-checks" or "self-inspection" throughout the process of work production.
- All Design and Construction Production Personnel shall receive initial training on the Quality Control procedures in the Quality Management Plan under the direction of the QC Administrator and "Formal QC" Team staff. Additional periodic training on the QC system will be provided as determined necessary by the QC Administrator.
- Formal Quality Control checks will be performed independently of Design Production Personnel by the Design QC Team staff and formal QC inspection and testing will be performed independently of Construction Production Personnel by the Construction QC Team staff throughout design and construction. To be an effective QC team, the Design-Builder shall possess an organizational structure that provides a team of "Formal QC" personnel that operates, neither above nor below, but parallel to the team of Production personnel. Primarily, the "Formal QC" personnel shall constantly monitor and measure each production or placement process in order to determine if it is in control and providing a product that is in conformance with requirements.

2.5 QUALITY MANAGEMENT PLAN (QMP)

The Design-Builder shall develop, implement, and maintain a comprehensive Quality Management Plan (QMP) that is consistent with and which expands upon the QC System outlined in the Design-Builder's Technical Proposal. The QMP shall be organized following the format outlined in **Appendix F: Quality Management Plan Requirements**. The QMP shall address the information required in Appendix F and any additional Quality Control requirements included in the Contract. The QMP shall contain the following five sections:

Section 1 – Introduction

Section 2 – Quality Control Organization

Section 3 – Document Management Procedures

Section 4 – Design Quality Control Procedures

Section 5 – Construction Quality Control Procedures

The Design-Builder shall schedule a meeting with MassDOT and FHWA in advance of the submission of the QMP to discuss the format and contents of the document as well as roles and responsibilities of the QC staff. Each Section of the QMP shall be submitted no later than the timeframes indicated in the table below, for review and approval by MassDOT and FHWA.

QMP Section	Submittal Timeframe (Calendar Days)
Section 1 – Introduction	14 Days After NTP
Section 2 – Quality Control Organization	14 Days After NTP
Section 3 – Document Management Procedures	14 Days After NTP
Section 4 – Design Quality Control Procedures	14 Days After NTP
Section 5 – Construction Quality Control Procedures	60 Days After NTP

MassDOT will not accept any Early Release for Construction (ERC) and Design Submittal packages until QMP Sections 1 through 4 have been submitted and reviewed at least once by MassDOT and FHWA. MassDOT reserves the right to require resubmission of the QMP Section 1 through 4 prior to submittal of ERC and Design Packages if initial QMP submission contains significant deficiencies or omissions. Shop Drawings and Construction Quality Control Plans may be submitted only after QMP Section 5 has been reviewed at least once by MassDOT and FHWA. The Design-Builder shall not revise any portion of the accepted QMP without the prior written acceptance of MassDOT and FHWA.

2.6 DESIGN QUALITY CONTROL

2.6.1 Design Quality Control System Requirements

- Design Quality Control activities shall be implemented in accordance with the approved QMP.
- Each formal Design submittal package (75%, and 100% Highway, First and Second Structural Bridge, and Issued for Construction) shall be reviewed by the Design QC Team prior to submittal to MassDOT and FHWA for review.

2.6.2 Frontline QC by Design Production Team

“**Frontline QC**” is the responsibility of the Design-Builder frontline Production staff who are developing the design. Frontline QC activities consist primarily of “self-checks” by the lead Designer staff and other Design Production staff members (Design Production Team) responsible for development of the design documents (i.e. calculations, plans, special provisions, and technical reports). This also includes cross-checks and reviews between members of the Design Production Team as the design development progresses. Examples of the primary Frontline QC activities that should be performed by the Design Production Team are as follows:

- Survey Field Checking
- Validating and Approving Computer Software
- Discipline Coordination Reviews
- Interdisciplinary Reviews (including regulatory compliance)
- Environmental Reviews
- Constructability Reviews
- Designer Self-Checks (Calculations, Plans, Specifications)
- Subconsultant Design Document Reviews
- Design Package Milestone Reviews of 75% and 100% Highway, First and Second Structural Bridge submittals, and Issued for Construction Bridge and Highway
- Shop Drawing Reviews

2.6.3 Formal QC by Design Quality Control Team

The Design QC Team is responsible for performing “**Formal QC**” activities independent of the Design Production Team. These Formal QC activities include “independent-checks” at key milestones in the design process and audits intended to confirm that the design process is functioning effectively. Examples of the primary Formal QC activities that should be performed by the Design QC Team are as follows:

- CAD Software QC Audits
- Independent Structural Design Check (Calculations)
- QC Audit of Studies, Reports, & Other Design Documents
- Environmental Compliance Review
- Independent Technical Review (at Design Package Milestones)
- QC Review of Shop Drawings

2.7 CONSTRUCTION QUALITY CONTROL

2.7.1 Construction Quality Control System Requirements

- Construction Quality Control Plans (QC Plans) shall be prepared for major construction Work Items in accordance with Section 2.7.2 below.
- Each Fabricator and Manufacturer is required to have their own Quality System Manual (QSM) documenting their QC system. The QSM shall follow the format and outline contained in Section 5.2.1 of AASHTO R38 or a similar format and outline that has been accepted by MassDOT. Each Fabricator and Manufacturer will provide the Design-Builder a copy of their QSM. After review and approval by the Construction QC Manager to ensure conformance to the Contract Quality Assurance requirements, each Fabricator or Manufacturer QSM will be transmitted to MassDOT for their use and information prior to fabrication and manufacturing.
- The QC sampling and testing frequencies shall be no less than the frequencies specified in the Department's Schedule for Sampling and Testing Materials included in the RMS 360. *All QC Sampling shall be obtained using random sampling in accordance with ASTM D3665 (as taught by NETTCP), unless specified otherwise in the QMP or QC Plan for the Work Item being tested.*
- Inspection Attributes shall be identified for each major Work Item. Inspection Lot and Sublot sizes shall be established for each Inspection Attribute, unless already specified by MassDOT (e.g., Subsection 450). The minimum Attributes to be inspected for QC shall be in accordance with the Massachusetts Department of Transportation Standard Specifications for Highways and Bridges and shall address the following four primary inspection components:
 - Equipment
 - Materials
 - Environmental Conditions
 - Workmanship
- Standard QC Report Forms and Record Books shall be established for inspection, sampling, and testing of all Work Items. QC documentation for Hot Mix Asphalt (HMA) shall be in accordance with the Subsection 450 Specifications. NETTCP standard Test Report Forms (TRFs) and Inspection Report Forms (IRFs) shall be used to document all QC inspection, sampling, and testing results. Where NETTCP TRFs or IRFs do not currently exist, the Design-Builder shall develop and use their own forms to address such testing or inspection. Any form created by the Design-Builder shall include all the information required by the test or inspection method and shall be submitted to MassDOT.
- HMA and Concrete Producers must have prequalified mix designs.
- All Fabricators furnishing Fabricated Structural Materials shall be on the current MassDOT "Approved Fabricators List."
- All Standard Manufactured Materials shall be delivered to the Project site with a standard Certificate of Compliance (COC) for the corresponding Lot of material.
- All laboratories performing QC testing of Project Produced Materials shall be qualified through either the AASHTO Accreditation Program (AAP) or NETTCP Laboratory Qualification Program.

- All QC personnel shall have appropriate certifications, which shall be described in the corresponding QC Plan(s) and shall be subject to MassDOT approval. If pertinent certification is available through NETTCP, that shall be the required certification. If not available through NETTCP, other comparable certifications may be accepted by MassDOT.

2.7.2 Construction Quality Control Plans

Construction Quality Control Plans (QC Plans) shall be prepared for major construction Work Items and submitted to MassDOT for acceptance a minimum of forty-five (45) days prior to the planned start of work on the applicable Work Item. QC Plans shall be submitted for each of the major or critical Work Items that comprise the primary features of the roadway, bridge, or other major structural elements, including, but not limited to the following:

- Earthwork
- Bridge Substructure
- Concrete Structure Elements - Cast-in-Place (Abutments, Retaining Walls, Bridge Barrier, & Walkways, Median Barrier)
- Bridge Superstructure - Steel Elements (Bearings & Girders)
- Bridge Superstructure - Concrete Deck
- Bridge Superstructure - Precast / Prestressed / Post-Tensioned Concrete Elements
- Bridge Superstructure - Closure Joints
- Bridge Superstructure - Deck Membrane Waterproofing System
- Hot Mix Asphalt Pavement
- Utility Infrastructure (Water, Fiber Optic, Telephone, Cable, Electric, and Gas)
- Drilled Shafts
- Micro-piles
- Driven piles
- Bridge seats and expansion joints
- Retaining Walls and Moment Slabs
- Drainage including headwalls and inlet and outlet structures
- Pavement Markings
- Lighting
- Landscaping
- Other Work Items (as deemed necessary by the Engineer as the work progresses)

It is expected that all major materials and construction processes needed to complete a Work Item will be addressed in the corresponding Quality Control Plan.

2.7.3 Quality Control Plan Format and Content

The Quality Control Plans shall use the NETTCP “Model Quality Control Plan” (Appendix F of the NETTCP QA Technologist Course Manual, December 2014) as a standard template; along with the MassDOT Quality Control Plan Commentary and shall address all aspects of the work needed to complete the subject Work Item. The “Model Quality Control Plan” and the Quality Control Plan Commentary is attached to this document for reference in Appendix C.

Each QC Plan shall include provisions to address corrective action procedures for any non-conforming work.

2.7.4 Quality Control Materials Sampling and Testing Ledger

As part of its Construction Acceptance responsibility, MassDOT will prepare and maintain, for the Project, an Acceptance Materials Sampling & Testing Ledger (RMS 360) to plan and document MassDOT’s Acceptance sampling frequencies and Acceptance testing results. However, the Design-Builder is required to prepare and maintain its own **Quality Control Materials Sampling & Testing Ledger** and provide MassDOT with planned QC sampling & testing frequencies for all Work Items in accordance with the following requirements:

- With each required Design Submittal package, the Designer of Record shall include a list of Work Items and quantities contained in the submittal. The list shall include a breakdown of each Lump Sum item and non-standard item, along with any standard items. All items requiring a special provision per MassDOT requirements shall have an asterisk in a separate column adjacent to the item number identifying the special provision requirement. The Work Items shall be listed using MassDOT’s standard nomenclature and item numbers. For non-standard items the Design-Builder shall assign an item number not already assigned to a non-standard item. MassDOT reserves the right to change the assigned item number for any non-standard item.
- The Design-Builder shall be responsible for creating and maintaining their own Quality Control Materials Sampling & Testing Ledger for the Project. The Design-Builder is not required to use the MassDOT form RMS 360, but may use it as a model for creating their QC Materials Sampling & Testing Ledger. MassDOT will provide the Design-Builder with a list of the standard Work Items and their material sampling & testing requirements. The QC Materials Sampling & Testing Ledger shall contain the following:
 - Item Number
 - Item Description
 - Estimated Quantity
 - Item Lot Size and Sublot Size
 - Source of Material
 - Location of Source
 - Sampling Frequency (*normally 1 QC sample per Sublot, unless otherwise specified by the Project Specifications or MassDOT’s Specifications*)
 - The QC Sampling and Testing Documentation required for the Work Item
 - Construction QC Manager and QC Administrator signoff that QC sampling and testing and related documentation for each Work Item has been completed and verified

- It is the responsibility of the Construction QC Manager to review the QC Materials Sampling & Testing Ledger and ensure that it is current with all Issued for Construction work packages and the completed work. Once the Project is under construction, the Construction QC Manager shall review the QC Materials Sampling & Testing Ledger a minimum of once a week.
- If the Design-Builder fails to provide MassDOT with the necessary information in each of its Design Submittals to allow MassDOT to maintain a current RMS 360, MassDOT reserves the right to issue a Deficiency Report and hold all payments for any Work Items covered under that submittal until the deficient RMS 360 information is reconciled.
- The Design-Builder shall perform all QC sampling, testing, and inspection completely independent of MassDOT's Acceptance sampling, testing, and inspection. The Design-Builder is required to upload and maintain on the Project SharePoint site, all QC sampling, testing, and inspection documentation as required by the Project Specifications. This shall include, but is not limited to:
 - QC Random Sampling Report Forms
 - QC Test Report Forms (TRFs)
 - QC Inspection Report Forms (IRFs)
 - Materials Certificates of Compliance (COCs)
 - Certificates of Analysis (COA)
 - Mill Certifications
 - Independent Test Reports
- As part of their Construction Quality Control system, the Design-Builder shall place "Design Hold/Control Points" which require the QC Materials Sampling & Testing Ledger and MassDOT's RMS 360 to be current prior to the continuation of work. These Control Points shall be specified in the Design-Builder's Quality Management Plan.

If the Design-Builder fails to perform the above requirements for the QC Materials Sampling & Testing Ledger and MassDOT's RMS 360, an NCR and Deficiency Report shall be issued in accordance with the Contract requirements and the Department's Standard Operating Procedures.

2.8 HMA QA SPECIFICATIONS AND PAY ADJUSTMENTS

The MassDOT Quality Assurance Specifications for Hot Mix Asphalt (HMA) Pavement as specified in Subsection 450 of the MassDOT Standard Specifications for Highways and Bridges, 2026 Edition shall be applied for construction of all pavement on the Project. The quality of each HMA Category A Lot and HMA Category B Lot produced and placed on the Project will be evaluated using Quality Level Analysis and must be at or above the Acceptance Limits specified in Subsection 450.77. Pay adjustment will be determined and applied to each Lot based on the final Lot Quality Level for each of the Quality Characteristics as specified in Subsection 450.92. The pay adjustment amount for each Lot will be based on the actual HMA quantity (Q_i) in tons, contained in the Lot. The HMA Pay adjustment amount will be based on a unit price (P_i) of \$110/ton of HMA.

2.9 NON-CONFORMANCE REPORT (NCR)

Completed work that does not conform to the Contract requirements for the quality of materials or workmanship shall be documented through a Non-Conformance Report (NCR) per Section 10.12 Non-Conforming Work. An NCR shall also be initiated by the Design-Builder if QMP and quality related processes are not followed. When an NCR is required, it shall be prepared and submitted to MassDOT one (1) business day after the non-conformance is identified.

The NCR shall clearly describe the element of Work that is non-conforming and the nature of the non-conformance. The NCR shall identify the root cause that led to the NCR. The NCR shall further address steps to be taken to ensure that the particular non-conformance is not repeated.

When a non-conformance impacts the performance, safety and life-cycle of the Project and its elements, the Design-Builder's Design Engineer of Record for the Work shall evaluate the effect of the non-conformance. Non-conformances related to non-compliance with the QMP and quality related processes do not require review by the Design Engineer of Record. The initial proposed resolution of the non-conformance, including remedial actions if necessary, shall be submitted after review and approval of the Design Engineer of Record within fourteen (14) days after the NCR is submitted to MassDOT, and shall be fully designed and documented. Any affected plans, specifications, calculations and Shop Drawings shall bear the stamp of a Registered Professional Engineer in the Commonwealth of Massachusetts as appropriate. The Design-Builder's Construction QC Manager and Quality Control Administrator shall also verify, by signing the NCR, that the resolution of the non-conformance, including any remedial actions, has undergone the appropriate level of QC review. Where the corrective action requires revision to the Issued for Construction Drawings and/or Special Provisions, a Field Design Change will be required to be submitted for MassDOT review and acceptance including any necessary calculations.

MassDOT shall retain the right to document deficiencies in the Work based on its Acceptance inspection, sampling and testing of the Work. The Design-Builder is responsible for providing MassDOT with QC inspection and testing results in a timely manner. MassDOT may use Deficiency Reports (DRs) to document deficiencies and withhold payment. These Deficiency Reports shall require the same review and ultimate closure by the Design-Builder as a Design-Builder initiated NCR. A DR may also be initiated by MassDOT if QMP and QC processes are not followed.

MassDOT shall review and accept the proposed resolution of any NCR prior to the Design-Builder implementing any corrective action. Where agreement cannot be reached regarding resolution of an NCR, a dispute resolution process shall be used. MassDOT shall ultimately have the authority to call for removal of any non-conforming work should MassDOT not agree that the remedial actions set forth by the Design-Builder are sufficient. MassDOT reserves the right to make cost adjustments for work that, although not in conformance with specifications, is nevertheless satisfactory to remain in place. Fabrication NCRs relating to precast concrete elements will be accepted by the Field Control Engineer and Fabrication NCRs relating to steel and other metal items are accepted by the Metals Control Engineer.

The Design-Builder shall maintain a log of all NCRs and submit this log to MassDOT and the Construction QC Manager on a bi-weekly basis, at a minimum, regardless of any status change. Each NCR shall be assigned a sequential number and shall include a brief description, the status and the expected date for closure for each NCR. MassDOT will not grant Final Acceptance or payment for any portion of the Work that has an outstanding NCR.

2.10 CONSTRUCTION PROCEDURES

The Design-Builder shall review and submit Construction Procedures for items that have the potential to affect public health and safety (such as erection plans, demolition plans, utility monitoring and protection plans, noise control and mitigation plan, dust control, temporary support of excavation, concrete placement, grouting, lead based paint management, structural monitoring, and others as deemed necessary as the work progresses) to MassDOT for review and acceptance. Construction Procedures are separate from Construction QC Plans and should not be combined with or inserted in QC Plans. It may be appropriate to reference relevant Construction Procedures in some QC Plans. All Construction Procedure submittals shall be signed by the Design-Builder's Design QC Manager (Major Participant Lead Engineering Design firm) and Quality Control Administrator indicating that these submittals are in accordance with the Quality Control process established in the approved QMP and in conformance with the Contract requirements. The Designer of Record for the Project shall also review the submittal for structural adequacy and conformance with the Issued For Construction Plans and Specifications and shall stamp the procedures "No Exceptions Taken" or "Reviewed with Comments" in accordance with MassDOT Bridge Manual Part I, Section 6.5.1.

2.11 SHOP DRAWINGS

The Shop Drawing distribution matrix shown in Table 6.3.4-2 of the MassDOT Bridge Manual and the requirements of Engineering Directive E-24-005 shall be followed in addition to the submittal distribution list developed at the beginning of the Project. The Design-Builder shall develop a list of those submittals that will require an engineering review by MassDOT and include this list in the corresponding Quality Control Plans for Work Items that include Fabricated Structural Materials. This list shall be submitted in accordance with Section 10.16 and include, but not be limited to, all working drawings, structural steel Shop Drawings, and prestressed and precast concrete element Shop Drawings. All approved Drawings shall be provided to MassDOT three (3) business days prior to the start of Work detailed by the drawings. Any approved Shop Drawings submitted to Fabricators and Manufacturers should include the Special Provisions pertaining to the item and the drawings shall have the same details as listed in the Special Provision. The Drawings submitted to MassDOT shall start from Revision 0. The Design-Builder shall track internal revisions using a different notation from MassDOT. The QMP shall describe the method used by the Design-Builder to track revisions.

2.12 MOCK-UPS AND CONTROL SECTIONS

Mockup Panels shall be required as directed by the owner for MSE wall precast panels or other project elements should they be incorporated in the project design. Fabrication of granite shall be in accordance with the tolerances specified in National Building Granite Quarries Association (NBGQA) specifications and MassDOT Bridge Manual, as needed. Mockups shall be provided that demonstrate the quality, construction and assembly of the elements including but not limited to joints, color, holes, cut-outs, sinkages and openings in granite work for anchors, clamps, dowels, supports, and lifting devices, and methods of securing granite to concrete backing. Mockups shall be provided as needed following acceptance of 75% design plans or acceptance of first structural submittal.

2.13 EARLY RELEASE FOR CONSTRUCTION

The Design-Builder shall establish an Early Release for Construction (ERC) process in accordance with Section 4.6 Early Start of Construction Process. See ERC Submittal Process Flowchart provided in Appendix C.

2.14 MATERIALS AND WORKMANSHIP QUALITY CERTIFICATE

The Design-Builder shall submit with the as-built plans a “Materials & Workmanship Quality Certificate” signed by the Design-Builder's Construction QC Manager and Quality Control Administrator indicating that all materials and workmanship incorporated in the Project conform to the Contract requirements.

SECTION 3.0: INFORMATION SUPPLIED TO DESIGN-BUILDER/ ACKNOWLEDGEMENT BY DESIGN-BUILDER

The Design-Builder shall have full responsibility to complete the formal design of all Project elements, regardless of the fact that MassDOT has supplied certain preliminary design work for certain portions of the Project to the Design-Builder. All Design Documents shall be furnished to MassDOT after all review submissions have been completed. The Design-Builder shall acknowledge that it has diligently reviewed and verified the MassDOT-Supplied Design for errors, omissions, inconsistencies or other defects and has incorporated into the DB Price all costs associated with correction of any such errors, omissions, inconsistencies and other defects. The Design-Builder specifically shall acknowledge and agree that:

- The design documentation provided in the Appendix – including plans, special provisions, and reports – are in general provided for reference only; and are conceptual in nature. The BTC was developed to represent MassDOT preferences and to establish the minimum baseline requirements that shall be equaled or exceeded by the Design-Builder. All Design-Builders acknowledge by receipt of such plans that they explicitly understand that while these plans have been advanced to a significant level of development, the Design-Builder shall be required to provide a final, complete Project design that is stamped, sealed, and certified by their own Massachusetts Registered Professional Engineer of Record for review and approval by MassDOT and possible third parties. However, in this narrative reference will be given to details presented in the plans which are developed to a higher level and are expected to be used as the minimum standard of acceptable design and detailing. Revisions or additions to information in the BTC Plans being provided may be necessary based on comments received;
- The Design-Builder is not entitled to rely on any documents or information provided by MassDOT other than the RFP Documents; and the Design-Builder's right to rely on the Reference Documents is subject to the limitations set forth herein;
- The Design-Builder is responsible for correcting any errors, omissions, and defects in the MassDOT-Supplied Design through the design and/or construction process, with the obligation to correct any errors, omissions, inconsistencies, and other defects affecting therein, all at no additional cost to MassDOT;
- MassDOT shall have no liability for errors, omissions and defects in the MassDOT-Supplied Design or documentation. The foregoing shall not be deemed to limit MassDOT's elimination of obligations with respect to Differing Site Conditions, or the Design-Builder's right to receive any available insurance proceeds;
- Design-Builder's Warranties and indemnities hereunder cover errors, omissions, and defects in the Project even though they may be related to errors, omissions, and defects in the MassDOT-Supplied Design;
- The Design-Builder has independently determined that the MassDOT-Supplied Design presents a feasible concept for the Project which can and shall be used as the basis for the completion of the Project, and agrees that it shall have no right to seek additional compensation or a time extension, except as specifically permitted by negotiated changes in the work; and

- The Design-Builder acknowledges and agrees that MassDOT shall not be responsible or liable in any respect for any loss, damage, injury, liability, cost, expense or cause of action whatsoever suffered by the Design-Builder, its employees, agents, officers or Subcontractors or any other Persons for whom the Design-Builder may be legally or contractually responsible, by reason of any use of any information contained in the MassDOT-Supplied Design or any action or forbearance in reliance thereon, except to the extent that negotiated changes in the work provides for an increase in the DB Price and/or extensions of the milestones with respect to such matter. The Design-Builder further acknowledges and agrees that: (i) if and to the extent the Design-Builder or anyone on the Design-Builder's behalf uses any of said information in any way, such use is made on the basis that the Design-Builder, not MassDOT, has approved of such use and information and is responsible for said information; and (ii) the Design-Builder is capable of conducting and is obligated hereunder to conduct any and all studies, analyses and investigations as it deems advisable to verify or supplement said information, and that any use of said information is entirely at the Design-Builder's own risk and at its own discretion.

DRAFT

SECTION 4.0: PROJECT DESIGN

4.1 PROJECT OVERVIEW AND EXISTING CONDITIONS

The proposed Project is being advanced by the Massachusetts Department of Transportation (MassDOT) to design and construct the full replacement of the bridge carrying Interstate 391 (I-391) over Chicopee Street (Route 116) located in the City of Chicopee, Massachusetts. The bridge is under MassDOT jurisdiction. The Project will be known as the Chicopee – Bridge Replacement, C-13-038, I-391 over Chicopee Street (Route 116) (Proposal No. 612187-CCCCC) and will be as described in this Request for Proposals (RFP). The Base Technical Concept (BTC) consists of bridge and highway BTC plan sets and Draft BTC Special Provisions.

The scope of work for Bridge No. C-13-038 includes design and construction of the full removal and replacement of the bridge. The proposed bridge is to be constructed in the same general footprint as the existing bridge. The existing I-391 horizontal alignment and profile are to be maintained. The proposed replacement bridge will provide a 75-year design life, a 100-year service life, and meet the design criteria established for the proposed bridge while minimizing impacts to the environment, right-of-way, and the traveling public. The proposed bridge shown in the BTC design is a four-span structure that will provide the required roadway clearances. The proposed work includes removing the existing bridge and constructing new foundations, piers, abutments, superstructure elements, and retaining walls. The proposed bridge will also include accommodations for future roadway lighting on the I-391 roadway supported by the bridge. The work below the bridge C-13-038 includes landscaping, park restoration/rehabilitation, sidewalk reconstruction, parking lot construction, lighting, drainage improvements, pavement milling and overlay and striping. The scope of work under this project also includes alterations to Bridge No. C-13-039 = H-21-059 (0WF) and C-13-047 (0WQ) as described within these provisions.

The scope of work for Interstate I-391 includes full depth pavement construction, pavement milling and overlay, line striping, median reconstruction, guardrail installation, grading and slope work, and various other construction activities to support the replacement of Bridge No. C-13-038.

Available record plans for all bridges included under this Project are included in Appendix C.

The existing Bridge No. C-13-038 (0WR) is a seven (7) span structure, built in 1979, that carries I-391 over Chicopee Street (Route 116), two (2) parking lots, and Rivers Park Connector in the Willimansett neighborhood of Chicopee, MA. The total length of the bridge is approximately 840'-0". The bridge consists of two separate structures separated by a 1" expansion joint along the I-391 median, with each carrying a single direction of I-391 traffic. Each superstructure consists of six (6) cell concrete box girders, measuring approximately 6'-9"+ deep, supported by integral concrete piers. The two superstructures are supported on shared reinforced concrete abutments with splayed wingwalls. Additional description of the existing structure is provided within Section 4.10.1.1 of these provisions.

The existing Bridge No. C-13-039 = H-21-059 (0WF) is six (6) span structure, built in 1977, that carries I-391 over the Connecticut River in the cities of Chicopee and Holyoke, MA. The nearest abutment supporting this bridge structure is located approximately 300 feet north of Bridge No. C-13-038. The total length of the bridge is approximately 942'-11". The bridge consists of two separate structures separated by a 1" expansion joint along the I-391 median, with each carrying a single direction of I-391 traffic. Each superstructure consists of seven (7) continuous steel plate girders with variable depth webs, measuring approximately 6'-6" at midspan and abutment support locations, and 9'-6" deep at pier support locations. The two superstructures are supported on shared reinforced concrete abutments with splayed wingwalls and solid-wall, granite faced, reinforced concrete river piers. Additional description of the existing structure is provided within Section 4.10.1.1 of these provisions.

The existing Bridge No. C-13-047 (0WQ) is single-span structure, built in 1979, that carries I-391 over B&M Railroad (BMRR) in the City of Chicopee, MA. The total length of the bridge is approximately 72'-11". The bridge consists of two separate structures separated by a variable width joint along the I-391 median covered by a concrete topping slab, with each structure carrying a single direction of I-391 traffic. The northbound structure consists of eight (8) W36 rolled steel beams. The southbound structure consists of eleven (11) W36 rolled steel beams. The two superstructures are supported on shared reinforced concrete abutments with splayed wingwalls. Additional description of the existing structure is provided within Section 4.10.1.1 of these provisions

Interstate I-391 is classified as an Urban Interstate highway. It originates from the I-91 interchange in Chicopee, south of the bridge, and terminates at Jackson Street in downtown Holyoke, north of the bridge. The northbound and southbound barrels are separated by a double-faced concrete median barrier. Though the full highway cross section consists of three (3) travel lanes, the inner (left) lanes in both the northbound and southbound directions have been closed off to restrict traffic loading on that deteriorated section of Bridge No. C-13-038. Therefore, I-391 in its present condition, within the general vicinity of Bridge No. C-13-038, is restricted to two (2) travel lanes in each direction.

South of Bridge No. C-13-038, I-391 continues with the same general configuration as described above. Highway lighting is present alongside the west shoulder. Approximately 0.5 miles South of the bridge, I-391 passes beneath a two-span bridge structure carrying Route 141. Deceleration and acceleration lanes for the loop ramp connections to Route 141 begin immediately south of the subject bridge's south abutment.

North of Bridge No. C-13-038, I-391 crosses over the Connecticut River via Bridge No. C-13-039 = H-21-059 (0WF). Further to the north, I-391 terminates at Jackson Street in downtown Holyoke.

4.2 SCOPE OF WORK

The Work includes but is not limited to:

- Final Design and Construction of all elements.
- Advancing Highway design through 75%, 100%, and Issued for Construction Highway, and through Construction of all elements.
- Advancing Bridge design through Structural Bridge Submittals and Issued for Construction Structural and through Construction of all elements.
- Performing the following work to Bridge No. C-13-038
 - Rehabilitation of the existing southbound superstructure, prior to Stage 1 construction.
 - Demolition of the existing bridge.
 - Construction of new bridge.
 - Installation of lighting pole supports, conduits and handholes on the bridge.
 - Lighting installation below the bridge.
 - Interim and as-built load rating accordance with RFP 4.10.2.2 and 10.19.
- Performing the following alterations to Bridge No. C-13-039=H-21-059
 - Removal of entire concrete median barrier and associated modifications to support traffic crossover
 - Construction of deck modifications and proposed median barrier, including any required shielding to protect the waterway below.
 - Installation of new membrane waterproofing within the full limits of deck modification.
 - Full removal and replacement of existing modular expansion joints.
 - Milling and overlay of the entire roadway surface over the bridge.
 - Interim and as-built load rating accordance with RFP 4.10.2.2 and 10.19.
- Performing the following alterations to Bridge No. C-13-039=H-21-059
 - Milling and overlay of the entire roadway surface over the bridge.
 - Interim and as-built load rating accordance with RFP 4.10.2.2 and 10.19.
- Removal of existing light poles and luminaires on bridges C-13-039=H-21-059 and H-21-060, including structural analysis of the aforementioned bridges to evaluate temporary crane loading during removal of existing light poles.
- Removal of existing concrete median barrier on I-391 to facilitate crossover of traffic to support stage construction south of bridge C-13-038.
- Retaining wall construction.
- Moment slab construction along retaining walls to support proposed highway barriers. Full depth reconstruction and sections of pavement milling and overlay of I-391, including barrier construction, at the approaches to the new bridge structure.

- Pavement milling and overlay of Chicopee Street, Whitman Street, and Perrault Street, including sidewalk reconstruction.
- Sidewalk reconstruction on Margaret Street and Saint Louis Avenue.
- Vietnam Veteran's Park reconstruction and associated landscaping. Coordination of work with Stakeholders.
- Pavement milling and overlay for modification of pavement markings, removal of temporary pavement markings, restoration of roadway surfaces and transitions to existing conditions at limits of work on I-391. Protection in place of existing utilities and utility coordination.
- Parking lot reconfiguration during construction to maintain a minimum level of parking and reconstruction of the parking area south of Chicopee Street.
- Constant monitoring, protection, and reinforcing (as necessary) of existing and/or temporary bridge elements to temporarily remain in service.
- Restoration of damaged pavement and disturbed areas within the Project limits.
- Coordination with private and municipal utility owners.
- Completion of Traffic Control Agreement
- Landscape restoration and invasive plant species management within the Project limits.
- Temporary traffic control and management, support of excavation, and other temporary work as necessary to maintain safe traffic operation and acceptable roadway conditions during construction.
- Coordination during design and construction with stakeholders, State/Municipal officials, and local businesses in conjunction with MassDOT.
- Coordination with the Cities of Chicopee and Holyoke.
- Coordination with the MassDOT Public Outreach Coordination team in order to facilitate community outreach, website updates, etc. in order to distribute current construction information, particularly as it relates to traffic impacts.
- Compliance with applicable regulatory approvals and permits issued prior to Notice to Proceed and any amendments or reevaluation made during construction.
- Construction mitigation and proper disposal of Hazardous materials in accordance with Regulations and Local Laws.
- Maintenance of access to abutters and local businesses throughout construction.
- Construction noise mitigation.
- Construction dust mitigation.
- Coordination with adjacent construction projects.

4.3 BTC DESIGN INTENT AND ATC RESTRICTIONS

MassDOT has advanced the design development for the replacement of Bridge No. C-13-038 (0WR), I-391 over Chicopee Street (Route 116), the modification of Bridge No. C-13-039 = H-21-059 (0WF), I-391 over Connecticut River and H-12-007, and the modification of Bridge No. C-13-047 (0WQ), I-391 over B&M Railroad through the BTC stage. The BTC design was advanced from other alternatives based on meeting the project purpose. The intent of the BTC design is to improve safety and operational efficiency through the Project limits. Additionally, the proposed improvements will support planned growth in the region and accommodate future traffic demand. This Project will achieve the following Project objectives:

- Improve public safety by replacing or modifying the deteriorating bridges.
- Reduce the overall footprint of Bridge No. C-13-038 and number of spans.

MassDOT has advanced the design development for the bridge replacements through the BTC stage. Bridge Type Studies and Sketch Plans will not be required. ATCs may be submitted for review, and, if accepted, incorporated in the Final Design documents. The MassDOT Bridge Manual, MassDOT Construction Standard Details, and other specific project criteria will be required for the design, detailing, and construction of all components of this Project if not specifically required by the contents of this RFP. The Design-Builder will be required to submit a minimum of three Final Design submissions (75% Highway/First Structural Bridge); 100% Highway/Second Structural, and Issued for Construction (IFC) Highway/Structural including Plans and Special Provisions advancing the BTC as required by the Project Development and Design Guide (PDDG). Approved ATCs that modify the BTC Sketch Plans shall be included in the technical proposal concept plans. The Proposer's concept plans shall show all principal design elements to a level of detail consistent with MassDOT Bridge Manual Sketch Plans and as modified by ATC's and serve as Bridge Sketch Plans for the Project moving forward.

4.3.1 BTC Elements

- The BTC is based on the bridges and span configurations, highway and bridge alignments, profiles, lane configurations, roadside elements, and retaining walls as shown on the BTC plans, and the projected and existing traffic volumes shown in the Functional Design Report.
- The BTC has been developed in conjunction with a public outreach program.
- Bridges shall be designed and detailed for existing and future utilities as described in Section 4.10 and/or depicted on the BTC plans and detailed so as to be accessible for future maintenance, replacement, and/or upgrading.
- Roadside elements shall be designed to maximize maintenance access and minimize required roadside protections.
- Proposed limits of work, as shown in the BTC plans are developed to minimize impacts to adjacent properties to the extent practicable.
- The BTC depicts temporary barriers for use in staged construction. Temporary barriers shall meet the performance requirements specified in Section 4.9.7. The Design-Builder shall specify how these barriers are to be restrained. Through-bolting any portion of the proposed deck that is to remain in the final condition is not permitted. Anchor rods grouted into the deck and removed without damaging the deck once the barrier is removed (or equivalent method) shall be used. The Design-Builder shall develop specifications and testing requirements for anchor rods/bolts used on existing decks to verify adequacy. Through bolting of existing bridge decks is permitted.
- The BTC depicts bridges designed to minimize deck joints and provide continuous girders.

4.3.2 ATC Restrictions

ATCs will be evaluated and either accepted or rejected per guidelines presented in RFP Volume I. The Design-Builder shall provide a design in all ATCs presented to the Department that is equal to or better than the BTC design it intends to supersede. The following is a list of ATC restrictions.

- Any ATC reducing the minimum vertical clearances shown on the BTC Plans.
- Any ATC which does not maintain the required number of vehicular through lanes, lane widths, shoulder widths, and arrangement in the final condition shown in the BTC. .
- Any ATC which does not provide a minimum of 11-foot travel lanes and 1-foot shoulders during construction.
- Any ATC that does not provide a 60 mph design speed ($e_{max} = 6\%$) on I-391 for the final condition.
- Any ATC that does not provide physical separation by barrier between the northbound and southbound directions of I-391 during construction and final conditions.
- Any ATC which proposes reducing the minimum horizontal or vertical sight distances shown on the DJW, or reducing the lateral offsets from the face of permanent barrier to travel lanes.
- Any ATC which incorporates the reuse of existing substructure elements for a permanent structure.
- Any ATC where a Mechanically Stabilized Earth (MSE), Modular or other wall type is used and whose primary design is as an earth retaining structure, and the superstructure is not supported on an independent deep foundation.
- Any ATC where a modular wall abutment is proposed and the abutment beam seat is not cast integrally with the top module as indicated in AASHTO Section 11.11.7.
- Any ATC that proposes the use of drilled micropiles in lieu of standard MassDOT Bridge Manual details for H pile supported integral abutments.
- Any ATC which introduces a Nonredundant Steel Tension Member (NSTM).
- Any ATC which proposes Geosynthetic Reinforced Soil-Integrated Bridge System (GRS-IBS) structures.
- Any ATC which proposes “lean on bracing”.
- Any ATC using precast adjacent box or deck beams
- Any ATC using partial depth precast deck panels.
- Any ATC which incorporates lightweight concrete on the bridge deck and/or traffic barriers.

Any ATC that proposes expansion joints over piers.

4.4 CODES, STANDARDS, AND SPECIFICATIONS

All design and construction shall be governed by codes, standards, and specifications relevant to public works for highways and bridges. AASHTO and MassDOT standards are applicable to the final design and construction documents to be developed by the Design-Builder, including but not limited to the list provided in Section 1.2.2. MassDOT documents are available on the MassDOT web page.

For items that may require special provisions, the Design-Builder will consult with MassDOT to ensure that the Department has not already developed a special provision for said item. When a special provision does exist, MassDOT will provide the Design-Builder with the most current special provision at the time of the request.

The Work shall be completed in conformance with all current engineering and policy directives, and other correspondence normally available and distributed to design consultants from MassDOT.

For Utility related work, the Design-Builder shall be responsible for obtaining and ensuring adherence of design and construction to the respective standards and criteria.

See Appendix C for Project-Draft BTC Special Provisions.

4.5 DESIGN REVIEWS AND SUBMITTALS

4.5.1 MassDOT Reviews

Oversight reviews will consist mainly of checks to ensure that RFP and Contract requirements and design criteria are being followed and that Quality Control activities are following the Design-Builder's approved Quality Management Plan. Oversight Reviews, at MassDOT's discretion, include, but are not limited to, review of Design Documents, electronic files, calculations, reports, specifications, geotechnical data, and other relevant design information. It is MassDOT's intent to provide acceptance of the submittals which meet all Contract and RFP requirements as confirmed by the QC Administrator in order for Construction to begin on any particular element.

4.5.2 FHWA Reviews

FHWA will also conduct oversight reviews to ensure compliance with FHWA rules and requirements. FHWA reviews will consist of checks to ensure that RFP and Contract requirements and design criteria are being followed and that Quality Control activities are in conformance with the Design-Builder's approved Quality Management Plan. It is FHWA's intent to provide acceptance of the submittals which meet all Contract and RFP requirements as confirmed by the QC Administrator in order for Construction to begin on any particular element of the Work.

4.5.3 City of Chicopee Reviews

For any design impacting traffic and facilities in the Cities of Chicopee and/or Holyoke including, but not limited to, temporary local detours and truck routes, the Design-Builder will be required to advance design of these items based on City of Chicopee and Holyoke reviews and MassDOT reviews. The Design-Builder will be required to organize and host comment resolution meetings for all reviews in coordination with the MassDOT Project Manager.

4.5.4 Reviews by Environmental Regulatory Agencies

The Design-Builder is responsible for all final design and construction phase submissions as required by the environmental permits and approvals. Further information is available in Section 5.0 and in Appendix C.

The Design-Builder shall assume design phase review of all permit plan changes. Acceptance of modifications will be a condition of construction.

4.5.5 MBTA Reviews

[**THIS SECTION NOT APPLICABLE**]

4.5.6 Design Submittal Review Process

In conformance with Sections 1.1.9 and 1.1.10, the Design-Builder shall make available all Project-wide submittals, including major milestone packages, to facilitate review, approval, and acceptance of the Contract documents. The Design-Builder shall establish a Master Submittal list of Design and Construction Submittals for MassDOT review. The Submittal list should include a short explanation of each submission. The Design-Builder shall provide a schedule for the Submittals that reflects the feasibility of MassDOT completing the reviews within the allotted timeframes. The Submittal list should identify early action or enabling submissions, indicating what work the submission enables and demonstrating the necessity of the enabling work. MassDOT shall use this list to determine the required reviewers and establish a distribution matrix. This list shall be updated periodically by the Design-Builder as the work progresses and submissions are broken up to support Early Release for Construction and resubmitted to MassDOT to determine the required reviewers.

All design submittals shall be in accordance with the latest MassDOT Project Development and Design Guide and MassDOT Bridge Manual and shall be in English units. The design shall be completed in conformance with all current engineering and policy directives, and other correspondence normally generated and distributed to Design Consultants for MassDOT.

All submittals shall conform to the approved Quality Management Plan (QMP) submitted by the Design-Builder and include a statement of conformance from the QC Administrator. All submittals shall be electronic as well as hard copy. All submittals are required to be part of the overall schedule for the Project and such schedule shall show the thirty (30) Day duration for initial review, duration for response to comments and a resubmittal activity with thirty (30) Day duration for resubmittal review. If submittals are received after 12 PM (noon), the review duration will start on the next business day. All submittals are subject to review and approval/acceptance by MassDOT, its designated reviewer, if any FHWA, utility companies, and others as provided herein. Resubmittal for review and approval of any Design Document or Construction Document may be required as appropriate to obtain approvals. MassDOT maintains the right to refuse and reject any submittal that does not comply with the MassDOT requirements related to the preparation and submittal of Contract Documents and Project requirements. Refusal or rejection of submittals will not constitute grounds for delays in schedule.

MassDOT will review and respond to complete design submittals within thirty (30) Days. However, the Design-Builder acknowledges that MassDOT has not guaranteed any specific review period for internal reviews or reviews by Federal, State, local agencies, railroad or utility owners. The period for each such review shall be established by the reviewing entity, at its discretion, after a plan submittal has been made to such entity.

4.5.6.1 **Distribution of Submittals**

The Design-Builder shall be responsible for the timely distribution of submittals. Submittals shall be distributed to reviewers in accordance with the Project's distribution matrix. The distribution matrix shall be based on the Master Submittal list and shall be updated as necessary for the duration of the Contract.

4.5.6.2 **Design Exceptions**

Design exceptions are required for the following elements by roadway facility:

- Interstate I-391 – Shoulder Width Left (4-foot shoulder only)

A Design Justification Workbook has been completed and approved by MassDOT and is included in Appendix C. If additional design exceptions are required as a result of an ATC or other design changes incorporated by the Design-Builder, the Design-Builder shall document and submit all design exceptions with the process outlined in the MassDOT Project Development and Design Guide. Any additional design exceptions must be approved by MassDOT and FHWA (as applicable) prior to the 75% Highway Design and initial Structural Bridge Design submittals.

Changes or additions to the current design exceptions may require the Design-Builder to update the approved Design Justification Workbook.

4.5.6.3 **Over the Shoulder Reviews**

Over the Shoulder (OTS) reviews are examinations by MassDOT and FHWA of design documents during the design process. The over-the-shoulder reviews will be conducted in the field office of the Design-Builder with an option for participants to attend virtually and in the presence of the Design-Builder's design personnel with the intent to minimize disruption of on-going design work. Formal assembly and submittal of drawings or other documents will not be required. The review may be of progress prints, computer images, draft documents, working calculations, draft specifications and reports, or other design documents and these review materials shall be submitted at least 3 days in advance of the scheduled meeting. The Design-Builder shall provide an agenda and short narrative of the items to be discussed with the review material for the meeting. The Design-Builder shall schedule at least one over-the-shoulder review prior to each of the design submittals which includes any Early Release submittals, Formal 75% Highway Design, and First Structural Bridge, 100% Highway Design, Second Structural Bridge and Issued for Construction Documents. The Design-Builder shall utilize the MassDOT's SharePoint® site in conformance with Section 1.1.9 and make available all design documents necessary to facilitate over-the-shoulder reviews. The Design-Builder shall prepare meeting minutes for all the over-the-shoulder reviews. Meeting minutes shall be distributed within 2 business days of the meeting and reviewed for completeness by all attendees. Meeting minutes shall be included as part of the design submittal package.

4.5.6.4 **Geotechnical Reports**

The Final Geotechnical Reports shall be prepared and submitted for review and approval in accordance with the MassDOT Bridge Manual Part I and RFP Section 4.11. The Design-Builder shall submit a separate Geotechnical Report for each permanent structure, each temporary bridge structure (if proposed), and one for all Highway Elements (see RFP Section 4.11.5). See RFP Section 4.11 for additional information on the Final Geotechnical Reports.

The applicable Geotechnical Reports shall be submitted concurrently with all Highway and Bridge submittals as reference documents to aid in the review of the highway and bridge submittals.

4.5.6.5 **75% Highway Design, and First Structural Design Submittals**

The 75% Highway Design and Structural Bridge submittals shall consist of all documents required by MassDOT in its design materials. First Structural Bridge submittal shall not be submitted prior to submitting the Bridge Geotechnical Report. The Water Quality Data Form (WQDF) shall be submitted with the 75% Highway submittal.

The Design-Builder may continue its design efforts beyond the 75% Highway Design or 1st Structural Bridge submission prior to receiving acceptance from MassDOT at its sole risk, and shall only submit subsequent design submissions for MassDOT review and acceptance after full consensus (from Bridge section; FHWA and any third party as required). Such continuation in no way relieves the Design-Builder of the responsibility to incorporate MassDOT and FHWA comments into the Design Documents, nor does it entitle the Design-Builder to any additional compensation or time extension resulting from changes to the Design Documents required by the Design-Builder's QC Team.

Resubmittal of 75% Highway Design or 1st Structural Design Submittals may be required if deemed necessary by MassDOT, or any Federal, State or local regulatory agency with jurisdiction over the Project. Each resubmittal shall address all comments received from a prior submittal. The Design-Builder shall not be entitled to any additional compensation or time extension due to any resubmittal requirement by MassDOT or Federal, State, or local agency. Resubmittals shall include a summary narrative of design changes from the original submittal, including those that were not the result of a project comment.

4.5.6.6 **100% Highway Design and Second Structural Design Submittals**

The 100% Highway Design Submittal and Second Structural Bridge shall consist of detailed, complete, and checked drawings, reports, and specifications necessary for construction of the applicable portion of the Project and shall be at least six (6) weeks prior to starting any physical work. All documentation, including MassDOT and FHWA written acceptance, relating to Design Exceptions from design standards shall be provided with the Second Structural Bridge and 100% Highway Design Submittal. The Design-Builder shall determine an appropriate method (i.e. memorandum) to call reviewers attention to any changes that have been made since the acceptance of the 75% Highway Design & First Structural Bridge submissions; specifically, those changes that were not a result of a comment.

Resubmittal of 100% Highway Design or 2nd Structural Design Submittals may be required if deemed necessary by MassDOT, or any Federal, State or local regulatory agency with jurisdiction over the Project. Each resubmittal shall address all comments received from a prior submittal. The Design-Builder shall not be entitled to any additional compensation or time extension due to any resubmittal requirement by MassDOT or Federal, State, or local agency. Resubmittals shall include a summary narrative of design changes from the original submittal, including those that were not the result of a project comment.

For Bridge Submissions, additional structural submissions beyond 2nd Structural may be required should major comments remain unresolved. Subsequent submissions shall be titled sequentially (3rd, 4th, etc.)

Acceptance of the 100% Highway Design and final structural submissions shall be obtained from MassDOT prior to proceeding to Issued for Construction.

4.5.6.7 **Re-submittal Process**

Re-submittals of any Design Submittal may be required if deemed necessary by MassDOT, or any Federal, State or local regulatory agency with jurisdiction over the Project. Each re-submittal shall address all comments received from a prior submittal. The Design-Builder shall not be entitled to any additional compensation or time extension due to any re-submittal requirement by MassDOT or Federal, State, or local agency.

Resubmittals shall include a summary narrative of design changes from the original submittal, including those that were not the result of a project comment.

The Design-Builder may continue its design efforts, at its sole risk, during the design submittal or re-submittal review process, and shall only submit subsequent design submissions for MassDOT review and acceptance after full consensus (from Bridge section; FHWA and any third party as required) with all general highway design and bridge substructure and superstructure design elements have been reached. Such continuation in no way relieves the Design-Builder of the responsibility to incorporate MassDOT comments into the Design Documents, nor does it entitle the Design-Builder to any additional compensation

or time extension resulting from changes to the Design Documents required by the Design-Builder's QC Team. MassDOT will review and respond to complete design and permit application/amendment submittals within thirty (30) Days. However, the Design-Builder acknowledges that MassDOT has not guaranteed any specific review period for internal reviews or reviews by Federal, State, local agencies or utility owners. The period for each such review shall be established by the reviewing entity, at its discretion, after a plan submittal has been made to such entity.

After the "Issued for Construction" Design Documents are accepted, the Design-Builder shall, at a minimum, provide MassDOT with three (3) full size sets of signed and sealed Design Documents and with four (4) sets of ½ scale signed and sealed Design Documents. In addition, the Design-Builder shall post these documents to the SharePoint IFC library and provide MassDOT with a USB Drive of electronic files consisting of all signed and sealed plans.

4.5.6.8 **Issued for Construction/Approval/Acceptance**

Within thirty (30) days of MassDOT and FHWA written acceptance of the Final Structural Bridge Submission and 100% Highway design of all items and segments of the Project, the Design-Builder shall provide the Design Documents (plans, specifications, reports, calculations, and materials list) organized and indexed in accordance with MassDOT's project development uniform file system. All plans, specifications, and reports shall be signed and sealed by the Professional Engineer registered in the Commonwealth of Massachusetts who is in responsible charge. A written statement shall accompany the final Design Submittal from the QC Administrator indicating that the Issued for Construction Design Submittal is in conformance with all RFP and Contract requirements.

The Design-Builder acknowledges and agrees that acceptance of the 100% Highway and 2nd or subsequent Structural submissions shall be obtained from MassDOT and applicable local agencies prior to submission of "Issued for Construction" Design Documents to MassDOT. MassDOT will also seek and receive FHWA concurrence (as applicable) prior to acceptance of "Issued for Construction" (IFC) Design Documents.

4.5.6.9 Design Change Notices

For this Project, Design Change Notices, DCNs, are defined as changes to existing Issued for Construction Design Drawings or Special Provisions prior to the commencement of the related construction or material fabrication. These are changes that are not necessitated by a non-conformance corrective action, nor necessitated by a changed field condition, which shall be submitted as Field Design Changes. Design Change Notices include changes implemented by the Designer based on coordination with the Design-Builder, Design-Builder's Fabricator, or MassDOT District or Construction Division personnel. Justification for the design change shall be provided to MassDOT for review and concurrence. Design Change Notices will be required to be submitted for MassDOT review and acceptance including any necessary calculations. Revisions to the issued for construction (IFC) Drawings shall be in accordance with MassDOT Bridge Manual, Part I, Chapter 4. Upon acceptance by MassDOT, all revised project documents that were affected are to be redistributed by the Design-Builder within 72 hours.

4.5.6.10 Field Design Changes

For this Project, Field Design Change Notices, FDC's, are defined as Designer of Record design changes to existing Issued for Construction Design Drawings or Special Provisions necessitated by a non-conformance corrective action or a changed field condition that were not the intent of the design at the time of Issued for Construction and at the time of MassDOT and FHWA's previous acceptance. Field Design Change Notices will be required to be submitted for MassDOT review and acceptance including any necessary calculations.

4.6 EARLY START OF CONSTRUCTION PROCESS

The Design-Builder's schedule and work plan shall identify the items, segments, or stages, including but not limited to rock excavation, clearing and grubbing, utility investigation and protection, demolition, temporary construction, and environmental protection mitigation that the Design-Builder plans to release for early construction (i.e., construction that is to start prior to completion of Issued for Construction Design Submittal Documents). The Design-Builder will maintain a log for all Early Release Construction/Fabrication (ERC/ERF) Packages.

The Design Builder shall coordinate with MassDOT and FHWA to conduct a meeting to go over the proposed Early Release Design and all other associated components (e.g. approved shop drawings, procedures, reports, etc.) that will be necessary to allow the fabrication or construction for said item or segment to begin. Following this meeting the Design-Builder shall prepare a formal Design Submittal of ERC/ERF using the same QC process established in the approved QMP to MassDOT and FHWA that shall include:

- All design plans;
- Design calculations;
- Design reports;
- Specifications and Special Provisions;
- List of Items and Quantities;(standard and non-standard) including an asterisk adjacent to each and every item requiring a special provision per MassDOT guidance;

See RFP Section 2.7.4 for RMS 360 quantity and specification requirements for all submittals.

The Design-Builder shall address and/or incorporate any comments from MassDOT and FHWA in its design prior to MassDOT's acceptance of the formal design. The Design-Builder shall then resubmit the revised Design Documents to MassDOT and FHWA.

Early Release for Fabrication or Construction of bridge elements shall not be submitted prior to submitting the Bridge Geotechnical Report. Early Release for Fabrication or Construction of bridge elements will not be accepted until bridge geotechnical assumptions presented in the reports are validated.

There are two categories of Early Release Packages for submission after MassDOT concurrence with the Design Submittal:

- Early Release for Fabrication
- Early Release for Construction

When the Design-Builder has obtained acceptance of the design and other associated components for an item or segment and wishes to proceed with the early start of construction/fabrication thereof, the Design-Builder will submit an Early Release Package, as described in Sections 4.6.1 and 4.6.2. Within this Package, the QC Administrator shall certify that:

- The Design meets all applicable requirements;
- The Design has been checked in accordance with the Design-Builder's approved QMP;
- Said item or segment is ready for construction; and

- The Design-Builder has obtained all required State, Local, Environmental, Railroad and Utilities approvals and permits.
- The ERC/ERF package includes all items referenced in RFP section 4.6.1 or 4.6.2 as applicable.

The Design-Builder shall not commence fabrication or construction until the MassDOT review is complete and MassDOT concurs in writing with the QC Administrator's statement approving construction. MassDOT's concurrence with the QC Administrator's approval statement will not constitute approval or acceptance of the design or subsequent construction, nor relieve the Design-Builder of its responsibility to meet the requirements hereof. Irrespective of whether MassDOT provides the Design-Builder with the authority to begin construction on elements of the Project prior to completion of the entire design, the Design-Builder shall bear the responsibility to assure that construction meets the RFP and Contract requirements. Any approved components procured under the Early Start of Construction process shall have their actual dimensions and unique fabrication information incorporated into all subsequent design and construction submittals.

4.6.1 Early Release for Fabrication Packages

The Early Release for Fabrication package shall include (as applicable):

- All Design Documents
- Shop Drawings with ERC Stamp
- Welding and other applicable fabrication Procedures
- Fabrication Schedule
- List of Items and Quantities (standard and non-standard)
- Special Provisions (relevant to fabrication)
- Fabricator's Quality System Manual (QSM)
- QC Plan(s) and Checklist for the work item(s)

4.6.2 Early Release for Construction Packages

The Early release for Construction package shall include (as applicable):

- All Design Documents
- Special Provisions
- Documentation that the Design-Builder has obtained all required Governmental, Railroad, Environmental Regulatory Agencies, and Utility Owner Approvals
- QC Plan(s) and Checklist for the work items
- Shop Drawings with ERC Stamp (for field constructed items)
- Construction Procedure
- Erection Procedure
- Demolition Procedure
- Traffic Management Plans
- List of Items and Quantities: (standard and non-standard)

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4.7 CONSTRUCTION SEQUENCING

The BTC Plans in Appendix C outline a suggested sequence of construction. The sequence of construction reflects the requirements to maintain vehicular traffic along I-391 and the associated ramps, Chicopee Street (Route 116), Margaret Street, Whitman Street, Perrault Street, and Saint Louis Avenue. Additional limitations and requirements associated with construction sequencing are outlined in Section 4.9. MassDOT's suggested sequence of construction was developed to minimize reductions of capacity on these roadways.

The BTC Plans contain conceptual construction sequencing for informational purposes and show each stage's intent for temporary traffic movements. The Design-Builder will be required to develop and submit its own proposed phasing and associated TTCs. This is not intended to be an exhaustive list, but to provide major traffic changes, and work activities as described in the BTC plans' staging. Within each stage, it is anticipated that smaller traffic shifts and work setups will occur to accommodate individual Project element construction. The Design-Builder shall prepare plans for all temporary traffic patterns and work setups that occur within each larger stage. It is expected that some design elements shown in any one individual stage can be completed before the schedule critical elements. The Design-Builder shall open proposed facilities as they are completed and as traffic patterns allow.

Pre-Stage 1:

1. Perform targeted repairs to the southbound structure of Bridge No. C-13-038 to address existing deterioration which adversely affects the load carrying capacity of the bridge. All repairs shall be completed under short-term temporary work zones.
2. Install temporary limited deflection barriers on I-391 northbound and southbound.
3. Remove select portions of existing median barrier on I-391 approach roadways, including over Bridge No. C-13-039 = H-21-059.
4. Install temporary pavement on I-391 approach roadways for Stage I crossover.

Stage 1:

1. Install temporary traffic controls and implement I-391 northbound temporary crossover.
2. Demolish existing northbound structure of Bridge No. C-13-038.
3. Construct proposed northbound structure of Bridge No. C-13-038.
4. Complete associated approach roadway work on I-391 northbound.

Stage 2:

1. Reposition temporary traffic controls and implement I-391 southbound temporary crossover.
2. Demolish existing southbound structure of Bridge No. C-13-038.
3. Construct proposed southbound structure of Bridge No. C-13-038.
4. Complete associated approach roadway work on I-391 southbound.
5. Complete associated approach roadway work on I-391 southbound.

Stage 3:

1. Reposition temporary traffic controls.
2. Complete median reconstruction on I-391 approach roadways, including over Bridge No. C-13-039 = H-21-059.
3. Complete final paving on I-391.
4. Complete construction of the following elements beneath Bridge No. C-13-038
 - a. Pavement milling and overlay on Chicopee Street (Route 116)
 - b. Sidewalks and pedestrian curb ramps
 - c. Park Pathway
 - d. Vietnam Veteran's Park and associated landscaping
 - e. Public parking lot.

4.8 HIGHWAY DESIGN

4.8.1 General

The highway design accommodates a proposed cross section along Interstate 391 with three (3) 12-foot through lanes, a 4 foot inside shoulder and a 12 foot outside shoulder at the immediate approaches to the bridge. Beyond the immediate approaches to the bridge, the highway design accommodates three (3) 12 foot through lanes, 4 foot minimum inside shoulders, variable width outside shoulders and auxiliary lanes at all existing on-ramps and off-ramps in each direction. The proposed conditions closely match the existing conditions as there is no roadway widening proposed at the approaches, and all on-ramps and off-ramps are maintained. The acceleration and deceleration lanes have been lengthened where feasible to meet current design standards.

Below the bridge along Chicopee Street, the highway design accommodates a proposed cross section with two (2) 12'-2" to 17'-0" travel lanes divided by a 0'-0" to 10'-0" median gore, and two (2) 5'-0" buffered bike lanes. There are sidewalks along each side of Chicopee Street, with a minimum proposed width of 7'-2". The existing roadway cross section along Chicopee Street is similar to the proposed conditions, however, there are approximately 8' wide shoulders instead of the proposed bike lanes.

4.8.2 Survey

The Design-Builder is responsible for obtaining any additional survey as required for use in the preparation of the construction documents for any proposed roadway improvements, stormwater locations, proposed changeable message sign installations, and any other work within or outside the limits of the work shown on the BTC Plans. The survey base plan shall be in conformance to all MassDOT survey requirements and shall be stamped and sealed by a Professional Land Surveyor registered in the Commonwealth of Massachusetts. All available survey files needed to generate the existing BTC Plans are provided in Appendix C. The Design-Builder shall verify the accuracy of survey information provided.

The survey base plan was prepared by WSP USA, Inc. in November 2024. The Project survey drawing is included in Appendix C.01 and research information is included in Appendix C.05.

The Design-Builder is responsible for verifying and accepting the available survey for use in preparation of the Final Design Documents. The Design-Builder is responsible for confirming the requirements for the installation of permanent bounds. The Design-Builder shall be responsible for the placement of permanent bounds consistent with the State Highway Layout Alteration Plans. This work will need to be performed by a Professional Land Surveyor registered in Massachusetts.

4.8.2.1 Project Survey Control

All survey control for projects done by or for MassDOT shall be tied into the current State Plane coordinate system and Project vertical datum. Those datums are currently the North American Datum of 1983 (2011) Epoch 2010.00 for horizontal control and Project vertical datum for vertical control. All elevations are in US feet, referenced to the North American vertical datum of 1988 (NAVD88).

The survey control points are shown on the Survey Control Plans contained in the BTC are provided in Appendix C. All control points shall be maintained and protected throughout the construction duration. All on the ground and GPS surveys must be localized to the established horizontal and vertical control as provided.

The datum used on the original bridge plans, Mean Sea Level Datum 1929, should not be relied upon.

Survey data, from preliminary design through as-built data after construction, shall be on the datums listed above. Care should be used with electronic CAD data during the entire Project that no translation or rotation of the data occurs. Field notebooks shall be obtained from the District Survey Office and all field notes shall be entered into those department books.

Prior to the Design-Builder establishing any construction baselines or extending the Project Survey Control, the Survey Section at MassDOT headquarters shall be contacted for advice on nearby control and procedures to achieve the required accuracy for the Project. When the control observations have been completed and adjusted, a copy of the adjustment results along with tie sketches of the points established and a brief description of the equipment and procedure used shall be submitted to the Survey Engineer at MassDOT headquarters.

Satellite based project network observations shall be tied to the nearest Federal Base Network (FBN) station or the nearest Cooperative Base Network (CBN) station as found on the National Geodetic Survey (NGS) website (<http://www.ngs.noaa.gov/PROJECTS/FBN/>), and adjustments shall achieve an accuracy of 0.015m horizontally, and 0.025m vertically (2 sigma or 95 percent confidence). Differential leveling observations shall be tied to the nearest second-order or better vertical control station retrieved from the National Geodetic Survey Datasheet website (<https://www.ngs.noaa.gov/datasheets/>) or from the MassDOT Geodetic Control website (<http://gis.MassDOT.state.ma.us/maptemplate/geodeticcontrol>) and double-run leveling shall achieve a closure of less than $6 \text{ mm} \times (\text{km})^{1/2}$ (km of loop).

4.8.2.2 Construction Baseline

The Design-Builder is responsible for creating the construction baselines required for the Project from the information provided on the BTC plans. All available survey files needed to generate the existing BTC Plans are included in Appendix C.

4.8.3 Roadway Design Standards

In addition to all other requirements applicable to the Design hereunder, the Design-Builder shall prepare the final horizontal and vertical design of the roadway elements of the Project in accordance with the standards referenced herein. The roadway design shall be in accordance with the improvement concepts presented in the BTC Plans.

Details such as roadway alignments shall be adjusted to meet the design standards and criteria specified and in accordance with the reference documents and standards in Section 1.2, and additional impacts shall be addressed to satisfy MassDOT and regulatory agencies. The Design-Builder acknowledges and agrees that any significant change to the BTC design provided in Appendix C may require the acquisition of additional properties and also may require amendment(s) to the environmental permits and approvals.

The Design-Builder acknowledges and agrees that a final design not meeting any of the remaining Controlling Criteria, or negative changes to lane and shoulder widths in the design exception currently approved by MassDOT as noted in Section 4.5.6.2, will require a new Design Justification Workbook be prepared, reviewed and approved by MassDOT. If a Design Justification Workbook is required, the Design-Builder shall be responsible for its preparation and for seeking its approval.

The Design-Builder shall be responsible for preparing design plans and documents stamped by an Engineer registered in the Commonwealth of Massachusetts that are in conformance with the most recent MassDOT Project Development and Design Guide and all amendments.

4.8.3.1 Roadway Design Documents

Highway Design BTC plans are included in Appendix C.

The Design submittals shall include at a minimum, the following and all supporting documents/reports as detailed in the most recent MassDOT Project Development and Design Guide:

- 75% Highway Design Submittal
- Design Justification Workbook (if required prior to approval of 75% Highway Design Plans)
- 100% Highway Design Submittal, including highway design calculations
- Issued for Construction Highway Design Submittal Documents

The Issued for Construction roadway design documents shall include, but not be limited to, the plans and Special Provisions as required by the most recent MassDOT Project Development and Design Guide.

MassDOT submission requirements as defined in MassDOT codes and standards and in current MassDOT Engineering Directives shall also be met.

Plan sets and sheet types for partial construction work elements, or early start of construction, prior to a completed Issued for Construction design shall comply with the Design-Builder's QMP and their QC process and MassDOT oversight and as per Section 4.6.

4.8.4 Roadway Design Criteria

The following subsections specify the roadway design criteria to be used for all roadways within Project limits.

4.8.4.1 Alignment Criteria

The horizontal and vertical alignment and roadway configurations for the facilities to be designed and constructed in the project limits are defined by the criteria the table below. Unless noted, design speed is the governing factor for all criteria. The design for the roadways shall meet or exceed these criteria in accordance with BTC plans and the approved design exceptions:

Design Criteria for Roadway Facilities within Project Limits

Roadway	Design Speed (mph)	Travel Lane Width (ft)	Inside Shoulder Width (ft)	Outside Shoulder Width (ft)	Max. Vertical Grade	Bicycle Facility/ Width (ft)	Pedestrian Facility/ Width (ft)
Interstate 391	60	12' typ	4' min	10' min ⁽¹⁾	3%	N/A	N/A
Chicopee Street	25	11' min	N/A	N/A ⁽²⁾	9%	5' min ⁽²⁾	7'-2" min

- (1) Minimum outside shoulder width shall be 10' minimum except for locations with auxiliary lanes. The minimum outside shoulder may be reduced to 1' minimum (2' preferred) where auxiliary lanes are present.
- (2) Outside shoulder along Chicopee Street shall consist of a 3' buffer and 5' bike lane.

The proposed bridge shall consist of three (3) through lanes in the northbound and southbound directions. In the finished condition, all existing acceleration / deceleration (auxiliary) lanes from on-ramps and off-ramps shall be maintained.

Any design that changes controlling values shown in the DJW such as, but not limited to design speed, maximum grade, etc. may be considered as an ATC.

4.8.4.2 Pavement Design

The Design-Builder shall construct pavement sections in conformance with MassDOT Subsection 450 Hot Mix Asphalt Pavement and Subsection 415 Pavement Milling of the MassDOT Standard Specifications for Highways and Bridges, 2026 Edition. New full depth pavement shall be designed for a minimum design life of 40 years.

All embankment, sub-base and sub-grade, shall be constructed in accordance with MassDOT Standard Specifications for Highways and Bridges, 2026 Edition, and all Supplemental Specifications .

The estimated traffic level to be used for all Superpave HMA mixture designs for this Contract expressed in Equivalent Single Axle Loads (ESALs) is **XX Million** 18-kip (80-kn) ESALs. Pavement grades for each pavement type shall be in accordance with MassDOT Standard Specifications for Highways and Bridges, 2026 Edition.

The Pavement Design provided below and in the BTC Plans shall be constructed by the Design-Builder and shall meet the following minimum criteria:

PROPOSED FULL DEPTH PAVEMENT

Surface Course: 1.5" Superpave Surface Course – 9.5 Polymer (SSC-9.5-P) over
Intermediate Course: 3" Superpave Intermediate Course – 19.0 (SIC-19.0) over
Base Course: 6" Superpave Base Course - 37.5 (SBC-37.5) over
Subbase: 4" Dense Graded Crushed Stone for Sub-Base over
8" Gravel Borrow Type B over

PROPOSED FULL DEPTH BOX WIDENING (LESS THAN 4 FEET)

Surface Course: 1.5" Superpave Surface Course – 9.5 Polymer (SSC-9.5-P) over
Intermediate Course: 3" Superpave Intermediate Course – 19.0 (SIC-19.0) over
Base Course: 6.0" High Early Strength Cement Concrete Base Course over
Subbase: 8" Gravel Borrow Type B over

PROPOSED MILLING AND OVERLAY

Surface Course: 1.5" Superpave Surface Course – 9.5 Polymer (SSC-9.5-P) over
Milling: 1.5" Pavement Fine Milling

PROPOSED BRIDGE PAVEMENT

Surface Course: 1.5" Superpave Bridge Surface Course – 9.5 Polymer (SSC-B-9.5-P) over
Protective Course: 1.5" Superpave Bridge Protective Course 9.5 - Polymer (SPC-B - 9.5 - P) over
Spray Applied Membrane Waterproofing

PROPOSED BRIDGE MILLING AND OVERLAY

Surface Course: 1.5" Superpave Bridge Surface Course – 9.5 Polymer (SSC-B-9.5-P) over
Milling: 1.5" Bridge Pavement Milling

PROPOSED CEMENT CONCRETE SIDEWALK AND PEDESTRIAN RAMPS

Surface: 4" Cement Concrete (Air Entrained, 4,000 PSI, 3/4", 610) Over
Subbase: 8" Gravel Borrow (Type b)

PROPOSED CEMENT CONCRETE SIDEWALK AT DRIVEWAYS

Surface: 6" Cement Concrete (Air Entrained, 4,000 PSI, 3/4", 610) Over
Subbase: 8" Gravel Borrow (Type b)

PROPOSED HOT MIX ASPHALT SIDEWALK, DRIVEWAY AND PARKING LOT PAVEMENT

Surface: 1.5" Superpave Surface Course - 9.5 (SSC-9.5) Over
2.5" Superpave Surface Course - 12.5 (SIC-12.5) Over
Subbase: 8" Gravel Borrow (Type b)

TEMPORARY FULL DEPTH PAVEMENT

Intermediate Course: 2" Superpave Intermediate Course – 19.0 Polymer (SIC-19.0-P) over
Base Course: 6" Superpave Base Course - 37.5 (SBC-37.5) over
Subbase: 8" Gravel Borrow (Type b)

Notes:

1. All embankment sub-base and sub-grade materials shall be in accordance with the Standard Specifications for Highways and Bridges Division III: Materials Specifications. Materials for gravel borrow, special borrow and/or reclaimed pavement borrow to be graded and compacted 95% dry density in lifts as required. Unsuitable material shall be removed and replaced. Existing subbase not conforming to the material specification M1.03.0 Gravel Borrow, Type B will be removed to the required depth and replaced with Gravel Borrow, Type B.
2. Prior to substantial completion the Design-Builder shall mill and resurface the HMA pavement surface course from beginning to end of traffic management plan (including bridge decks) to restore pavement, lane lines and markings as directed by MassDOT. Should the Design-Builder extend the Project limits they are responsible for milling and final paving of the full Project limits as directed by the Engineer.
3. All grooved, milled, and/or scarified pavements must be paved (temporarily or otherwise) in advance of the winter pavement moratorium so as to ensure effective snow and ice removal operations, unless otherwise directed by the Engineer.
4. For bridge decks, concrete surface shall cure a minimum of 48 hours before preparation for spray applied waterproofing membrane shall commence.
5. If the Design-Builder proposes vehicular traffic to travel on an alternative pavement course for an extended duration, the HMA pavement shall be polymer modified.
6. For bridge decks, spray applied membrane and HMA intermediate course shall be completed no later than 30 days after new bridge decks are open to traffic.
7. All hot mix asphalt pavements shall be constructed in accordance with Subsection 450 Quality assurance for HMA.
8. Asphalt emulsion for tack coat (Subitem 452.) shall be spray applied for triple overlap coverage in accordance with subsection 450.43 (G) of the Standard Specifications.
9. HMA joint adhesive (Subitem 453.) shall be applied in surface course at all vertical cold joints prior to HMA paving.
10. Surface paving to be completed at the end of the project and as directed when it can be placed in its entirety.
11. Pavement core test data is provided in Appendix C.

4.8.4.3 Maintenance of Existing Pavement

The Design-Builder will be responsible for temporary patching and other minor repairs to ensure the existing pavement, within the Project limits, is maintained at all times during the duration of the Project in a safe condition for traffic or as directed by MassDOT. Payment for such patching or repairs will be as indicated below.

During prosecution of the work, MassDOT will identify locations of any necessary pavement repairs, emergency or otherwise, based on observations from the Engineer and alerts by the Design-Builder. Requests for emergency repair by MassDOT must be responded to by the Design-Builder within two hours of notification. The Design-Builder will coordinate with the Resident Engineer to locate the limits of the pavement repairs and the and the limits of all repairs shall be agreed upon by MassDOT prior to the execution of repair.

The Design-Builder will be compensated for the temporary patching and other minor repairs to maintain the existing pavement under the following Contract pay item:

Item	Description	Unit
451.	HMA FOR PATCHING	Ton

Compensation for traffic management mobilizations for pavement repairs will be paid under the following Pay Item:

Item	Description	Unit
851.11	TRAFFIC MANAGEMENT MOBILIZATION FOR EMERGENCY REPAIRS	Day

This item is only applicable if the work requires a traffic setup outside of an already established work zone established and paid for under Item 851.01 or work zone established and paid for under Item 851.12. Upon NTP, the Design-Builder shall be responsible for the maintenance and repair of the existing Project pavement up until final acceptance. The Design-Builder must anticipate repairs and maintain forces, materials and equipment for such events. The Design-Builder should independently monitor the pavement for defects and make repairs as necessary. Requests for repair by MassDOT must be responded to by the Design-Builder within **two hours** of notification.

If the Design-Builder has not started physical work on an assigned emergency repair within twenty-four (24) hours from receipt of the notification, no payment under Item 851.11 shall be made subject to the discretion of the Engineer. Furthermore, the Design-Builder will be assessed damages in the amount of \$1,000 per hour for each hour physical work is delayed.

If existing pavement is damaged due to the actions of the Design-Builder during construction, any said damage will be repaired at the expense of the Design-Builder as required by MassDOT.

The Special Provisions for these items are included in Appendix C.

Compensation for traffic management for emergency pavement repairs and HMA patching shall include temporary illumination for work zones. All repair activities are to be coordinated with MassDOT.

4.8.5 Roadway Clear Zone

The Project shall include clear zones that are clear of obstructions. The clear zones shall be in conformance with the MassDOT Project Development and Design Guide, AASHTO's Roadside Design Guide (latest edition), and AASHTO's A Policy on Geometric Design of Highways and Streets (2018). The Design-Builder shall design and construct MassDOT standard roadside barriers that meet the requirements of 2016 AASHTO Manual for Assessing Safety Hardware (MASH) if designed and tested after December 31, 2010 where clear zone criteria cannot be met.

4.8.6 Roadway Alignment

The Design-Builder shall undertake all work and account for all schedule adjustments required to obtain any new required approvals and/or permits if the final design of the horizontal and/or alignment is changed.

4.8.7 Retention of Existing Materials

There are several significant components within the project limits for which the Design-Builder must exercise care and custody over the course of the Project. These items and instructions for handling them are as follows:

- Brick Pillars at Vietnam Veterans Memorial Park
Brick pillars are located around the perimeter of the Vietnam Veterans Memorial Park located at the northeast corner of the intersection of Chicopee Street and Saint Louis Avenue. These pillars are essential to an annual ceremony which takes place the Sunday night prior to Memorial Day. These pillars must be maintained for the full duration of construction, and the bases of the pillars must remain clear at all times. During the day of the ceremony, no work shall take place.
- Flag poles at Vietnam Veterans Memorial Park
Flag poles within the park are shown on the Plans as removed and reset. It shall be ensured that each year the poles are in place during the week leading up to the annual Memorial Day celebration, as well as the day of the celebration. This work must be coordinated with Veterans' Affairs coordinator for Chicopee.
- Temporary Fencing Beneath Bridge No. C-13-038

MassDOT has installed temporary fencing beneath the existing bridge in Span 6 where spalling of the underside of superstructure is occurring. Once the temporary fencing is no longer required, the Design-Builder must return the temporary fencing to MassDOT at the following address:

MassDOT District 2
811 North King Street
Northampton, MA 01060

4.9 TRAFFIC ENGINEERING

MassDOT has approved the Design Justification Workbook (DJW), dated November 2025 (provided in Appendix C). MassDOT will review any project design changes from the BTC for consistency with their Policies. Any design changes to the roadway configuration shall meet or exceed the approved elements. Any design changes that require a Design Justification Worksheet (DJW) will be considered an ATC.

Significant design changes to the BTC roadway design will require a reassessment of the approved DJW. These design changes include, but are not limited to, the following:

- Changes to roadway alignment or profile which are not in conformance with the current Controlling Criteria as set forth in Engineering Directive E-20-001.
- Modification to number of travel lanes that require widening (striping modifications would be acceptable)

To determine if the design changes are not less than the approved design per the MassDOT Policies, the Design-Builder shall be required to submit a DJW for review and approval by MassDOT.

A Functional Design Report (FDR) entitled “Functional Design Report: I-391 Bridge Replacement Over Chicopee Street”, dated October 2025, (provided in Appendix C) shall be used for reference by the Design-Builder for the approach to traffic design and maintenance of traffic as shown in the BTC Plans. Any modification of the BTC roadway shall meet or exceed the traffic operations described in the BTC plans and FDR. The Design-Builder shall obtain approval from MassDOT, the City of Chicopee and the City of Holyoke for any lane configurations that vary from the BTC with the submission of a revised FDR. The revised FDR will be evaluated in terms of traffic operations, safety, and overall Project goals represented within the BTC.

The Design-Builder shall utilize the traffic data contained within the Functional Design Report to perform the traffic operational analysis using appropriate software approved by MassDOT to re-evaluate the operational requirements of the design.

4.9.1 Temporary Traffic Control Plan (TTCP)

The Design-Builder shall maintain at least two travel lanes in each direction on I-391. The Design-Builder shall maintain access to and from all I-391 ramps and provide, at a minimum, the lane configurations per the BTC plan set. Exceptions to the above roadway capacity requirements within the Project area are listed in the RFP below.

- All ramps to and from I-391 shall remain open, with the exception of short-term, off-peak closures. These closures will be contingent on the Design-Builder obtaining approved detours from District 2 and the affected municipalities.
- Lanes on Chicopee Street (Route 116) may be restricted during off-peak hours, with the approval of District 2.

Roadway capacity may be reduced during the hours indicated in the following lane closure table:

I-391 LANE RESTRICTION HOURS Year-Round			
	# of lanes open*	Northbound	Southbound
Monday-Thursday	2	6AM - 7PM	6AM - 7PM
	1	7PM - 6AM	7PM - 6AM
Friday	2	6AM - 7PM	6AM - 7PM
	1	7PM - 7AM (Sat)	7PM - 7AM (Sat)
Saturday	2	7AM - 9AM, 3PM - 5PM	7AM - 9AM, 3PM - 5PM
	1	9AM - 3PM, 5PM - 7AM (Sun)	9AM - 3PM, 5PM - 7AM (Sun)
Sunday	2	7AM - 9AM, 3PM - 5PM	7AM - 9AM, 3PM - 5PM
	1	9AM - 3PM, 5PM (Sun) - 6AM (Mon)	9AM - 3PM, 5PM (Sun) - 6AM (Mon)
* Minimum number of through travel lanes required to remain open to traffic			

The Design-Builder shall maintain at least one accessible sidewalk and one travel lane in each direction along Chicopee Street (Route 116). Temporary nighttime closure and detour of Chicopee Street under I-391 is permissible on a limited basis to facilitate major construction operations (i.e. lifting of existing bridge elements, delivery and/or erection of large precast bridge elements, concrete pours, traffic shifts, etc.) and is at the discretion of the City of Chicopee, City of Holyoke and MassDOT. Temporary closures shall only be permitted after 9PM, after the final PVTA Route 21 bus. Temporary nighttime truck detour will be along Grattan Street, I-391, Main Street and Cabot Street. The Design-Builder shall request approval for each closure and detour of Chicopee Street from the City of Chicopee, City of Holyoke, and MassDOT prior to implementation and shall be prepared to bear the risk of schedule delay if the request is denied. Closure and detour of Chicopee Street and the connector road between Margaret Street and Perrault Street shall only be incorporated if substantial time savings can be realized, and shall be minimized to the extent possible. Design-Builder should be aware that advance notice and coordination with the City of Chicopee's and City of Holyoke's officials is required.

The Design-Builder will be required to submit a temporary traffic control plan (TTCP) consistent with their final design for MassDOT approval. Preliminary traffic management and construction staging plans are provided in the BTC Plans. The BTC Plans depict the intended staging and lane requirements during construction and are conceptual in nature. The Design-Builder shall provide temporary traffic control plans consistent with project delivery in their proposal and advance the traffic control plans to final design. Alternative approaches proposed for the construction of the bridge may result in a modified approach to TTCP's (from the BTC) during the different construction phases. The Design-Builder shall respond to District and Boston Traffic review comments in developing the final traffic control plans. These requirements include, at a minimum, the following:

- Two (2) through lanes in each direction on I-391 shall be maintained throughout construction with the exception of short-term lane closures during off-peak hours as indicated in the above referenced lane closure table.
- Maintenance of operations as shown in the BTC plan set for I-391 ramp movement, except during off-peak hours as indicated in the above referenced lane closure table.
- Minimum lane widths of 11 feet and shoulder widths of 1 foot are required on I-391 for one lane travel. Where a vertical obstruction, such as a barrier, is present, the minimum shoulder width shall be 2 feet for one lane travel. A minimum travel lane width of 11 feet and shoulder width of 1 foot is required for two lanes between barriers.
- Maintain one ADA accessible sidewalk along Chicopee Street during each construction stage.
- Maintain one vehicular travel lane in each direction along Chicopee Street.
- Modifications to pavement markings and signage for temporary staging conditions.
- Provide short-term detours as needed to accommodate construction staging and restricted turns or closed roadways.
- Establishing temporary work zone speed limit on I-391 during construction will require State Traffic Engineer approval prior to implementation. Refer to Standard Operating Procedures (SOP) for Work Zone Speed Limits provided in Appendix C for additional information.

- Consistent with the outreach requirements of Section 1.3.1 and the contingency planning requirements of Section 10.20; the Design-Builder shall provide temporary traffic staging plans to police, fire, and other emergency and highway assistance services in advance of every traffic detour and every change in temporary traffic control setup.
- The Design-Builder shall provide a Traffic Control Supervisor (TCS) who will be the Responsible Person in Charge of the Project work site relative to all design and/or setup and maintaining traffic control in the work zone. The TCS shall be certified by the American Traffic Safety Services Association (ATSSA) and shall have completed the Traffic Control Technician training as a prerequisite for the Traffic Control Supervisor training and meet all the minimum TCS requirements of the ATSSA Certification Board. The TCS certification must be current and remain current for the duration of the Project.

4.9.1.1 Temporary Alignment Criteria for I-391

Temporary roadways, alignments, lane shifts and taper on I-391 shall meet or exceed the following in accordance with the BTC plans:

Design Speed:	55 mph min (horizontal and vertical alignment)
Configuration:	2 travel lanes in each direction
Travel lane Width:	11' minimum
Inside Shoulder:	1' minimum
Outside Shoulder:	1' minimum

Short term lane shifts and tapers for lane closures shall meet or exceed 55 mph design speed.

Temporary ramps shall be designed to meet the minimum design criteria for a 25 mph design speed and a minimum 12-foot lane width.

4.9.1.2 Temporary Alignment Criteria for Chicopee Street (Route 116)

Temporary roadways, alignments, lane shifts and taper on Chicopee Street (Route 116) shall meet or exceed the following in accordance with the BTC plans:

Design Speed:	25 mph min (horizontal and vertical alignment)
Configuration:	1 travel lane in each direction
Travel lane Width:	11' minimum
Outside Shoulder:	1' minimum

Short term lane shifts and tapers for lane closures shall meet or exceed 25 mph design speed.

4.9.1.3 Local Roads

The Design-Builder shall maintain continuous access to side streets and to all abutters' private access or shall implement a detour acceptable to the Engineer. The Design-Builder shall also gain all necessary Department and City approvals prior to implementing such detours. The detour shall be notified to all abutters within 200 feet of the Project limits 14 calendar days prior to implementation.

4.9.1.4 **Public Parking**

The Design-Builder shall maintain a minimum of sixty (60) parking spaces available for public use beneath Bridge No C-13-038 at all times during the work. The Design-Builder shall ensure that the parking area remains safe for public use, including providing adequate lighting, clear signage, and protection from construction hazards.

4.9.1.5 **Additional Requirements**

The Design-Builder shall coordinate with MassDOT operations and remove traffic management devices as directed to allow for storm clean-up activities should the need arise.

The Design-Builder shall take into consideration the effects of snow removal operations on temporary fences and traffic management devices remaining in place during storm cleanup activities.

The Design-Builder is responsible for the design, procurement, maintenance and removal of all temporary guide signs required to implement all temporary ramp relocations and arrangements. This includes the need to provide temporary signs to replace existing signs which are in conflict with temporary roadways used for traffic management during construction staging. Sign designs and locations shall conform to MUTCD standards and be submitted for approval prior to placement and relocation of existing or temporary ramps.

The Design-Builder shall reference AASHTO Table 3-7 for limiting factors of superelevations for use in developing TTCP alignments/superelevations.

4.9.1.6 **Rolling Roadblocks**

If utilized, Rolling Roadblocks (RRB) will only be allowed between 2 a.m. and 5 a.m. The Design-Builder shall coordinate with MassDOT, local and state law enforcement, municipalities and media a minimum of two weeks in advance of any proposed RRB.

The Design-Builder shall coordinate with MassDOT to determine the practical time gap lengths needed to safely complete the work. The Design-Builder shall plan their work to minimize the duration of all RRBs. The maximum time a RRB may be in place is twenty (20) minutes. The longer the duration of the RRB that is needed, the further back the RRB will need to start and therefore more signing and temporary traffic control devices will be required to complete the work. Time shall be allowed between successive roadblocks to disperse queued traffic and will be determined by MassDOT on a case-by-case basis.

The Design-Builder shall prepare an RRB Implementation Plan and submit the plan for review and approval by MassDOT prior to the work. The RRB Implementation Plan shall detail location and type of all traffic control devices, signing, PCMS, location of police details and cruisers, ramp closures and Traffic Control Supervisor.

At a minimum, RRB involves the use of a number of items, including:

- Police cruisers, Design-Builder pilot cars and chase vehicle (typically police cruiser)
- Police detail Officers (at all closure points and one police cruiser per lane to be controlled)
- Traffic Control Supervisor (Design-Builder) located at the work site
- PCMS (at all closure points and at least one per each direction on roadway being closed)
- Reflectorized drums at all on-ramp closure points

Procedure:

1. Portable Changeable Message Signs (PCMS) shall be placed on roadway being closed in advance (upstream) of the planned starting point of the RRB, approximately 1-mile in advance of the start of the RRB. One PCMS to be placed for each direction affected by the RRB. All messages to be approved by MassDOT prior to installation of the PCMS. All PCMSs to be installed outside AASHTO clear zone or protected by temporary barrier. All barriers are to be installed in accordance with MassDOT Standards and AASHTO Roadside Design Guide.
2. Police cruisers, chase vehicle and pilot car will enter the roadway to be closed and form a moving blockade by slowly decelerating traffic behind them to a fixed speed of 10 mph. One cruiser is needed for each lane of traffic. The pilot car and chase vehicle should be placed in front of the police cruisers. The vehicle queue should never stop completely.
3. Eventually a large gap opens between the free-flowing traffic in front of the police cruisers and the slowed traffic behind. The gap in time between the slowly moving blockage and the work site will give the Design-Builder time to complete the planned work.
4. The chase vehicle shall leave the blockade and follow the last free flowing vehicle ahead of the blockade. The chase vehicle shall verify that all access points are closed to traffic ahead of the blockade and that no stopped vehicles remain on the roadway within the blockade and work areas. When the chase vehicle passes the work site and confirms with the Traffic Control Supervisor that the roadway is closed and clear the proposed work operation can begin.

All on-ramps to the roadway to be closed between the rolling blockade and the work operation must be temporarily close using police details with cruisers. These closures will remain in place until the “all clear” signal is given by the Traffic Control Supervisor in responsible charge of the work site, or until the front of the rolling blockade passes the closed access point upstream of the work site. This shall be determined in the Design-Builder’s Implementation Plan. Detours are not anticipated to be required for RRB closures due to the short duration.

4.9.1.7 Temporary Changeable Message Signs

The Design-Builder shall provide a minimum of three (3) temporary portable changeable message signs (PCMS) on I-391 outside of the immediate construction area to provide advance notification and warning for motorists. The Design-Builder shall coordinate with MassDOT to finalize the changeable message sign locations and text. The Design-Builder shall verify that sufficient space is available for the placement of the signs at the locations proposed and that the signs can be appropriately viewed by the traveling public per standards.

The Design-Builder will be responsible for supplying, placing and maintaining the PCMS and for using them to communicate Project information to the public. The Design-Builder will promptly respond to all requests by MassDOT to relocate and/or update text on the changeable message signs during the Project. The Design-Builder shall provide MassDOT with a plan for all proposed PCMS locations and a weekly report on PCMS content. PCMS shall conform to MassDOT Standard Specifications.

The Design-Builder will be responsible for all maintenance associated with all PCMS. This includes, but is not limited to, knockdowns, power outages, equipment malfunctions, temporary modifications to support the TTCs during construction and any other incidents within the project limits.

4.9.2 Roadside Elements

All temporary and permanent roadside and median design elements within the Project limits and at any advance signing, including but not limited to highway guardrail, temporary and permanent construction barriers, sign supports, drainage outlets, etc. shall be designed in accordance with the most current AASHTO Roadside Design Guide, AASHTO Manual for Assessing Safety Hardware (MASH), MassDOT Standards and all amendments. Sign supports and luminaires shall be designed in accordance with the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals, latest Edition.

Overhead sign support design criteria shall include:

- 110 mph Wind Speed
- 50 Year Design Life
- Fatigue Category 1

The Design-Builder is responsible for conducting geotechnical investigations and designing all support foundations. Ground mounted signs shall be designed in accordance with MassDOT design standards and construction standard details. Reflective sheeting for and ground mounted signs shall comply with Materials Section M9.30.0.

Proposed signing plans shall include the layouts showing the locations of existing and proposed ground mounted signs, warning and regulatory signs, special sign details, legend, and foundation requirements.

The Design-Builder will be responsible for the maintenance and/or removal of any roadside elements found to be impeding the safe operation of traffic including but not limited to minimum vertical clearance requirements at the discretion of the MassDOT. New signage shall be provided as required for the proposed design. If the Design-Builder determines that an existing sign is not consistent with the proposed design, it shall be the responsibility of the Design-Builder to replace as required. The Design-Builder shall replace the existing highway guardrail with new guardrail conforming to the latest AASHTO MASH requirements within the Project.

4.9.2.1 Approach Barrier

The Design-Builder shall be responsible for the design of all approach barrier and barrier transitions. The barrier details shown on the Plans shall be revised as necessary by the Design-Builder. Refer to the Draft BTC Special Provisions in Appendix C for additional requirements.

4.9.3 Pavement Markings

The Design-Builder shall provide temporary and permanent pavement markings, and slotted pavement markers as required within the Project limits to complete the Project. The Design-Builder will be required to design, install and remove pavement markings and markers in accordance with MassDOT and MUTCD standards and specifications.

All temporary pavement markings shall be as follows:

- Wet reflective temporary tape for short term use (no more than 7 days).
- Wet reflective paint
- Reflectorized surface-applied polyurea for markings in place during winter

Temporary pavement markings shall be refreshed as necessary for the duration of the Project to remain visible and as directed by MassDOT. The Design-Builder should assume that all temporary paving markings shall be refreshed every three (3) months for the duration of the Project or as directed by MassDOT. It should also be assumed that the temporary markings shall be refreshed at least once for any stage that encompasses a winter period.

Temporary pavement markings shall consist of furnishing, applying, maintaining and removing temporary white and/or yellow reflectorized pavement markings during construction and maintenance operations. Temporary pavement markings shall conform to Materials Subsection M7.01.07, M7.01.10, M7.01.11, M7.01.14, M7.01.15, M7.01.16, M7.01.23, and M7.01.24 of the latest Supplemental Specifications. Other materials which will provide satisfactory durability, and reflectivity may be used with prior approval of MassDOT. Any conflicting pavement markings shall be completely eradicated by an approved method. Any conflicting existing recessed pavement markers shall be fully removed, and the recess shall be patched by an approved method.

The Design-Builder shall be responsible for the maintenance/replacement of all temporary and permanent pavement markings and markers within the Project limits through the entire Project duration. Prior to final placement of proposed pavement markings, all temporary and existing pavement markings shall be entirely removed from the pavement surface. Areas where pavement markings are removed on the final surface shall be newly milled, resurfaced and restriped.

The Design-Builder shall promptly respond to all requests by MassDOT to refresh markings during the Project.

Temporary markings shall be provided for all temporary lane alignments on I-391 required by the sequence of construction implemented. The Design-Builder will be required to modify the existing and temporary markings as necessary each time a revision to temporary lane alignments is implemented.

Permanent pavement markings along Chicopee Street (Route 116) shall be Recessed Wet Reflective Polyurea. Legends and symbols shall be Pre-formed Wet Reflective Thermoplastic.

Permanent pavement markings along I-391 shall be as follows:

- Broken White Lane Lines – Recessed Wet Reflective Tape
- Yellow and White Edge Lines and Gore Markings – Recessed Wet Reflective Polyurea
- Two -way white/red pavement markers at ramps and lane lines

The Design-Builder shall maintain a minimum of sixty (60) parking spaces available for public use beneath Bridge No. C-13-038 in the final condition. The Design-Builder shall submit the proposed parking lot configuration to the City of Chicopee for approval.

4.9.4 Guardrail

The Design-Builder shall replace the existing highway guardrail with new guardrail conforming to the latest AASHTO MASH requirements within the limits of new guardrail shown on the BTC Plans.

4.9.5 Bicycle Lanes and Bicycle Accommodations

The Design-Builder shall construct bicycle accommodations/facilities no less than that shown in the BTC plans. The bicycle accommodations will need to meet the specifications and requirements of the 2012 AASHTO Guide for the Development of Bicycle Facilities, the MassDOT Project Development Design Guide, as well as the MassDOT Separated Bike Lane Planning & Design Guide and will need to be approved by MassDOT.

4.9.6 Rectangular Rapid Flashing Beacon (RRFB)

The Design-Builder shall remove and reset on new foundation the two RRFBs along Chicopee Street (Route 116) as shown in the BTC plans, conforming with Section M10 of the MassDOT Standard Specifications. The RRFBs shall remain operational during construction. The RRFBs shall be retained until sidewalk reconstruction commences at the adjacent pedestrian curb ramps. Prior to reestablishing the existing crossing at this location, the RRFBs shall be reinstalled on the new foundations.

4.9.7 Temporary Barrier Systems for Construction and Maintenance Operations

The Design-Builder shall utilize MASH performance requirements for deployments of temporary barrier per Engineering Directive E-16-002 and E-20-004.

Refer to the Draft BTC Special Provision for Temporary Barrier-Limited Deflection (TL-3) barriers provided in Appendix C for additional requirements.

4.9.8 Visual Barriers and Screening

The proposed Project will impact traffic, and potentially create delays as “rubbernecking” or curious drivers on adjacent travel lanes may watch ongoing construction activities such as demolition and construction. The Design-Builder shall mitigate this traffic impact by installing temporary visual barriers on the adjacent structure. The Design-Builder shall provide the visual barrier for approximately 200 feet in advance of and through the I-391 work zone to prevent visibility into the work area from passing motorist at all times. The barrier shall be placed completely outside of the travelled way, including shoulders. Screening shall not conflict with MASH requirements.

4.10 BRIDGE DESIGN AND OTHER STRUCTURES

4.10.1 General

MassDOT is proposing to replace the following bridge. The Design-Builder shall design, demolish, and construct the structure noted below and make the Project fully functional in accordance with all contract requirements.

- C-13-038 (0WR): I-391 over Chicopee Street (Route 116)

To facilitate the BTC construction sequencing, targeted modifications to the bridge structures listed below are required. The scope of these modifications may vary based on the construction sequencing selected by the Design-Builder. It shall be the Design-Builder's responsibility to determine, validate, and confirm the exact scope of all required structural modifications to the bridge structures listed below based on the Design-Builder's selected construction sequencing. The actual scope of structural modifications may vary depending on the construction sequencing proposed by the Design-Builder. All modifications to the bridge structures listed below shall be in accordance with all contract requirements.

- C-13-039 = H-21-059 (0WF): I-391 over Connecticut River
- C-13-047 (0WQ): I-391 & Off Ramp over G&W Railroad

The BTC plans detail the general configuration, bridge type and elements/treatments that have been developed through the preliminary concept phase of the Project. The preliminary roadway alignment, profile, and cross section shown on the BTC plans were developed through coordination performed for the Project. Final bridge design will be required as part of this Project. Further details on modification limitations in the final design are outlined in this RFP.

The Design-Builder will finalize the bridge design in conformance with the MassDOT Bridge Manual, AASHTO standards and all other standards as applicable. The final design will meet the current seismic requirements of the MassDOT Bridge Manual.

In general, the scope of work for this Project is based on the BTC shown on the reference Plans issued with this RFP. The final design, details and means and methods of construction for the Work will be the responsibility of the Design-Builder. This narrative will specify components and concepts to establish a minimum level of design and detailing that must be equaled or exceeded by the Design-Builder. All Design-Builders acknowledge by receipt of such plans that they explicitly understand that while these plans have been advanced to the preliminary design level, the Design-Builder shall be required to provide a final, complete Project design that is stamped, sealed and certified by their own Professional Engineer of Record for review and approval by MassDOT and possible third parties. The Professional Engineer must be registered in the Commonwealth of Massachusetts.

The structural integrity of existing structures and utility infrastructure must be maintained throughout construction until and unless those structures or utilities are removed from service. The Design-Builder shall verify locations of all existing structures and utilities, and shall also provide a final design of proposed structures needed to maintain the integrity of the existing structures and utilities, until they are removed from use and/or demolished.

The Design-Builder shall address construction loading on all existing and proposed bridge elements, including but not limited to loads on the existing superstructure, abutments, wingwalls and piers. Construction loading on existing and new bridge elements is not addressed on the BTC Plans. **Repairs to the existing Bridge No. C-13-038 (0WR) structure will be required to support temporary loading conditions during the BTC staged construction.**

Construction plans for the existing structures are included in Appendix C. A brief description of each existing structure is provided below. The existing utilities listed for each bridge are approximately as shown on the BTC plans; the Design-Builder is responsible for verifying existing utilities and existing utility locations. The Design-Builder shall also refer to the Utility plans and Section 6.0 of the RFP.

The Design-Builder shall be aware that all existing paint is assumed to be lead based or containing lead .

4.10.1.1 Description of Existing Bridges

The following section provides a description of the existing bridges within the scope of this Contract.

Bridge No. C-13-038 (0WR):

According to the existing plans, existing Bridge No. C-13-038 (0WR) is a seven (7) span structure, built in 1979, that carries I-391 over Chicopee Street (Route 116), two (2) parking lots, and Rivers Park Connector in the Willimansett neighborhood of Chicopee, MA. The bridge consists of two separate structures separated by a 1" expansion joint along the I-391 median, with each carrying a single direction of I-391 traffic. Each superstructure consists of six (6) cell concrete box girders, measuring approximately 6'-9"+ deep, supported by integral concrete piers. The two superstructures are supported on shared reinforced concrete abutments with splayed wingwalls. The substructure is founded on concrete-filled, 14" diameter, steel pipe piles. Additional information regarding the existing bridge cross section and clearances is provided below.

Span Lengths

Seven (7) Spans, each 120'-0"

Total Structure Length: 840'-0"±

Skew: 17°-58'-35"

Cross Section Properties

Out to Out Width = 111'-8" ± (combined I-391 NB & SB)

Lane Width: Three (3), 12'-0"± lanes (per direction of I-391 NB and SB)

(Currently reduced to Two (2), 12'-0" lanes per direction due to deck condition)

Curb-to-Curb Width: 52'-9-1/2"± (per direction of I-391 NB and SB)

Shoulder Width: Left Shoulder = 4'-0"±, (per direction of I-391 NB and SB)

Right Shoulder = 11'-3"± (I-391 NB), 12'-7" (I-391 SB)

Sidewalks: None

Bridge No. C-13-039 = H-21-059 (OWF):

According to the existing plans, existing Bridge No. C-13-039 = H-21-059 (OWF) is six (6) span structure, built in 1977, that carries I-391 over the Connecticut River in the cities of Chicopee and Holyoke, MA. The bridge consists of two separate structures separated by a 1" expansion joint along the I-391 median, with each carrying a single direction of I-391 traffic. Each superstructure consists of seven (7) continuous steel plate girders with variable depth webs, measuring approximately 6'-6" at midspan and abutment support locations, and 9'-6" deep at pier support locations. The two superstructures are supported on shared reinforced concrete abutments with splayed wingwalls and solid-wall, granite faced, reinforced concrete river piers. The substructure is founded on steel HP 14x89 piles at Piers 1 through 4, and concrete-filled, 14" diameter, steel pipe piles at both abutments and Pier 5. Additional information regarding the existing bridge cross section and clearances is provided below.

Span Lengths

Six (6) Spans: Span #1 = 164'-0", Span #2 through #4 = 205'-0", Span #5 = 163'-10-5/8" (average)

Total Structure Length: 942'-10-5/8" (average)

Skew: 0°-00'-00"

Cross Section Properties

Out to Out Width = 114'-10" ± (combined I-391 NB & SB)

Lane Width: Three (3), 12'-0"± lanes (per direction of I-391 NB and SB)

(I-391 SB Entrance ramp present at north end of structure)

(Lane reduction over Bridge No. C-13-083 (OWR) begins at south end of structure)

Curb-to-Curb Width: 56'-3-1/2"± (I-391 SB) and 52'-9-1/2"± (I-391 NB)

Shoulder Width: Left Shoulder = 2'-9"± (I-391 SB), 4'-3" (I-391 NB)

Right Shoulder = 4'-9"± (I-391 SB), 12'-5" (I-391 NB)

Sidewalks: None

Bridge No. C-13-047 (0WQ):

According to the existing plans, existing Bridge No. C-13-047 (0WQ) is single-span structure, built in 1979, that carries I-391 over B&M Railroad (BMRR) in the city of Chicopee, MA. The bridge consists of two separate structures separated by a variable width joint along the I-391 median covered by a concrete topping slab, with each structure carrying a single direction of I-391 traffic. The northbound structure consists of eight (8) W36 rolled steel beams. The southbound structure consists of eleven (11) W36 rolled steel beams. The two superstructures are supported on shared reinforced concrete abutments with splayed wingwalls. The substructure is founded on concrete-filled, 14" diameter, steel pipe piles. Additional information regarding the existing bridge cross section and clearances is provided below.

Span Length

One (1) Span: 72'-10 5/8"

Total Structure Length: 72'-10 5/8"

Skew: 44°-37'-29"

Cross Section Properties

Out to Out Width: I-391 NB = 53'-4 1/2" ±, I-391 SB = Varies (81'-10" ± average)

Lane Width: Three (3), 12'-0"± lanes (per direction of I-391 NB and SB)

(I-391 NB entrance ramp and I-391 SB exit ramp also carried by structure)

Curb-to-Curb Width: I-391 NB = 56'-4 3/4" ±, I-391 SB = Varies (79'-2" ± average)

Shoulder Width: Left Shoulder = 5'-3"± (I-391 SB), 5'-7" (I-391 NB)

Right Shoulder = 3'-6"± (I-391 SB), 6'-2" (I-391 NB)

Sidewalks: None

4.10.2 Bridge Design Criteria

All design shall conform to the AASHTO LRFD Bridge Design Specifications and MassDOT Bridge Manual, editions as specified in Section 1.0.

The proposed replacement bridge structure shall be designed according to the specifications contained herein. The Design-Builder shall work within the constraints provided to advance a concept that meets all technical and functional requirements.

4.10.2.1 Structural Design Requirements

The following is a list of bridge design criteria that applies to all structures unless specified within each bridge heading succeeding this list:

General:

- All bridges included here are considered critical and essential structures and shall follow the requirements for a “critical-essential bridge” in the MassDOT Bridge Manual.
- Bridge Nos. C-13-038 and C-13-047 on the project shall be considered not located in a marine environment. Bridge No. C-13-039 = H-21-059 shall be considered located in a marine environment.
- Design shall be based on Load and Resistance Factor Design (LRFD) for HL-93 Live Loading.
- The bridges shall be designed and constructed with a minimum design and service life in accordance with MassDOT Bridge Manual 2.1.2.2.
- No welded attachments are allowed to connect to a tension area of any primary steel members.
- Minimum horizontal and vertical clearances beneath the bridge structures shall be in accordance with the BTC Plans.
- Bridge types are not restricted to those historically (as detailed in the MassDOT Bridge Manual) used by MassDOT. The Design-Builder may propose other types of components and submit to MassDOT for approval as an ATC. MassDOT will make its determination by considering, among other factors, whether the proposed type has been accepted for general use by other transportation authorities and the Design-Builder has demonstrated the bridge type and components will perform under Project conditions.
- Staging for the bridges as shown on the BTC Plans correlates to project-wide staging for the overall Project.
- The Design-Builder shall utilize, as applicable, the MassDOT Bridge Construction Special Provisions on the MassDOT website: <https://www.mass.gov/info-details/bridge-construction-special-provisions>.

- The design and construction of any temporary bridges proposed as part of this Project shall follow the MassDOT Bridge Manual and AASHTO LRFD Guide Design Specifications for Bridge Temporary Works. Temporary bridges shall be able to accommodate MASH TL-3 bridge barriers.
- Minimum span-to-depth requirements of the MassDOT Bridge Manual Part I Section 3.6.1.3 for conventional bridges shall be followed for design development of any final detailing.
- Design-Builder shall coordinate with MassDOT for current bridge standard title and subsequent sheet format.
- The bridge expansion joint concept as depicted in the BTC is based on the design intent for the reduction or elimination of bridge joints. The Design-Builder is responsible for selection of an appropriate bridge expansion joint system based on the thermal movements for the proposed structure. The Design-Builder is also responsible for proper detailing the top of abutments to accommodate the proposed expansion joint type.
- Minimum requirements of MassDOT Bridge Manual Part I-3.6.1.3 for conventional bridges shall be followed for design development of any final superstructure detailing.
- Large steel-reinforced elastomeric bearings, defined by AASHTO LRFD Bridge Design Specifications as thicker than 8 inches or having a plan area greater than 1,000 in², shall not be permitted.

Superstructure:

- All bridge wearing surfaces shall be designed in accordance with Section 4.8.3.2.
- Any bridge deck on which traffic will be placed shall receive the full 3" pavement (wearing and protective course). The 1½" surface course shall be milled and paved once traffic is in the final alignment before final striping. If bolt down barrier is used on bridge decks, deck details shall be included for restoring the deck, waterproof membrane and overlay on the structure for the final condition following removal of the bolted down temporary barrier.
- Bridge decks shall be HP concrete in accordance with the MassDOT Bridge Manual.
- Open or filled grating decks, cast-in-place bare decks, partial depth concrete deck panels and orthotropic decks shall not be permitted.
- Cast-in-place bridge decks shall be made continuous through each stage of construction by utilizing mechanical reinforcing bar splicers or adequately developed bars extending from one stage to the next.
- Stay-in-place metal deck forms shall be used except as noted in Section 3.5.2.4 of the MassDOT Bridge Manual.
- Adjacent concrete deck or box beams are not to be used for any superstructure type within this Project. However, spread boxes with standard composite decks are allowed

- If the Design-Builder proposes a steel superstructure, all members shall be hot dip galvanized or metalized in accordance with the MassDOT Bridge Manual. Exterior girders shall be painted. Finish coat shall be Federal Standard Color #14223, Green.
- Design of the Bridge No. C-13-038 superstructure must be in accordance with the fire resilience requirements defined in RFP Section 4.10.2.3.
- The fascia bridge barrier shall be a MassDOT CF-MTL5 with snow fence on all structures.
- For bridges carrying utilities, the Design-Builder shall place all utilities as shown on the BTC plans or as approved by the utility companies and MassDOT. The utility bays shall be designed by the Design-Builder per the MassDOT Bridge Manual. Proposed utilities shall not extend below the low chord of the proposed bridge. The bridge type should take into consideration the proposed utilities. The Design-Builder shall provide a removable approach slab on all approaches for bridges with a proposed utility bay in accordance with the MassDOT Bridge Manual.
- The Design-Builder shall provide a structural design for the moment slab supporting the traffic barriers on the approach embankment of all bridges, as shown in the BTC plans. The design shall consider any additional loads resulting from all roadway light poles, sign support haunches, etc. in addition to the dead and vehicular loads in accordance with AASHTO LRFD Bridge Design Specifications and the MassDOT Bridge Manual, Part I, 3.3.2.5.
- When designing bridge superstructure framing, designating diaphragms or cross frames as primary members in a straight, skewed or non-skewed, girder bridge is prohibited. Therefore, fatigue is typically not an applicable failure mode for the connections to cross frames and diaphragms in a straight girder bridge.

Substructure:

- Pier and abutment geometry, including clear horizontal openings, shall be the minimum shown in the BTC. Protection of bridge piers and abutments shall be in accordance with MassDOT Bridge Manual requirements.
- The MassDOT architectural bridge pier shall be used for all new bridge piers. Aesthetic treatment on the pier columns shall be in accordance with RFP Section 4.16.4.8.
- The Design-Builder may be required to perform additional subsurface explorations and shall account for potential additional borings in their bid. See Geotechnical requirements section of this document for more information.
- The proposed span arrangement shown in the BTC plans has associated borings, CPT, geophysical, or other information with each substructure element, either existing borings or new borings as part of this project and in accordance with the MassDOT Bridge Manual. See Section 4.11 for geotechnical requirements.

- Concrete stub or cantilever abutments supported on shallow spread footings with ground improvement may be considered. MSE walls may be used with stub abutments on piles to reduce the need for a full height abutment. However, stub abutments bearing directly on MSE walls or on pre-cast modular walls shall not be used.
- If MSE walls are used, the Design-Builder will need to coordinate the placement of reinforcement strips in order to avoid deep foundation elements, pile cap, and substructure units.
- The minimum offset from the back of retaining wall facing to centerline of the integral abutment shall be 4'-3". The minimum offset from the back of retaining wall to the face of drilled shafts should be 3 feet or the shaft diameter, whichever is greater. All offsets between retaining walls and deep foundation elements shall ensure that proper compaction can be achieved. The Design-Builder shall coordinate the placement of reinforcement strips in order to avoid piles or drilled shafts, pile cap, and substructure units.
- The Design-Builder is responsible for selecting an appropriate bridge bearing system considering the anticipated loads and thermal movements which will be applied on the bearings. In conformance with the MassDOT Bridge Manual, MassDOT's design preference is for bearings to be circular elastomeric with steel reinforcing layers. Elastomer will have a specified Shear Modulus of 0.160 ksi. The elastomeric bearings will not be vulcanized to the beam sole plate. Elastomeric bearings shall not have a bearing compressive stress greater than 1.6 ksi. Pot bearings are not an acceptable bearing type for any structure on this Project. Where required, HLMR bearings shall be a disc type bearing. A single bearing type shall be used continuously throughout a bridge structure.

4.10.2.2 Bridge Load Rating Requirements

Final Bridge Rating Reports (per MassDOT Bridge Manual, Chapter 7) of the as-built replacement Bridge No. C-13-038, alterations to Bridge No. C-13-039 = H-21-059, and alterations to Bridge No. C-13-047 will be prepared by the Design-Builder in accordance with RFP Section 10.19 and the additional requirements discussed in this section.

In addition to the final Bridge Rating Reports, as stated in Chapter 3 of Part I of the MassDOT Bridge Manual, preliminary load rating calculations for the aforementioned bridges shall be submitted to MassDOT for review to verify that the design will also provide adequate load carrying capacity for the Massachusetts posting vehicles.

Preliminary rating values shall include values for all staged conditions of the existing and proposed Bridge No. C-13-038, as well as any existing bridges within the project limits which have a changed loading condition due to construction staging and traffic shifts. Preliminary rating values shall include values for all staged conditions of the proposed and existing bridges to carry traffic. Preliminary rating values shall consider current structural deterioration or section loss as documented in the latest inspection reports and as confirmed by a hands-on verification inspection performed by the Design-Builder. See next page for specific guidance for each bridge included under this contract.

If the Design-Build Team increases loads or changes traffic patterns on an existing bridge carrying traffic during the project, preliminary rating values may be required by MassDOT, regardless of staged construction. See next page for specific guidance for each bridge included under this contract.

The preliminary rating values submission shall be included in each structural design submission and include, at a minimum, the Summary of Bridge Rating table and Breakdown of Bridge Rating Table as well as Appendix C calculations. AASHTOWare files (or other MassDOT approved rating program files) shall be included in submissions of preliminary rating values. Failure to include preliminary load rating values in a structural bridge submission may result in a “Reject at Quality Control” status.

See below for additional load rating requirements for the bridges specific to this Project.

Bridge No. C-13-038 (OWR & DIU): I-391 over Chicopee Street (Route 116):

A load rating report for the existing bridge structure (OWR) was prepared by WSP in 2022. As part of the BTC development, a supplemental load rating analysis was performed by WSP in 2026. The purpose of this supplemental analysis was to confirm feasibility of the BTC design considering the additional deterioration of the structure that had occurred since the 2022 rating (based on findings noted in the August 2025 Special Member inspection report). The 2022 Rating Report and the 2026 rating memorandum are included in Appendix C.10 for reference only.

During preparation of the Technical Proposal, the Design Builder shall review the load rating assumptions and methodology provided in the rating documentation provided in Appendix C.10 for the existing bridge. Following NTP, the Design Builder shall be fully responsible for development of its own load rating analysis for all temporary load conditions and rehabilitation repairs for the existing bridge proposed by the Design Builder’s project-wide construction and traffic management sequence. Rehabilitation repairs to the existing structure are required to address existing deficiencies. All temporary loading conditions must produce operating load ratings over 1.0. The rating analysis shall be provided to MassDOT as an early action submittal in a concise format which includes all rating assumptions, methodologies, calculations, AASHTOWare software inputs and output. Prior to implementing any changes to loading on the existing bridge, the rating analysis prepared by the Design-Builder must be reviewed and approved by MassDOT, and the effectiveness of the rehabilitation repairs must be confirmed through a joint inspection by the Design-Builder and MassDOT.

Prior to opening the proposed replacement bridge (DIU) to traffic in a temporary staged alignment and the final alignment, the Design-Builder shall be responsible to prepare an as-built Bridge Rating Report in accordance with RFP Section 10.19. This report shall reflect the actual permanent conditions on the subject bridge constructed by the Design-Builder. The rating analysis shall be provided to MassDOT as a formal submission, prepared in accordance with Chapter 7 of Part I of the MassDOT Bridge Manual, and shall include the Summary of Bridge Rating table, Breakdown of Bridge Rating Table, Appendix C calculations, and Appendix D AASHTOWare summary tables.

Bridge No. C-13-039 = H-21-059 (OWF): I-391 over Connecticut River

A load rating report for the existing bridge structure was prepared by Bayside Engineering, Inc. in 2005. As part of the BTC development, a supplemental load rating analysis was performed by WSP in 2026 for this bridge to evaluate the temporary stage construction conditions and permanent structure modifications depicted in the BTC design. The 2005 Rating Report and the 2026 rating memorandum are included in Appendix C.10 for reference only.

During preparation of the Technical Proposal, the Design Builder shall review the load rating assumptions and methodology provided in the rating documentation provided in Appendix C.10 for the subject bridge. Following NTP, the Design-Builder shall be fully responsible for development of its own load rating analysis for all temporary structural modifications and load conditions for the subject bridge proposed by the Design-Builder's project-wide construction and traffic management sequence. All temporary loading conditions must produce operating load ratings over 1.0. The rating analysis shall be provided to MassDOT as an early action submittal in a concise format which includes all rating assumptions, methodologies, calculations, AASHTOWare software inputs and outputs. The rating analysis must be reviewed and approved by MassDOT prior to implementing any structural modifications or changes in loading on the subject bridge.

Prior to opening the bridge to traffic in final alignment, the Design-Builder shall be responsible to prepare an as-built Bridge Rating Report in accordance with RFP Section 10.19. This report shall reflect the actual permanent conditions on the subject bridge constructed by the Design-Builder. The rating analysis shall be provided to MassDOT as a formal submission, prepared in accordance with Chapter 7 of Part I of the MassDOT Bridge Manual, and shall include the Summary of Bridge Rating table, Breakdown of Bridge Rating Table, Appendix C calculations, and Appendix D AASHTOWare summary tables.

If the Design-Builder proposes a construction sequence that keeps the existing bridge structurally unaltered without increasing loading on a temporary or permanent basis, a load rating analysis of this existing structure is not required.

Bridge No. C-13-047 (OWQ): I-391 & Off Ramp over G&W Railroad

A load rating report for the existing bridge structure was prepared by Bayside Engineering, Inc. in 2005. As part of the BTC development, a supplemental load rating analysis was performed by WSP in 2026 for this bridge to evaluate the temporary stage construction conditions depicted in the BTC design. The 2005 Rating Report and the 2026 rating memorandum are included in Appendix C.10.

During preparation of the Technical Proposal, the Design Builder shall review the load rating assumptions and methodology provided in the rating documentation provided in Appendix C.10 for the subject bridge. Following NTP, the Design Builder shall be fully responsible for development of its own load rating analysis for all temporary load conditions for the subject bridge proposed by the Design Builder's project-wide construction and traffic management sequence. All temporary loading conditions must produce operating load ratings over 1.0. The rating analysis shall be provided to MassDOT as an early action submittal in a concise format which includes all rating assumptions, methodologies, calculations, AASHTOWare software inputs and outputs. The rating analysis must be reviewed and approved by MassDOT prior to implementing any changes in loading on the subject bridge.

Prior to opening the bridge to traffic in final alignment, the Design-Builder shall be responsible to prepare an as-built Bridge Rating Report in accordance with RFP Section 10.19. This report shall reflect the actual permanent conditions on the subject bridge constructed by the Design-Builder. The rating analysis shall be provided to MassDOT as a formal submission, prepared in accordance with Chapter 7 of Part I of the MassDOT Bridge Manual, and shall include the Summary of Bridge Rating table, Breakdown of Bridge Rating Table, Appendix C calculations, and Appendix D AASHTOWare summary tables.

If the Design-Builder proposes a construction sequence that keeps the existing bridge structurally unaltered without increasing loading on a temporary or permanent basis, a load rating analysis of this existing structure is not required.

4.10.2.3 Fire Resilience

Due to the presence of public vehicle parking beneath the existing and proposed Bridge No. C-13-038 structures, the Design-Builder shall consider fire safety beneath the bridge during both design and construction.

As part of the design of the new bridge, the Design-Builder shall perform a temperature exposure analysis for proposed bridge using the Rijkswaterstaat (RWS) time-temperature curve, or other recognized standard time-temperature curve that is acceptable to MassDOT, based on the site conditions beneath the bridge. This analysis shall be followed by an engineering analysis of the bridge structure to demonstrate sufficient fire resilience. All analysis shall be in accordance with the National Fire Protection Association (NFPA) Publication 502.

BTC design proposes a concrete structure over a steel structure for improved fire resilience. If the Design-Builder proposes a steel superstructure, the Design-Builder shall demonstrate that the steel structure's fire resilience is equal to or greater than that of the BTC design. This demonstration shall be completed through the ATC process and shall be presented in the Design-Builder's Technical Proposal. The use of cementitious coatings or fireproofing boards to provide fire resilience will not be permitted, as such measures obscure structural elements and create difficulties for future inspection and maintenance.

Additionally, to maintain public safety within the project limits, the Design-Builder shall ensure that the Chicopee Fire Department maintains continuous access to Chicopee Street (Route 116) beneath the existing and proposed bridge structures throughout the construction period. Any temporary closures of Chicopee Street (Route 116), including but not limited to nighttime closures required for bridge demolition or girder erection, shall be coordinated with and communicated to the Chicopee Fire Department well in advance of the work to allow for proper emergency response planning.

The proposed bridge shall incorporate a dry standpipe system in accordance with Section 4.15.

4.10.2.4 Prestressed Beam Camber and Precast Concrete Element Tolerance Management Plans

If the Design-Builder elects to use prestressed concrete girders for the superstructure or precast concrete elements for any bridge component, management of girder camber and precast tolerances shall be critical to successful construction. As part of developing the final bridge special provisions, the Design-Builder shall prepare and implement a comprehensive quality control plan, in accordance with PCINE-18-GCPMAB, to ensure proper fit-up of all prestressed and precast concrete elements at the project site. This plan shall include, but not be limited to:

1. Establishment of a plan/coordination process between the Design-Builder's Engineer of Record and the fabricator to minimize and address differential camber of prestressed girders.
2. Address timing of fabrication of each beam in relation to beam erection time. There shall be consistency across all beam for the duration of time between beam fabrication and erection.

4.10.3 Base Technical Concept (BTC) Design Intent

MassDOT has advanced the design development for the bridges included in this project through the BTC stage. The following is a description of each bridge proposed in the BTC plans. Unless specifically stated herein, the dimensions and structural elements shown on the plans are for schematic purposes only.

4.10.3.1 General

The Project as shown on the BTC plans contains areas of specific design intent. The design intent is for the Design-Builder to propose and design bridge structures that incorporate design innovations, best engineering practices and accelerated bridge techniques that best meet the requirements of the Project as specified in the RFP documents and BTC Plans.

Design intent shown on the BTC shall be followed. The Design-Builder is responsible for the final bridge configuration. Pre-approved ATC(s) meeting the design criteria and standards listed in RFP Section 4.10.3 and the criteria specified in the following sections may be presented in the Technical Proposal. Refinements consistent with the BTC design intent introduced by the Design-Builder to the design shown on the BTC are not considered an ATC.

4.10.3.2 Bridge Design Intent

MassDOT has advanced the design development for the bridge structures included in this project through the BTC stage. The following is a description of each bridge structure proposed on the BTC plans. Following the descriptions are specific attributes and design requirements to each bridge. Unless specifically stated herein, the dimensions and structural elements shown on the plans are for schematic purposes only.

4.10.3.2.1 I-391 over Chicopee Street (Route 116)

The BTC proposes full replacement of the existing bridge structures with four-span continuous bridges carrying I-391 over Route 116 (Chicopee Street). The structure types are not restricted and shall follow all guidelines in the MassDOT Bridge Manual.

The intent of the BTC bridge span layout is to maintain an open, unobstructed east–west connection beneath the structure near Chicopee Street (Route 116) and the adjacent Vietnam Veteran’s Park, and to provide public parking south of Chicopee Street (Route 116). The BTC also proposes a new bridge structure which is shorter than the existing structure to eliminate concealed areas beneath the bridge at the extreme north and south ends that could encourage nuisance activities.

The Design-Builder may propose alternative span arrangements; however, any alternative must; preserve an open east–west connection beneath the structure, accommodate public parking south of Chicopee Street (Route 116), and avoid creating concealed areas beneath the structure that may promote nuisance activities. Minimum clear dimensions beneath the structure shall comply with BTC plans.

The proposed superstructure is separated into a northbound and a southbound barrel. The barrels are both 52’-0” wide curb-to-curb and accommodated three 12’-0” travel lanes, a 12’-0” outside shoulder, and 4’-0” inside shoulder.

In order to maintain the required two (2) travel lanes on I-391 Northbound and Southbound, staged construction is proposed as shown in the BTC plans. No thru bolting of the proposed deck is allowed.

Exterior girder bays, adjacent to low speed lanes, shall be considered future utility bays and designed/detailed accordingly. Provisions for supporting future fiber optic and highway lighting shall also be provided per the MassDOT Bridge Manual.

In the event a non-cast in place deck is utilized, structural framing shall be designed to accommodate future cast in place deck replacement.

4.10.3.2.2 *I-391 over Connecticut River*

The BTC proposes the following modifications to the existing bridge structures.

- Full removal and replacement of the existing concrete median barrier across the entire length of both existing structures. The new median shall consist of CF-MTL5 reinforced concrete barriers, as detailed in accordance with the MassDOT Bridge Manual. This work is required to facilitate the traffic management scheme proposed by the BTC design.
- Reconstruction of a portion of the existing bridge deck in the vicinity of the median replacement to provide the required railing anchorage and deck overhang resistance.
- Installation of a new membrane waterproofing within the full limits of deck reconstruction. The Design-Builder shall detail the transition between new and existing membrane waterproofing to ensure a water-tight seal across the entire bridge.
- Full removal replacement of the existing modular expansion joint system across the full width of the existing structures, including through the median and fascia barriers. Design and detailing of the joint replacement work shall be the responsibility of the Design-Builder.
- Milling and overlay of the entire roadway surface across the bridge structures. This work shall occur at the end of the Design-Builder's construction sequence once traffic is in final alignment to ensure a clean roadway surface at the end of construction.

The BTC design was developed under the assumption that all construction work will be performed from either the top side of the existing bridge structures or from underneath the structures using under-bridge access equipment. Access to the underside of the bridge via the waters or banks of the Connecticut River was not considered in the BTC design and no environmental permitting was performed based on this approach. If alternative site access methods are proposed, the Design-Builder shall be responsible for completing the necessary environmental permitting to allow for this work.

4.10.3.2.3 *I-391 & Off Ramp over G&W Railroad*

The BTC proposes the following modifications to the existing bridge structures.

- Milling and overlay of the entire roadway surface across the bridge structures. This work shall occur at the end of the Design-Builder's construction sequence once traffic is in final alignment to ensure a clean roadway surface at the end of construction.

4.10.4 Employment of Accelerated Bridge Construction Techniques

MassDOT is committed to the use of innovative and accelerated project development and construction. As a result, accelerated bridge construction techniques are encouraged to facilitate on-time, on-budget project completion with minimum disruption to people and commerce. MassDOT encourages the use of accelerated construction techniques on this Project, including but not limited to rapid demolition and erection methods.

4.10.5 Drawings and Calculations

The Design-Builder will be required to submit drawings and calculations according to the MassDOT Bridge Manual and specifications. All Design submittals shall conform to the approved Quality Management Plan (QMP) submitted by the Design-Builder. These documents will be reviewed by MassDOT and comments returned for response and implementation where required. An Issued for Construction Submittal will then be required, consisting of updated calculations, plans and specifications, stamped by a Massachusetts Registered Professional Engineer shall be submitted. Work will be allowed to proceed on a conditional basis prior to the submission of the final documents in accordance with RFP Section 4.6.

Drawings for all structures shall be in accordance with the MassDOT Bridge Manual using MassDOT Bridge Manual standards, details and title blocks. One (1) set of design calculations along with one (1) set of independent design check calculations will be required. Each of the bridge design calculation packages shall receive a documented internal quality control check. The documentation can be by checker initialing or other. Documentation shall be provided that any differences between the two sets of calculations have been reconciled and an explanation of the differences shall be provided as part of the submission. Internal quality control checks and documentation to be outlined in the Design-Builder's Technical Proposal as part of Design Quality Control Process.

4.10.6 Materials and Samples

All construction materials shall be in accordance with the Standard Specifications and the Qualified Construction Materials List as maintained by MassDOT's Research and Materials Section. Traffic materials shall be in accordance with the Standard Specifications and the Qualified Traffic Control Equipment list as maintained by MassDOT's Traffic Section. No experimental or previously un-approved materials shall be used without prior written approval by MassDOT.

Design-Builder to refer to MassDOT Bridge Manual Part I Chapter 4.2.2.3. For this Project, this is to include all concrete used in the bridge construction including substructure units and approach slabs. All cast in place concrete shall be HP concrete per MassDOT Bridge Manual Part I Section 4.2.2.3.

4.10.7 Retaining Walls

4.10.7.1 Retaining Wall Design Criteria

As shown on the BTC plans, retaining walls are proposed to support the north approach roadway.

If applicable to the proposed design, for integral abutments adjacent to MSE walls and/or stub abutments supported on piles through MSE walls within the zone of wall reinforcement, abutment piles must be placed prior to construction of MSE walls. MSE walls shall also adhere to any and all requirements as stated in RFP Section 2.12.

1. Accepted wall types to be used on this project are: mechanically stabilized earth (MSE) walls, prefabricated modular walls, soldier pile and lagging walls with permanent cast-in-place facing, conventional gravity walls and cantilever walls, or concrete bin walls. Gabion walls, metal bin walls, and concrete masonry unit (CMU) block walls are not accepted wall types to be used on this Project.
2. Final retaining wall design for all walls shall be completed by the Design-Builder in accordance with AASHTO Section 11 for both internal (structural) stability and external stability (including sliding, overturning, bearing resistance, settlement, and short-term and long-term overall stability) for each of the wall structures. For specialty wall types, the final design calculations shall be performed by the specialty wall designer, stamped by a Professional Engineer licensed in Massachusetts, and be approved by the Designer of Record.
3. Wall embedment shall be based on the wall type but shall be a minimum of 4 feet below ground surface, or deeper if needed to satisfy external stability requirements, unless founded on bedrock. The Design-Builder shall consult wall manufacturers and standard design guides for embedment depths.
4. The Design-Builder shall use the same wall type within a continuous stretch of wall. Continuity of wall appearance throughout the project site is also desired for aesthetic continuity.
5. In locations where existing and proposed utilities are located, the Design-Builder shall coordinate with the utility company prior to selecting a wall type in order to accommodate the potential for any utility openings or supports on the walls or any external reinforcements/straps/anchors.
6. Wall drains shall be determined by the Design-Builder based on wall type and shall conform to the wall manufacturer's specifications if a proprietary wall system is used.
7. The Design-Builder will maintain roadway drainage throughout construction of the retaining walls for all walls spanning over or adjacent to waterways (culverts, streams, rivers, ponds, etc.) to assure no untreated drainage enters the waterways.
8. For internally reinforced walls, such as MSE walls, only inextensible reinforcement will be permitted for any wall supporting a roadway.

9. The location of proposed MSE walls shall be coordinated with and approved by MassDOT during design based on the potential for future utility trenching damaging the MSE wall soil reinforcement. Other wall types may be required in areas where future utility trenching may be anticipated along or within the zone of reinforcement for the MSE wall.
10. All MSE walls shall use the following form liner pattern for consistency with that used on Bridge No. C-13-038.
 - Spec Liner Pattern #1319 Weathered Brick
 - Custom Rock Pattern #5018 Running Bond Used Brick
 - Sika Greenstreak Pattern #338 Rough Brick

4.10.7.2 Mechanically Stabilized Earth (MSE) Walls

Hot dip galvanized steel reinforcement is required for MSE wall soil reinforcement unless approved by MassDOT. Architectural precast concrete facing panels supported on cast-in-place concrete leveling pads shall be provided. An impermeable membrane barrier shall be placed below the road base and just above the first layer of soil reinforcement to prevent surface water infiltration, salt melt, and associated seepage forces. Utilities should not be located within the zone of reinforcement for the walls. The design of the MSE wall system should meet the differential settlement requirements indicated in AASHTO Section 11.10.4.1. or as otherwise required by the proprietary MSE wall manufacturer, whichever is more stringent.

Soils proposed for reuse in MSE wall reinforcing zone shall be classified as non-corrosive and tested in accordance with AASHTO T 289 I for pH, AASHTO T 288 I for resistivity, AASHTO T 921 I for chlorides and AASHTO T 290 I for sulfates. Soils shall typically be considered non-aggressive if they meet the criteria set out in AASHTO Section 11.10.6.4.2a. and meet the gradation requirements with the maximum of 10% of fines.

Safety against structural failure should be evaluated with respect to pullout and rupture of reinforcement using the methods described in the latest edition of the AASHTO LRFD Bridge Design Specifications.

4.10.7.3 Prefabricated Modular (PM) Walls

The PM wall system shall be designed to provide a system that acts as a gravity wall without the need for external reinforcing straps, grids, mesh, tiebacks, deadmen, etc. behind the wall system to provide external stability that would conflict with existing and proposed utilities and drainage structures, including future maintenance and repair of utilities. The PM wall units shall be placed so as not to interfere with guardrail posts, drainage or other utilities, or other potential obstructions. The PM retaining wall system shall be supported on cast-in-place leveling pad, or other foundation materials as approved by the Engineer. The top of the leveling pad shall be located at or below the theoretical leveling pad elevation. The minimum wall embedment shall be 4.0 feet as measured to the top of the leveling pad.

PM wall units shall have tongue and groove, shiplap or similar approved connections along all joints, both vertical and horizontal.

The design of the PM wall system should meet the differential settlement requirements indicated in AASHTO Section 11.11.3 or as otherwise required by the proprietary PM wall manufacturer, whichever is more stringent.

4.10.7.4 Other Wall Types

If proposed, soldier pile walls, conventional gravity walls, and cantilever walls shall be designed and constructed in accordance with the applicable AASHTO LRFD and MassDOT Bridge Manual requirements.

4.11 GEOTECHNICAL

The following section shall apply to all Project elements. Refer to Section 4.10, for additional geotechnical information and requirements related to the bridges.

4.11.1 General

Geotechnical explorations have been conducted for this Project. A Geotechnical Data Report (GDR) has been prepared to show the subsurface conditions and geotechnical design recommendations in support of the BTC. This document is provided in Appendix C. The Design-Builder shall review and accept the provided Geotechnical Data Report.

A Final Geotechnical Report based on the provided Geotechnical Data Report and any further geotechnical investigation conducted by the Design-Builder shall be completed by the Design-Builder as part of this Contract and at no additional cost to MassDOT

The Design-Builder shall perform additional geotechnical investigations, testing, research and other measures appropriate to comply with the minimum standards in the latest MassDOT Bridge Manual for the proposed retaining walls and new and modified structures from the BTC plans.

The Design-Builder shall ensure the geotechnical investigations and analyses are both thorough and complete to provide accurate information for the design and construction of the project to result in a Project that is safe and meets operational standards and final acceptance requirements.

The Design-Builder shall be responsible for all grading and related work such as remedial excavation and embankment/foundation settlement monitoring required for construction of the Project. No grading operations and foundation construction for the Project shall commence until the Geotechnical Report(s) for the area of grading and foundation construction has been approved by MassDOT and, as applicable, local agencies.

The Design-Builder shall design foundations such that unsuitable/organic soils are removed, bypassed, or improved. The Design-Builder may use ground improvement techniques to improve poor ground conditions when traditional over-excavation and replacement is not feasible for environmental, technical, or economic reasons. Ground improvement methods must meet the limitations provided herein.

The Design-Builder shall be aware that groundwater may be encountered during excavation activities. Groundwater has the potential to be contaminated. It will be the responsibility of the Design-Builder to manage all contaminated or uncontaminated water which is encountered during excavations.

4.11.2 Use of Geotechnical Information

The Design-Builder shall use the subsurface information and all Reference Documents provided in Appendix C at their own risk. While the MassDOT provided information does identify subsurface conditions at the exact location of specific borings, test pits, cone penetration tests, and/or geophysical lines, any further interpretations of subsurface conditions beyond or in addition to that information are the Design-Builder's sole responsibility.

It is the responsibility of the Design-Builder to review soil samples and rock cores from the subsurface explorations, which are located at the MassDOT Storage Facility at 219 Winthrop Avenue, in Lawrence, MA.

4.11.3 Subsurface Investigations by the Design-Builder

Subsurface explorations shall be conducted by the Design-Builder for the retaining walls and any new and modified structures from the BTC plans so that the requirements of AASHTO LRFD Bridge Design Specifications Article 10.4 and Table 10.4.2-1, and the latest MassDOT Bridge Manual are met. The BTC plans show existing borings based on assumed structures and span arrangements. Any changes to this may require additional borings in line with MassDOT Bridge Manual. The Design-Builder acknowledges the requirements to perform additional explorations to supplement the existing subsurface information, and that MassDOT may require further additional borings, test pits, probes, geophysical surveys or cone penetration tests in connection with any of MassDOT's reviews. At a minimum, the Design-Builder shall perform the following geotechnical explorations to supplement the Geotechnical Design Report, and shall include them in their Geotechnical Reports:

- If the Design-Builder proposes to shift or add a substructure element (piers or abutments), or other major project element, and its proposed location is more than 15 feet away from BTC boring locations, additional borings are required. The supplemental explorations shall meet the above stated requirements and shall be specified as part of the ATC proposal.
- If the Design-Builder proposed to adopt the substructure locations shown in the BTC (piers or abutments) and the closest BTC borings are more than 15 feet from the substructure location, additional borings are required. The supplemental explorations shall meet the above stated requirements and shall be specified as part of the ATC proposal.
- If an ATC proposes to shift a substructure (piers or abutments) and its proposed location is within 15 feet of the BTC boring locations, additional borings are not required.
- For all substructures, a minimum of two borings, drilled within 15 ft of the end of each substructure, are required at each substructure location regardless of the substructure width. An additional boring, drilled within 15 ft of the center of the substructure, is required for substructure widths greater than 150 ft.
- The fill layer in borings BB-212 through BB-214 contained trace organics and trace brick fragments (an urban fill material) which ranged in thickness from 2.7 to 9.7 feet. To evaluate the impact that this potentially unsuitable fill material may have on the proposed retaining walls, the Design-Builder team shall conduct an additional exploration to determine the thickness and extent of the urban fill in the area of the walls and embankment. Soils disturbed by the exploration, such as test pits or trenches, should be replaced in lifts and properly compacted.

- If drilled shaft foundations are proposed, additional borings shall be advanced in accordance with Table 10.4.2-1 in AASHTO LRFD.
- Borings in addition to those required above can be conducted at the Design-Builder's discretion.

The Design-Builder shall perform and analyze additional borings, test pits, and other subsurface investigations, along with laboratory soil and rock testing, necessary to complete the design and construction of the Project.

The Design-Builder shall deliver to MassDOT digital copies of logs, in an AutoCAD compatible format and PDF format, for all additional investigations conducted. The Design-Builder shall also provide a database (or excel file) of all subsurface investigations including exploration ID, town, northing, easting, ground elevation, boring elevation, total boring depth, ground water elevation, structure ID, bedrock core (Y/N), digital pictures of all rock cores, laboratory test results, and any other relevant information.

The Design-Builder shall obtain all Governmental Approvals necessary for geotechnical investigations, including Dig Safe, and all approvals required for access road grading and drilling permits. Boxes of soil and rock samples, with an as-drilled exploration plan, are to be delivered to the MassDOT Storage Facility in Lawrence, MA. Any soil or rock samples which are taken for laboratory testing must be returned to their respective boxes after testing is complete.

4.11.4 Geotechnical Reports

Each geotechnical report provided by the Design-Builder shall be accompanied by a separate volume containing all applicable calculations signed and sealed by a Professional Engineer registered in the Commonwealth of Massachusetts. The calculations shall be categorized into sections, with each section prefaced with a cover sheet that includes a brief narrative of the calculation, and all subsequent sheets properly indexed with page numbers. Each sheet shall be initialed by the person performing the calculation and by the checker/reviewer. All revisions and backup calculations shall be initialed and certified by a Professional Engineer registered in the Commonwealth of Massachusetts.

The Design-Builder shall submit a Final Geotechnical Report for this project and shall include the requirements outlined in the latest MassDOT Bridge Manual and those listed below:

1. Interpretation and analysis of soil and bedrock conditions based on the geotechnical information available and other investigations conducted by the Design-Builder.
2. Design and construction recommendations for the following, as applicable:
 - a. Bridge substructures: Axial and lateral resistance of deep foundations, recommended foundation types (pile type or drilled shaft) sizes, bearing material, estimated tip elevations, and design parameters for vertical and lateral analyses.
 - b. Retaining walls: Type, short-term and long-term global stability (static and seismic), sliding and overturning stability, bearing resistance, settlement (total and differential), foundation and backfill requirements. This shall include evaluating and mitigation design of embankment fill loads on foundations and structures in-service adjacent to the embankment fill.

3. Construction Quality Control, including inspection, testing, and load testing programs to verify design resistances and installation procedures for deep foundation elements (piles and/or drilled shafts).
4. Instrumentation programs, where necessary, to monitor embankment, substructure, or adjacent structures response to construction activities.
5. Plan view of exploration locations, exploration logs, and laboratory test results used to characterize soil and rock conditions.
6. Interpretive subsurface profiles at all new embankments and structures showing the soil and rock conditions as interpreted from the explorations.
7. The Design-Builder shall also provide backup calculations and references for all soil properties used in the design and all applicable items listed under bullet point #2 of this section.

The Design-Builder shall prepare geotechnical report addenda to incorporate changes made during the Work. Any such addenda shall be incorporated into the revised Final Geotechnical Report when the design is complete and upon completing construction, as applicable. The design phase report, including the addenda, shall be submitted prior to start of construction, and shall be reviewed and approved by MassDOT. Construction shall not proceed before written approval. If design changes are made during construction, an updated design phase report, including addenda, shall be submitted for review and written approval by MassDOT before construction proceeds on the changed design.

Each report shall be signed and sealed by a Professional Engineer registered in the Commonwealth of Massachusetts. These reports shall be delivered to MassDOT in a searchable electronic PDF format. The applicable Geotechnical report shall be submitted concurrently with the Bridge submittals.

4.11.5 Highway Elements

For the following Highway Elements, the Design-Builder is responsible for providing analyses, design and construction details in the Geotechnical Report, and on the Plans and/or Special Provisions:

1. Sign Structures: The Design-Builder is responsible for the design and construction of all sign support structures, including overhead traffic structures in accordance with the latest geotechnical engineering practice.
2. Embankments: The Design-Builder is responsible for the design and construction of new, heightened or widened embankments, in accordance with latest geotechnical engineering practice.
3. Slopes (cut and fill cases): The Design-Builder must ensure the stability of steepened slopes, in their temporary and permanent conditions, in accordance with latest engineering practice.
4. Retaining Walls: The Design-Builder is responsible for the design and construction of all retaining walls in accordance with the latest geotechnical engineering practice. The Design-Builder must ensure the stability of walls, in their staged (temporary) and final (permanent) conditions.

For the evaluation of embankments, slopes and walls, analysis shall include the following (as applicable): bearing resistance, settlement, sliding, maximum eccentricity (overturning), and overall global stability.

If a soil nail wall system is proposed, its design and construction shall be in accordance with publication “Geotechnical Engineering Circular (GEC) No. 7 - Soil Nail Walls, 2015, FHWA-NHI-14-007.

Design and construction of Mechanically Stabilized Earth (MSE) walls and Reinforced Soil Slopes (RSS) (if proposed) shall be in accordance with publications “Geotechnical Engineering Circular (GEC) No. 11, Design and Construction of Mechanically Stabilized Earth Walls and Reinforced Soil Slopes, FHWA-NHI-10-024 and FHWA-NHI-10-025 and the AASHTO Bridge Design Specifications. In the event of conflict between the FHWA references and the AASHTO Specifications, the AASHTO Specifications govern.

If Prefabricated Modular (PM) walls are proposed, their design and construction shall be in accordance with the manufacturer’s requirements and the AASHTO Bridge Design Specifications. In the event of conflict between the manufacturer’s requirements and the AASHTO Specifications, the AASHTO Specifications govern.

In addition to the above-mentioned publications, the MSE retaining walls shall also conform to the minimum requirements of the Draft BTC Special Provisions.

4.11.6 Bridge Foundations

The Design-Builder is responsible for the analysis, design, and construction of the bridge substructures and their foundations. All design calculations must be in accordance with AASHTO LRFD and the MassDOT Bridge Manual. See Section 4.10 for additional information specific to bridge foundations.

Bridge foundations that are located behind retaining walls shall be independently supported and not rely on the retaining wall for support.

Where any proposed subsurface steel elements are exposed to soil and groundwater (not embedded in a pile cap), the Design-Builder shall refer to the corrosion rate used in the Geotechnical Design Report in their design and shall conduct corrosion testing of any imported fill soils to be used at that structure to determine an appropriate sacrificial thickness for the corrosion allowance for the steel elements to retain minimum required capacity for the entire 100-year project service life. This includes all exposed surfaces of driven piles and permanent casing for drilled foundations that is structurally required. Irrespective of the results of the testing, a minimum corrosion allowance of 1/64” over 100 years, or 0.00016 inches/year, shall be used for design.

The Design-Builder shall provide Quality Assurance and Control guidance for the installation of proposed deep foundation elements following the latest accepted industry standards to assess plumbness and movement tolerances. Installation records shall be submitted to MassDOT after completion of bridge foundations.

As-built foundation data on existing or new substructure elements that will be abandoned in place and which differs from the baseline design plans shall shown on the Design-Builder final plans. This shall include information such as plan locations, additional piles or shafts, changes in diameter, tip elevation, and/or bottom of footing elevation.

Driven Piles

The design and construction of all driven piles shall be in accordance with GEC No. 12 "Design and Construction of Driven Pile Foundations" (FHWA-NHI-16-009 and FHWA-NHI-16-010) along with the companion publication "Design and Construction of Driven Pile Foundations - Comprehensive Design Examples" (FHWA-NHI-16-064).

The use of timber piles is not allowed for supporting structural elements (piers or abutments).

Pile testing and pile design shall conform to the requirements of all relevant Sections of the Standard Specifications and Supplemental Specifications, The MassDOT Bridge Manual, and AASHTO LRFD Bridge Design Specifications.

Piles shall be driven with an impact hammer meeting the requirements of Subsection 940.50 of the Standard Specifications. Vibratory hammers may be used to advance the pile provided the final seating of the pile is done using an impact hammer. Pile followers and pile jetting shall not be allowed. Pile driving equipment and methods shall be submitted for review and acceptance by the Engineer.

Recommended criteria for refusal criteria, restrike and pile acceptance shall be evaluated and provided by a Professional Engineer registered in the Commonwealth of Massachusetts, engaged by the Design-Builder. If piles are designed to be driven to bedrock, then driving criteria must be established by dynamic testing of at least one (1) production pile per substructure element per phase of construction, but no less than 2 percent of the production piles. The Design-Builder shall select piles to be dynamically load tested, subject to the acceptance of the Engineer.

A static load test is not required if piles are driven to bedrock or achieve practical refusal (10 blows or more per half inch of penetration) in a soil layer directly above bedrock. For all other piles, a static load test and a dynamic load test using Pile Driving Analyzer (PDA) shall be performed on one (1) sacrificial pile per site condition. A site condition is defined as a specific soil bearing stratum at a specific bridge. The location of the sacrificial pile shall be proposed by the Design-Builder and accepted by the Engineer. For the sacrificial pile, the dynamic test must be calibrated to the static load test.

Drilled Shafts

The design of Drilled Shafts shall be in accordance with Geotechnical Engineering Circular No. 10 – Drilled Shafts: Construction Procedures and LRFD Design Methods FHWA-NHI-18-024 and the MassDOT Bridge Manual.

If Drilled Shafts socketed into bedrock are proposed, and all axial resistance shall be derived from the bedrock, without consideration of overburden soils.

If Drilled Shafts are proposed, the Design-Builder shall propose construction methods and testing commensurate with the resistance factor proposed in the design. Crosshole Sonic Logging (CSL) testing must be performed on all drilled shafts.

For construction of drilled shafts, a shaft inspection device (SID) capable of video inspection shall be required if end-bearing resistance of the drilled shaft is included in the design. Alternatively, if end-bearing resistance of the drilled shaft is ignored in the design, then the use of a SID is not required during construction.

Drilled Micropiles

The Design-Builder may consider the use of micropiles. Micropile design, testing, and installation shall be in accordance with the latest MassDOT Bridge Manual and Micropile Design, Construction Reference Manual FHWA-NHI-05-039, and the following:

If proposed, micropiles shall consist of permanent casing sections and fully reinforced grout sections bonded with in- situ soil or bedrock. Permanent casings shall be included as part of the micropiles and shall remain in place after grouting is complete. Temporary casings shall be installed if necessary, to facilitate micropile construction and shall be removed during or after grouting.

The permanent casing shall incorporate an additional 1/16" (or greater, as described above) thickness for sacrificial steel corrosion protection. For micropiles socketed into bedrock, permanent steel casing shall be installed a minimum of 12-inches into bedrock to prevent subsidence of overburden into the uncased rock socket.

Load capacities shall be confirmed by verification and proof load testing. Each substructure unit (abutment or pier) shall have the following:

- One (1) pre-production verification pile load test on a sacrificial pile within 10 feet of the footprint of the substructure unit, but at least 5 feet from any production pile.
- One (1) proof pile load test on a production pile, or 5% of the production piles, whichever is greater.

The location of the sacrificial pile and selection of proof test pile(s) shall be selected by the Design-Builder and accepted by the Engineer. The load tests shall conform to the requirements of ASTM D1143 (vertical compression load testing) or ASTM D3689 (vertical tension load testing) except as modified herein.

Before starting the work, the Design-Builder shall submit a pile load test plan including a written description of the equipment and methods, which are intended to be used to the Engineer for acceptance. The methods must be of an accepted type and shall be altered as necessary to meet the acceptance of the Engineer. The pile load test plan and description shall be prepared and stamped by a Professional Engineer registered in the Commonwealth of Massachusetts.

4.11.7 Ground Improvement

If proposed, design and construction of ground improvement techniques shall be done in accordance with the Ground Modification Methods Reference Manual FHWA-NHI-16-027 and FHWA-NHI-16-028. The manual introduces the web-based GeoTechTools (<http://www.geotechtools.org>) which is a decision-making tool that identifies many geotechnical solutions for design and construction of embankments on soft soils, embankment widening, and pavement foundations. These tools help select and apply the most appropriate method to the site-specific problems and conditions.

The Design-Builder may consider the following ground improvement techniques.

- Lightweight Fills: Reduce settlement and/or improve stability of embankments located above deep inorganic unsuitable soil that can't be excavated. Only the fills listed below may be considered for this project.
 - Geofom – expanded polystyrene (EPS)
 - Lightweight cellular concrete, also known as foamed concrete
 - Expanded shale, clay and slate (ESCS)
 - Foamed Glass Aggregates (FGA)

If used, geofom shall be fully encapsulated with a petroleum resistant membrane.

- Aggregate Columns: Increase bearing resistance of underlying soil, reduce settlement, improve slope stability, and reduce liquefaction potential of soil. Aggregate columns shall not be used to support bridge foundations.
 - Stone Columns – Vibro-replacement or Vibro-displacement may be used.
 - Rammed Aggregate Piers – The pre-drilled column is appropriate for areas of the site where boulders and cobbles were encountered frequently.
- Column-Supported Embankments (CSE): Stiff vertical columns (driven or formed in place) that transfer the load of the embankment through the soft compressible soil layer to a firm bearing strata. Soil mix columns, aggregate columns, and cement-based columns may be used.

For CSE, timber piles may be used on the project. The Design-Builder shall demonstrate that proposed timber piles will be permanently submerged in groundwater for the entire project design life. Alternatively, timber piles that are not fully submerged shall be treated with a wood preservative. The Design-Builder shall demonstrate that treated piles will last for the entire project design life. Piles shall be treated in accordance with the requirements of Section M9.05 of the Standard Specifications

The Design-Builder shall take into consideration existing utilities in areas of proposed ground improvements. Such improvements shall not impede the utility owner from accessing their facilities.

The Design-Builder shall conduct performance monitoring during ground improvement operations to ensure that the contractor's work is performed according to the contract requirements, and that adjacent structures are not being damaged.

The Design-Builder shall provide a test section for each proposed ground improvement method with applicable load testing and Quality Control round of in-situ testing.

4.11.8 Geotechnical Instrumentation and Monitoring

The Design-Builder shall be responsible for the installation and monitoring of all instrumentation necessary to ensure the safety of the public and construction workers, as well as the stability and integrity of the existing or modified Bridges and structures. The Design-Builder shall also be responsible for visual and survey monitoring in accordance with Draft BTC Special Provision 100.9 and 100.99.

The Design-Builder shall prepare a geotechnical instrumentation program to monitor vibration, accelerations, vertical settlement and lateral movement of existing structures during construction through Project completion according to accepted industry standards. The Design-Builder shall prepare a Working Plan that details the proposed program of instrumentation and monitoring, shall establish threshold values of the monitored parameters, and shall describe a Response Plan that will be implemented when the threshold parameters are exceeded. The design of instrumentation within the Working Plan shall demonstrate an understanding of the need, purpose and application of each proposed type. The Design-Builder shall provide, install, and monitor instrumentation during and after construction.

The Design-Builder shall provide weekly Construction Instrumentation Monitoring Reports to MassDOT including interpretation of data by the Design-Builder's Lead Geotechnical Engineer. Should any threshold values be exceeded, the Design-Builder shall notify MassDOT immediately and take corrective action in accordance with the Response Plan.

Before installing any instrumentation, submit for MassDOT review and approval, an Instrumentation Plan showing the location of all monitoring points and a description of methods, equipment, materials and other details consistent with the above requirements.

4.12 BRIDGE HYDRAULICS AND SCOUR

[** THIS SECTION IS NOT APPLICABLE**]

4.13 DRAINAGE DESIGN

4.13.1 Objectives

The Design-Builder shall provide a well-drained Project and a safe environment for those that use and maintain the Facility. The design and construction of all drainage structures and appurtenances shall adequately address functionality, durability, ease of maintenance, maintenance access, safety, aesthetics, and protection against vandalism. In fulfilling the requirements for drainage design and construction, the Design-Builder shall fulfill both the requirements related to drainage features or systems and other required design elements on the Project.

The Design-Builder is responsible for the functioning roadway drainage system within the Project Limits, during staged construction of the Project. The Design-Builder shall maintain and repair drainage features at the request of MassDOT.

The Design-Builder shall be aware and fully comply with Federal, State, and local Laws related to drainage design including the MassDOT Stormwater Guidebook (2023 Edition) and MassDEP Stormwater Handbook (2008 Edition), as well as all applicable Governmental Approvals, including Environmental Approvals, and shall perform the design such that there will be no substantial adverse effects to the Connecticut River, adjacent properties or drainage systems.

The pipe network layout shown in the BTC presents a conceptual layout of structures intended to maintain existing drainage patterns. Rim, invert, pipe sizes and slopes are provided on the BTC as a concept to accompany the pipe network shown on the BTC. It shall be the responsibility of the Design-Builder to prepare a final drainage design which meets the requirements of the PDDG, this RFP and in accordance with approved Project permitting. The Design-Builder will prepare a final design which will meet these objectives for this Project to the maximum extent practicable.

4.13.2 General

The Design-Builder is responsible for the design, including locating, sizing, and constructing all temporary and permanent drainage facilities. It is anticipated that proposed drainage elements throughout the project will tie into the existing drainage system within the Project limits. The design shall comply with the ten Stormwater Performance Standards of the Wetland Protection Act to the maximum extent practicable, as defined in the 2008 MADEP Stormwater Handbook. It shall also comply with Chapter 8 of the MassDOT PDDG and the MassDOT Stormwater Design Guide, 2023 Edition.

The Design-Builder shall design and install temporary and permanent drainage facilities, perform a gutter flow analysis, and address existing deficiencies within the Project limits.

The Design Documents shall include, but are not limited to, the following:

- Stormwater Management Plan (SMP)
 - Stormwater Management Report
 - Supporting calculations and analysis
 - Operation and Maintenance Plan
 - Long Term Pollution Prevention Plan
 - Drainage Atlas
- Storm Drain Plans, Details, and Quantity Summaries
- Grading Plans
- Plans and details of structural stormwater management Best Management Practices (BMPs) designed in conformance with the MassDEP Stormwater Management Handbook and the MassDOT Stormwater Design Guide, 2023 Edition
- Erosion Control Plans
- Right of Way Protection/Erosion Control plans during the conduct of the Work
- Final Stormwater Management Plan

- Stormwater Pollution Prevention Plan (SWPPP)
- Construction Period Pollution Prevention Plan (CP/PP)
- Construction Staging Stormwater Management Plans (for each stage)

The Design-Builder shall confirm applicable standards with MassDOT prior to commencing design work.

All drainage systems shall be designed to avoid objectionable backwater or excessive velocities which may adversely affect structure and embankment stability, adjacent property, existing storm drain facilities, natural drainage courses, or floodplain limits. The Design-Builder shall address existing deficiencies in the stormwater collection within the Project limits as feasible to eliminate standing water in low areas, either through minor re-grading or through the addition of catch basins. Any new catch basins as well as existing catch basins within the limit of work shall be equipped with standard grates and frames conforming to the MassDOT Construction Standard Details and as specified in Engineering Directive E-16-003. Any new catch basins shall also be constructed with 4-foot deep sump basins as defined by the MassDOT Stormwater Handbook.

The drainage systems for the Project shall accommodate the drainage runoff and off-site runoff from properties affected by the Project. The Design Documents shall include provisions for maintenance access in accordance with MassDOT, MassDEP and local agency requirements and recommendations.

The Design-Builder shall submit preliminary drainage studies showing the hydrology, hydraulic calculations, and preliminary plans of the proposed Stormwater drainage system improvements to MassDOT, and appropriate agencies, in accordance with permitting requirements, for review prior to submitting the Project's final drainage design documents. The drainage system improvements shall comply with the Stormwater Management Policy and shall include Stormwater Control Measures (SCMs), where applicable. The Design-Builder shall identify and prepare individual drainage reports and plans for any and all Stormwater drainage systems affected by the Project. MassDOT and local agencies require final drainage reports, plans and specifications to be submitted with any applications for Environmental Approvals that are required.

- The scope of the stormwater management design shall be consistent with all applicable State and Federal permits, as required.
- Stormwater design shall be performed in accordance with the latest MassDOT Stormwater Design Guide or as approved by the District Stormwater Engineer.

4.13.3 Temporary Drainage Structures

The Design-Builder is responsible for the design and construction of all temporary drainage components that will be required through the various stages of the Project. Several areas of the Project will require temporary drainage structures in order to address an interim spread condition into a travel way as an effect from temporary alignments, lane shifts or tapers.

The lane shifts and tapers are to be engineered such that the stormwater is processed without creating unsafe driving conditions. All manholes, storm drains, or other structures exposed to live traffic are to be sufficiently rated for traffic loading and restrained from dislodgment. The Design-Builder should be aware that the existing structures are a different standard. Confirm that all existing drop inlet frames, grates and catch basin frames that are to be maintained during construction are hook and lock bar grate or welded shut. All structures to be adjusted shall have new castings that shall comply with MassDOT engineering and policy directives. Existing manhole castings within the traveled way shall be replaced with new casting with bolted covers.

4.13.4 Approach to Compliance with Stormwater Management Policy

The Work must meet the ten Stormwater Management Standards (SMS) defined in the MassDOT Stormwater Design Guide, 2023 Edition, to the maximum extent practicable as defined by the SMS. The goal of these standards is to address concerns related to the quality of discharge to wetlands or waters of the Commonwealth of Massachusetts, control flooding, and maintain groundwater levels. These conditions are achieved by improving the existing conditions regarding peak rates of runoff, groundwater recharge, and water quality treatment. The Project must incorporate water quality improvements to the maximum extent practicable, as defined by the SMS. The stormwater improvements proposed by the Design-Builder must provide water quality improvements as defined in the SMS. Water quality improvements in the BTC include catch basin structures with deep sumps and are intended to demonstrate a feasible means of meeting this requirement. Test pits shall be performed as directed by the Engineer.

The Design-Builder's submissions shall be completed to thoroughly document that stormwater runoff from the Project complies with this requirement.

4.13.5 Compliance with Local Approvals

[** THIS SECTION NOT APPLICABLE**]

4.13.6 Stormwater Management Plan

The BTC provides limited information for improvement and management of stormwater. The information, findings, and summaries identified in the BTC are based on the environmental planning process conceptual engineering design.

The Design-Builder shall be responsible for preparing a Stormwater Management Plan (SMP). As a result of these programs, the SCMs to be used shall address the overall drainage, stormwater runoff management, water quality, floodplain impacts, groundwater impacts and associated environmental and mitigation measures. The SMP for the Project shall comply with the National Pollutant Discharge Elimination System (NPDES) permit requirements and the Massachusetts Stormwater Management Policy (Policy). As a result of these programs, the SCMs to be used shall address the overall drainage, stormwater runoff management, water quality, floodplain impacts, groundwater impacts and associated environmental and mitigation measures.

The SMP shall include a Stormwater Management Report that documents how the proposed stormwater management design meets the applicable criteria. The SMP shall include supporting calculations and analysis. Following the approval of the SMP by MassDOT, the Design-Builder shall furnish final drainage reports and plans for the Project.

4.13.7 Gutter Flow Spread Analysis

The Design-Builder shall perform a gutter flow spread analysis for each construction stage of the Project. This analysis shall include all existing, temporary, and proposed drainage elements for a given stage based on the stormwater collection measures proposed for each specific stage of the Project. Gutter spread analysis does not need to consider a snowbank condition. The Design-Builder shall perform an analysis of the downstream piping to verify that there is sufficient capacity.

The maximum allowable gutter spread shall be as follows (refer to the PDDG for the design storm):

- I-391 Mainline Left (Inside) Shoulders: 6 feet or the shoulder width, whichever is greater
- I-391 Mainline Right (Outside) Shoulders: the shoulder width plus half the width of the adjacent lane
- South Parking Lot: the spread depth shall not exceed the proposed curb height

The Design-Builder shall maintain positive drainage and provide slotted barriers, as required, throughout the staged construction.

4.13.8 Additional Project Specific Drainage Requirements

The following is a list of items that were identified during preliminary design that might require additional consideration as the Project advances into design. The Design-Builder shall incorporate the necessary provisions into the design and construction of the Project, including but not limited to the following:

- The Design-Builder may move or modify the closed drainage system design provided that the new design meets or exceeds the current design and/or existing conditions. The Design-Builder may not propose a design that worsens gutter spread, pipe capacity, freeboard, velocity, beyond PDDG limits, or have other negative impacts.
- Drainage for temporary roadways during all construction phases.
- When temporary barrier is utilized, it will be necessary to clear the slotted drainage openings in the bottom of the barrier from any snow, ice, or debris that may build up as a result of a weather event or winter condition within 48 hours of the weather event or as directed by MassDOT.
- Temporary drainage structures shall be located outside of the vehicle wheel path, where practical. All permanent drainage structures shall be located outside of the proposed travel lanes.
- The Design-Builder is responsible for the existing and temporary drainage structure maintenance during the course of the Project.
- The Design-Builder is responsible for the existing drainage during the course of the Project.
- In accordance with Subsection 227 of the Standard Specifications, all accumulated sediment and debris in drainage structures and pipes within the Project limits shall be removed and disposed of legally.

4.14 LIGHTING

The following section shall apply to all streets, parking lots and multi-use path lighting elements within the project limits as depicted on the BTC plans. Light trespass outside of the State and City Highway Layout should be eliminated to the greatest extent possible. There shall be zero light trespass into private residential properties.

4.14.1 Scope

Highway Lighting:

All work for the highway lighting system located on the I-391 bridge will be for future works and no lighting design is required under this Project.

Within the limits of the I-391 bridge to be replaced, the Design-Builder shall remove existing lighting circuit conductors back to the nearest accessible point off the bridge, cap and make safe. The Design-Builder shall be responsible for providing an empty lighting raceway system across the bridge and terminating at a handhole past the abutment at each end of the structure. The empty lighting raceway system shall include all necessary conduit and junction boxes, with pull strings, for future routing of lighting branch circuits along the bridge and out of each light pole foundation blister. Refer to bridge plans for conduit placement and blister locations.

Street, Parking Lot, and Multi-use Path Lighting:

A new street, parking lot, and multi-use path lighting system under the I-391 shall be designed and constructed on the Project by the Design-Builder. The Design-Builder shall conduct all work necessary to provide all lighting located inside the Project limits. This includes all transportation related permanent lighting of the street facilities to the limits generally covered by the existing lighting system. The Design-Builder shall also provide all lighting associated with the temporary roadways for the usage and construction of the Project per MassDOT Standard Specifications for Highways and Bridges.

Features included under this requirement include new street luminaires, sidewalk luminaires, multi-use path poles and luminaires, street controls, decorative and street poles, in-grade luminaires mounting, load centers, service cabinets, wiring, conduits, grounding, handholes, junction boxes, pole and cable tags, containment, procurement, installation, focusing, commissioning, and as-built information necessary for delivering a complete and functional system. This system shall meet the following requirements:

The permanent lighting shall be designed according to the ANSI/IES RP-8 Lighting Roadway and Parking Facilities and the AASHTO Roadway Lighting Design Guide. The designer shall meet the Illuminance, Luminance, Veiling Luminance, and Uniformity Ratio criteria to ensure the appropriate illumination level is provided for the driver to have the maximum visibility and minimum glare for a street classification of Major and pedestrian activity classification Medium.

New load center, lighting conduit, wiring, pull boxes and junction boxes for the proposed street lighting system for temporary and permanent conditions will be required under the I-391. New lighting conduit, wiring and junction boxes for the proposed parking lot and multi-use path lighting system will be required and will be the responsibility of the Design Builder.

Utilize energy efficient and long-life low maintenance lighting technologies that are reviewed and accepted by MassDOT.

Utilize photocontrol switch systems with timeclock that automatically activates lamps before dusk and deactivates the system past dawn for roadway and sidewalk lighting. Photocell shall turn on the system and the timeclock shall turn off the system with elapsed time.

The Design-Builder shall prepare the necessary design and engineering studies. Applicable design reports to describe and justify all lighting components to be incorporated into the Project.

The Design-Builder shall coordinate with MassDOT and the City of Chicopee, to ensure the appropriate design methods, procedures, submittals, plan preparation, analysis, review and comment processes, approval procedures, specifications, and construction requirements are met.

The Design-Builder is responsible for disposing of all equipment to be removed. Prior to disposal, the Design-Builder shall coordinate with the City of Chicopee and MassDOT to determine if they would like any of the equipment turned over to them for future re-use at their discretion.

The Design-Builder shall be responsible for all required coordination with the local utilities including initiation of contact, workorder requests, development of loading calculations, and identifying/confirming available service (volts, amps, kAIC rating) at the project location.

Plaque Lighting

In addition to the above requirements, the Design Builder shall provide plaque lighting around Willimansett Viaduct Park. The perimeter brick columns have 15 plaques along the interior and 4 plaques on the exterior faces for a total of 19 plaques to be illuminated. The intent is to softly light these plaques in warm white light from adjustable narrow beam, in-grade recessed fixtures on photocell control. The intent to power these lights from nearby park lighting. A maintained average light level of 3 FC shall be achieved.

4.14.2 Design Requirements

The Design Builder shall employ a lighting certified (LC) professional with a minimum of 10 years of experience in highway facility lighting design.

The Design Builder shall make an inventory of all existing lighting elements and related cabling, controls, and power equipment within the Contract Limits and impacted by the Project.

The entire lighting system shall be designed for maximum durability for temperature, climate, and environment and ease of maintenance.

In order to provide the most up-to-date lighting technologies, the Designer-Builder shall present to MassDOT and the City of Chicopee the proposed lighting scheme utilizing LED luminaires. This shall include:

- A luminaire with a minimum of 70,000 hours of maintenance-free operation attaining 70% of the initial lumen output (LM70), in -40 deg to +40 deg C ambient temperature

- Documentation illustrating the LED luminaires have been tested in accordance with IES-LM-80 and IES-LM-79, with the TM-21 report
- The LED luminaire shall include an integral voltage surge protection module (SPD)
- LED lifespan data analysis, specific to the die temperature during the lifespan test period
- LED Luminaires for street at minimum 26,000 Lumen, with a CCT of 4000K and a minimum CRI of 70
- LED Luminaires for parking lots at minimum 4,000 Lumen, with a CCT of 4000K and a minimum CRI of 70
- LED Luminaires for multi-use path at minimum 3,000 Lumen, with a CCT of 4000K and a minimum CRI of 70
- Plaque lighting shall be in-grade, aimable, 2700K LED, walk-over and slow drive-over traffic compliant.
 - IK10, 6kV surge protection, UL Wet Locations and IP67

The Design-Builder shall develop a lighting plan for the Project to:

- Provide for all components as called for in this document and BTC
- Provide a complete visual representation and knowledge of the lighting design

The electrical design shall be in accordance with the latest edition MassDOT Standard Specifications, the current adopted edition of the National Electrical Code and Massachusetts Electrical Code, and in coordination with MassDOT District 2 electrical personnel. In addition, the design shall comply with the following:

- All junction boxes shall be type NEMA 4X with all 316 Stainless Steel construction
- All wire shall be type XHHW-2 with fully color-coded insulation
- All splices below grade shall use re-enterable, fully submersible splicing methods.
- Load centers shall be type NEMA 3R with all 316 Stainless Steel construction
- Conduit below grade or embedded in concrete shall be type PVC Schedule 80
- Conduit above grade or exposed shall be type RTRC (Phenolic) XW (Extra Heavy Wall)
- Handholes shall be provided adjacent to each in-grade light pole foundation
- Junction boxes shall be provided adjacent to each bridge mounted light pole foundation
- Minimum conduit size between handholes and junction boxes shall be 3". Minimum conduit size into light pole bases shall be 2".

The Design-Builder shall coordinate define, identify, and coordinate all aspects of the lighting for all Project requirements and for the governing standards.

4.14.3 Submittals

Submittals shall be made as part of the 75% Highway and 100% Highway submissions and are subject to MassDOT review and approval. At a minimum, the drawings and specifications shall be submitted per MassDOT submittal requirements and shall cover the following lighting aspects. The Design-Builder shall develop special provisions for items that deviate from MassDOT standard specifications:

- Location plan
- Proposed lighting system for streets, pedestrian pathway, and parking lots
 - Existing lighting elements to be removed/maintained
 - Edges of pavement, shoulder, curbs, and barriers
 - Luminaire supports and spacing
 - All other lighting facilities; conduit, wiring, pole numbering, controllers, power supplies, pull boxes, etc.
- Luminaire location callouts
 - Pole locations with base line stationing and offsets
 - Luminaire mounting height
 - Arm length
 - Panel and circuiting numbers
 - Assembly types
 - IESNA photometric distribution types
 - Luminaire wattages
 - Luminaire initial lumens provided
- Details/Equipment
 - Pole mounting details for all configurations and types
 - Foundation details
 - Grounding details
 - Luminaire mounting details for all configurations and types
 - Lighting controls information
 - Load center details, locations, and views
 - Single Line Diagrams
 - Pull/Junction box mounting details
 - Handhole details
 - Conduit trenching details if applicable
 - Wiring diagram for all the lighting circuits

- Schedules
 - Panel schedules
 - Cable and conduit schedule
 - Foundation schedule
 - Luminaire and Pole specifications and technical data
 - Photometric data conforming to IESNA Standards
 - IP Ratings and UL Listings
 - All materials used in construction of luminaires and poles and their associated equipment
 - Mounting specifications
 - Ballast/Driver/Transformer data and information
 - Voltages
 - Wattages
 - Initial Lumens Provided
 - Controls
 - Finishes
 - Warranties
 - Any and all modifications and installations
- A technical memo showing photometric plans shall be provided showing light fixture layout, calculation grids, and summary tables.
- Voltage drop calculations shall be provided for all lighting circuits showing voltage drop at the furthest point in each circuit is 3% or less.

The Design-Builder shall review the proposed luminaire attachments and performance of all lighting with MassDOT. This review shall include, but is not limited to, the access, maintenance, and suitability of placement of the luminaires and related support and wiring.

The Design-Builder shall develop and submit for review and acceptance voltage drop calculations for all lighting circuits, as well as conduit fill calculations.

The light loss (or lamp lumen) depreciation (LLD) multiplier shall be determined by using product data from the chosen manufacturer for each luminaire and used in the lighting calculations. The luminaire dirt depreciation (LDD) factor shall be .95 for all luminaires. These total light loss factors (LLF) shall be used in all calculations.

4.14.4 Software for Design

The Design-Builder shall obtain MassDOT's consent on the use of software programs and techniques. The use of proven and commonly available software familiar to MassDOT is encouraged. For lighting calculations, the Design-Builder is required to utilize Lighting Analysts AGI32 or Visual software for full detailed reports to demonstrate compliance with reference standards. Compliance calculations and checks are required. The Design-Builder shall detail each geometric design condition for roadway lighting, along with clearly outlining the design criteria used. Typical lighting layouts are not acceptable. These different analysis components shall demonstrate compliance with relevant standards or references. These shall be demonstrated through graphical output, which also includes numerical summaries for the analysis grid areas. Photometric plans shall be provided showing light pole layout, calculation grids, and summary tables.

4.14.5 Construction Requirements

The Design-Builder shall provide lighting materials per the MassDOT Standard Specifications and Project specifications that:

- Shall be new at the time of installation.
- Meet all visual and aesthetic goals for the Project.
- Are long life and energy efficient based on light source type.
- Are compatible with the electrical characteristics (voltage, phases, wires) of the power supply available at the Project Site.
- All lighting luminaires and features shall be easily maintained by MassDOT's in-house personnel.

The Design-Builder shall comply with the following:

- Provide all permanent and temporary lighting and related supports, lamping, controls for operational systems throughout the duration of the Project.
- Provide all new lighting load center, luminaires, poles, mounting, controls, wiring, electrical raceways/conduits, switches, junction boxes, handholes, panels, cabinets, enclosures, and all related electrical equipment as needed.
- MassDOT Standard Specifications shall be used for all materials and installations.

Provide as-built plans and manuals fully describing the lighting installation. The Design-Builder shall provide all lighting and related systems for the Project and lighting throughout the project limits shall remain operational during construction. This shall include detailed designs and approvals for temporary schemes. All areas that have existing lighting shall have the lighting maintained throughout construction. All temporary lighting shall meet MassDOT and IESNA requirements. Street lighting on any newly constructed roadways and approaches shall be operational prior to opening it to traffic and then also maintained during all phases of construction thereafter.

4.14.6 Roadway Lighting

The Design-Builder shall provide and install lighting materials that meet or exceed the following requirements:

- The complete roadway lighting system shall be made up of a contemporary style LED luminaire located and positioned based on the Design-Builder's approved final design.
- All luminaires shall have a maximum mounting height of 29'-0", measured from the finished roadway surface to the center of luminaire(s).
- Particular concern shall be paid to reduce light trespass.
- All street luminaires shall have a semi or full cutoff optics to minimize night skylight pollution.
- All street luminaires and poles shall meet all applicable standards for roadway lighting including but not limited to roadway, interchanges and bridges.
- Design shall provide an average maintained 0.9 cd/m² illumination throughout the areas of illumination of street for the project identified in the BTC.
- Design shall provide an average maintained 0.5 foot candles illumination throughout the areas of illumination of walkway for the project identified in the BTC.
- Design shall provide an average maintained 0.2 foot candles illumination throughout the areas of illumination of parking lot for the project identified in the BTC.
- Design shall provide an average maintained 0.05 foot candles illumination throughout the areas of illumination of the multi-use paths for the project identified in the BTC.
- All luminaires selected for the Project shall have a CCT equal to 4000K with a CRI index equal to 70 or higher. Slight variations to these requirements may be accepted with MassDOT approval.
- All poles shall meet the vibration requirements defined in the latest version of ANSI 136.31.
- Street luminaires shall be post top mounted on a round tapered steel pole.
- All light poles shall be accessible for MassDOT maintenance. A removable 16"x16" access panel shall be installed at any location where access to the light pole is blocked by a solid barrier.
- All poles, handholes, and load centers shall be safely grounded per NEC and MassDOT Standards.
- All steel poles, bases, arms, and misc. mounting brackets shall be hot-dipped galvanized in accordance with MassDOT Standards.
- The Design-Builder shall ensure the proposed design accommodates access to all light poles and other utilities.

All street poles installed at grade shall have an AASHTO approved breakaway coupling where required.

- Handholes shall be provided. Composite covers shall be used for handholes within sidewalks
- High-mast lighting will not be allowed.
- The proposed final design will also include modifications to existing lighting infrastructure, as required, if existing infrastructure designated to remain is impacted by the proposed construction. This could include relocation/replacement of existing handholes, conduit, and wiring.

- All lighting poles on the Project shall be designed to meet AASHTO LTS, latest edition, with the maximum weight and EPA of the luminaires, arms, ITS equipment, cameras, other luminaires, signs, or any other accessories deemed necessary to be mounted to the poles included in the calculations. Pole shop drawings must be signed and sealed by a Professional Engineer registered in the Commonwealth of Massachusetts.

4.14.7 Temporary Roadway Lighting

Temporary lighting throughout the project shall be provided as required by MassDOT Standard Specifications for staging the work (construction zones, lane drops, and crossovers) and to maintain existing lighting conditions. The Design-Builder shall identify and submit a listing of temporary lighting required throughout the project including limits of lighting and methods of meeting requirements. The Design-Builder shall be responsible to identify power source and layout conduit and wiring to feed the temporary lighting during construction phase.

Mounting height of luminaires and locations of light poles shall be designed by the Design-Builder to meet or exceed the MassDOT standard illumination requirements. Upon completion of the Project the temporary light poles assemblies and portable devices shall be removed.

Temporary pole design shall be submitted to MassDOT review and approval. Standard foundations and temporary poles shall be utilized, as required.

Based on the Design-Builder's approved final design, all Project areas that have final condition lighting shall be temporarily illuminated throughout construction until the final lighting is in-service.

4.15 MECHANICAL SYSTEMS

4.15.1 Fire Protection

4.15.1.1 General

4.15.1.1.1 Description of Existing Fire Protection System

There is no current fire standpipe system on the existing Bridge No. C-13-038 (OWR).

4.15.1.1.2 *Description of Proposed Fire Protection System*

The proposed fire standpipe system for the new Bridge No. C-13-038 (D1U) shall be a class 1, vertical, manual dry standpipe system. The system shall comply with Massachusetts Comprehensive Fire Safety Code for materials and installation. Dry standpipe fire system design and components shall meet the standards set forth in the National Fire Protection Association standards NFPA 13, NFPA 14, and NFPA 502.

The system shall consist of two independently located standpipes: one serving the I-391 northbound structure and one serving the I-391 southbound structure. Each standpipe shall be installed approximately at the midpoint of the overall structure length, at the fascia of each structure supporting I-391 northbound/southbound.

4.15.1.2 **Standpipe System Design Criteria**

4.15.1.2.1 *Standpipe System Performance*

The fire standpipe system shall be designed and installed by experienced and qualified staff regularly engaged in fire standpipe system design and installation. Materials shall be clearly marked or stamped with the manufacturer's name, rating, and conformance with ASTM standards, with corresponding standard number clearly marked, as applicable. Grooved joint fittings shall also be approved for fire protection service by an organization concerned with product evaluations for compliance with appropriate standards for production of listed items.

The standpipe system shall be designed to maintain a flow of 750 gallons/minute and a minimum of 100psi residual pressure at the hydraulically most remote location along the system.

4.15.1.2.2 *Standpipe and Fire Hose Valve Sizes*

The minimum pipe size for the bridge standpipes shall not be less than four inches in diameter.

4.15.1.3 **Standpipe System Installation Requirements**

4.15.1.3.1 *Fire Department Connections*

Each standpipe shall be provided with a fire department connection at both the upper level (I-391 roadway level) and the lower level (ground level adjacent to Route 116). Each fire department connection (FDC) shall be identified and signed in accordance with NFPA 502 and NFPA 14. Each FDC shall have signage that indicates it feeds a manual dry standpipe system and indicates the required pressure to deliver system demand. A listed check valve shall be installed directly downstream of the FDC. FDCs shall be installed so that they are not less than 18 inches and not more than 48 inches from finished grade. FDCs at the I-391 roadway level shall be installed in a manner which does not create a hazard for passing vehicles.

4.15.1.3.2 *Vacuum and Air Relief Valves*

If required, vacuum and air relief valves shall be located at all high points in the standpipe system. The vacuum and air relief valves shall be sized and installed per manufacturer requirements and recommendations.

4.15.1.3.3 *Isolation and Control Valves*

If required, all isolation and control valves in the system shall be locked in the open position. All standpipe branch lines shall be provided with accessible control valves.

4.15.1.3.4 *Piping*

All standpipe system piping shall be supported in accordance with NFPA 13 and all anchors and supports used shall also comply with NFPA 13 requirements. If required, seismic restraint of standpipe system piping shall be provided in accordance with NFPA 13. All standpipe piping shall be labeled and identified in accordance with NFPA 14 and NFPA 502. All standpipe system piping and components shall be located and installed to minimize damage from vehicle impacts. All piping shall be installed so that it is easily accessible for maintenance and inspection.

4.15.1.4 **Standpipe System Product and Material Requirements**

4.15.1.4.1 *UL Listings*

All standpipe system components for the project shall be UL listed for their intended use.

4.15.1.4.2 *Piping and Fittings*

Standpipes shall be welded or seamless hot-dipped galvanized steel pipe conforming to ASTM A53, Type S, Grade B, or ASTM A135, or ASTM A795, Schedule 40. Pipe ends shall be prepared with AWWA C606 cut grooves in accordance with coupling manufacturer's instructions. All galvanizing shall conform to the requirements of ASTM A123.

Standpipe fittings shall be ASTM A536 galvanized ductile iron with cut grooved end coupling joints, with dimensions matching steel pipe. Track bolts and heavy hex nuts for couplings shall be per ANSI/ASME B18.10 and B18.2.2.

Sealing gaskets shall have internal sealing lips projecting diagonally inward so the internal pressure serves to increase tightness of the seal when installed. Gaskets shall be Grade E Type EPDM, Type II Butyl, or equivalent synthetic rubber elastomeric material specifically suited for fire protection service.

4.15.1.4.3 *Couplings*

Couplings shall comply with AWWA C219, Bolted, Sleeve-Type Couplings for Plain-End Pipe, long body, same size as, with pressure rating at least equal to and ends compatible with, piping to be joined. Couplings shall have an interior and exterior coating per AWWA C210 or AWWA C213. Grooved end couplings, gaskets, and fittings shall be from the same manufacturer. All couplings and other devices necessary to complete the work shall be specifically manufactured for the purpose of the intended use, and shall be approved for use by the Engineer.

4.15.1.4.4 *Fire Department Connections*

Fire Department connection (FDC) shall be Storz 4" connection, brass body construction, bright aluminum finish, with drop clapper inlets, and NPT female outlets. Signage for FDCs shall be 14-inch x 20-inch steel, white/red reflective, with markings as approved by the Chicopee Fire Department. Outside screw and yoke (OS&Y) Gate Valves shall be provided. Valves shall be FM Approved and listed to meet UL 262 and be rated for 300 psi minimum. Body material to be cast or ductile iron or cast steel. End connections shall be flanged or grooved to match mating piping.

4.15.1.4.5 *Drain Valve*

Standpipe drain valve shall be brass body construction with non-rising stem, red iron hand wheel and brass cap and chain.

4.15.1.4.6 *Expansion Joints*

Flexible expansion joints shall be provided for the standpipe system as required to accommodate pipeline deflection and thermal movements (including from the bridge superstructure). Expansion joints shall be manufactured of ductile iron conforming to ASTM A536. Expansion joints shall be force-balanced type and rated for 300 psi. The force-balanced expansion joint shall not impart external axial thrust while under water pressure. The flexible expansion fitting shall not increase or decrease the internal water volume as the unit expands or contracts. The expansion joints shall be ball-and-socket type having a minimum allowable ball deflection of 20 degrees. Install expansion joints as shown on the Contract Drawings such that the angular and parallel misalignment of the connected pipes is within the expansion joint manufacturer's recommended range.

4.15.1.4.7 *Standpipe Support System*

Pipe hangers and supports shall be as shown on the drawings, designed for dynamic thrust, wind support and to provide allowance for thermal and bridge expansion criteria. The Contract Drawings do not depict all required supports or thrust restraints. Pipe hangers and supports shall be hot-dip galvanized in accordance with ASTM A153.

Contractor shall place supports to withstand shear and pullout loads imposed by pressure and trust loading from standpipe operation.

4.15.1.5 **Standpipe System Design Submittal Requirements**

4.15.1.5.1 *Drawings and Calculations*

The Design-Builder shall develop and submit, to MassDOT and the Chicopee Department, tier 1 construction documents per section 901.2.1 of 780CMR (Massachusetts building code) for the bridge standpipe system. The Design-Builder shall also develop hydraulic calculations for the bridge standpipe system in accordance with NFPA 14, NFPA 502, AHJ and Chicopee Fire Department requirements. The hydraulic calculations shall be signed and sealed by a qualified registered Professional Engineer.

The Design-Builder, prior to installation of standpipe system, shall develop fully coordinated shop drawings that shall contain at a minimum, detailed design layout of the system, equipment specifications, system sequence of operation and analysis to substantiate the design.

The Design-Builder is responsible for developing fluid delivery time calculations in accordance with NFPA 502, NFPA 14, and Chicopee Fire Department requirements. The fluid delivery time calculations shall be signed and sealed by a qualified registered Professional Engineer.

4.15.1.5.2 *Seismic Design*

The Design-Builder is responsible for determining the seismic design requirements for the bridge standpipe system. The Design-Builder shall develop a report detailing the seismic requirements pertaining to the standpipe system. This report shall be submitted to MassDOT and the Chicopee Fire Department for review and comment. If required the Design-Builder shall develop standpipe seismic bracing plans, details and calculations signed and sealed by a qualified registered Professional Engineer.

4.15.1.6 **Standpipe System Construction Requirements**

The bridge fire standpipe system shall be installed and constructed in a complete manner and shall include all of the components necessary to provide a complete and operable system which includes, but is not limited to, pipe, hangers, hardware, valves, enclosures, hardware, signage and other related equipment. The fire standpipe system must be installed and constructed with the requirements of all related performance specifications as applicable and required to provide and complete, and code compliant system.

4.15.1.7 **Standpipe System Commissioning Requirements**

The bridge fire suppression system shall be tested in accordance with the requirements of NFPA 14. The Design-Builder shall coordinate all standpipe system testing with the Chicopee Fire Department. The Design-Builder shall submit all test procedures and test reports to the Chicopee Fire Department office for review.

4.16 LANDSCAPE

4.16.1 Qualifications

The Design-Builder landscape design team shall include qualified professionals with demonstrated expertise for the successful completion of the project. The Design-Builder shall submit qualifications for review and approval by the MassDOT Landscape Architect. Qualified professionals to be included on the Design-Build team shall include:

- **Landscape Architect** - shall be a Registered Landscape Architect in Massachusetts with at least ten years of experience on projects of similar size and scope, including public transportation projects, park projects. Experience shall include construction detailing, planting design, knowledge of native plant materials, restoration planting, and stormwater control measures.
- **Graphic/Exhibit Designer** – Minimum of 5 years of experience developing artwork and managing production of interpretive panels and structural framework to hold exterior panel. Provide a minimum of 3 representative projects with images and references.
- **Arborist** - qualifications shall match requirements within Subitem 102.55 Arborist of the Special Provisions.
- **Invasive Plant Specialist** - qualifications shall match requirements within Subitem 102.3 Herbicide Treatment of Invasive Plants and Subitem 102.33 Invasive Plant Management Strategy of the Special Provisions.

4.16.2 Landscape Design - General

Preliminary Landscape Plans are provided in the Base Technical Concept (BTC). The Design-Builder shall develop the final landscape design in conformance with the Project's BTC, Draft BTC Special Provisions, and all applicable environmental clearances, permits, and approvals.

All landscape components and materials shall be in accordance with the current MassDOT Project Development and Design Guide (PDDG), current MassDOT Standard Specifications, provisions listed under MassDOT Landscape and Roadside Maintenance, including MassDOT Guidance, Landscape Design Special Provisions, Seed Mixes, Plant Care and Management, Invasive Plant Management, and Resources, all available on the Mass.gov website. <https://www.mass.gov/lists/landscape-design-and-roadside-maintenance>.

The 75% Highway Design Submittal, 100% Highway Design Submittal and Issued for Construction (IFC) Highway Design Landscape Plans and Special Provisions shall be submitted for approval by the MassDOT Landscape Architect. These plans shall meet or exceed the requirements set forth in the Standard Specifications and BTC Special Provision Requirements provided in Appendix C for specifications and forms. The landscape design shall be developed concurrently with the overall design of the Project, including roadway improvements, bridge and bridge components, other structures, pedestrian and bicycle pathways, gathering spaces, lighting, signage, stormwater control measures and environmental impact restoration. The design shall be coordinated with the horizontal and vertical geometry, existing land uses, existing right-of-way, existing easements and rights, grading, drainage, and layout of structures such as walls and piers.

4.16.3 Landscape Design – Goals and Objective

The landscape design shall be sustainable, economical, comfortable for all users, both day and night, and add aesthetic value to the City of Chicopee. The Design-Builder shall design and construct the landscape elements to assure long term vitality and durability.

The goal of the landscape design is to integrate the proposed Chicopee Bridge Preservation, C-13-038, I-391 over Chicopee Street (Route 116), associated roadways, adjacent Vietnam Veterans Memorial Park, Chicopee Street Business district, Rivers Park, the Connecticut River pathway, and other surrounding gathering spaces, pathways, stormwater elements, and landscape restoration areas, into an overall attractive, well-considered, landscape design within the Willimansett neighborhood in the City of Chicopee, Massachusetts. This Project design shall be:

- a. Versatile – serving multiple needs, users, and purposes.
- b. Functional – providing best management practices for multimodal transportation, civic gathering event design, and ecological enhancement.
- c. Durable – provide materials of high quality, able to perform well and stand the test of time.
- d. Cohesive – design aesthetics of the off-bridge elements shall complement the quality of the bridge design.
- e. Sustainable – improving and enhancing the natural environment, establishing plantings that are native to Massachusetts, low maintenance, self-sustaining, with restoration areas that look intentional.
- f. Culturally responsive – providing an asset and enhancement to the Willimansett neighborhood through renovation of the adjacent Vietnam Memorial Park, providing gathering areas and shared use path connection between the Connecticut River pathway and Rivers Park.
- g. Natural Resources sensitive – restoring and rehabilitating landscape areas damaged or compromised by construction or transportation improvements. To this end, the design shall:
 - Provide restoration of construction impacts, such as laydown and storage areas and the repair and revegetation of compacted soils related to former roadways and construction staging areas.
 - Provide removal and control of invasive plant species.
 - Provide support for the ecological web through the planting of keystone species such as oak trees and other regional pollinator species.

The landscape design shall integrate the proposed project into the existing site with naturalistic grading, such that slopes steeper than 2:1 are minimized or mitigated where possible, and intersections of graded vertical and horizontal planes are transitioned gently with rounded curves. Care with grading shall allow for ease of maintenance (i.e. mowing) and minimize the potential for soil erosion.

All bicycle, pedestrian, and shared use paths, as well as gathering spaces, pedestrian curb ramps and crossings, shall conform to Public Right-of-Way Accessibility Guidelines (PROWAG), in association with Americans with Disabilities Act (ADA), and Architectural Barriers Act (ABA).

All landscape elements shall be designed and installed considering vandalism and overall public safety. The Design-Builder shall review and coordinate all precautions associated with the landscape design with MassDOT and other relevant public entities. Design criteria may include but not be limited to the following:

- Protective or sacrificial sealants shall be provided for components subject to graffiti.
- Skateboard deterrence for edges and railings subject to skateboard abuse.
- Potential hideouts shall be minimized, circulation routes shall be well lit, and open site lines for visual transparency provided.

4.16.4 Landscape Hardscape Elements - General

Hardscape elements, include asphalt unit pavement, brick columns, ornamental steel fencing, site furnishings, and landscape lighting, may be described, coordinated, or referenced in one or more additional section(s) of this RFP, Appendices, and/or Special Provisions. The Design-Builder shall note all such Sections, Appendices, and Special Provisions, and ensure that the fabricated components/elements meet all specified requirements and intents described within this RFP. The Design-Builder shall note that all hardscape elements shown or described are conceptual but required to the minimum level shown, and it is within their responsibility to further develop, coordinate, design and ultimately install all such elements to the satisfaction and acceptance of MassDOT.

4.16.4.1 Asphalt Hexagonal Unit Pavement

The pavement in the Vietnam Veterans Memorial Park will be replaced with asphalt hexagonal unit pavers. The condition of the entire pavement base will be evaluated by the Design-Builder and MassDOT during construction and will either be restored as needed or replaced. Product materials and samples of proposed materials shall be submitted for acceptance by MassDOT Landscape Architect.

4.16.4.2 Stone Dust Walkways

Stone dust walkways will be installed along the inside of the existing brick columns in the Vietnam Veterans Memorial Park as shown in the drawings. Steel edging will be installed vertically and flush to the stone dust path finished grade along both sides of the path. The steel vertical edge should be a minimum of 6" below grade and set firm in distributed portions of subgrade concrete for stability.

4.16.4.3 Brick Columns and Virtual Vietnam Memorial website QR codes

Repairs to any of the brick columns and central planter in the Vietnam Veterans Memorial Park will match the finishes of the existing structures. Two brick columns to be reconstructed to match the existing columns.

4.16.4.4 Ornamental Steel Picket Fence and Steel Planting Bed Fence

The ornamental steel picket fence shall be black and 42" high located around the Vietnam Veterans Memorial Park, and under the bridge on the north side of Chicopee Street as shown on the drawings. Ornamental steel picket fence shall be made as described in the Special Provisions and shown in the Drawings. Fence posts at the fence ends by brick columns will be placed directly adjacent to a brick column.

The Steel Planting Bed Fence shall be black and 18" high located on the back (park) sides of the front planters at the Vietnam Memorial Park (ornamental fence will run along the remaining three sides of the front planters) and around the perimeter of the planting bed at Margaret and Chicopee streets. Locations are shown in the Drawings.

4.16.4.5 Site Furnishings

Sight furnishings shall be installed in accordance with the Special Provisions. The site furnishings shall be as follows:

Vietnam Veterans Memorial Park

- Six (6) steel and wood benches
- Two (2) Steel Trash Receptacle

Margaret & Chicopee Streets

- Four (4) Picnic Tables
- One (1) Steel Trash Receptacle

4.16.4.6 Accent and Pedestrian Site Lighting

Accent lighting will be on each brick column in the Vietnam Veterans Memorial Park. The pedestrian lighting will be along the HMA path extending under the bridge. All lighting will comply with DarkSky standards.

4.16.4.7 Lockable Hose Bib – Flush Mount Yard Hydrant

Lockable Hose Bid (Flush Mount Yard Hydrant) shall be installed at two (2) locations, and shall be lockable, flush, frost proof yard hydrant type, tapped into buried water supply pipes. Final locations shall be confirmed and accepted by the MassDOT Landscape Architect.

4.16.4.8 Form Liners for Bridge Piers

The default pattern for all other formed bridge pier surfaces shown on the BTC plans as requiring an architectural finish shall be cast using form liners manufactured by one of the following approved form liner manufacturers, or by other manufacturers as approved by MassDOT.

- Spec Liner Pattern #1319 Weathered Brick
- Custom Rock Pattern #5018 Running Bond Used Brick
- Sika Greenstreak Pattern #338 Rough Brick

4.16.4.9 Interpretive Panel for the ‘Y’ Business District

A 24” x 36” size color interpretive panel shall be designed to celebrate the ‘Y’ Business District that was a center of neighborhood life in this Willimansett section of the City of Chicopee. The panel shall have a balance of text, photographs, a locus map showing the past locations of these businesses, and convey a sense of community life during this period. The panel shall be mounted on a dark brown durable steel structure facing Chicopee Street in the planting bed on the corner of Chicopee and Margaret Streets as shown on the Drawings. All elements of the interpretive panel and structure design must be graffiti coated and approved by the project MassDOT Landscape Architect.

The ‘Y’ shape of the intersection of Chicopee and Meadow Streets gave the name to this Willimansett business district and many of the businesses throughout the 1930s into the 1950s. The ‘Y’ Business District held the Y Cash Market which was the beginning of the large regional grocery store chain Big Y. There was also the Y Garage, Y Café, Y Package Store, and the Y Barber Shop.

4.16.5 Landscape Softscape Elements – General

Planting design shall be informed and shaped by the roadway design and neighborhood context. Plantings shall be low maintenance, self-sustaining, shall expand native pollinator areas within the Project, and shall provide seasonal interest, wildlife value and an enjoyable visual experience. The goals of planting design shall be to:

- a. Repair and revegetate compacted soils such as areas of construction staging areas.
- b. Improve pollinator habitat, adding desirable pollinator plants.
- c. Furnish and install plantings consistent with the ability level and resources of the entity responsible for maintenance and care of the plantings.
- d. Identify, remove, and replace invasive plants existing on the project site through an invasive plant management strategy for removal and management during construction, and to replace areas of invasives with native pollinator species.

The design of the above goals shall be consistent with MassDOT Landscape PDDG and shall consider materials and procedures that restore and enhance local ecology and promote diversity of native species.

The Design-Builder landscape design team shall develop the design in conformance with the Project objectives as shown in all applicable environmental clearances/approvals.

Where appropriate to site conditions and context, and when feasible and available, native woody and herbaceous plant species should be native to EPA Level III Ecoregions of the Project area when possible and available. For this Project, that is 59 Northeastern Coastal Zone.

As specified in the Draft BTC Special Provisions, landscape restoration shall include an invasive plant management plan, and may require invasive plant control, which may require herbicide treatment and appropriate permitting.

4.16.5.1 Graded Mound by Existing Flagpoles

The existing graded mound holding the three flagpoles in the Vietnam Veterans Memorial Park will be recreated to match the existing landform in a location evenly spaced between the proposed path and the plaza pavement just southeast of their existing location.

4.16.5.2 Central Planer in Vietnam Veterans Memorial Park

Existing planting in the Vietnam Veterans Memorial Park shall be evaluated to determine which, if any, of the mature plants can be preserved and incorporated into the new plantings. The central planter shall be fully planted with medium to low shrubs, groundcovers and perennial species. With the exception of the Dwarf Korean Lilac, the proposed species shall be eco region specific and shall provide support for local pollinator species and ecological web while providing a variety of texture, color and sensory interest.

4.16.5.3 Preliminary Planting Plans

Preliminary Planting Plans show the level of expectation for the planting design with refinements anticipated within the progression of the overall project design. The Design-Builder shall develop designs to assure the intentions described herein are carried out for long term plant vitality and diversity of native plants and habitats. Final plant species selections and substitutions shall be coordinated with written acceptance by the MassDOT Landscape Architect. Planting and Establishment requirements shall be as per the MassDOT Special Provisions.

The Design-Builder shall be responsible for restoration of any existing areas impacted by construction activities. All disturbed areas shall be repaired, as directed by MassDOT. Repairs may include, but aren't limited to, soil stabilization measures, decompaction of soils, furnishing and installing loam and compost blanket, seeding or alternative treatments as noted on the plans.

The intent for all Plant Associations listed herein is to provide planting design flexibility while ensuring the plant species are native, diverse, appropriate to the site and provide the range of intended ecological functions. To promote genetic diversity, plants should be characterized as 'species' and the use of cultivars should be minimized. Plant species shall be native to the EPA Level 8.1.7 Ecoregion – Northeast Coastal Zone, Lower Worcester Plateau (Level IV).

Proposed planting design shall reflect the microclimates and site conditions for specific planting areas. Deviations from the listed plant species may be permitted with written approval from the MassDOT Landscape Architect. Plant substitutions shall be appropriate to the site conditions and design intent, in a quantity that is at least equal to the indicated quantity. The plants selected may be chosen based on ultimate size, habit, soil moisture, solar exposure, salt exposure, slope, as well as the intended ecological function. The design intent for the planting beds is to provide full coverage when installed to limit the development of weeds and invasive species. The final planting design shall provide for protection of installed plants during long-term maintenance. For planted areas, the design shall provide means for defining and marking no-mow areas or areas where new, small young plants require protection during maintenance to prevent accidental mowing. Protection strategies may include MassDOT's tree and plant protection fencing.

4.16.5.4 Landscape Site Preparation

The Design-Builder's landscape design team shall develop methods of preparing substrates, installation procedures, erosion control procedures and maintenance procedures that will result in healthy full ground coverage of the specified plant species. Final design plans shall provide details and locations for the materials and procedures used to provide short term erosion control and long-term establishment of the specified seed mixes.

4.16.5.4.1 *Tree Protection*

The Design-Builder shall include TPPZ limits and Tree Protection Special Provisions within the 75%, 100%, and IFC documentation. Special Provisions shall include armoring and pruning, air excavation and root pruning, as well as tree root and soil protection, describing measures based upon site conditions, anticipated construction activity, duration of use, and appropriateness based upon anticipated soil loads, for submission to and approval by MassDOT. The Arborist shall create an inventory of existing trees, perform a health evaluation, provide recommendations to retain or remove, and provide appropriate tree protection measures.

The Design-Builder shall note that there are many significant trees both inside and within proximity of the limit of work that will require protection. The TPPZ barrier shall be regularly monitored and righted as needed throughout the project duration to avoid accidental intrusion.

4.16.5.4.2 *Invasive Plant Management*

The Design-Builder shall develop an Invasive Plant Management Strategy to manage invasive plant species on site and prohibit the transport of invasive plant species infested soils to non-affected areas on site or other offsite areas. This report, prepared by an approved Invasive Plant Specialist, shall be approved prior to onset of construction. Refer to Section 4.17 for Invasive Plant Management Requirements.

4.16.5.4.3 *Soil Decompanction*

Soils of laydown, stockpile, work areas, temporary roadway are often compacted, a condition which affects both water infiltration and root growth of desired vegetation. A general restoration procedure based on compaction and desired percolation rates can be found in the Special Provisions. The Design-Builder shall provide written soil decompaction plan with recommendations and procedures.

4.16.5.4.4 *No Disturb Areas*

While the Design-Builder will need many of the unpaved areas for laydown and staging, there are likely to be areas that will not be useful for construction yet have landscape value. The disturbance limits shown on plans are estimates. Once the Design-Builder has developed preliminary plans, the Design-Builder shall walk the site with MassDOT to confirm/identify revised limits and these shall be marked with staking and or fencing as specified herein.

4.16.5.4.5 *Storm Water Control*

Appropriate storm water mitigation controls shall be used across slopes to prevent erosion and slow stormwater runoff downslope. The primary objective is to provide immediate and long-term slope stabilization. Solutions shall include planting and bioengineering methods. Specific methods may vary depending on site conditions and time of year for install.

4.16.5.5 Plant Materials

The Design-Builder shall provide the trees, shrubs, and perennials as specified in the Project drawings for the Project. Other planting locations and species selections can be developed by the Design-Builder Landscape Architect. Should substitutions be required, preference will be given for the use of straight species however, exceptions may be permitted with written acceptance by MassDOT Landscape Architect. Dwarf cultivars may be considered in limited circumstances such as maintaining lines of sight and also, with written acceptance by MassDOT Landscape Architect. Where mulch is used, it should be aged pine bark mulch.

The on-ground treatment shall be individual tree pits and mulch rings as detailed in the BTC. Care shall be taken to identify easements, underground and overhead utilities. Smaller ornamental trees shall be used where overhead wires are present. Trees shall not obscure street lighting or signage and shall not be planted over underground utilities. Trees shall not be planted within the offsets below.

- Typical 6-foot setback and minimum of 4-foot setback from back of curb.
- Minimum of 3-foot setback from bicycle, pedestrian paths, SUP's, guardrails, and retaining walls.
- Minimum of 10-foot setback from utility poles. Note that smaller trees, less than thirty feet (30') mature height, may be planted below overhead utility lines. Planting shall consider clearances from mature plant spread and height relative to underground and overhead utilities. See National Grid Forestry Clearance Standards figure in Appendix C.12.

Tree branching shall allow for an eighty inch (80") vertical clearance adjacent to pedestrian paths and one hundred inch (100") vertical clearance adjacent to bicycle paths or SUP's.

Native seed mixes shall be as specified in the BTC Special Provision 765-4. Special provisions materials for seed mixes are available on the MassDOT Landscape Design and Roadside Maintenance website. <https://www.mass.gov/lists/landscape-design-and-roadside-maintenance>. Specific seed mixes shall be selected based on site conditions, such as site context, long term maintenance needs, solar orientation, slope, soil moisture and soil composition.

4.16.5.6 Maintenance of Plantings and Seeded Areas

Refer to the Special Provision for Subitem 765.635 Native Seed Establishment for best maintenance practices for seed installation. See MassDOT Landscape Design and Roadside Maintenance website also for guidance regarding basic plant care and establishment of native seed mixes: <https://www.mass.gov/lists/landscape-design-and-roadside-maintenance>.

4.16.5.7 Landscape Special Provisions

The Design-Builder shall be mindful of submittals included within the MassDOT Landscape Special Provisions and shall consider such provisions as an integral part of this RFP document and the BTC. As the Project develops additional Special Provisions may be required.

The Design-Builder shall provide Special Provisions for elements not listed within Appendix C.09, such as site furnishing elements including but not limited to benches, bike racks, ornamental steel fence etc.

4.16.5.8 Landscape Deliverables – Partial List

Pre-construction

- Landscape design plans and quantity estimates as required.
- All submittals as required in MassDOT Standard Specifications and BTC Special Provisions.
- Decompaction plan for site restoration of compacted areas.
- Recommended maintenance plan for all hardscape elements and landscape areas. Plan shall include graffiti mitigation as required. Maintenance plan shall be reviewed and accepted prior to the completion of the Project.

During Construction

- The Design-Builder shall submit a landscape maintenance plan including schedule of watering, weeding, mowing, and all necessary activities to ensure healthy establishment of area planting types at the commencement of the plant establishment period.
- Submit Spring and Fall seasonal reports on planted area conditions and recommended correction as may be required for the duration of the plant establishment period.
- Submit seasonal reports for invasive plant management for the duration of the contract.

Post Construction

- Submit as-built plans.

4.17 INVASIVE PLANT SPECIES AND INFESTED SOIL MANAGEMENT

The Design-Builder is required to develop an Invasive Plant Management Strategy (IPMS) to eradicate invasive plant species and noxious plants on site, as well as to prohibit the transport of invasive plant species infested soils to non-affected areas on site or other offsite areas. This report, prepared by an approved Invasive Plant Specialist, shall be approved prior to onset of construction. Refer to MassDOT BTC Special Provisions for Invasive Plant Management Strategy and Herbicide Treatment of Invasive Plants in Appendix C.

Poison Ivy (*Toxicodendron radicans*) shall be included in the IPMS. The IPMS will also prohibit the transport of Invasive Plant species infested soils to non-affected areas on site or other offsite areas. Invasive Plant treatment shall be for the entire project duration and as approved in the Invasive Plant Management Strategy.

75% Highway Design Submittal, 100% Highway Design Submittal and IFC Highway Design submittal Landscape Plans and Special Provisions shall be submitted for acceptance by the MassDOT Landscape Architect. Work under these items shall meet or exceed the requirements set forth in the Draft BTC Special Provision provided in Appendix C.

Treatment of invasive plants shall be conducted in accordance with Subitem 102.3 Herbicide Treatment for Invasive Plants and Subitem 102.33 Invasive Plant Management Strategy. Invasive Plant growth shall be monitored following treatment and re-delineated for continuing treatment for the project duration.

All soils in areas that have been treated under Subitem 102.3 Herbicide Treatment for Invasive Plants and are subsequently scheduled for excavation shall be considered suitable for reuse contingent on the Engineer's determination that no evidence of invasive plant growth or propagation has been documented in the area to be excavated for the 6-month period prior to excavation.

Any loam sourced off-site shall be inspected at its source to check for the presence of invasive species prior to delivery.

If Invasive Plant growth or propagation is discovered in treated areas immediately prior to scheduled excavation for stockpiling for reuse despite having been treated according to the approved IPMS, then the excavated soil shall be segregated from successfully treated excavated soil prior to reuse on site. All construction schedule submissions shall include line items for work related to management of segregated excavated soil with the intent that temporary stockpile locations will be identified and reserved on the project to the maximum extent possible without affecting other work. Infested, segregated stockpiles shall be treated according to Subitem 102.3 Herbicide Treatment for Invasive Plants, for subsequent reuse when there is no evidence of invasive plant propagation for 6-months. All stockpiles of infested soil shall be managed for the duration of the contract in accordance with these requirements and requirements in the SWPPP.

When stockpiling of infested segregated soil on site cannot be accommodated according to the submitted construction schedule, then the infested segregated soil shall be hauled and stockpiled at a location approved in the IPMS and managed for 6-months as stipulated above prior to re-use. MassDOT does not require herbicide treatment of infested soils prior to removal for offsite disposal.

SECTION 5.0: ENVIRONMENTAL APPROVALS/ CLEARANCES, COMPLIANCE, MITIGATION

5.1 GENERAL STATEMENTS

Federal and State jurisdictional wetland resources documented near the Project area include but are not limited to: Land Under Water, Riverfront, Bank, Bordering Land Subject to Flooding and the buffer zone to various resource areas. The Connecticut River is designated habitat for several species however the project does not directly impact open water.

The Project Area is not located within the mapped boundaries of any state-designated Area of Critical Environmental Concern (ACEC), which are places in Massachusetts that receive special recognition because of the quality, uniqueness and significance of their natural and cultural resources. The Project is located adjacent to priority and estimated habitats of Massachusetts listed species of concern (PH 2084 and EH 1319, within the Connecticut River).

It is the responsibility of the Design-Builder, in coordination with MassDOT, to obtain all required Environmental Approvals/Clearances to the extent not already obtained by or on behalf of MassDOT as described in Section 5.2. The Design-Builder will be required to prepare all documentation required for any application for any such Environmental Approval/Clearance or any amendment to any such Environmental Approval/Clearance. The Design-Builder is also responsible for the preparation of all documentation required to satisfy any conditions to the Design-Builder's scope of work contained in Environmental Approvals/Clearances or amended Environmental Approvals/Clearances prior to the start of work and/or following the completion of work, as directed by the applicable condition.

The Design-Builder is responsible for complying with: (a) all conditions and schedules in any Environmental Approvals/Clearances, whether obtained by MassDOT or the Design-Builder, and (b) all applicable Environmental Laws and Policies. Failure to comply with conditions or schedules in the Environmental Approvals/Clearances will be grounds for termination hereof.

The Design-Builder shall be responsible for all costs, liability, penalties, expenses, damages, including economic, property, natural resource and personal injury, or delays resulting from any non-compliance with Environmental Approvals/Clearances.

The Design-Builder is encouraged to engage with MassDOT and the regulatory agencies to ensure that its designs will be acceptable from an environmental perspective. The coordination process is described in Section 5.4. MassDOT takes no responsibility for any time delay or cost associated with submissions that are refused, rejected, conditioned or modified by MassDOT or any regulatory agency or for any redesigns such agencies or MassDOT may require.

5.2 CONSTRUCTION-RELATED PERMITS AND ENVIRONMENTAL APPROVALS/CLEARANCES TO BE OBTAINED BY THE DESIGN-BUILDER

The Design-Builder will be responsible for obtaining all construction-related permits as well as any amendments to the permits already obtained, if needed due to design changes.

The Design-Builder will be responsible for obtaining the following construction-related permit(s):

- National Pollution Discharge Elimination System (NPDES) – General Permit for Stormwater Discharges from Construction Activities (CGP), U.S. Environmental Protection Agency.

Note: As of the date of this RFP, dewatering of contaminated groundwater may be required; however, this shall be confirmed by the Design-Builder. The Design-Builder will be responsible for obtaining the appropriate approvals under the US Environmental Protection Agency's NPDES program as required. (e.g. including but not limited to the Remediation Dewatering General Permit). Discharge of uncontaminated and non-turbid groundwater is allowed in accordance with the conditions of the CGP.

5.2.1 NPDES Construction General Permit

The Project is subject to the Environmental Protection Agency (EPA) Construction General Permit. Pursuant to the Federal Clean Water Act, construction activities which disturb one acre or more of land are required to apply to the U.S Environmental Protection Agency (EPA) for coverage under the NPDES General Permit for Storm Water Discharges from Construction Activities. On January 18, 2022 (87 FR 3522), EPA signed its 2022 Construction General Permit (CGP) for stormwater discharges from construction activities. The 2022 CGP, which became effective on February 17, 2022, replaces the 2017 CGP. The CGP expires on February 16, 2027.

The NPDES CGP requires all “Operators” including MassDOT (as owner with operational control over construction plans and specifications) and the Design-Builder (as party with day-to-day control of those activities at a project that are necessary to ensure compliance with the permit conditions) to electronically submit Notice of Intents (NOIs) to the EPA prior to the start of construction (defined as any earth-disturbing activity including clearing, grading, excavation, grubbing, and/or other related activities, such as stockpiling of fill material or demolition that could lead to the generation of pollutants). In cases where a municipality or other party be classified as an “Operator”, said Municipality or party must also submit a NOI. The Design-Builder is responsible to ensure that all required “Operators” have submitted an NOI and shall provide proof of same to the MassDOT prior to the start of any work.

The CGP requires preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP) in accordance with the provisions of the Federal Clean Water Act. The SWPPP shall include the NPDES CGP conditions and detailed descriptions of stormwater controls, erosion and sedimentation controls, pollution prevention controls, and construction dewatering controls to be implemented during construction. It is the responsibility of the Design-Builder to complete the SWPPP, provide all information required, and obtain all certifications, as required by the CGP. Any amendments to the SWPPP required by site conditions, schedule changes, revised work, construction methodologies, and the like are the responsibility of the Contractor, and require the approval of the Engineer prior to implementation. For all projects subject to regulation under the Massachusetts Wetlands Protection Act Stormwater Management Standards, DEP requires submission of a Construction Pollution Prevention Plan (CP/PP) for review and approval. DEP allows for a combined CP/PP and SWPPP submittal, provided DEP's and EPA's filing requirements are followed. Note that the project is exempt from the Wetlands Protection Act as a provision of the Bridge Exempt status therefore DEP approval of a CP/PPP is not anticipated to be required. It is the responsibility of the Design-Builder to comply with the current CGP conditions and the conditions of any state Wetlands Protection Act Order, DEP 401 Water Quality Certification, Army Corps of Engineers Section 404 General Permit and other environmental permits applicable to the Project; including the SWPPP, and the methods and means necessary to comply with applicable conditions of said permits.

Included in the current CGP conditions, is the requirement for inspection of all erosion controls and site conditions on a weekly basis as well as within 24 hours of the occurrence of a storm event of 0.25 inches or greater, or the occurrence of runoff from snowmelt sufficient to cause a discharge or the occurrence of runoff from snowmelt from a storm event that produces 3.25 inches or more of snow within a 24-hour period.

The 2022 CGP includes new turbidity monitoring requirements and discharge sampling requirements. Activities required to comply with these requirements should be included in the construction schedule. MassDOT will not allow delay claims associated with these or any other CGP requirements.

The Design-Builder shall choose a qualified individual (herein after referred to as the "SWPP Inspector") who will be on-site during construction to perform these inspections. MassDOT must approve the Design-Builder's SWPP Inspector. In addition, if MassDOT determines at any time that the SWPP Inspector's performance is inadequate, the Design-Builder shall provide an alternate SWPP Inspector within three (3) calendar days. Written weekly inspection forms, and Monthly Summary Reports must be completed and provided to the Engineer within seven (7) calendar days of the conclusion of the event. Monthly Summary Reports must include a summary of construction activities undertaken during the reporting period, general site conditions, erosion control maintenance and corrective actions taken, the anticipated schedule of construction activities for the next reporting period, any SWPPP amendments, and representative photographs.

The Design-Builder is responsible for preparation of the SWPPP, including all related certifications, inspections, reports and any corrective actions necessary to comply with the provisions of the NPDES CGP. Any amendments to the SWPPP required by site conditions, schedule changes, revised work, construction methodologies, or regulatory changes are the responsibility of the Design-Builder and require the approval of MassDOT prior to implementation. The Design-Builder shall provide MassDOT with at least five (5) copies of all documents associated with the SWPPP including, but not limited to, the final approved SWPPP, required SWPPP amendments (including revisions/addenda pre, during and post- construction), certifications, NOIs, Notices of Terminations (NOT's), Weekly Inspection forms, Storm Event Inspection forms, Monthly Summary reports (including photographs). These are to be distributed by the Design-Builder to MassDOT's Construction Engineer, Area Engineer, Resident Engineer, MassDOT's Environmental Engineer, and Construction Environmental Coordinator. Additional copies are to be provided by the Design-Builder if requested by the MassDOT. Work associated with performance of inspections of all erosion/sediment controls and site conditions is considered incidental to this Item.

Refer to Draft BTC Special Provision Subitem 756 for additional requirements. The Design Builder shall submit proof of any training required under Subitem 756 to the Engineer for review and approval before commencing any work.

The Standard Specifications require adequate erosion/sediment controls and pollution protection practices for the duration of the Contract. Inspection of these controls is considered incidental to the applicable items. Additional erosion/sediment controls and pollution prevention practices beyond those specified in the RFP documents which are selected by the Design-Builder to facilitate and/or address the Design-Builder's schedule, methods, and prosecution of the work shall be considered incidental to this item. The NPDES CGP requires the submission of a Notice of Termination (NOT) from all "Operators" when final stabilization has been achieved, as well as removal and proper disposal of all construction materials, waste and waste handling devices, removal of all equipment and construction vehicles, removal of all temporary stormwater controls, etc. Approval of final stabilization by MassDOT and confirmation of submission of the NOT will be required prior to submission of the Resident Engineer's Final Estimate.

5.3 ENVIRONMENTAL APPROVALS/CLEARANCES TO BE PROVIDED BY MASSDOT

Environmental permits, approvals and clearances have been coordinated and received throughout the preliminary design phase. The Design-Builder acknowledges that any Environmental Permit or Approval provided by MassDOT is based on the Project's Base Technical Concept (BTC) as presented in the application materials and that the Environmental Permits/Approvals/Clearances may require amendment or additional coordination as the design progresses. The Design-Builder, in coordination with MassDOT, shall be responsible for obtaining all such amendments to Environmental Permits/Approvals/Clearances necessitated by the Design-Builder's work. Coordination with regulators will occur as described in Section 5.4. The Design-Builder, in coordination with MassDOT, shall be responsible for ensuring compliance with conditions and schedules regarding the amendment of any Environmental Permit/Approval. The most current copies of the applications are provided in Appendix C. Table 1 provides a status summary of all applicable procedural regulatory reviews and environmental Permits based on the Project's Base Technical Concept (BTC).

Table 1: Summary of Applicable Procedural Regulatory Reviews and Environmental Permits as of March 2026

Federal		
Regulation/Administering Agency	Category	Status
National Environmental Policy Act (NEPA)/ Federal Highway Administration	Individual Categorical Exclusion (CE)	PENDING
Section 106 of the National Historic Preservation Act of 1966 / State Historic Preservation Officer	Consultation	Cleared on 2/25/2026
US Army Corps of Engineers	Section 404 Pre-Construction Notification (PCN)	N/A
Section 7 of the Federal Endangered Species Act/U.S. Fish and Wildlife Service	Northern-long eared bat (NLEB) , Tricolored Bat, Monarch Butterfly Consultation	USFWS letter issued 12/01/25. Guidance and requirements are included in the RFP
United States Coast Guard	Bridge Permit	N/A
State		
Regulation/Issuing Agency	Category	Status
Massachusetts Environmental Policy Act (MEPA)/ Massachusetts Executive Office of Energy and Environmental Affairs	Environmental Notification Form (ENF) and mandatory Environmental Impact Report (EIR)	Project qualifies as a functional equivalent of existing infrastructure and is exempt from MEPA
Massachusetts Endangered Species Act/ Natural Heritage Endangered Species Program (NHESP)	Coordination for Regulatory Review Determination	N/A
401 Water Quality Certification (WQC) / Massachusetts Department of Environmental Protection (MassDEP)	401 Water Quality Certificate – Major Fill and Excavation and Dredge Project	N/A
MassDEP (Waterways)	Chapter 91 Licensing	Exempt – No Action Required
MA Wetlands Protection Act / Chicopee Conservation Commission	Order of Conditions	Exempt – (Courtesy Letter to be sent by Design-Builder prior to Construction)

The Design-Builder must ensure there are no impacts to wetland resource areas beyond those approved by permitting authorities. Any deviations from the approved permitted areas will require additional regulatory review and approval will be at the responsibility of the Design-Builder. The Design-Builder shall not work in, alter, impact or disturb any wetland resource area other than those areas of proposed impacts as designated and depicted within the applicable permit applications and permitted by the regulatory agencies. Unpermitted wetland impacts shall be avoided through worker isolation techniques including permanent and temporary chain link fence, sedimentation fence, haybales, and limit of work signage, erosion control barriers, fencing and signage shall delineate the permitted work areas.

The Design-Builder shall utilize upland areas within state and city highway layouts for staging or laydown area. If the Design-Builder chooses to create staging areas outside of the state or city highway layouts, the Design-Builder shall delineate all environmental resource areas adjacent to such staging areas, and must isolate such environmental resource areas from staging areas with orange snow fence, compost filter tubes and limit of work signage. The creation of staging areas outside of the state or city highway layouts will not result in any wetland resource area impact beyond those permitted within the applicable environmental permits; such applies to the entire project area, including any additional areas chosen by the Design-Builder for staging access and/or construction access.

5.3.1 National Environmental Policy Act (NEPA)

The Project is subject to the National Environmental Policy Act. The Massachusetts Department of Transportation (MassDOT) prepared a Categorical Exclusion (CE) Checklist for the Project. Based on the information prepared, the Project qualifies as a Individual CE. A copy of the CE Checklist, with supporting documentation, is provided in Appendix C.

The Design-Builder is encouraged to take specific consideration of the circumstances during final design and construction that may trigger the need to reevaluate approved NEPA documentation, including but not limited to:

- Changes in project engineering or design (e.g., shifting or modifying the project footprint, or modifying project termini)
- Changes in affected environment or circumstances (e.g., designation of new threatened or endangered species, which has the potential to inhabit the project area)
- Changes in required right-of-way (ROW) or easements
- Changes in nature and severity of environmental impacts due to changes in project design or changes in the affected environment
- Changes to environmental commitments (e.g., avoidance, minimization, and/or mitigation measures)

Project changes may require field review and additional analyses to evaluate the environmental implications of the change. Additional analysis can be incorporated into the reevaluation to demonstrate that the approved NEPA document remains valid. The Design-Builder shall consult with the Resident Engineer and MassDOT Environmental Services to ensure necessary regulatory reviews are conducted and that NEPA reevaluations are properly documented during final design and construction. The Design-Builder, in coordination with MassDOT, shall be responsible for documentation of the reevaluation process necessitated by the Design-Builder's work.

5.3.2 Section 106 of the National Historic Preservation Act

The Project has been reviewed pursuant to Section 106 of the National Historic Preservation Act by the MassDOT Cultural Resources Unit (CRU). Based on the review, CRU and FHWA determined that the Project would not result in any adverse effect to any historic eligible resources. Section 106 documentation is provided in the CE Checklist in Appendix C.

Any substantial changes to the proposed bridge design, particularly the aesthetics of the bridge, will need to be reviewed by the MassDOT Cultural Resources Unit, and may need further approval by the SHPO.

5.3.3 Section 404 of the Clean Water Act

[**THIS SECTION NOT APPLICABLE**]

5.3.4 Section 6(f)

The Project has been reviewed pursuant to Section 6(f) of the Land and Water Conservation Act. Any construction activity located within the LWCF Grant Boundary of the Rivers Street Park to support bridge construction is considered a non-conforming use of the LWCF area. Once the Design-Builder begins non-conforming work within the temporary easement located at the Rivers Street Park, all work associated with the non-conforming use shall be completed and the site fully restored to the existing conditions within six (6) months. This includes, but is not limited to, grading, tree plantings and seeding within the temporary easement. Construction fencing shall be placed around the area of non-conforming use to minimize impacts to adjacent LWCF area. The Design Build Team shall identify the proposed non-conforming work in their baseline schedule with a specific start and stop date of non-conforming work and restoration clearly identified showing that all work will be completed within a continuous six (6) month duration.

Reporting of the conditions during the six (6) month time frame will be required, which will include, but is not limited to, photo documentation of the area prior to work and following restoration of the area. The Design-Builder shall coordinate with and provide MassDOT all information required by the National Parks Service.

5.3.5 Section 7 of the Endangered Species Act

5.3.5.1 Northern Long-Eared Bat Protection

The northern long-eared bat (*Myotis septentrionalis*; NLEB) and tricolored bat (*Perimyotis subflavus*; TCB) are listed as federally endangered or proposed threatened, respectfully, under the Endangered Species Act (ESA). The U.S. Fish and Wildlife Service (USFWS) developed this guidance to address ESA compliance and promote conservation of NLEB and TCB. This project has been consulted with the USFWS through the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), and Federal Transit Administration (FTA) Programmatic Biological Opinion for Transportation Projects in the Range of the Indiana Bat and Northern Long-Eared Bat dated December 13, 2024.

On June 11, 2025, the MassDOT Highway Division Environmental Services, conducted a northern long-eared bat summer presence/absence survey using acoustic detection methods, in accordance with the 2024 survey guidelines. The survey did not confirm the presence of NLEB and/or TCB, and as stated within the survey guidelines, the survey is valid for five years. Due to the 5-year validity of the negative presence/absence survey, it is recommended that the contractor conduct all activities that could result in stressors to the bats such as tree removal/trimming, lighting, or use of percussive equipment, by June 11th, 2030. If additional stressor producing work is proposed by the Contractor past this date, additional review is required by the MassDOT Highway Division's Environmental Services Section, and additional review and restrictions may be required by the USFWS.

Due to the negative survey results, the Project is eligible for a May Affect, Not Likely to Adversely Affect (NLAA) determination, with Avoidance and Minimizations Measures (AMMs), in accordance with the FHWA, FRA and FTA Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat. On behalf of FHWA, the lead federal agency for Section 7 consultation, MassDOT submitted a Programmatic Consultation for Transportation Projects affecting NLEB or Indiana Bat to the USFWS through the Information for Planning and Consultation (IPaC) webpage and generated a NLAA documentation letter (see USFWS NLAA document in Appendix C.04). Therefore, the Project has completed Section 7 consultation through the Endangered Species Act, and the AMMs listed below.

In advance of the uplisting of the TCB to endangered under the ESA, the following Avoidance and Minimization Measures (AMMs) must be strictly adhered to in order to protect NLEB and TCB and to be in compliance with the ESA. Contact MassDOT Environmental Services - Wildlife Unit Supervisor for questions about project limits, restrictions, or conservation measures.

General AMM

- The Contractor shall ensure all personnel working in on the project site are aware of all environmental commitments related to NLEB and TCB, including all applicable AMMs, NLEB and TCB information shall be made available to all personnel.
 - <https://www.fws.gov/midwest/endangered/mammals/nleb/>
 - <https://www.fws.gov/species/tricolored-bat-perimyotis-subflavus>
- On 6/11/2025, MassDOT Highway Division Environmental Services conducted a northern long-eared bat summer presence/absence survey, in accordance with the 2024 survey guidelines. The survey did not confirm the presence of NLEB and/or TCB. If work is proposed by the Contractor past 6/11/2030, additional review is required by the MassDOT Highway Division's Environmental Services Section, and additional review and restrictions may be required by the USFWS.

Tree Removal AMMs

- *If additional cutting is proposed by the Contractor that is outside the scope of this contract, additional review is required by the MassDOT Highway Division's Environmental Services Section, and additional review and restrictions may be required by the USFWS.*

Bridge AMM

- On 6/11/2025, MassDOT Highway Division Environmental Services, conducted a northern long-eared bat bridge/structure bat assessment, in accordance with the USFWS guidelines. The assessment did not find presence of, or evidence of use by bats, and as stated within the guidelines, the assessment is valid for two years. If bridge work is not complete before 6/11/2027, assessment of the bridge for the presence of, or evidence of use by, bats shall be completed by the MassDOT Wildlife Unit prior to continuing bridge work. The Contractor shall notify the MassDOT Wildlife Unit no later than fourteen (14) days prior to 6/11/2027 to provide adequate time for inspection. If bats are found to be present, or, if there is evidence of bat usage, work at the bridge shall not commence until after the MassDOT Wildlife Unit has completed coordination with the US Fish and Wildlife Service to determine the appropriate follow up or mitigation actions.

5.3.5.2 Anadromous Fish Protection

[**THIS SECTION NOT APPLICABLE**]

5.3.5.2.1 *Essential Fish Habitat Protection*

[**THIS SECTION NOT APPLICABLE**]

5.3.6 Massachusetts Environmental Policy Act (MEPA)

[**THIS SECTION NOT APPLICABLE**]

5.3.7 Chapter 91 of the Public Waterfront Act

[**THIS SECTION NOT APPLICABLE**]

5.3.8 401 Water Quality Certification (Major Fill/Excavation)

[**THIS SECTION NOT APPLICABLE**]

5.3.9 401 Water Quality Certification (Major Dredge)

[**THIS SECTION NOT APPLICABLE**]

5.3.10 Massachusetts Endangered Species Act

[**THIS SECTION NOT APPLICABLE**]

5.3.11 Massachusetts Wetlands Protection Act

[**THIS SECTION NOT APPLICABLE**]

5.3.12 United States Coast Guard – Bridge Permit

[**THIS SECTION NOT APPLICABLE**]

5.4 COORDINATION BETWEEN THE DESIGN-BUILDER, MASSDOT AND REGULATORY AGENCIES

MassDOT will serve as the applicant of record for all Environmental Approvals/Clearances. MassDOT will review all applications for Environmental Approvals or amendments prepared by the Design-Builder, sign as the applicant and submit the application to the agency with jurisdiction.

The Design-Builder shall be responsible for preparing all documentation necessary to support applications for Environmental Approvals. MassDOT shall be provided a reasonable opportunity to review and comment on completed applications for Environmental Approvals prior to their submission.

MassDOT will serve as liaison between the Design-Builder and regulatory agencies. The Design-Builder is encouraged to establish a working relationship with the regulatory agencies and MassDOT. The Design-Builder shall not be authorized to negotiate with regulatory agencies on behalf of MassDOT but shall coordinate all negotiations with MassDOT.

The Design-Builder shall prepare the following materials for MassDOT to review, approve, and submit as necessary to agency with jurisdiction:

- Verification of training under MassDOT Erosion Prevention & Sediment Control Training Program
- NOI and SWPPP for submission to EPA

5.5 DUTY OF COMPLIANCE

The Design-Builder is responsible at all times for complying with: (a) all conditions and schedules in any Environmental Approvals/Clearances, whether obtained by MassDOT or the Design-Builder; and (b) all applicable Environmental Laws and Regulations. Failure to comply with conditions or schedules in Environmental Approvals/Clearances may be grounds for termination thereof. The Design-Builder shall be responsible for any and all costs, liability, penalties, expenses, damages, including economic, property, natural resource and personal injury, or delays resulting from any noncompliance with Environmental Approvals/Clearances.

5.6 ENVIRONMENTAL MITIGATION

In the event that impacts to wetland resources, protected habitats, or cultural resources beyond those permitted in the BTC are determined to be unavoidable, the Design-Builder is responsible for preparing all designs and specifications for environmental mitigation and for complying with all mitigation requirements and schedules contained in Environmental Approvals/Clearances, including requirements for noise control, water quality monitoring, and precautions for construction adjacent to “sensitive resource areas”. As of the date of this RFP, it is assumed that no work will occur in State or Federally regulated wetland resource areas.

Public involvement and communications are very important aspects of this Project’s development and construction phases. MassDOT has conducted extensive public outreach for this Project with the general public, abutters, local elected officials, local municipalities, local historical commissions, Federal and State agencies, and adjacent business owners.

The Design-Builder will be responsible for all mitigation commitments and permit conditions established in the aforementioned permits and approvals, and during the extensive public outreach process. In addition to those items already mentioned herein, this shall include but not be limited to:

- Adherence to the Construction Noise Control and Construction Dust Control Draft BTC Special Provisions provided in Appendix C.
- Adherence to contract restrictions on parking in residential neighborhoods and routing truck traffic through residential neighborhoods.
- Construction of Stormwater Control Measures (SCMs).
- Submission of a Temporary Traffic Control Plan (TTCP) to MassDOT for review and approval. The TTCP will be coordinated with the elected, engineering, planning, and public safety officials in the affected Cities of Chicopee and Holyoke.
- Adherence to the public involvement plan prepared by MassDOT’s outreach consultant and accepted by the agency. This plan will be shared with the Design-Builder during the drafting process. Submission of a Soil and Groundwater Management Plan for review and acceptance by MassDOT.

The mitigation commitments described below shall not be considered all-inclusive and shall be in addition to the requirements described in other Sections of the RFP.

5.6.1 Water Resources

Construction period impacts to water resources will be limited by the adherence to the project erosion and sedimentation control plans as well as the Best Management Practices detailed in the BTC.

5.6.2 Wetland Resource Area Mitigation

[**THIS SECTION NOT APPLICABLE**]

5.6.3 Streambed Restoration

[**THIS SECTION NOT APPLICABLE**]

5.6.4 Invasive Insect Pests

As part of its environmental obligations, the Design-Builder shall be responsible for notifying Massachusetts Department of Agricultural Resources (MDAR) of construction activities and regularly coordinating with them to receive bulletins and updates for invasive species, including Asian longhorn beetle, emerald ash borer, spotted lanternfly.

In addition, prior construction activities, the Design-Builder shall provide mandatory training for all personnel, including compliance training as required, for invasive insect species. Training sessions shall be MDAR personnel or their designated specialists. Training shall be for the listed pests and additional subjects as recommended by MDAR. Design-Builder shall be responsible for arrangements, as well as all reproduction costs and distribution of training materials.

Contact at MDAR is

Jennifer Forman Orth, Ph.D.
Environmental Biologist
Massachusetts Department of Agricultural Resources
251 Causeway St., Suite 500
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p: (617) 626-1735

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<http://massnrc.org/pests>

5.6.5 Air Quality

See Draft BTC Special Provision Subitem 440.5 provided in Appendix C for specific requirements related to Dust Control during construction. This Special Provision identifies the minimum MassDOT requirements for Dust Control on this Project.

Mitigation measures will be implemented to reduce air quality impacts during construction. Air quality specifications are incorporated into Contract documents to ensure compliance with applicable provisions of Massachusetts General Laws and Massachusetts Department of Environmental Protection (MassDEP) regulations, such as prohibiting trucks from idling more than 5 minutes; notifying MassDEP prior to the start of construction; and filing necessary forms such as BWP AQ 06, “Notification Prior to Construction or Demolition” with the Bureau of Waste Prevention.

The Design-Builder will be required to develop and submit a Dust Control Plan to MassDOT that will include but not be limited to the following: construction will not result in excessive particulate matter emissions, nuisance dust conditions, or PM₁₀ (particulate) concentrations exceeding national and Massachusetts ambient air quality standards; use of watering trucks to minimize dust; covers for dust-producing materials (e.g. dirt) when hauling; stabilization of the surface of dirt piles if not removed immediately; cover truck contents when transferring materials; and use of approved dust suppressants on traveled paths that are not paved.

In addition, all diesel-powered non-road construction equipment and vehicles greater than 50 brake horsepower will have engines that meet either the Environmental Protection Agency (EPA) particulate matter emission standards or emission control technology verified by the EPA or the California Air Resources Board (CARB); or emission control technology certified by manufacturers to meet or exceed emission reductions verified by EPA or CARB. Emission control devices, such as diesel oxidation catalysts or diesel particulate filters, will be installed on the exhaust system side of the diesel combustion engine equipment.

5.6.6 Noise

During construction, businesses and residential properties in proximity of the bridge may experience temporary noise impacts from the demolition and operation of heavy equipment during the construction period. See Draft BTC Special Provision Subitem 119.5 provided in Appendix C for specific requirements related to Noise Control during construction. This Special Provision identifies the minimum MassDOT requirements for Noise Control on this Project.

The Design-Builder will employ an acoustical engineer who will develop for MassDOT's review and approval a Noise Control Plan which will include mitigation measures to control noise impacts during construction. The plan will require the Design-Builder to establish standard work hours between the hours of 7 AM and 10 PM and to notify MassDOT for any exceptions to the standard work hours unless allowed as an exception by MassDOT with sufficient mitigation and justification. The Design-Builder shall collect and submit baseline noise measurements as necessary to prove future compliance with the Noise Control Plan (NCP). Prior to collection of the baseline noise measurements, the Acoustical Engineer shall submit a plan showing proposed monitoring locations, equipment, and procedures for review and approval by MassDOT.

The Design-Builder will be required to comply with the construction noise limits for the daytime, evening and nighttime hours, except where noise limit exceedances occur when utilizing mitigation in accordance with the NCP. Typical noise control mitigation measures that the Design-Builder may be required to use include mufflers, shrouds or other kinds of enclosures or barriers, or restrict usage. The Design-Builder will be required to utilize construction equipment fitted with exhaust systems and mufflers that have the lowest associated noise whenever those features are available. In addition, the Design-Builder will be required to submit a staging plan for review and approval by MassDOT that establishes equipment and material staging areas away from sensitive receptors.

Noise monitoring will be required to document compliance with the noise monitoring plan. Predicted or measured noise levels that exceed or approach recommended construction noise limits will be mitigated.

To address potential noise issues arising during construction, the Design-Builder will establish a noise complaint hotline and designate a point of contact to address noise complaints. The Design-Builder's acoustical engineer will be notified if needed, as well as MassDOT's Resident Engineer, to ensure resolution of community noise issues.

If any nuisance noise issues cannot be reasonably mitigated, then the associated activities shall be limited to 8 AM to 6 PM Monday through Friday, and 10 AM to 5 PM on Saturday and Sunday. Nuisance complaints must be addressed within 24 hours of the complaint and maximum noise level complaints must be addressed within 48 hours of the complaint.

The Design-Builder shall also provide a noise measuring device for the Engineer's use for the Project duration. The noise measuring device shall be regularly maintained and calibrated in accordance with the manufacturer's recommendations.

5.6.7 Traffic

Given the nature of the Project, impacts to traffic during construction are expected. Mitigation measures will be implemented to reduce traffic congestion during construction. The Design-Builder will prepare a Temporary Traffic Control Plan (TTCP). This plan will be based on the TTCP shown in the BTC documents; and coordinated with the elected, engineering, planning, and public safety officials in the Cities of Chicopee and Holyoke. Measures in the TTCP will include: identification of a construction truck route; establishment of employee parking areas away from residences and the job site (except within the protected work zone); potential traffic signal changes on along the project corridor and along alternate routes as needed; reducing roadway construction activities during high traffic volume periods; and the possible utilization of alternate work schedules to reduce traffic impacts, but only if noise control parameters can be met. To limit impacts on adjacent community facilities, businesses, and residents, MassDOT and the Design-Builder will assess measures to provide adequate notice and assistance as needed to maintain access to adjacent residential properties, as well as local businesses.

5.6.8 Continued Coordination and Public Involvement

MassDOT will continue to work closely with the Cities of Chicopee and Holyoke, and other local affected communities through their representatives, abutting residences, and businesses, and other stakeholders during construction. Public information meetings and/or other means of providing the public with up-to-date and easily understood construction information will continue throughout project development and construction. MassDOT's public involvement consultant will grow the existing database of contacts who want to and need to know about the construction schedule and will regularly update the contacts through email, mobile media, and telephone. The Design-Builder will be responsible for providing MassDOT's public involvement consultant with the necessary information for regularly-scheduled updates and stand-alone announcements for high-impact operations.

The City of Chicopee contacts to address community concerns during construction are:

Douglas E. Ellis, P.E.
City Engineer
Chicopee Engineering Department

115 Baskin Drive
Chicopee, MA 01020
(413) 594-3416 (ext. 310)
dellis@chicopeema.gov

The City of Holyoke contacts to address community concerns during construction are:

Rodolfo Andujar
Highway and Bridges Foreman
Holyoke Department of Public Works.

536 Dwight Street
Holyoke, MA 01040
(413) 322-5645 (ext. 5132)
dellis@chicopeema.gov andujarr@holyoke.org

These individuals will have the opportunity to attend regularly scheduled Design-Builder coordination meetings with the MassDOT Resident Engineer, who has the authority to negotiate resolutions to issues.

5.6.9 Cultural Resources

There are no National Register-listed or eligible properties, districts, or sites within the Area of Potential Effect (APE) of the Project.

5.6.10 Hazardous Waste/Waste Regulated Materials

Mitigation measures will be implemented to reduce hazardous waste impacts during construction. The Design-Builder will develop and implement a Soil and Groundwater Management Plan during construction and will be required to comply with MassDOT's Special Provisions for handling and disposal of contaminated soil and groundwater. See the Draft BTC Special Provisions provided in Appendix C for additional requirements, specifically with regard to the presence of lead-based paint.

The Design-Builder shall evaluate site conditions related to hazardous/regulated building materials that will be disturbed by this Project and include any costs for the proper handling, removal, disposal and recycling of that material during demolition activities. Work must be performed in accordance with all Federal, State and local laws and regulations. The cost should include the preparation of any required work plans for agency and/or MassDOT approval. The Draft BTC Special Provisions shall be incorporated into the Contract (See Appendix C).

The Design-Builder shall be responsible for the proper management and disposal of hazardous/regulated building material generated during the project. Hazardous/regulated building materials include, but are not limited to, lead-based paint, polychlorinated biphenyls (PCB) contained in caulking and highway lighting ballasts, mercury containing lamps, and asbestos containing materials (pipe, waterproofing, etc.).

5.6.10.1 Asbestos Containing Material - Asbestos Liability Insurance

The Design-Builder shall be aware that possible asbestos was identified in the existing Bridge No. C-13-038 caulk sealant between expansion joints in concrete components, rubber bearing pad components, and roadway expansion joint seals. . Additional information is provided in Appendix C.04.

If asbestos-containing material is anticipated to be encountered, prior to any testing or removal of asbestos, Asbestos Liability Insurance shall be obtained for this Project in accordance with Subsection 7.05 of the Standard Specifications. The Design-Builder and the Massachusetts Department of Transportation shall be named as additional insureds. The actual receipted costs will be reimbursed to the Design-Builder.

If any existing material is a possible ACM (asbestos containing material), the Design-Builder must perform all asbestos inspection, testing, removal, and proper disposal in accordance with the required rules and regulations included in the Draft BTC Special Provisions and as required by the Engineer.

The following Draft BTC Special Provisions shall be incorporated into the Contract for the inspection, testing, removal and disposal of asbestos containing elements (See Appendix C):

- Item 182.1 - Inspection and Testing for Asbestos - Lump Sum
- Item 182.21 - Removal and Disposal of Asbestos - Foot
- Item 182.21 - Removal and Disposal of Asbestos - Square Foot

Compensation for Items 182.1 and 182.21, if necessary, will be made in accordance with Section 3 of RFP Volume III, Draft Terms and Condition.

5.6.10.2 Painted Steel

Painted steel may exist on steel components of the bridge, therefore the General Requirements for Demolition and Work Involving Painted Steel (02/06/2020 version) must be adhered to by the Design-Builder during demolition activities.

Additional information is provided in Appendices C.04 and C.09

5.6.11 Rodent Control

The Design-Builder shall develop and implement rodent control measures consistent with those outlined in Subsection 119 of the MassDOT Standard Specifications for Highways and Bridges, 2026 Edition. The measures shall be submitted for MassDOT review and approval prior to the start of any demolition under this Project.

5.7 SUBSURFACE HAZARDOUS MATERIALS

The Design-Builder will be responsible for researching site conditions (i.e. a review of regulatory agency records and site history) within the Project Limits and as otherwise impacted by the Design-Builder's operations in order to identify potential sources of contamination that could impact work on this Project.

Soil to be removed from the project area shall not be assumed to be uncontaminated and must be evaluated prior to off-site management for potential contamination with hazardous materials. No soil may be disposed of off-site without proper assessment by the Design-Builder and approval from the Resident Engineer, District Environmental Engineer, or the project designee.

The Design-Builder will develop a Soil and Groundwater Management Plan (SGMP) that will be implemented during construction to manage soil, sediment and groundwater that may be impacted by oil and/or hazardous materials. The SGMP will be based upon existing data and information generated by the Design-Builder through its own research. The SGMP should detail soil sampling and management techniques that will be performed under the direction of an LSP as well as ways to avoid and/or reuse contaminated media in accordance with all applicable regulations. Only soil that is intended for off-site disposal should be sampled unless an alternative plan is submitted and approved by MassDOT. The Design-Builder's work must comply with all State and Federal laws and regulations pertaining to the reporting, handling, reuse and disposal of contaminated soil and groundwater, including the Massachusetts Contingency Plan, (310 CMR 40.0000) and Massachusetts Department of Environmental Protection policies and guidance.

The Design-Builder should include costs for the proper handling, removal, disposal, and recycling of all materials, hazardous and non-hazardous. The Design-Builder's Price Proposal shall include the cost of minimizing contact with or avoiding excavation of soil and dewatering in known contaminated areas by design approach and/or construction techniques. Where excavation or dewatering is unavoidable, the Design-Builder shall utilize appropriately trained personnel and shall select the most cost-effective approach to Hazardous Materials Management, which may include onsite reuse where allowed by the regulations. To assist in the preparation of an SMGP and estimated disposal costs, the MassDOT 25% Hazardous Materials Review Memorandum and the WSP Hazardous Materials Assessment are included in Appendix C.04.

In the event the Design-Builder encounters contamination within the right-of-way, the Design-Builder shall (a) promptly notify MassDOT; (b) comply with all requirements applicable to the Design-Builder; and (c) take reasonable steps including revisions to construction techniques, to limit excavation or dewatering in areas with contamination. The Design-Builder shall afford MassDOT the opportunity to inspect sites containing contamination before any action is taken which would inhibit MassDOT's ability to ascertain the nature and extent of the Unknown Contamination.

Where excavation or dewatering of contamination materials is unavoidable, the Design-Builder shall follow the SGMP as described above and the Draft BTC Special Provisions included in Appendix C. Compensation shall be according to RFP Volume III Section 3.8 Compensation for Hazardous Materials Management.

The following Draft BTC Special Provisions shall be incorporated into the contract for the handling, reuse and disposal of contaminated soil and groundwater (See Appendix C):

- Item 180.03 – Licensed Site Professional Services (Hour)
- Item 181.11 – Disposal of Unregulated Soil (Ton)
- Item 181.12 – Disposal of Regulated Soil - In-State Facility (Ton)
- Item 181.13 – Disposal of Regulated Soil - Out-of-State Facility (Ton)
- Item 181.14 – Disposal of Hazardous Waste (Ton)
- Item 183.1 – Treatment of Contaminated Groundwater (Gallon)
- Item 183.2 – Disposal of Granular Activated Carbon (Pound)

Compensation for Items 180.03 through 183.2 will be made at the contract unit bid prices for these items.

The Design-Builder will not release, dispose, store, or transport hazardous materials at, on, under or from the project area except in strict compliance with all State and Federal laws and regulations governing hazardous materials and hazardous waste. Should a release of hazardous materials to the environment occur on with the project area caused by the Design-Builder's or its subcontractors' negligence or intentional misconduct, the Design-Builder will be responsible for conducting any and all response actions to mitigate the hazardous material release and to achieve regulatory closure at its own expense. The Design-Builder will promptly notify MassDOT of all spills or releases of hazardous materials or hazardous waste caused by the Design-Builder's or its subcontractors' actions and activities and for which the Design-Builder may have an obligation to report the DEP.

5.8 ENVIRONMENTAL HEALTH AND SAFETY PLAN

An Environmental Health & Safety Plan (EHASP) shall be prepared by a Certified Industrial Hygienist or other experienced individual with the appropriate training required by OSHA to prepare such a plan, and shall include the components required by OSHA 29 CFR 1910.120(b) as well as the appropriate components of 310 CMR 40.0018. The preparer's name and work experience shall be included as part of the EHASP submittal. The EHASP must be stamped by a Certified Industrial Hygienist certifying that it complies with all applicable laws, regulations, standards, and guidelines, and that it provides a degree of protection and training appropriate for implementation on the Project during the execution of this Contract. The HASP shall be submitted to MassDOT for review and acceptance within thirty (30) days of Notice to Proceed.

The EHASP shall be designed to identify, evaluate, and control health and safety hazards resulting from any on-site chemical contamination present in air, soil, water and sediment during work on this Project and provide for emergency response if needed. The EHASP shall be a dynamic document with provision for change to reflect new information, new practices, or procedures, changing site environmental conditions or other situations which may affect site workers and the public. Health and safety procedures provided by the Design-Builder shall comply with all the appropriate regulations that address employee working conditions (e.g. OSHA, RCRA, and CERCLA). In addition, guidelines of NIOSH, OSHA, MBTA, EPA, etc. shall be followed. Equipment used for the purpose of health and safety shall be approved for their intended use and meet pertinent standards and specifications of the appropriate regulatory agencies.

A copy of the EHASP shall be maintained on-site at all times by the Design-Builder. The on-site copy shall contain the signature of the Certified Industrial Hygienist and each on-site employee of MassDOT, the Design-Builder and Subcontractors. The employee's signature on the EHASP Plan shall be deemed prima facie evidence that the employee has read and understands the plan. Signature sheets shall be submitted monthly, or at the request of MassDOT and a final copy of the EHASP with all signatures shall be submitted to MassDOT at the conclusion of the Contract, or at MassDOT's request.

The following Draft BTC Special Provisions shall be incorporated into the Contract for additional EHASP requirements (See Appendix C):

- Item 180.01 – Environmental Health and Safety Program (Lump Sum)
- Item 180.02 – Personal Protection Level “C” Upgrade (Hour)

5.9 FLOOD CONTINGENCY

[**THIS SECTION NOT APPLICABLE**]

SECTION 6.0: UTILITIES

6.1 GENERAL STATEMENT

MassDOT has conducted preliminary coordination with the owners of utilities within the Project area. Construction of the Project will affect existing utilities. The Design-Builder shall complete their own Utility investigation to ensure that Utilities are properly identified and that all necessary work occurs so as to enable the Design-Builder to achieve completion of the Project in accordance with the Contract Document requirements. The Design-Builder shall expect to devote resources to utility investigation, coordination, monitoring, protection, and construction as required to complete the Project.

Anticipated services include but are not limited to: the identification of utilities requiring alteration or protection, notifications, and coordination of design and construction efforts for the Utility Work. The Design-Builder shall coordinate with any utility agency (private, state or municipal) which may be impacted by the Project. MassDOT has coordinated with some of the owners of public utilities in the Project area, including communications, electric, cable, gas, water and sewer utilities; however, it is recommended that the Design-Builder meet with all owners of affected utilities within thirty (30) days from Notice to Proceed to brief affected utilities on proposed construction schedules, anticipated design changes, detours, etc. Permits may be required to work in the vicinity of existing utilities. It will be the responsibility of the Design-Builder to obtain any permits sufficiently in advance of the work. Any costs related to acquisition of permits will be borne by the Design-Builder. Final utility coordination will be the responsibility of the Design-Builder.

6.2 ASCERTAINING THE LOCATION OF UTILITIES

The Design-Builder bears full responsibility at its own expense for ascertaining the existence and exact location and size of any utility to be relocated or otherwise impacted on either a temporary or permanent basis. As utility investigation and planning will be an integral aspect of the final design, the Design-Builder shall schedule and complete all utility investigations no later than 90 calendar days after the NTP. This early investigation work is to be scheduled in the Baseline Schedule submission and updated as part of the monthly Schedule Updates.

6.2.1 Existing Utilities Known to MassDOT

NOTE: This section is intended to be used for informational purposes only and reflects the BTC Plans, and the early coordination process undergone by MassDOT and various Utilities.

Subsurface Utility Engineering (SUE) has been performed as part of the BTC design process and the results are included within the RFP documents. The Design-Builder shall be ultimately responsible for confirming all existing conditions in the field prior to commencing work. The Design-Builder shall be responsible for all necessary coordination with various utility agencies as required to complete the Project. The Design-Builder should reference the Project Utility Coordination (PUC) Form contained within in Appendix C for additional information related to utility alterations and suggested construction staging.

A complete layout of existing known utilities can be found on the BTC plans. See Appendix C for Utility Contacts contained within the Project Utility Coordination Form, as well as MassDOT's Utility Contact Website. A description of each known utility is provided as follows:

Electric

Owner: Chicopee Electric Light Department

Description: Twelve (12) 4 inch diameter PVC conduits underground, below the south sidewalk along Chicopee Street.

Four (4) 4 inch diameter PVC conduits underground, below the roadway along Margaret Street.

Overhead wires along the west side of Margaret Street, also supplying power to street lighting along the east side of Margaret Street.

Two (2) 4 inch diameter PVC conduits underground, below the roadway along Whitman Street.

Overhead wires along the east side of Whitman Street.

Unknown conduits underground, below the roadway along Perrault Street.

Electrical cabinet located along west side of Perrault Street.

Overhead wires along the west side of Perrault Street.

Four (4) 4 inch diameter PVC conduits, transitioning to three (3) and one (1) 4 inch diameter PVC conduits underground, below the east sidewalk and roadway along Saint Louis Avenue, respectively.

Overhead wires along the east side of Saint Louis Avenue.

Communication

Owners: Verizon & Charter

Description: Four (4) 4 inch diameter conduits underground, below the eastbound travel lane along Chicopee Street.

Seven (7) 4 inch PVC conduits below the westbound travel lane along Chicopee Street, east of Perrault Street.

One (1) 4 inch diameter PVC conduit underground, below the roadway centerline along Chicopee Street.

One (1) 4 inch diameter PVC conduit underground, below the north sidewalk along Chicopee Street. Transitions to two (2) 4 inch diameter PVC conduits east of Perrault Street.

Two (4) 4 inch diameter PVC conduits underground, below the roadway along Margaret Street.

One (1) 4 inch diameter PVC conduit underground, below the east sidewalk along Margaret Street.

Overhead wires along the west side of Margaret Street.

Two sets of two (2) 4 inch diameter PVC conduits underground, below the east sidewalk along Whitman Street.

Overhead wires along the east side of Whitman Street.

Six (6) 4 inch PVC conduits underground, below the west sidewalk along Perrault Street.

Overhead wires along the west side of Perrault Street.

One (1) 4 inch diameter PVC conduit underground, below the east sidewalk along Saint Louis Avenue.

Overhead wires along the east side of Saint Louis Avenue.

Gas

Owner: Eversource

Description: One (1) 6-inch diameter gas main below Chicopee Street and Saint Louis Avenue.

One (1) 2 inch gas service line below Margaret Street, Whitman Street and Perrault Street.

Sewer

Owner: City of Chicopee

Description: One (1) 8” diameter PVC sewer main below Chicopee Street, Margaret Street, Perrault Street and Saint Louis Avenue.

One (1) 10” diameter PVC sewer main below Whitman Street.

Water

Owner: City of Chicopee

Description: One (1) 12” diameter cast iron water main below Chicopee Street.

One (1) 6” diameter cast iron water main below Margaret Street.

One (1) 8” diameter ductile iron water main below Whitman Street and Perrault Street.

One (1) 4” diameter cast iron water main below Saint Louis Avenue to Memorial Park.

Street Lighting

Owner: Chicopee Electric Light Department

Description: Street lighting is located along both sides of Chicopee Street, Margaret Street and Saint Louis Avenue, and the parking lots below the existing bridge.

Street lighting is located along the east side of Whitman Street.

Street lighting is located along the west side of Perrault Streetsuperst.

6.3 DESIGN-BUILDER AND UTILITY OWNER RESPONSIBILITIES

6.3.1 Design-Builder's Responsibilities

This section defines the responsibility of the Design-Builder and MassDOT, with regard to the initial utility plan and changes that occur as the prosecution of the Work progresses. MassDOT, with assistance from the Design-Builder shall coordinate with Utility companies that are impacted by the Design-Builder's operations. To support this effort, the Design-Builder shall provide routine and accurate schedule updates, provide notification of delays, and provide documentation of the steps taken to resolve any conflicts for the impacted utilities. The Design-Builder shall provide copies to MassDOT of the Design-Builder communication with the Utility companies, including but not limited to:

- Providing advanced notice, for all utility-related meetings initiated by the Design-Builder.
- Providing meeting minutes for all utility-related meetings that the Design-Builder attends.
- Providing all test pit records.
- Request for *Early Utility* work requirements of this section (see below).
- Notification letters for any proposed changes to Utility start dates and/or sequencing.
- Written notification to MassDOT of all apparent utility delays within seven (7) Calendar Days after a recognized delay to actual work in the field – either caused by a Utility or the Design-Builder. Notification of any utility-related delays to the critical path shall meet the requirements of Section 9.4.
- Any communication, initiated by the Design-Builder, associated with additional Right-of-Way needs in support of utility work.
- Submit weekly utility coordination reports to MassDOT outlining coordination attempts made (meetings, emails sent, and phone calls) and utility progress for that week.
- Submission of completed Utility Completion Forms.

The point of contact with MassDOT is:

Paul Kelly
District Utility and Constructability Engineer
Massachusetts Department of Transportation, Highway Division
District 2

811 North King Street
Northampton MA 01060
Phone: (413) 478-4885
Email: Paul.Kelly@dot.state.ma.us

The following list outlines general Design-Builder responsibilities for performing utility work as part of the proposed project. Refer to the BTC Plans for all utility specific alteration details not listed in this section:

1. The Design-Builder shall be responsible for the planning, coordination and construction of utility work required for completion of the Project. The Design-Builder shall carry out any of the utility work carefully and skillfully and shall support and secure its work so as to avoid damage to all utilities, existing bridge and building structures, etc.
2. The Design-Builder shall coordinate with any utility agency (private, state, or municipal) which may be impacted by the Project. It is recommended that the Design-Builder meet with all owners of affected utilities during Technical Proposal development. The Design-Builder is required to meet with all utility owners again within thirty (30) calendar days from the Notice to Proceed to brief affected utilities on proposed construction work, schedules, detours, etc. MassDOT may schedule a pre-proposal utility meeting during the Technical Proposal development phase to assist with utility coordination. A separate utility meeting can be scheduled by each shortlisted team, coordinating the meeting with the District DUCE and inviting MassDOT as a participant. The Design-Builder shall be required to submit design plans to utilities for review and approval of utility work during the design phase.
3. The Design-Builder shall provide a detailed utility alteration plan including any necessary utility relocations for each stage of construction as part of the Issued for Construction Plans.
4. Early in the construction schedule, the Design-Builder shall discuss the logistical requirements of performing the utility alteration work with each utility owner to ensure proper accommodations are in place for utility crews to access the necessary areas of the project. Each utility owner may require differing work site access accommodations. Some utility work may exclusively occupy a significant portion of the construction site and may therefore preclude concurrent work from being performed by either the Design-Builder or another utility owner. The Design-Builder shall be fully responsible for coordinating his/her construction activities appropriately to ensure each utility owner has adequate space and means of access to perform the temporary and proposed utility work.

The Design-Builder shall be responsible for providing access to the project site, to allow for each utility owner to perform the utility alteration work. This shall include, but not be limited to, maintaining access to electric cabinets at all times, providing laydown space for materials and equipment, and establishing temporary traffic control.

The Design-Builder shall also be responsible for providing all construction equipment and support personnel required to perform the utility alteration work responsibilities designated to the Design-Builder within these provisions. This shall include, but not be limited to, lifting equipment.

5. The Design-Builder shall verify that all items installed on behalf of each utility company adhere to all design standards and specifications required by their respective owner and that the proposed locations for these facilities have been approved by the utility owner. Available standards and specifications have been included in Appendix C, however the design-builder shall coordinate with each utility company to verify or acquire the latest standards and/or specifications.

6. The Design-Builder shall maintain regular coordination with the MassDOT District Utility Coordination Engineer regarding utility force account status, including but not limited to: Notice to Proceed status, scope, and schedule. The Design-Builder shall track force account construction and documentation for reimbursement.
7. The Design-Builder shall construct and maintain any required temporary earth support and dewatering systems to construct any deep utility trenches.
8. The Design-Builder is responsible to complete any necessary tree trimming or clearing and grubbing required for utility alterations.
9. The Design-Builder shall be responsible for providing sufficient time in the project schedule for each utility owner to perform their portions of the utility alteration work. Early in the construction schedule, the Design-Builder shall discuss the schedule needs with each utility owner to confirm the duration and timing of performing the design and physical work associated with each utility alteration. It may not be feasible to perform certain aspects of the utility alterations concurrently with other construction activities. Some utility work may exclusively occupy a significant portion of the construction site and may therefore delay other work from being performed by either the Design-Builder or another utility owner. Time of year restrictions may apply to some work performed by utility owners. The Design-Builder shall be responsible for coordinating design changes which impact the sequence of utility alterations with each affected utility owner.
10. The Design-Builder shall notify MassDOT upon becoming aware that a utility owner is not advancing the work in accordance with the approved utility schedule. Such notice shall be provided to MassDOT no later than seven (7) calendar days after the occurrence of the event that the Design-Builder believes to be a utility delay. After such notice, MassDOT and the Design-Builder shall continue to diligently seek the utility owner's cooperation in performing their scope of Work.

In order to demonstrate that a critical path delay has been caused by a third-party utility, the Design-Builder must demonstrate, through the requirements of the monthly Progress Schedule submissions and the supporting contract records associated with Section 9.0 that the delays were beyond the control of the Design-Builder.

All documentation provided in this section is subject to the review and verification of MassDOT and, if required, the utility owner. In accordance with MassDOT Specifications Time Extension will be granted for a delay caused by a utility, only if the actual duration of the utility work is in excess of that shown on the Project Utility Coordination Form, and only if;

- a. The Design-Builder appropriately scheduled utility investigation activities well in advance of the final design and properly incorporated those findings into the design.
- b. The Design-Builder provided proper Notification of Delay was provided to MassDOT in accordance with the time requirements that are specified in this section.
- c. The utility delay is a critical path impact to the Baseline Schedule (or most recently approved Progress Schedule).

11. The Design-Builder shall be responsible to communicate changes to the proposed construction sequence that may affect the timing of utility alterations.
12. Permits may be required to work in the vicinity of existing utilities. It will be the responsibility of the Design-Builder to obtain any permits sufficiently in advance of the work. Any costs related to acquisition of permits will be borne by the Design-Builder.
13. The Design-Builder shall evaluate existing utility conditions and notifying the utility owner(s) of any existing deficiencies and/or any impacts that might be associated with the project during or after construction.
14. All existing utility service shall be maintained throughout construction unless noted otherwise.
15. The Design-Builder shall accurately locate, monitor, and protect existing utility infrastructure that could potentially be impacted by construction activities. This work shall include vibration monitoring as needed to protect existing adjacent structures.
16. The Design-Builder shall coordinate any utility abandonment with respective utility owners.
17. All existing or proposed manholes, vaults, hand holes or other structures exposed to traffic are to be rated for traffic loading (HS-25). The Design-Builder shall coordinate with utility companies to make provisions for installation of traffic loading rated structures and/or covers if necessary.
18. All buried utilities shall have a minimum clear separation of 12 inches.
19. Unless otherwise required by the utility owner, the Design-Builder shall not move or remove any utility without the utility owner's written consent. The Design-Builder shall provide thirty (30) days' notice to any utility owner whose infrastructure will require alteration. MassDOT shall be provided a copy of the written notice. If utility assets are damaged by the Design-Builder's operations, it shall notify the affected utility owners and MassDOT and shall assume any costs related to its repair.
20. Every effort shall be made to locate manholes, vaults, hand holes or other structures exposed to traffic outside of the travel lanes.
21. The Design-Builder shall perform Shop Drawing reviews for all conduit, manholes, and utility supports.

In addition to the general responsibilities outlined previously, the Design-Builder shall be also responsible for performing these specific work items to support the temporary and proposed utility alterations. Refer to the BTC Plans for all utility specific alterations details not listed in this section:

6.3.1.1 **Electric (Chicopee Electric Light Department (CELD))**

Temporary

- None.

Permanent

- Refer to Section 4.14 for full description of Lighting work to occur for this Project.

6.3.1.2 **Communication (Verizon)**

Temporary

- None.

Permanent

- None.

6.3.1.3 **Communication (Charter)**

Temporary

- None.

Permanent

- None.

6.3.1.4 **Gas (Eversource)**

The Design-Builder should be aware that construction work which interrupts the flow of gas is restricted during the peak gas usage season between November 15th through April 15th.

Temporary

- None.

Permanent

- None.

6.3.1.5 Water (City of Chicopee)

Temporary

- None

Permanent

- Removal and resetting of existing hydrant located at the southwest corner of the intersection of Chicopee Street and Perrault Street, including all incidentals required to complete this work. Work shall be performed in accordance with City of Chicopee standards.
- Adjusting water gates and valves to final grade.
- Replacing any gates and/or valves which are unable to be adjusted.

6.3.1.6 Sewer (City of Chicopee)

Temporary

- None

Permanent

- Adjusting sewer manholes to final grade.

6.3.2 Utility Responsibilities / Work by Others

The following section provides a summary of work responsibilities performed by each utility owner for their respective work within the project limits. All required work is shown on the BTC Plans. For additional information, see Section 6.2.1 and the associated PUC Form. Utilities owning infrastructure within the Project Limits shall be allowed to monitor the Design-Builder's Work around their infrastructure.

6.3.2.1 Electric (Chicopee Electric Light Department (CELD) Responsibilities)

Temporary

- None.

Permanent

- Remove and dispose existing guy wire and sidewalk strut, and install new guy wire and sidewalk strut at UPL 3 on Perrault Street, as shown on the Plans.
- Adjust all manholes and handholes to grade as required.

6.3.2.2 Communication (Verizon Responsibilities)

Temporary

- None.

Permanent

- Adjust pullboxes to grade as required.

6.3.2.3 Gas (Eversource Responsibilities)

The Design-Builder should be aware that construction work which interrupts the flow of gas is restricted during the peak gas usage season between November 15th through April 15th.

Temporary

- None.

Permanent

- Adjust all gate boxes to grade as required.

6.3.2.4 Sewer (City of Chicopee Responsibilities)

Temporary

- None.

Permanent

- None.

6.3.2.5 Water (City of Chicopee Responsibilities)

Temporary

- None.

Permanent

- Provide additional design support to Design-Builder for proposed water infrastructure as required.
- Provide construction oversight during installation and testing of proposed water infrastructure .

6.4 NOTIFICATION TO UTILITIES

Following completion of an existing utility survey, the Design-Builder will be responsible to coordinate with any Utility whose assets may be affected by the Project. See Appendix C and MassDOT's Utility Contact Website for a partial list of Owners whose assets are likely to be affected. It is the responsibility of the Design-Builder to confirm, add and modify this information.

6.5 EARLY RELOCATION OF UTILITIES

No early relocation of utilities are anticipated.

Should the Design-Builder decide to relocate additional utilities other than those described in this section, the Design-Builder will be responsible for costs and scheduling impacts associated with those relocations.

6.6 COMMENCEMENT OF UTILITY WORK

Subject to the availability of Right-of-Way, the Design-Builder may commence the Utility Work at any time following the date specified in the Notice to Proceed under an approval by MassDOT for the early start of construction. The Design-Builder is responsible for causing the Utility Work to be completed in order to permit construction of the Project according to the construction schedule as approved by MassDOT.

6.7 MEETINGS AND COOPERATION WITH UTILITY OWNERS

The Design-Builder shall be responsible for all coordination with the affected Utility Owners that is necessary in order to accomplish the Utility Work (including obtaining information, coordination of scheduling, design review, inspections, approvals and acceptances). The Design-Builder shall notify MassDOT at least two (2) Business Days in advance of each meeting with a Utility Owner's representative scheduled by the Design-Builder and shall allow MassDOT to participate in the meeting. The Design-Builder shall complete meeting minutes for all meetings held with utility representatives and shall submit minutes to MassDOT and the Utility within two (2) days of the meeting. The Design-Builder shall provide copies of all correspondence with the Utility Owner within seven (7) days after receipt or sending.

The Design-Builder shall make diligent efforts to obtain the cooperation of each Utility Owner as necessary for the Project. The Design-Builder shall immediately notify MassDOT if the Design-Builder becomes aware that a Utility Owner is not cooperating in providing needed Work or approvals. After such notice, the Design-Builder shall continue to diligently seek to obtain the Utility Owner's cooperation, and shall assist MassDOT as reasonably requested by MassDOT, with regard to the dispute. The Design-Builder shall incorporate all utility phases of construction into the overall work schedule. No additional time or compensation will be provided resulting from delays due to utility coordination and phasing. MassDOT agrees to use its reasonable efforts to assist the Design-Builder in obtaining the cooperation of the Utility Owners, but such assistance shall not be deemed to relieve the Design-Builder of its sole and primary responsibility for the satisfactory compliance of its obligations set forth in the Contract Documents.

The Design-Builder shall be responsible for all work associated with progressing work, maintaining schedule, and resolving conflicts for the alterations of the impacted utilities. In addition, the Design-Builder shall be responsible for checking and verifying material quantity and labor hours submitted by the Utility Companies for reimbursement on behalf of MassDOT.

MassDOT will be responsible for payments directly to the Utility Owners as follows:

- 50% reimbursement, except as noted below, for any existing utilities that need to be altered or replaced on the Project provided the utility meets or beats their schedule duration of work provided in force accounts submitted to MassDOT.
- Municipal utilities or utilities holding ownership fee to property or occupancy easement rights, MassDOT shall reimburse the owners of these utilities 100% of the actual costs incurred for necessary alteration of their facilities.
- Project reimbursement will be made through MassDOT utilizing conventional force account agreements.
- The Design-Builder shall furnish to the Resident Engineer a written daily report of labor, materials and/or units installed, equipment, and salvage, exclusive of prices, in connection with work by each utility within two (2) working days from the close of the working day reported.
- Upon the completion of the physical work, the Design-Builder shall submit a record plan to the Resident Engineer showing the work actually performed by the utility and, written notification that said work has been completed.
- Payment to the utilities will be for the actual costs and related indirect costs accumulated in accordance with a work order accounting procedure prescribed by the applicable Federal or State regulatory body for the adjustment of each utility's facilities, including the preliminary engineering performed by the utility in conjunction with this Project. MassDOT will be responsible for verifying and making all payments to utilities. MassDOT shall utilize the Design-Builder's daily force account reports in verifying work completed. The Design-Builder shall assist in verifying work has been completed as requested by MassDOT.
- Should utility alterations overrun the estimated cost submitted to MassDOT and included in the force account agreement, the utility shall submit a written explanation of the cost overrun to MassDOT for verification as outlined in the Force Account Agreement. If requested, the Design-Builder shall assist MassDOT in verifying the reason for the overrun through a review of the Design-Builder's force account daily sheets.

6.8 INSPECTION OF UTILITY WORK

The Design-Builder shall permit Utility Owners to inspect the Utility Work.

6.9 ENVIRONMENTAL COMPLIANCE PERTAINING TO UTILITY WORK

The Design-Builder shall comply with all applicable Environmental Laws in performance of the Utility Work, including the requirement set forth in Section 5.0.

6.10 AGREEMENTS BETWEEN DESIGN-BUILDER AND UTILITY OWNERS

The Design-Builder shall not enter into any agreement with any Utility Owner that purports to bind MassDOT in any way, nor shall any agreement be deemed to modify the terms of the Contract Documents.

6.11 POLICY OF AVOIDING RELOCATIONS

The location of utilities and potential impacts of Relocations shall be considered by the Design-Builder in developing changes to MassDOT Supplied Designs with the following goals: (a) avoiding Relocations to the extent practicable; (b) if a Relocation is not reasonably avoidable, protecting the utility in place to the extent practicable; and (c) otherwise minimizing the potential costs and delays relating to the Relocations to the extent practicable.

6.12 LEGAL ACTIONS

Should the Design-Builder reasonably believe that any Utility Owner will not undertake or permit any Relocation in a manner consistent with the timely completion of the Project, MassDOT will consider requests by the Design-Builder to exercise any legal rights that MassDOT may have (as deemed appropriate by MassDOT in its sole discretion) with respect to the Utility Owner. Such request shall be accompanied by evidence reasonably satisfactory to MassDOT that the Design-Builder has made diligent efforts to obtain the Utility Owner's cooperation but has been unsuccessful.

6.13 SCHEDULING AND COST RISKS

The Design-Builder shall be aware that the BTC has minimized relocations to street lighting only and that if permanent utility alterations are introduced from that presented in the BTC, it could bear a significant risk of schedule delay if the change is not properly coordinated with the utility owner. Each utility owner requires a significant lead time to design and schedule temporary and permanent relocations. The Design-Builder shall be prepared to bear full responsibility for any schedule delays or increases in construction cost resulting from modifications to the sequence of temporary and permanent utility alterations.

The Design-Builder shall be solely responsible to communicate changes to the proposed utility alterations shown on the Preliminary Plans to the Utility and MassDOT. In addition, the Design-Builder shall also be responsible to communicate changes or alterations to the proposed construction sequence that may affect the timing of utility alterations. Should the Design-Builder propose additional relocations other than those described in the RFP for their convenience, the Design-Builder shall be responsible for payment of costs and scheduling impacts of those relocations.

Any and all changes to the BTC sequencing and scope of utility alteration work shall be the Design-Builder's responsibility to mitigate any impacts to the Project schedule and no time or compensation will be provided to the Design-Builder. Changes to the BTC sequencing and scope of utility alteration may require the effected utility companies to revise and resubmit their force account documentation. This may include, but not limited to, revisions to the respective utilities cost estimate, submitted durations and scope. The schedule delays and cost required for the utility companies to revise documentation shall be the Design-Builder's responsibility to mitigate. The Design-Builder shall consider Right-of-Way implications when proposing alternatives to the utility alterations proposed in the Base Technical Concept. The Design-Builder shall be responsible for all schedule impacts due to additional Right-of-Way required for alterations as specified in Section 8.0.

6.13.1 Project Utility Coordination Form

The utility schedule and sequence information provided in the Project Utility Coordination (PUC) Form included in Appendix C is the best available information at the time of the Technical and Price Proposal due date and has been considered in setting the Contract Duration. The information is provided for the Design-Builder's use in developing their bids and the Baseline Schedule Submission.

If the Design-Builder intends to submit a schedule that contains durations or sequencing that varies from those provided in the Project Utility Coordination Form, the Design-Builder must submit a Proposal Schedule in accordance with Section 9.0 hereinafter. As a prerequisite to the Proposal Schedule submission, and in advance of the utility notification(s) period, the Design-Builder shall coordinate the proposed utility changes with MassDOT and the utility companies, to develop a mutually agreed upon schedule, prior to the start of construction. The submission of the Baseline Schedule should not include any of these types of proposed utility changes and should not delay the submission of the Baseline Schedule.

MassDOT will issue initial notice-to-proceed dates to each utility company based on either the:

- 1) Design-Builder's accepted Baseline Schedule
- 2) An approved Early Utility Request in the form of an Early Utility sub-net schedule (in accordance with the requirements of this Subsection)
- 3) An approved Proposal Schedule

A time extension will be granted for the Design-Builder for a utility delay only if the actual duration of the utility work is in excess of that shown on the Project Utility Coordination Form and only if the delay impacts the critical path, only if the Design-Builder did nothing to interfere with the progression of the Utility, only if the Design-Builder properly coordinated with MassDOT, and only if the delay is demonstrated as part of an acceptable Time Entitlement Analysis, per Section 9.7. The Design-Builder will be responsible to recover any time lost as a result of changes made to the durations or sequencing provided in the Project Utility Coordination Form.

Inclusion of the Project Utility Coordination Form information shall not be construed as changing or superseding any other provision of the Contract. Utility delays, as defined in Section 9.0, are non-compensable delays. The sole remedy for utility delay is a time extension as specified under Section 9.0.

6.13.2 Utility Work Prior to Schedule Submission

If the Design-Builder anticipates that any utility work will need to start prior to the first schedule submission required by Section 9.0, the Design-Builder shall present that information at the pre-construction conference in the form of the Initial Schedule, Section 9.3, detailing when each early utility activity is required to start.

6.14 UTILITY DIARIES/AS-BUILTS

The Design-Builder shall maintain "utility diaries" and "as-built" utility maps of a quality acceptable to MassDOT. The standards for preparation of all Design Documents relating to utilities and final as-built plans shall conform to all applicable MassDOT requirements. A status of this effort will be provided to MassDOT no less than every thirty (30) Days. The Design-Builder will be responsible for recording daily Utility work force reports. The start, suspension, re-start, and completion dates of each of the utilities, within each phase of the utility alteration work, will be monitored and agreed to by MassDOT and the Design-Builder as the work progresses.

At the completion of the Project "As-Built" utility maps shall be provided electronically to each utility company.

SECTION 7.0: RAILROAD COORDINATION

This Project involves highway work on and adjacent to the bridge carrying I-391 over the Connecticut Valley Railroad Line (C-13-047 (0WQ)). The line is owned by Genesee and Wyoming Incorporated, operated by Berkshire Eastern Railroad, and traveled by Amtrak's Hartford-Springfield service. The Design Builder will be performing paving operations, traffic striping, and temporary and final barrier work adjacent to and over the bridge. The work may also require bolting of temporary barrier into the bridge deck. The Design-Builder is responsible for obtaining the necessary right-of-entry form from Genesee and Wyoming's Real Estate Department to conduct the paving, striping, and barrier work within the envelope of the railroad's air rights. The process for obtaining the right-of-entry is described in Section 1.1.7. Railroads Role.

7.1 INSURANCE REQUIREMENTS

The insurance requirements set forth in this section are in addition to the requirements of the Standard Specifications.

Railroad Operations Directorate: Section F:

Railroad Protective Insurance (Required if work is performed within fifty (50) feet from the center line of the nearest railroad track).

1. The Design-Builder shall furnish, with respect to the operations of the Design-Builder or any of the Design-Builder's Subcontractors performing within the Railroad right-of-way, broad form Railroad Protective Liability Insurance covering all work performed under this Contract in the amount of not less than \$5,000,000 per occurrence, \$10,000,000 aggregate combined bodily injury and property damage. The Design-Builder shall carry Worker's Compensation Insurance, including Employer's Liability Insurance as provided by Massachusetts General Laws, Chapter 152, as amended, covering all work performed by him under the Contract. The Design-Builder shall carry Umbrella Liability Coverage with limits of not less than \$10,000,000 per occurrence, covering all work performed by him under this Contract. Automobile Liability Insurance: The Design-Builder shall provide Automobile Liability Insurance to include the use of all vehicles; owned, leased, hired and non-owned, with limits not less than \$1,000,000 combined single limit covering all work performed under the Contract.

2. Such insurance shall be written on an occurrence basis.

3. The applicable railroads shall be the named insureds on such insurance. Additional named insured are listed below. Original policies and certificates shall be made out to the applicable railroads and mailed to:

General Counsel and Secretary
Genesee and Wyoming, Incorporated
20 West Avenue
Darien, CT 06820

Assistant Vice President, Engineering
AMTRAK
National Railroad Passenger Corporation
30th Street Station, 3rd Floor South, Box 64
Philadelphia, PA 19104

4. The Design-Builder shall furnish to the railroad companies a signed original of the Railroad Protective Liability Policy prior to entry upon the railroad right-of-way.
5. Such policies shall provide 30 days notice to each named insured by the insurance company before any change or cancellation of the policies.
6. Such Railroad Protective Insurance policies may be provided in forms commonly referred to as AAR/AASHTO or ISO/RIMA but not Oregon.

Questions regarding insurance should be directed to Genesee and Wyoming's General Counsel and Secretary at [\(203\) 202-8900](tel:203-202-8900). The Design-Builder shall be aware of the latest Genesee and Wyoming insurance limits / requirements. See the following link for more information: <https://www.gwrr.com/wp-content/uploads/2023/06/Right-of-Entry-Application-6.29.2023.pdf>

SECTION 8.0: RIGHT-OF-WAY

8.1 GENERAL STATEMENT

Right-of-Way acquisitions are required for this Project, as shown on the BTC plans included in Appendix C. However, no acquisitions are being specifically obtained for additional construction access or temporary work zones.

The following requirements detail the process if any acquisitions, easements, or any other Right-of-Way action are required.

Existing site features within temporary construction easements, including, but not limited to sidewalks, excavation, pavement, striping, landscaping, signage, and utilities, shall be retained or restored unless otherwise noted on the BTC Plans.

8.2 ADDITIONAL PROPERTIES

The Design-Builder shall make reasonable efforts to restrict additional costs to the Project by ensuring that all elements of the Project fall within the limits of the Right-of-Way currently available for the Project as an alternative to the acquisition of Additional Properties wherever possible. The Design-Builder shall exercise particular care to avoid the need to acquire land owned by a public entity and used for a use inconsistent with highway use, since the acquisition of such properties by MassDOT may require the enactment of special legislation.

The Design-Builder shall be responsible for assembling a team that has experience working with the MassDOT Right of Way Bureau on the acquisition process. The team will require approval from the MassDOT Right of Way Bureau. The approved ROW Acquisition Team will be responsible for completing the Right-of-Way administrative process as set forth in this Section 8.0 in order for MassDOT to acquire the Additional Properties. Acquisition of the Additional Properties will be limited to that land and those interests in land necessary for Project purposes, but will also include any portions of the Additional Properties deemed by the owners of such Additional Properties and MassDOT to be an uneconomic remainder. Additional Properties will not be considered to include properties necessary for excessive work space (as determined by MassDOT), the Design-Builder lay-down areas or material storage areas.

8.3 PLANS FOR ACQUISITION OF ADDITIONAL PROPERTIES

8.3.1 General

The Design-Builder shall be responsible for the preparation of all property/land acquisition materials related to any Additional Property in accordance with MassDOT Project Development and Design Guidelines, the Federal Aid Policy Guide (FAPG) relating to such documentation, and with MassDOT Standards. All dimensions are to be shown in the English system. Bar scales shall be provided on all plans. The Design-Builder acknowledges that it is familiar with the requirements of MassDOT's Right-of-Way Bureau and Manual and with the requirements applicable to Right-of-Way plans.

Included as a part of the Work, is the preparation of Preliminary and Final Right-of-Way plans. If the proposed design layouts result in the need to acquire any Additional Property for the Project or to transfer any property to a municipality (to the extent required), separate layouts will be required for each municipality. The Design-Builder shall be required to prepare separate plans and written instruments for advance takings and/or additional easements to the extent required by MassDOT.

8.3.2 Schedule

The Design-Builder shall, within 30 Days of determining the need to acquire Additional Property, prepare a schedule for the delivery of any Additional Property then identified and submit the same to MassDOT for approval and shall integrate the delivery schedule into the overall Project schedule. The schedule shall indicate the date for the acquisition of the Additional Properties and the completion of the plans and other Right-of-Way activities required by the Contract Documents. The schedule shall allow MassDOT at least six months following MassDOT's approval of a Case File to provide access to any Additional Property that is vacant and shall allow at least 18 months from the date of MassDOT's approval of a Case File for any Additional Property which involves the relocation of occupants, except in the case where the acquisition of Additional Property will require the enactment of special legislation, in which case no schedule can be estimated by MassDOT. Delays that cause any Additional Property (except for those requiring special legislation) to be inaccessible to the Design-Builder beyond the time set forth above shall be considered an Owner-Caused Delay to the extent that the Critical Path is delayed. MassDOT shall notify the Design-Builder of any such delay in the dates for acquisition of the Additional Properties. In such an event, the Design-Builder shall immediately determine whether the delay impacts the Critical Path and, if so, to what extent the delay may be avoided through alternative construction methods or otherwise. Upon such notice, the Design-Builder shall promptly meet with MassDOT to determine the best course of action.

8.4 THE DESIGN-BUILDER'S RIGHT-OF-WAY RESPONSIBILITIES

The Design-Builder shall be responsible for completing all necessary administrative activities and for preparing all required documentation sufficient for MassDOT to acquire the Additional Properties by either eminent domain or negotiated purchase, except that MassDOT will retain the primary responsibility for title review, appraisal review, approval of the Real Estate Review Board (if necessary) and (to the extent applicable) the Federal Highway Administration, acquisition negotiation (with assistance from The Design-Builder and the Design-Builder's consultants as necessary), and the approval by MassDOT of acquisition documents, and the adoption and recording of acquisition documents. All Right-of-Way activities must be completed in compliance with the Right-of-Way Manual and the Federal Highway Administration's Right-of-Way Project Development Guide (PDG).

After identifying the Additional Properties as set forth in Section 8.2, but before beginning the preparation of the Case Files as set forth in Section 8.4.3, the Design-Builder's ROW Acquisition Team shall meet with the Director of MassDOT's Right-of-Way Bureau or their representative to discuss Right-of-Way acquisitions.

8.4.1 Acquisition Process Summary

The Design-Builder's major activities with respect to the acquisition of the Additional Properties include:

- Identification of Additional Properties
- Meeting with the Director of the Right-of-Way Bureau
- Owner and occupant interviews
- Preparation of title examinations
- Survey and plan preparation work (ROW and Layout Plans)
- Preparation of real/personal property report, if applicable
- Identification and valuation of tenant-owned improvements, if applicable
- Obtain appraisals
- Create and compile Case Files using MassDOT format in SharePoint
- Prepare the layout schedule
- Prepare a recordable order of taking and taking plan
- Establish use and occupancy charge, if applicable
- Initiate Negotiations with Offer letter
- Manage properties, if applicable

8.4.2 Relocation Process Summary

The Design-Builder shall be required to coordinate and perform the administrative requirements necessary in order to relocate any occupants from any Additional Property proposed to be acquired by the Design-Builder. All work prepared by the Design-Builder with respect to relocation shall be performed in accordance with applicable State and Federal Law (including the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, Public Law 91-646, as amended).

The Design-Builder's major activities with the relocation of occupants from the Additional Properties include:

- Interview owner/occupant
- Prepare relocation plan
- Obtain approval as relocation advisory agency
- Identify alternative sites
- Prepare personal property inventory*
- Identify specific relocation site*
- Obtain move-cost estimates*
- Review estimates
- Issue recommendation
- Obtain approval of relocation amount from Right-of-Way Bureau
- Issue authorization to move
- Monitor relocation
- Prepare claim package
- Check outstanding claims
- Obtain relocation claim approval from MassDOT

* Performed in cooperation with occupant.

8.4.3 The Design-Builder's Responsibilities for Case Files

The Design-Builder shall prepare and submit to MassDOT for each Additional Property a case file (using MassDOT's electronic case file format) containing all necessary documentation for acquiring the Additional Property, including that information set forth below. A separate Case File shall be prepared for each owner. The Design-Builder shall provide all field survey work, base mapping and other services necessary to complete the Case File documentation at its own expense. The Case File shall be labeled using the case file contents naming guide and shall contain the documentation as required in Section 8.4.4 through Section 8.4.9, inclusive.

8.4.4 Eforms

MassDOT Right of Way Eforms shall be used to collect all relevant property information and to generate the following:

- Journal
- Notice to Owner
- Property Interview Mail out letter (if necessary)
- Property Interview Record
- Layout Schedule (Recorded Land or Registered Land)
- Personal Property Report (if applicable)
- Structure and Occupancy Report (if applicable)
- Right of Entry (if applicable)
- Land Damage Agreement (if applicable)
- Offer Letter
- Notification of Award of Damages Report
- Notification of Award of Damages Report Mail out letter (if necessary)
- Owner's Request for Review (if necessary)
- Payment & Computation Schedule

8.4.5 Parcel Sketch

The Design-Builder shall provide parcel sketch in electronic form. An accepted preliminary Right of Way plan is required to prepare the parcel sketch. The parcel sketch shall show the total Additional Property with the taking and remainder areas clearly noted.

8.4.6 Appraisal(s)

For each Additional Property, the Design-Builder shall cause a fair market value appraisal of the real property to be prepared, including the improvements making up a part of the realty (fixtures and equipment). The appraisal(s) shall be prepared by an appraiser(s) listed on MassDOT's list of approved real estate appraisers. For properties expected to cost more than \$300,000.00 to acquire, two complete appraisals are required. All appraisals shall be prepared in conformance with Law (including the Uniform Relocation Assistance and Real Property Acquisitions Policies Act of 1970, Public Law 91-646, as amended) and with professional appraisal methods for each Additional Property to be acquired. The form of all such appraisals shall be approved by MassDOT.

8.4.7 Real/Personal Property Report

The real/personal property report shall detail the items making up each Additional Property, and classify such items as real estate, tenant-owned improvements or personal property. Particular attention should be paid to items which have questionable classifications.

8.4.8 Title Examination

The Case File shall include a current title report for each Additional Property and a copy of each exception listed. The title process requires delivery of a preliminary title report for review by MassDOT, followed by an amended title report if necessary. Each title report shall note any encumbrances or title clearance requirements. The title report included in each Case File shall be updated to 30 Days or less prior to the date of the Case File's submittal to MassDOT and shall incorporate all corrections requested by MassDOT. Title examinations shall be completed by licensed attorneys on MassDOT's approved list. As soon as practicable following its completion, a copy of each title examination shall be forwarded to: Director, MassDOT, Right-of-Way Bureau, 10 Park Plaza, Boston, MA 02116.

8.4.9 Recording Document

A legal description section shall be included in the Case File noting the form of granting instrument (fee, easement, etc.) adequate to effect the desired acquisition of the Additional Property, signed by a land surveyor licensed to practice in the Commonwealth of Massachusetts. A separate legal description is required for each parcel of the Additional Property. The Design-Builder shall also cause a plan or plans to be prepared showing the dimensions of each Additional Property. For properties intended to be placed within the State Highway Location Line, a State Highway Alteration Plan is required. All plans shall be in recordable form and shall be prepared in a form and manner acceptable to MassDOT in all respects.

8.5 REPRESENTATIONS BY THE DESIGN-BUILDER

The Design-Builder or its representative shall not represent himself as an agent of MassDOT while communicating with any of the owners or occupants of the Additional Properties for the purposes of completing any of the documentation to be contained in the Case Files without prior MassDOT approval. The Design-Builder or its representative shall not appear before any owner or occupant of any Additional Property for the purposes of completing any of the documentation to be contained in the Case Files without either being accompanied by an authorized representative or employee of MassDOT or first presenting to that owner or occupant a letter, executed by MassDOT, stating that neither the Design-Builder nor its agent or representative is an agent or representative of MassDOT for the purposes of the acquisition of the Additional Property or the preparation of any relevant documentation. The Design-Builder or its representative shall at all times conform to the requirements of applicable Law in all communications with the owners or the occupants of the Additional Properties.

8.6 REVIEW OF THE CASE FILES

Within 30 Business Days following MassDOT's receipt of a completed Case File, MassDOT shall review the documents contained therein and shall notify the Design-Builder of any deficiencies. If the Case File is deficient in any way, the Design-Builder shall correct every deficiency and resubmit the Case File for MassDOT's approval. With each re-submittal, a 10 Day review period begins during which time MassDOT may approve or disapprove the information in the Case File. This process shall continue until MassDOT has received a complete Case File with no deficiencies.

8.7 AMENDMENTS TO CASE FILES

The Design-Builder shall be responsible for any expenses incurred by MassDOT associated with the Design-Builder's request to amend information in a Case File after its submission to MassDOT.

8.8 NEGOTIATIONS AND RELATED PROCEEDINGS

Negotiations and/or condemnation proceedings for any Additional Property will be brought by MassDOT at MassDOT's expense within a reasonable time following MassDOT's approval of the Case File for said Additional Property. The Design-Builder shall assist MassDOT as requested during the negotiation and/or condemnation proceedings, including providing updated or new appraisals, preparing for court testimony, negotiating with the property owner(s) and providing witnesses to testify with respect to the Design-Builder's work products. The Design-Builder will not be required to provide any expert witnesses other than the Person who originally performed the work and/or that Person's employees.

Once begun, MassDOT will provide the Design-Builder with updates as requested regarding the status of the acquisition process for any Additional Property. MassDOT shall notify the Design-Builder of the availability of the Additional Property within seven Days after MassDOT has received access to said Additional Property and shall notify the Design-Builder of any access restrictions.

8.9 COOPERATION AND COORDINATION WITH MASSDOT

At all times throughout the Right-of-Way acquisition process set forth in this Section 8, the Design-Builder shall cooperate and coordinate its activities with the Director of MassDOT's Right-of-Way Bureau.

SECTION 9.0: PROJECT SCHEDULING

9.1 PROSECUTION OF WORK (MILESTONES)

(Supplementing Subsection 8.03 of the Massachusetts Department of Transportation Standard Specifications for Highways and Bridges, 2026 Edition)

MassDOT has determined that the Design-Builder shall utilize accelerated and/or conventional construction techniques, including prefabricated elements, that expedite construction with a minimum disruption to road users and minimal impact to environmental resources while providing work zone safety and an enhanced quality for this Project.

In submitting a Price Proposal for this RFP, the Design-Builder acknowledges that a detailed plan has been developed to meet the Contract Time for all aspects of the RFP; including shift work; extended work hour requirements/restrictions; all the limitations of operations; utility coordination, as well as the planning of all subcontractor and supplier operations.

The following Milestones are to be included in the Design-Builder's Baseline and Contract Progress Schedule submissions. The Design-Builder shall identify the completion of the work pertaining to each Contract Milestone through the inclusion of a Finish Milestone in the Baseline Contract Progress Schedule.

It is anticipated that the Notice to Proceed will be issued to the Design-Builder on or before the date specified in RFP Volume I: Instructions to Proposers, Schedule of Events. The following Contract Milestones are to be included in the Design-Builder's Baseline and Contract Progress Schedule submissions. The Design-Builder shall identify the completion of the work pertaining to each Contract Milestone through the inclusion of a Finish Milestone in the Baseline Contract Progress Schedule.

The Design-Builder shall complete the Work in accordance with the following milestones:

- Milestone No. 3: Full Beneficial Use
- Milestone No. 2: Substantial Completion
- Milestone No. 1: Contractor Field Completion

These Milestones are defined and restricted as identified below:

Milestone No. 3 – Full Beneficial Use

Full Beneficial Use defined as: The majority of contract Work has been completed and the asset(s) has been opened for full multi-modal transportation use, except for limited contract work items that do not materially impair or hinder the intended public use of the transportation facility. All anticipated lane takings have been completed, except for minor, short term work items.

- All travel lanes, sidewalks, and bicycle accommodations are in their final configuration.
- Fulfillment of the requirements identified in the MassDOT Standard Specifications for Highways and Bridges, 2026 Edition.

The Design-Builder shall achieve Milestone No. 3 within **1973** Calendar Days from NTP.

Milestone No. 2 – Substantial Completion

Substantial Completion defined as: A walkthrough of the entire contract Work has been performed by the Resident Engineer, a Punch List has been generated and the Work required by the contract, including paperwork, has been completed, except for work having a contract price of less than one percent of the adjusted total contract price, including overruns, underruns and all contract amendments. All material submittals have been received by the District Materials Lab.

In addition, Milestone No. 2 – Substantial Completion also includes the following:

- Completion of all environmental mitigation and restoration areas.
- Completion of the roadway resurfacing, final drainage, guardrail, barrier, and lane markings.
- Punch List has been developed.
- Fulfillment of the requirements identified in the MassDOT Standard Specifications for Highways and Bridges, 2026 Edition.

The Design-Builder shall achieve Milestone No. 2 within **1994** Calendar Days from NTP.

Milestone No. 1 – Contractor Field Completion

Contractor Field Completion is defined as: All physical contract Work is complete including Punch List. The Contractor has fully de-mobilized from field operations.

In addition, Milestone No. 1 – Contractor Field Completion also includes the following:

- Completion of the Project including Milestone No. 2 and all Punch List Work.
- Acceptance of As-Built Drawings and Rating Reports.
- Fulfillment of the requirements identified in the MassDOT Standard Specifications for Highways and Bridges, 2026 Edition.

The Design-Builder shall achieve Milestone No. 1 within **2,039** Calendar Days from NTP.

9.2 HOLIDAY WORK RESTRICTIONS

(Supplementing Subsection 7.09 of the Massachusetts Department of Transportation Standard Specifications for Highways and Bridges, 2026 Edition)

The District Highway Director (DHD) may authorize work to continue during these specified time periods if it is determined by the District that the work will not negatively impact the traveling public. DHD may allow work in those areas on a case by case basis and where work is behind barrier and will not impact traffic.

Below are the holiday work restrictions:

New Year's Day (Federal Holiday)

No work on major arterial roadways from 5:00 AM on the day before until the normal start of business on the next subsequent business day. No work on local roadways on the holiday without permission by the DHD and the local police chief.

Martin Luther King's Birthday (Federal Holiday)

No work restrictions due to traffic concerns, however work on local roadways requires permission by the DHD and local police chief.

President's Day (Federal Holiday)

No work restrictions due to traffic concerns, however work on local roadways requires permission by the DHD and local police chief.

Evacuation Day (Suffolk County State Holiday)

No work restrictions due to traffic concerns.

Patriot's Day (State Holiday)

Work restrictions will be in place for Districts 3 and 6 along the entire Boston Marathon route and any other locations that the DHD in those districts determine are warranted so as to not to impact the marathon. All other districts work restrictions will be as per DHD.

Mother's Day

No work on Western Turnpike and Metropolitan Highway System from 5:00 AM on the Friday before, until the normal start of business on the following day.

Memorial Day (Federal Holiday)

No work on major arterial roadways from 5:00 AM on the Friday before, until the normal start of business on the following day.

Bunker Hill Day (Suffolk County State Holiday)

No work restrictions due to traffic concerns.

Juneteenth

No work restrictions due to traffic concerns, however work on local roadways requires permission by the DHD and local police chief.

Independence Day (Federal Holiday)

No work on major arterial roadways from 5:00 AM on the day before until the normal start of business on the next subsequent business day. No work on local roadways on the holiday without permission by the DHD and the local police chief.

Labor Day (Federal Holiday)

No work on major arterial roadways from 5:00 AM on the Friday before, until the normal start of business on the following day.

Columbus Day (Federal Holiday)

No work on major arterials from 5:00 AM on the Friday before, until the normal start of business on the following day

Veterans' Day (Federal Holiday)

No work restrictions due to traffic concerns.

Thanksgiving Day (Federal Holiday)

No work on major arterials from 5:00 AM two days before until the normal start of business on the following Monday.

Christmas Day (Federal Holiday)

No work on major arterial roadways from 5:00 AM on the day before until the normal start of business on the next subsequent business day.

9.3 SCHEDULE OF OPERATIONS

Replace Subsection 8.02 of the Standard Specifications with the following:

An integrated cost and schedule controls program shall be implemented by the Contractor to track and document the progress of the Work from Notice to Proceed (NTP) through the Contractor Field Completion (CFC) Milestone. The Contractor's schedules will be used by the Engineer to monitor project progress, plan the level-of-effort required by the Department's work force and consultants and as a critical decision-making tool. Accordingly, the Contractor shall ensure that it complies fully with the requirements specified herein and that its schedules are both accurate and updated as required by the specification throughout the life of the project. Detailed requirements are provided in Subsection 722 of the Massachusetts Department of Transportation Standard Specifications for Highways and Bridges, 2026 Edition, and as amended below in Section 9.4.

9.4 CONSTRUCTION SCHEDULING

(Supplementing Subsection 722 of the Massachusetts Department of Transportation Standard Specifications for Highways and Bridges, 2026 Edition)

722.63.C: Contract Progress Schedules / Monthly Updates

Add the following paragraph to the end of this subsection:

The Design-Builder shall require each fabricator of critical items (Precast Elements, Structural Steel) to provide a Monthly Fabrication schedule which shall be submitted to MassDOT with each Stated Contract Progress Schedule on a monthly frequency.

722.81: Basis of Payment

Replace the first paragraph with the following:

The timely and accurate submission of the Baseline Schedule is critical to the Contract and the Department's ability to make informed decisions. Only payments under Item 740.3 - Engineer's Field Office and Equipment and Item 748. - Mobilization will be made until the Baseline Schedule is accepted by the Engineer.

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9.5 ACCESS RESTRAINTS

[**THIS SECTION NOT APPLICABLE**]

9.6 INCENTIVE/DISINCENTIVE REQUIREMENTS

[**THIS SECTION NOT APPLICABLE**]

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9.7 DETERMINATION AND EXTENSION OF CONTRACT TIME FOR COMPLETION (TIME EXTENSIONS)

(In cases of delay and except as defined in Section 9.6 above, if applicable)

A. General

It is an essential part of all Contracts that the Design-Builder shall perform the Work fully, entirely and in an acceptable manner within the Contract Duration.

The Contract Duration is based upon the requirements of public convenience and the assumption that the Design-Builder will prosecute the Work efficiently and with the least possible delay, in accordance with the maximum allowable working time, as specified in the Contract.

The Contract Duration has been carefully considered and has been established for reasons of importance to the Department. The Contract Duration will be enforced and it is understood that the Design-Builder accepted this concept at the time of the submission of the bid. The timing of the Notice to Proceed (NTP) has been taken into account in the determination of the Contract duration and the timing of the issuance of the NTP shall not, by itself, be a reason for a time extension.

An extension of Contract time will be granted only if entitlement to a time extension has been clearly demonstrated to the satisfaction of MassDOT by a documented time entitlement analysis, performed in accordance with the requirements of this Section.

B. Requests for Additional Contract Time (Time Extensions)

In response to a request for a time extension, an extension of contract time may be granted for demonstrated delays resulting from only one, or, in the case of concurrent delays, a combination of the following causes:

1. Extra Work

Each extra work order (EWO) proposal shall include an evaluation of the impact of the EWO on contract time, expressed in calendar days. If there is no impact to the critical path as a result of the EWO, the EWO shall indicate this by stating that zero (0) calendar days of additional time is being requested. The need for a time extension as a result of the EWO must be clearly demonstrated by a documented time entitlement analysis (TEA) performed by the Design-Builder in accordance with the requirements of this Section. No Time Extension will be granted for any change that does to impact the current critical path and/or any critical path impact that can be mitigated by means of various recovery options to be presented to MassDOT in a timely manner. A documented preliminary TEA supporting the EWO proposal shall be submitted to MassDOT as part of the EWO proposal.

2. MassDOT-Caused Delays

If any part of the Work is delayed or suspended by the Department, the Design-Builder will be granted a time extension to complete the Work or any portion of the Work only if entitlement to this time extension has been clearly demonstrated by a documented time entitlement analysis and a clear impact to the current critical path. Department-caused delays shall not include delays to or suspensions of the Work that result from the fault or negligence of the Design-Builder.

3. Delays Not Caused by Design-Builder Fault or Negligence

When delays occur due to reasonable causes beyond the control and without the fault or negligence of the Design-Builder, including, but not restricted to: “Acts of God”; war, whether or not declared, civil war, insurrection, rebellion or revolution, or to any act or condition incident to any of the foregoing; acts of the Government; acts of the State or any political subdivision thereof; acts of other contracting parties over whose acts the Design-Builder has no control; fires; floods; epidemics; abnormal time of Winter freezing or Spring thawing; strikes, except those caused by improper acts or omissions of the Design-Builder; extraordinary delays in delivery of materials caused by strikes, lockouts, wrecks, and/or freight embargoes; a time extension will be granted only if entitlement to a time extension has been clearly demonstrated to have impacted the critical path, only if a presentation of alternative recovery options has been determined to be not acceptable to MassDOT, and only if the delays have been documented by a timely and acceptable time entitlement analysis.

An “Act of God” as used in this Section is construed to mean an earthquake, flood, cyclone, hurricane, tornado, or other cataclysmic phenomenon of nature beyond the power of the Design-Builder to foresee and/or make preparations against. Additional consideration may be given to severe, abnormal flooding in local rivers and streams that has been reported as such by the National Weather Service. Rain, wind, snow, and/or other natural phenomena of normal intensity, based on National Weather Service reports, for the particular locality and for the particular season of the year in which the Work is being prosecuted, shall not be construed as an “Act of God” and no time extension will be granted for the delays resulting therefrom.

Within the scope of acts of the Government, consideration will be given to properly documented evidence that the Design-Builder has been delayed in obtaining any material or class of labor because of any assignment of preference ratings by the Federal Government or its agencies to defense contracts of any type.

4. Delays Caused by Public Service Corporations, Municipal Departments or Other Third Parties

If any part of the Work is delayed by public service corporations, municipal departments or other third parties, a time extension will be granted only if entitlement to a time extension has been clearly demonstrated by a documented time entitlement analysis.

C. Time Extension Determination

1. When the Design-Builder submits a request for a time extension, placing the MassDOT on notice of a delay due to any of the causes listed, it shall be submitted in writing to MassDOT within fifteen (15) calendar days after the start of the delay. No time extension will be granted if a request for a time extension is not filed within fifteen (15) calendar days after the start of the delay.

A documented preliminary time entitlement analysis (TEA) supporting the request for a time extension and meeting the requirements of this Section, shall be submitted to MassDOT no later than fifteen (15) calendar days after the request for a time extension is submitted to MassDOT or thirty (30) calendar days after the start of the delay. A documented final TEA shall be submitted to MassDOT no later than fifteen (15) calendar days after the end of the delay. During the time between the preliminary and final TEAs, the delay shall be documented in statused contract progress schedules submitted in accordance with the requirements of this Section.

2. No time extension will be granted for any delay or any suspension of the Work due to the fault of the Design-Builder.
3. No time extension will be granted if the request for a time extension is based on any claim that the originally established contract duration was inadequate.
4. Time extensions will only be granted for delays, including concurrent delays, to activities affecting contract milestones, the contract completion date and/or other critical path activities as demonstrated to the satisfaction of MassDOT by a detailed time entitlement analysis that clearly states the number of calendar days of extra time being requested.
5. The probable slowdown or curtailment of work during inclement weather and winter months has been taken into consideration in determining the contract duration and therefore no time extension will be granted.
6. Any work restrictions related to weather, permit conditions, community accommodation, traffic or any other restriction specified in the Contract or reasonably expected for the particular locality and for the particular season of the year in which the Work is being prosecuted must be considered in the analysis of each individual time extension and shall not be considered, in itself, justification for an extension of time.
7. Any time entitlement analysis prepared for the purpose of requesting a time extension shall clearly indicate any proposed overtime hours or additional shifts that are incorporated in a cost and resource loaded Critical Path Method Schedule. MassDOT shall have final approval over the use of overtime hours and additional shifts and shall have the right to require that overtime hours and/or additional shifts be used to minimize the duration of time extensions if it is determined to be in best interest of the MassDOT to do so.

D. Disputes

Any dispute regarding whether or not a time entitlement analysis demonstrates entitlement to a time extension, the number of days granted in a time extension or any other question of fact arising under this Section shall be determined by MassDOT.

The Design-Builder may dispute a determination by MassDOT by filing a claim notice within fourteen (14) calendar days after the Design-Builder's request for additional time has been denied or if the Design-Builder does not accept the number of days granted in a time extension. The Design-Builder's claim notice shall include a time entitlement analysis that sufficiently explains the basis of the time-related claim. Failure to submit the required time entitlement analysis with the claim notice shall result in denial of the Design-Builder's claim.

SECTION 10.0: CONSTRUCTION

10.1 PROJECT OFFICE LOCATION

Design-Builders submitting Proposals in response to this RFP must have an established, fully staffed office or shall establish a Project office within approximately one (1) mile of the Project location in Chicopee, Massachusetts. The Design-Builder shall provide a field office for MassDOT and Project staff. The Design-Builder shall establish the field office within one (1) month of NTP. MassDOT strongly recommends that both parties' staff be located together with separation between offices.

The Design-Builder shall furnish office furniture, equipment, phone services, computer and all office supplies and maintain a field office for MassDOT and Project staff for 7 MassDOT staff members in accordance to the relevant provisions of Subsection 740 of the MassDOT Standard Specifications for Highways and Bridges, 2026 Edition except as modified by BTC Special Provisions Item 740.3 Engineer's Field Office and Equipment as contained in Appendix C. In addition, the field office shall include a conference room with a conference table and chairs to accommodate all Project meetings.

MassDOT has not identified in the BTC any MassDOT owned property outside of the project limits available for the Design-Builder's use for laydown or staging. The Design-Builder is responsible for securing any additional areas from MassDOT or from private owners for use as staging and laydown to support operations. This may require the Design-Builder to enter into agreements with third parties for the use of private property for staging and laydown. The Design-Builder shall identify in their proposal areas they have identified as potential areas for staging and laydown and any agreements, executed or pending, with the owners of these properties.

10.2 PRICE ADJUSTMENTS

This Contract contains price adjustments for hot mix asphalt cement mixtures, diesel fuel, and gasoline. For this Project the base prices are as follows: liquid asphalt \$640.00 per ton, diesel fuel \$3.141 per gallon, Portland concrete \$425.13 per ton, and gasoline \$3.141 per gallon and Steel Base Price Index 362.6. MassDOT posts the **Price Adjustments** on their Highway Division's website at <https://www.mass.gov/service-details/massdot-current-contract-price-adjustments>

STEEL PRICE ADJUSTMENT

This Contract contains Price Adjustments for reinforcing steel and structural steel. See Document 00813DB - PRICE ADJUSTMENT FOR STRUCTURAL STEEL AND REINFORCING STEEL DESIGN-BUILD provided in Appendix D for their application and base prices.

10.3 QUALITY ASSURANCE REQUIREMENTS

The Design-Builder shall perform the QC inspection, sampling and testing activities outlined in the Design-Builder's approved Quality Management Plan and all required Construction QC Plans. As part of MassDOT's oversight role, all materials and Work shall be subject to Acceptance inspection sampling, testing, and inspection by MassDOT. At all points in performance of the Work at which MassDOT Acceptance sampling, testing, inspection, or related approvals are required by the Contract, the Design-Builder shall not proceed beyond that point until MassDOT has completed such Acceptance activities or waived its right in writing.

As part of MassDOT's oversight role, all materials and each part or detail of the Work shall also be subject to Acceptance inspection and testing by MassDOT.

10.4 MATERIALS QUALITY ASSURANCE REQUIREMENTS

The Design-Builder is required to prepare and maintain its own Quality Control Materials Sampling & Testing Ledger for the Project and provide MassDOT with planned QC sampling & testing frequencies for all Work Items in accordance with the requirements of Section 2.7.4. MassDOT will prepare and maintain an Acceptance Materials Sampling & Testing Ledger (RMS 360) to plan and document MassDOT's Acceptance sampling frequencies and Acceptance testing results in accordance with the following procedures:

- The Resident Engineer in coordination with the District Materials Engineer shall be responsible for creating, maintaining, and updating the RMS 360 in accordance with current MassDOT procedures.
- When the Project design is split into multiple Work Packages (i.e. Bridge 1, Bridge 2, Highway, etc.), the Work Packages and their Work Items shall be listed separately from one another within the RMS 360. For example:

995.01 Bridge A

- a. Concrete
- b. Reinforcing Steel
- c. Spray Applied Membrane Waterproofing
- d. Etc.

995.02 Bridge B

- a. Concrete
- b. Reinforcing Steel
- c. Spray Applied Membrane Waterproofing
- d. Etc.

- Once an Early Release for Construction (ERC) package or Issued for Construction package is approved for construction the MassDOT RMS 360 shall be updated to reflect the final list of Work Items.
- MassDOT shall only pay for completed Work Items listed on the RMS 360 and which are accompanied with all necessary Design-Builder QC documentation and MassDOT Acceptance documentation as required by the Project Specifications and the RMS 360.
- MassDOT will periodically audit the Design-Builder's Quality Control Materials Sampling & Testing Ledger and all required QC documentation. This includes all documentation requirements specified in the RMS 360. If non-conformances are found, a Deficiency Report will be initiated by MassDOT in accordance with Section 2.9.

10.5 SUPERVISION AND CONSTRUCTION PROCEDURES

The Design-Builder shall take all reasonable precautions and be solely responsible for the safety of, and shall provide protection to prevent damage, injury or loss to: (a) all employees of the Design-Builder and its Subcontractors performing the Work and other persons who are on site or would reasonably be expected to be affected by the Work; (b) the Work and materials and equipment to be incorporated therein; and (c) all other property on, adjacent to, or near the Right-of-Way.

The Design-Builder shall provide adequate security for the site and shall be responsible for damage or loss to all property at the site.

The Design-Builder shall provide appropriate security for MassDOT designated/approved staging areas and shall be responsible for damage or loss to all property at the site owned by the Design-Builder, MassDOT or any other Person which results from Work or is directly related to the Design-Builder's actions.

The Design-Builder shall be solely responsible for the safety and security of the work zone, including the installation and maintenance of perimeter controls such as fences and gates in areas that do not impact the traveled way. The Design-Builder shall not interfere with access into or through private property via existing entrances and pathways, and shall maintain alternative temporary accessible pedestrian detour routes, where applicable, at all times.

The Design-Builder shall ensure that all of its activities and the activities of its employees, agents, officers and Subcontractors and all other Persons for whom the Design-Builder may be legally or contractually responsible are undertaken in a manner that will minimize the effect on surrounding property and the public to the maximum extent practicable.

In the event of the Design-Builder's discovery of (a) any historic, archaeological or paleontological resources; or (b) any Differing Site Conditions, the Design-Builder shall immediately notify MassDOT verbally, to be followed immediately by written notification. The Design-Builder shall immediately stop work in and secure the area pending further instructions. In such event, MassDOT shall view the location within 48 hours of receipt of such notification and shall advise the Design-Builder at that time whether Work may be resumed or whether further investigation is required.

In the event of the Design-Builder's discovery of any remains that appear to be human, the Design-Builder shall immediately suspend work, secure the area, and verbally notify the Essex Medical Examiner's Office and MassDOT. If the remains are determined to be human and are judged to be more than 100 years old, MassDOT shall notify the State Archaeologist and arrange for a site visit. The Design-Builder shall not resume work in the affected area until so directed by MassDOT.

MassDOT shall promptly conduct further investigations as deemed appropriate. MassDOT shall use reasonable efforts to determine within five (5) business days after receipt of such notification whether the resource or condition falls within the scope of causes (a) or (b) of the preceding paragraph and shall immediately notify the Design-Builder of its determination once made. MassDOT shall at that time also advise the Design-Builder of any action to be taken regarding the situation. (If a threatened or endangered species, or archaeological or paleontological or historic resource is present, the notice shall also advise the Design-Builder what course of action MassDOT intends to take with respect thereto and whether the location shall be fenced off or whether Work may resume.)

MassDOT shall have the right to require the Design-Builder to re-commence Work in the area at any time, even though an investigation may be on-going. The Design-Builder shall promptly re-commence Work in the area upon receipt of notification from MassDOT to do so.

Notwithstanding the foregoing, the Design-Builder shall not be obligated to stop Work upon discovery of (a) any resources or conditions which the RFP documents indicate are present in the location in question, or (b) where the Design-Builder can take actions pertaining to the resources or conditions permitted under the terms of a Government Approval. The Design-Builder shall provide prompt notice to MassDOT of any such discovery.

10.6 COMMENCEMENT OF CONSTRUCTION

The Design-Builder shall not commence construction of any portion of the Project prior to occurrence of all the following events except with the prior written approval of MassDOT:

- MassDOT shall have approved or accepted: (i) the Hazardous Materials Management Plan when planned construction involves or may involve contact with Hazardous Materials; (ii) the Project Schedule; and (iii) the Design related to that portion of the Project; (iv) any applicable construction means and methods as required; (v) the Project Quality Management Plan (QMP) and all relevant Quality Control Plans; and (vi) the Project Management Plan; (vii) Construction Staging Plans including a designated truck route and employee parking areas; (viii) Noise Control Plans; and (ix) Dust Control Plans.
- All Governmental Approvals necessary for construction of the applicable portion of the Project shall have been obtained and all conditions of such Governmental Approvals which are a prerequisite to commencement of such construction shall have been performed.
- All required insurance and bonds shall remain in full force and effect.
- The Design-Builder shall have completed all required investigations to establish and confirm the existence and location of Utilities in such portion of the Project.

- All rights of entry or other approvals are obtained as necessary in order to permit the Design-Builder to enter into physical possession of the property upon which the Project will be constructed.
- All required Pre-Construction meetings have been held.
- The Design-Builder has posted a sign at the job site that clearly provides the following information to the general public: MassDOT job name, MassDOT contract number, name of Design-Builder with contact telephone number for members of the public. The telephone number shall be staffed at all times (24 hours per day, 7 days per week, 365 days per year) for the purposes of receiving questions and complaints.

Any Early Start of Construction shall be at the sole and complete risk of the Design-Builder, and any changes, reconstruction, removals and schedule delays required for compliance with the final approved Design Documents shall be at the Design-Builder's sole cost and expense. If the accepted Design Documents for the Project require changes to the Work previously performed, the Design-Builder shall make such changes to the Work at its sole cost and expense, and with no Contract time extension.

10.6.1 Construction Monitoring Plans

The Design-Builder shall be responsible for preparing a construction monitoring plan to monitor vibration, accelerations, vertical settlement, damage, and lateral movement of existing substructures and adjacent ground, temporary excavation support systems and adjacent ground, and existing structures and infrastructures during construction including the existing bridges, ancillary structures and infrastructure.

The Design-Builder shall be responsible for the implementation of its construction monitoring plan prior to commencing Stage 1 of the BTC. Refer to Section 4.11.8 Geotechnical Instrumentation and Monitoring.

The Design-Builder's construction monitoring plan shall include details on the proposed instrumentation, monitoring frequency, threshold values of monitored parameters, and describe the response plan that will be implemented if threshold parameters are exceeded. The construction monitoring system shall be in good working condition, and if damaged, repairable to good working condition such that there is minimal disruption to monitoring capabilities. The design and distribution of instrumentation within the Working Plan shall demonstrate an understanding of the need, purpose, and application of each proposed type. The Design-Builder shall provide, install, and monitor instrumentation during and after construction.

During staged demolition of the existing structures and installation of support of excavation systems, the Design-Builder shall provide daily Construction Instrumentation Monitoring Reports to MassDOT including interpretation of data by the Design-Builder's Lead Geotechnical Engineer. For all other times the Design-Builder shall provide weekly report for times with construction activities are performed. The daily and weekly reports shall include clear and explicit statements of exceedances of any pre-determined threshold value. Should any threshold values be exceeded, the Design-Builder shall verbally notify MassDOT immediately and take corrective action in accordance with the Response Plan where instrumentation data indicate adverse conditions.

Before installing any instrumentation, submit for MassDOT review and acceptance, the location of all monitoring points and a description of methods, equipment, materials and other details consistent with the above requirements.

10.6.2 Utility Protection Plan

The Design-Builder shall be responsible for preparing a utility monitoring plan to monitor vibration, vertical settlement, and lateral movement of the existing utilities throughout all phases of construction. The Design-Builder shall be responsible for the implementation of its utility monitoring plan prior to commencing Phase I of the BTC and any construction that may cause ground vibration.

10.7 HOUSEKEEPING AND MAINTENANCE OF RIGHT-OF-WAY

Throughout all phases of construction, including suspension of Work, and until Final Acceptance, the Design-Builder shall keep the Right-of-Way and work site clean and free from rubbish and debris.

The Design-Builder shall not discharge smoke, dust, or any other air contaminants into the atmosphere in such quantity as will violate applicable Environmental Laws or Governmental Approvals, and shall fully comply with Draft BTC Special Provision Subitem 119.5: Noise Control and Special Provision Subitem 440.5: Dust Control as provided in Appendix C.

If the Design-Builder defaults or neglects to maintain the Project free from accumulation of waste and rubbish as set forth above or otherwise fails to comply with the use of site and clean-up procedures required by the RFP, and fails within a 24 hour period after receipt of oral notice, subsequently confirmed in writing, to commence and continue correction of such default or neglect with diligence and promptness, MassDOT may after such twenty-four (24) hour period, immediately, without prejudice to other remedies MassDOT may have, correct such deficiencies. In such case, MassDOT shall deduct from payments then or thereafter due the Design-Builder, the cost of correcting such deficiencies. If payments then or thereafter due to the Design-Builder are not sufficient to cover such amounts, the Design-Builder shall pay the difference to MassDOT on demand.

The Design-Builder shall be responsible for snow and ice removal within the work zone, staging areas, and construction access driveways. Snow removal in the active traveled way will continue to be performed by the entity performing such activities prior to the Contract.

The Design-Builder shall clean drainage structures and outlets receiving runoff from the Project limits throughout the duration of construction activities to ensure that pre-Contract drainage patterns are preserved.

10.8 INSPECTION AND MAINTENANCE OF NEW/TEMPORARY BRIDGE STRUCTURES

The Design-Builder shall be responsible for inspection and maintenance of all new and temporary structures within the project limits until Final Acceptance.

10.8.1 Inspection of Existing Bridges

MassDOT is responsible for conducting the required inspections for all existing bridges on the National Bridge Inspection Standards (NBIS) regulations. The Design-Builder shall coordinate with MassDOT and allow access once construction begins for all necessary bridge inspections of the existing structures or portions of the existing structures during staged construction to complete its mandated NBIS inspection. The Design-Builder shall also coordinate and allow access for MassDOT bridge inspections following staged construction phases once those portions of the new structure are open to traffic as well as following the overall completion of the bridge construction.

The Design-Builder is advised that the existing Bridge No. C-13-038 is in poor condition, with widespread deterioration adversely affecting its load-carrying capacity. The Design-Builder shall perform frequent and thorough inspections of the bridge structure on a routine basis throughout all phases of construction to monitor the condition of the superstructure and substructure and to identify the development or progression of structural deficiencies. Particular emphasis shall be placed on the Stage 1 condition, during which traffic patterns are altered from the existing configuration, with inspections specifically evaluating the effects of modified traffic loading. Additional repairs beyond those identified in these provisions may be required based on observed field conditions, and the Design-Builder shall be fully responsible for maintaining the structural integrity and safe performance of the existing bridge for the duration of construction.

10.8.2 Repair of Existing Bridges

General Repairs:

During prosecution of the work, MassDOT may identify locations of any necessary deck or other structural component repairs to any bridge located within the project's limits, emergency or otherwise, based on observations from the Engineer, routine Bridge Inspections, and alerts by the Design-Builder. The Design-Builder shall coordinate with the Resident Engineer the location of repairs through sounding or other approved testing methods and limits of all repairs shall be agreed upon by MassDOT prior to the execution of repair. All mobilizations for repair activities are to be coordinated with MassDOT.

Bridge No. C-13-038 (OWR):

The existing Bridge No. C-13-038 (OWR) is in poor condition with a current load carry capacity below statutory level. A temporary lane arrangement has been implemented over the bridge to restrict live load from the most severely deterioration structural elements. The traffic management sequence proposed by the BTC requires targeted repairs to the existing I-391 Southbound Bridge No. C-13-038 (OWR) superstructure to restore operating ratings over statutory, prior to initiating future construction stages. The scope of repairs is anticipated to consist of partial depth and/or full depth concrete patch repairs to the wearing surface, deck, parapets, median, and box girder bottom flanges and webs. Temporary shoring of the existing structure may be required.

The Design-Builder shall be responsible for developing appropriate repair details and submitting to MassDOT for review and approval in advance of the work as an early action submittal.

Estimated locations of existing deterioration which require repair are identified in Appendix C. The Design-Builder shall thoroughly review the extents of existing deterioration and consider the influence it may have on the means and methods for completing the work. The Design-Builder shall note that the deterioration presented in Appendix C is based on the observed condition of the existing bridge structures at the time of August 2025 special member inspection and may not represent actual conditions at the time of construction. Prior to commencing repairs, the Design-Builder shall hammer sound inspect the specified bridge components in the presence of the Engineer to determine the actual limits of repair.

The Design-Builder is permitted to evaluate and propose alternate traffic management sequences as part of their design. However, the condition of the existing bridge, and the associated repair needs for addressing structural deficiencies and restoring a statutory load carrying capacity, must be considered by the Design-Builder if alternate traffic management sequences are considered, the Design-Builder shall maintain the stability and statutory load carrying capacity of all structures throughout all stages of the work.

Compensation for all traffic management and mobilizations for the bridge repairs will be paid under the following Pay Items:

Item	Description	Unit
851.11	TRAFFIC MANAGEMENT AND MOBILIZATION FOR EMERGENCY REPAIRS	Day

This item is intended for emergency temporary traffic management which is necessary to perform emergency bridge repairs, to any bridge located within the project’s limits, outside of an already established work zone established and paid for under Item 851.01 or work zone established and paid for under Item 851.12, as described below.

Upon NTP, the Design-Builder shall be responsible for the maintenance and repair of each of the existing Project bridge decks up until final acceptance. The Design-Builder must anticipate emergency repairs and maintain forces, materials and equipment for such events. The Design-Builder should independently monitor the decks for defects and make repairs as necessary. Requests for emergency repair by MassDOT must be responded to by the Design-Builder within **two hours** of notification.

If the Design-Builder has not started physical work on an assigned emergency repair within twenty-four (24) hours from receipt of the notification, no payment under Item 851.11 shall be made subject to the discretion of the Engineer. Furthermore, the Design-Builder will be assessed damages in the amount of \$1,000 per hour for each hour physical work is delayed.

851.12	TRAFFIC MANAGEMENT FOR STAGE 1 BRIDGE REPAIRS	Day
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This item is intended for temporary traffic management which is necessary to perform bridge repairs prior to Stage 1 associated with strengthening the Bridge No. C-13-038 (OWR) structure to restore statutory load ratings in preparation for future traffic management during staged construction, outside of an already established work zone established and paid for under Item 851.01 or work zone established and paid for under Item 851.11.

The Design-Builder will be compensated for all repairs on the sounded bridge components under the following Contract pay items:

Item	Description	Unit
127.2	REINFORCED CONCRETE EXCAVATION FOR REPAIRS	Cubic Yard
127.22	REINFORCED CONCRETE EXCAVATION FOR REPAIRS - OVERHEAD	Cubic Yard
451.	HMA FOR PATCHING	Ton
909.5	RAPID SETTING CONCRETE FOR REPAIRS	Cubic Yard
909.51	RAPID SETTING CONCRETE FOR REPAIRS - OVERHEAD	Cubic Yard
910.1	STEEL REINFORCEMENT FOR STRUCTURES – EPOXY COATED	Pound

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10.9 PROTECTION AND RESTORATION OF PROPERTY AND LANDSCAPE

The Design-Builder shall protect existing features to be retained within the limits of the work shown on the BTC and shall not cause damage or injury to any property beyond those limits. If the Design-Builder causes damage or injury to areas beyond those limits, the Design-Builder shall restore any damaged or injured property to a condition similar or equal to that existing before the damage or injury occurred. The repairing, restoring, rebuilding, or making good such damage or injury shall be at no additional cost to MassDOT. The Design-Builder shall identify the limit of work line on the final design plans.

Should the Design-Builder significantly alter the tree line along residential areas beyond what is shown on the BTC they shall propose and install a landscape restoration plan that provides for a similar level of screening. This plan shall be reviewed and accepted by MassDOT prior to implementation.

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10.10 ENVIRONMENTAL CONSTRUCTION COMPLIANCE

The Design-Builder is solely responsible for compliance with any Environmental Approvals or approvals applicable to the Project as provided by MassDOT, or as amended or obtained by the Design-Builder.

Prior to the commencement of work, the Design-Builder shall identify the edge of all resource areas located within 50 feet of the estimated limits of work. The Design-Builder shall also delineate the limits of work as included in the Environmental Approvals obtained by or on behalf of MassDOT. Such limits shall be re-delineated as permit amendments are secured.

Prior to any site activity including site preparation or clearing, the Design-Builder shall attend a preconstruction meeting with MassDOT and applicable regulatory agencies.

The Design-Builder shall comply with Draft BTC Special Provisions 119.5 and 440.5 for Noise Control and Dust Control, respectively, as provided in Appendix C.

Upon completion of all work included in the Contract documents and prior to Final Acceptance, inclusive of mitigation designed and constructed by the Design-Builder, the Design-Builder shall submit to MassDOT:

- A written statement by a Professional Engineer registered in Massachusetts, certifying that the Project has been developed and constructed in accordance with the conditions of the Environmental Approvals and amendments.

10.11 MATERIAL ON SITE

The Design-Builder may use materials such as stone, gravel, sand or other materials found in excavations within the area of construction within the state and city highway layouts within the Limits of Work of the BTC if such material meets MassDOT Specification requirements. Sufficient samples shall be taken to ensure uniformity and continued compliance with previously submitted testing reports as material gradation and quality can vary significantly within a given natural deposit. Material which is excavated and does not meet specification shall be removed as excess material from the Right-of-Way and disposed of under the respective Contract disposal item.

10.12 NON-CONFORMING WORK

Non-conforming Work is Work that MassDOT determines does not conform to the requirements of the Contract Documents. Non-conforming Work shall be removed and replaced so as to be in conformity with the requirements of the Contract Documents, at the Design-Builder's expense, and the Design-Builder shall take all action necessary to prevent similar deficiencies from occurring in the future. The fact that MassDOT may not have discovered the Non-conforming Work shall not constitute acceptance of the Non-conforming Work. If the Design-Builder fails to correct (or begin correction of) the Non-conforming Work within ten (10) days of receipt of notice from MassDOT requesting correction, MassDOT may cause the Non-conforming Work to be remedied or removed and replaced, and may deduct the cost of doing so from any moneys due or to become due to the Design-Builder and/or otherwise obtain reimbursement from the Design-Builder for such cost.

The Design-Builder shall be solely responsible for identifying, documenting, and reporting to MassDOT all instances of Work that have not been constructed with the absolute strictest adherence to the accepted/approved drawings and specifications. An NCR shall also be initiated by the Design-Builder if QMP and quality related processes are not followed. The Design-Builder is responsible for coordinating with MassDOT on test results so that they have current information. The Design-Builder will report in the form of a Non-Conformance Report (NCR), which shall be submitted to MassDOT in writing within 24 hours. A copy of the NCR shall be simultaneously sent to the Design-Builder's Design Engineer.

The NCR shall clearly describe the element of Work that is non-conforming and the reason for the non-conformance. The NCR shall further address steps to be taken to ensure that the particular nonconformance is not repeated. The Design-Builder's Design Engineer of Record for the Work shall evaluate the effect of the non-conformance on performance, safety and life of the Project and its elements. If remedial actions are necessary, they shall be documented and bear the stamp of a Registered Professional Engineer in the Commonwealth of Massachusetts. The Design-Builder's Construction QC Manager must also sign off on the NCR stating that the remedial actions to be employed have undergone the appropriate level of QC review.

The Design-Builder shall maintain a log of all NCRs and submit this log to MassDOT and the Construction QC Manager on a bi-weekly basis regardless of any status change. Each NCR shall be numbered sequentially, given a brief description, a status if it is not closed, and an expected date for closure. MassDOT will not grant final acceptance for any portion of the Work that has an outstanding NCR. All NCRs must be closed with a stamp of the Design-Builder's Professional Engineer registered in the Commonwealth of Massachusetts.

MassDOT shall have the authority to call for removal of any Non-conforming Work should MassDOT not agree with the remedial actions set forth by the Design-Builder in any given NCR. MassDOT shall also retain the right to write its own Deficiency Reports (DRs) based on the observance, sampling, and testing of the Work. MassDOT shall withhold payment related to DRs and DRs shall require the same review and ultimate closure by the Design-Builder as a Design-Builder-generated NCR. MassDOT reserves the right to make cost adjustments for work that, although not in conformance with specifications, is nevertheless satisfactory to remain in place.

10.13 SCHEDULING AND NOTICE TO OWNER

The Design-Builder shall notify MassDOT in writing at least five (5) business days prior to commencing planned construction activities, including fabrication, to allow MassDOT to schedule its resources. In addition, the Design-Builder shall notify MassDOT in writing by Friday noon of all scheduled construction activities for the following week.

10.14 DOCUMENTATION

During performance of the Work, the Design-Builder shall collect and preserve the following data in written form acceptable to MassDOT:

- Daily manpower and equipment reports for the Design-Builder and each Subcontractor for construction-related activities.
- Daily occurrence logs for construction-related activities maintained by the Design-Builder's Project executive or his designee(s), in which shall be recorded daily in narrative form all significant occurrences on the Project, including (i) weather; (ii) asserted Force Majeure events; (iii) events and conditions causing or threatening to cause any significant delay or disruption or interference with the progress of the Work; (iv) significant injuries to person or property; (v) a listing of each activity depicted on the current Project Schedule status submittal which is being actively prosecuted; and (vi) a daily record of all labor, materials and equipment expenses which are being incurred. For any local agency betterments or utility-related Work such data shall be maintained separately for each local agency or Utility. For Hazardous Materials Management, such data shall be maintained separately for each site. If it becomes necessary to progress Work for which an Extra Work Order has not been executed or that may be the subject of a future claim, the Design-Builder shall identify this Work on separate daily occurrence logs.
- Quality records documenting all Quality Control operations, inspections, activities, sampling and tests performed, including the work of Subcontractors (including Producers, Fabricators, and Manufacturers). Such records shall include any delays encountered and work that does not conform to the requirements of the RFP together with the corrective actions taken regarding such work. Material documentation, testing and acceptance are required prior to payment placed on an estimate for payment.
- Certifications and QC Reports.

The Design-Builder shall maintain and submit records weekly that include factual evidence that required activities and tests have been performed, including the following: (i) type, number, and results of Quality Control activities, including reviews, inspections, tests, audits, monitoring of work performance, and materials analysis; (ii) related data such as qualifications of personnel, procedures, and equipment and qualified testing laboratory used; (iii) the inspector or data recorder, the type of test or observation employed, the results and the acceptability of the work and action taken in connection with deficiencies; (iv) nature of non-conforming work and causes for rejection; (v) proposed corrective action; (vi) corrective actions taken; and (vii) sampling and test results of corrective actions.

A Construction “Materials & Workmanship Quality Certificate” and any related quality documentation shall be submitted at completion of all work with the As-Built plans and signed by the Design-Builder's Construction QC Manager and Quality Control Administrator, indicating that all materials and workmanship incorporated in the Facility conform to RFP and Contract requirements.

10.15 CONSTRUCTION PROCEDURES

10.15.1 General

The Design-Builder shall consult with MassDOT and all other applicable agencies that may require review of construction procedures, and shall coordinate the preparation, submittal and review of all construction procedures. Where permits are required from railroads or Utilities, or other local agencies, construction procedures shall be submitted to them for review and approval in accordance with their requirements.

Construction procedure drawings (such as erection plans, demolition plans, temporary support of excavation, grouting and others as deemed necessary as the work progresses) that have the potential to affect public safety shall be reviewed and approved by the Design-Builder's design engineer (Major Participant Lead Engineering Design Firm) and these submittals shall follow the same QC process established in the approved QMP. These approved construction procedures will be submitted to MassDOT for review and acceptance.

The Design-Builder shall include these construction procedures in their Master Submittal list. MassDOT shall use this list to determine the required reviewers. This list shall be updated periodically by the Design-Builder as the work progresses and submissions are broken up to support Early Release for Construction and resubmitted to MassDOT to determine the required reviewers

10.15.2 Bridge Demolition Procedure

The demolition work included in this Project consists of complete removal and disposal of existing bridge superstructures, partial removal and disposal of existing bridge superstructure, and removal and disposal of portions of existing bridge substructures, including all attachments and existing pile foundations that interfere with the proposed work, as described in these provisions and as shown on the BTC Drawings.

The Design-Builder shall verify that all existing bridge superstructure and substructure elements have sufficient capacity to accommodate the Design-Builder's proposed bridge staging. Additional support/reinforcing, if required, shall be designed and installed by the Design-Builder. During demolition, the Design Builder shall provide protection of the existing superstructure and substructure to remain during stage construction.

The Design-Builder shall verify the adequacy of existing concrete to support any anchorages that are proposed to facilitate construction staging or demolition.

The Design-Builder shall verify the existing utilities on and around the structures being demolished, prior to demolition. The Design-Builder shall also coordinate with all utility companies to include any utility shifts and temporary utility placements between demolition stages.

The Design-Builder shall be aware that possible hazardous materials are present on the existing Bridge No. C-13-038. Additional information is provided in RFP Section 5.6.10 and Appendix C.04.

10.15.2.1 Demolition Limits and Scope of Work

Bridge No. C-13-038 (OWR): I-391 over Chicopee Street (Route 116):

This bridge structure shall be demolished per the BTC drawings and as noted in this section:

The demolition limits shown on the BTC plans are necessary to construct the new bridge. If the Design-Builder's proposed design differs from the BTC plans and requires different demolition limits, then they shall perform the necessary investigations with respect to impacts to ROW, permitting, planning, environmental, staging, etc. All demolished portions of the bridges shall be disposed of in accordance with Section 4.10.2.3.

Staged demolition is required to maintain the minimum travel lanes through the construction sequence, as shown on the BTC Plans and as required by Section 4.9. The Design-Builder shall manage roadway drainage between existing and proposed structures throughout all stages of demolition and construction.

All existing piers, abutments, wingwalls and approach slabs shall be demolished. Where demolition is required, existing structures shall be demolished to a minimum of 2'-0" below final grade unless noted otherwise in the BTC plans, in this Request for Proposals, or as required to allow for new construction. The Design-Builder shall confirm that any portions of existing substructures to remain below final grade do not impact the proposed work (proposed substructures, utilities, structural elements, concrete barriers, etc.) and shall be, at a minimum, 1'-0" away from any proposed work.

Bridge No. C-13-039 = H-21-059 (OWF): I-391 over Connecticut River

This bridge superstructure requires partial demolition per the BTC drawings:

The demolition limits shown on the BTC plans are necessary to perform the median barrier modification necessary for the BTC traffic management sequence. If the Design-Builder's proposed design differs from the BTC plans and requires a different traffic management sequence, then they shall perform the necessary investigations with respect to impacts to revised partial demolition limits, ROW, permitting, planning, environmental, staging, etc. All demolished portions of the bridges shall be disposed of in accordance with Section 4.10.2.3.

Bridge No. C-13-047 (OWQ): I-391 & Off Ramp over G&W Railroad

No demolition is required for this bridge structure for the BTC.

Existing Highway Lighting Poles

As shown on the BTC plans, several existing highway lighting poles located on Bridge No. C-13-039 = H-21-059 (0WF) I-391 over Connecticut River and Bridge No. H-21-060 (0WT): I-391 and Ramps A, B, C, & D over Main Street and PVRR which require demolition.

10.15.2.2 Protection During Demolition

The Design-Builder shall take care not to damage existing portions of structures that are to remain through the various construction phases. Any item damaged, or otherwise made unsatisfactory for continued use due to demolition operations, shall be repaired or replaced with an equal or better product at the expense of the Design-Builder. The Design Builder shall ensure the structural stability and integrity of all structures during all stages of demolition. This shall be demonstrated in a detailed demolition plan submission as described in Section 4.10.2.3.8.

The Design-Builder shall ensure the safe passage of vehicular, pedestrian, bicycle, and rail traffic around demolition areas and prevent injury to persons and damage to property through the use of appropriate temporary shielding, protective barriers and enclosures and temporary earth support during the removal of substructure elements. Temporary Protective Shielding shall be placed on the existing super/substructures prior to demolition.

The Design-Builder shall investigate and assure itself of the condition of the work to be demolished and shall take all precautions to ensure safety of persons and property. In addition, the Design-Builder shall be aware that all existing paint is assumed to be lead-based or contains lead.

The use of explosives shall not be permitted under any circumstances.

Bridge No C-13-038 (0WR)

The Design-Builder shall be aware that the existing Bridge No. C-13-038 (0WR) is in poor condition. The Design-Builder shall also consider note the unconventional design of the existing bridge structure in their development of temporary protective shielding measures. Traditional temporary protective shielding systems used for girder/slab bridges may not be feasible for this structure.

Bridge No. C-13-039 = H-21-059 (0WF):

The BTC design was developed under the assumption that all demolition work will be performed from either the top side of the existing bridge structures or from underneath the structures using under-bridge access equipment. Access to the underside of the bridge via the waters or banks of the Connecticut River was not considered in the BTC design nor was environmentally permitted. It is recommended that the Design-Builder follow the approach outlined in the BTC, however the Design-Builder is permitted to explore alternative methods of site access to accomplish the required work. If alternative site access methods are proposed, the Design-Builder shall be responsible for completing the necessary environmental permitting to allow for this work. No matter the method for site access, temporary protective shielding shall be installed to prevent falling of debris onto the waters of banks of the Connecticut River during all demolition and construction operations.

10.15.2.3 Protection of Utilities

The Design-Builder shall maintain all utilities except those requiring relocation and keep utilities in service and protected from damage. The Design-Builder shall coordinate with all utility companies involved in the Project limits prior to any structural demolition.

The Design-Builder shall be responsible for adequately protecting existing utility lines to remain in service. If any utilities are damaged due to the Design-Builder's operations, they shall be repaired at the expense of the Design-Builder.

10.15.2.4 Traffic

The Design-Builder shall conduct demolition operations and removal of debris to ensure minimum interference with the normal use of public ways and other adjacent facilities. Traffic ways, streets, walks or other used facilities shall not be closed without the written permission of MassDOT and the City of Chicopee.

10.15.2.5 Salvage and Hazardous Materials

All materials removed under this Section which are not to be re-used on the proposed structure shall become the property of the Design-Builder and shall be removed from the job site and disposed of legally.

Refer to Section 5.6.10 for Hazardous Waste requirements.

10.15.2.6 Demolition Submittals

The Design-Builder shall be responsible for submitting the information listed in this section to MassDOT for review and acceptance for each bridge structure to be demolished. The Design-Builder shall also be responsible for submitting additional information as required by the Railroads for their review and approval as indicated in Section 7.0. The following information shall be included in a demolition submittal to MassDOT for review:

1. Plan identifying off-site disposal locations.
2. Agency certification(s) for off-site disposal locations.
3. Prior to the submission of a periodic invoice for payment for Work including materials disposal, the Design-Builder shall submit all disposal receipts from the solid waste facility or the recycling site. Such receipts shall bear the printed name of the facility operator and shall specify the date of delivery, the quantity and type of material delivered, and shall be signed by an on-site representative of the facility operator. For disposal of materials that qualify for payment, no payments will be made for the disposal of materials for which there are no signed disposal receipts.
4. A demolition scheme shall be submitted for review and approval for each structure indicating procedures, sequence of operations, placement of shields, barriers, equipment types and placement, dust control, and plan of demolition. The demolition scheme shall be a part of an overall demolition scheme for the interchange and shall be coordinated with proposed construction sequencing and Temporary Traffic Control Plans (TTCP). At a minimum, the following information shall be included in the submittal.

- a. Plan(s) showing the location of all roadways, utilities, structures to be removed, protective barriers and shielding as required and other appurtenances in the vicinity of the demolition areas.
 - b. Provide details of shielding showing materials and methods of securing it in place.
 - c. Identification of crane and lifting equipment type and model, set-up location(s), and intended operating radii and pick loads during each stage.
 - d. Crane and lifting equipment technical information including rating data. Information shall include equipment geometry, weight, boom lift capacity and crawler/outrigger pressure tables.
 - e. Identification of the order and sequence of lifts, repositioning of equipment, and intended pick weights.
 - f. Demonstrate the structural stability and capacity of the existing superstructure and substructure components are maintained throughout all phases of demolition.
 - g. If applicable, identify methods and materials proposed for temporary structures or strengthening of specific structural members for stability during the demolition process.
 - h. Identification of other equipment proposed for use in the demolition process.
 - i. A schedule of demolition operations identifying durations and sequence.
 - j. Any other pertinent information that describes the proposed demolition procedure
5. The methods and schemes proposed for demolition and shielding shall be prepared under the supervision of, and be signed and sealed by a Professional Engineer registered in the Commonwealth of Massachusetts. Such Engineer must be familiar with these specifications, those of the American Association of State Highway and Transportation Officials (AASHTO), The Massachusetts Department of Transportation Standard Specifications for Highways and Bridges, the Work, and be experienced in the technical field. All drawings and calculations shall be stamped with the seal of the supervising Engineer.
 6. Calculations evaluating each existing bridge's superstructure and substructure during each stage of demolition and construction. The submissions shall be prepared, signed, and sealed by a Professional Engineer registered in the Commonwealth of Massachusetts.
 7. These submittals shall be reviewed and approved by the Design-Builder's designer of record prior to being submitted for review and approval by MassDOT.
 8. Any acceptance of the above submissions by MassDOT shall not relieve the Design-Builder of complete responsibility for all demolition procedures and operations.

10.15.3 Erection Procedure

The Design-Builder shall design the proposed erection procedures for all bridges, which include but are not limited to, rigging, lifting attachments, temporary shoring, bracing systems, supports, falsework, crane locations, crane capacity charts, other lifting equipment, and jacking necessary to allow construction of all structural components. The calculations, drawings and erection sequences shall be signed and sealed by a registered Professional Engineer in the Commonwealth of Massachusetts and shall be submitted to the Engineer of Record for review and approval and then to MassDOT for review and acceptance.

Erection Procedures that exceed the limitations of the environmental permit documents may be considered but would require submission of amendment requests and necessary regulatory agency approvals with no additional time or compensation provided to the Design-Builder.

The Erection Procedure developed by the Design-Builder shall include, at a minimum:

- Description of where materials and structural components will be stored prior to transportation to the site.
- Description of how materials and structural components will be transported to the site assembled and erected.
- Description of where equipment required will be stored prior to transportation to the site.
- Description of how the required equipment and materials will be transported to the site, staged, assembled, and moved into position, and removed from the site as required for use during the erection.
- Procedures for preventing impacts to vehicular travel during construction.
- Contingency planning including spare equipment, parts, materials, and other items required during erection.
- Calculations to address stresses on existing and proposed structural elements due to erection.
- Procedures for the erection of the bridge girders and installation of post-tensioning tendons as required by Draft Special Provision 995.01.

Design in accordance with MassDOT Standard Specifications, including incorporating factors of safety similar to Subsection 960.61

Erection work will not be allowed over live traffic.

10.15.4 Bridge Temporary Works

The Design-Builder is responsible for the means and methods of construction for all elements within the construction contract including temporary access. Temporary work required for construction shall be designed, implemented, and removed by the Design-Builder. The Design-Builder shall submit structural or fill/embankment designs, stamped by a Registered Professional Engineer in the Commonwealth of Massachusetts, to the Design Engineer and MassDOT for review. Temporary structure designs may include temporary trestles/work platforms and erection supports. Temporary structure design shall be in accordance with AASHTO including AASHTO Guide Design Specifications for Bridge Temporary Works. Upon removal of the Temporary Works the affected areas must be restored to the original condition.

All temporary structure designs shall be in accordance with AASHTO including *AASHTO Guide Design Specifications for Bridge Temporary Works*. Temporary works shall be fully designed by the Design-Builder and stamped by Professional Engineer registered in Massachusetts. Upon removal of the Temporary Works the affected areas must be restored to the original condition.

The Design-Builder will not be permitted to weld onto, drill into, or cut into any existing structural steel or support on the existing footings or abutment/pier stems while in use for the construction staging without prior approval from MassDOT.

Temporary platforms, if proposed, shall be fully designed by the Design-Builder and stamped by Professional Engineer registered in Massachusetts. All components shall be designed in accordance with the AASHTO LRFD Bridge Design Specifications and MassDOT Bridge Manual with all interims published as of the bid opening date. The Design-Builder is responsible for determining all equipment and material loads associated with the temporary platforms. These loads and equipment shall correlate to the demolition procedure, erection procedure, cofferdam and foundation installation procedures, and any other construction operations that will need to be supported by the temporary platforms. Additional live load shall be considered an incorporated into the design, but no less than 250 lb/SF.

The Design-Builder may utilize any method of access to the project site as detailed in the environmental permit documents. Alternative method or techniques for temporary works may be considered and will be the Design-Builder's responsibility to maintain such procedures, methods, and techniques within compliance of the Environmental Permits. Any deviations from the approved permit plans that will introduce new impacts to resource areas will require permit amendment approvals to be obtained by the Design-Builder. Any alternative methods deviating from the BTC suggested temporary works proposed by the Design-Builder, regardless of whether they have environmental impacts, shall be submitted as part of the RFP Technical Proposal submission and concept plans.

The Design-Builder shall consider the site access restrictions pertaining to Bridge No. C-13-039 = H-21-059 (0WF) discussed within these provisions when developing temporary works.

10.15.5 Temporary Excavation Support

All temporary support of excavations (SOEs) shall be designed and constructed such that Occupational Safety & Health Administration (OSHA) requirements are met or exceeded. SOEs in the vicinity of roadway shall also meet the requirements contained in the MassDOT Bridge Manual.

The Design-Builder shall be responsible for ensuring that all SOEs shall be designed and constructed to maintain a safe system and will provide support for existing facilities and utilities. The Design-Builder shall take full account of all relevant factors, including surcharge pressures due to structure live loads and construction loads in lateral earth pressure diagrams.

The Design-Builder shall ensure the design and drawings for the temporary earth support system(s) are signed and sealed by a Professional Engineer registered in the Commonwealth of Massachusetts.

10.15.6 Precast Retaining Wall Systems and Other Fabricator-Designed Elements

Wall systems, moment slabs, or other prefabricated elements that are designed by the Fabricator or Fabricator's Engineer shall be submitted as a Construction Procedure. The submittal shall have shop drawings and design calculations for the prefabricated elements signed and sealed by a Professional Engineer registered in the Commonwealth of Massachusetts.

The Design-Builder shall be responsible for ensuring that all fabricator-designed elements shall be designed and constructed in accordance with the Construction Plans, Specifications, and all Contract Documents. The Engineer of Record shall review the shop drawings, calculations, and product specifications and ensure the fabricator-designed elements are designed in accordance with AASHTO, the MassDOT Bridge Manual, and additional design codes listed herein.

10.16 SHOP DRAWINGS

Shop Drawings for the permanent Work shall include, but not be limited to structural steel fabrication plans, precast concrete fabrication plans, bearing fabrication plans, abutment rehabilitation plans, concrete reinforcing plans, anchor bolt layouts, shop details, erection plans, equipment lists and any other information specifically required by the Standard Specifications, Special Provisions, or local agencies. The Shop Drawings shall be reviewed and approved by the Design-Builder's design engineers who prepare the Design Documents and shall follow the same QC process established in the approved QMP.

Structural steel Shop Drawings shall include complete details for fabrication, camber, erection, and shop assembly of members and details, schedules, procedures, special erection equipment, and diagrams showing the sequence of erection. They shall include details of cuts, connections, camber, Charpy values, FCM designations, holes, and other pertinent data. Welds shall be indicated by standard AWS symbols; and the size, length, type, and testing of each weld shall be shown.

The Design-Builder shall obtain all necessary approvals for Shop Drawings for fabrication and said approvals along with copies of all approved drawings shall be provided to MassDOT three (3) business days prior to the start of Work detailed by the drawings. Incomplete packages shall be returned to the Design-Builder for resubmission. Fabrication may not proceed until resubmission to MassDOT. The Design-Builder must include a Table of Contents for all shop and working drawings on the transmittals and Shop Drawings submitted to MassDOT. Any changes to Shop Drawings must be approved by the Engineer of Record and clearly indicated on the Shop Drawings prior to transmitting to MassDOT. Only the most current Shop Drawing shall be posted on MassDOT's SharePoint ®.

10.17 OPERATION AND MAINTENANCE MANUALS

[**THIS SECTION NOT APPLICABLE**]

10.18 AS-BUILT RECORD DRAWINGS

As a condition to Final Acceptance, the Design-Builder shall provide to MassDOT the Project's As-Built Record Drawings consisting of files of electronic pdf images created from within AutoCAD, containing layer information, in accordance with current MassDOT CAD Standards and provide each Highway and Bridge Title Sheet that includes the signature blocks for MassDOT final project acceptance in accordance with the MassDOT Engineering Directive E-21-004. The Design-Builder shall also provide two (2) full size hard copy sets, and the 3-D electronic drawing files of final plans (Record Documents). The Record Drawings shall depict the final completed Project, including all changes with all of the relevant data showing drainage systems, underground utilities, traffic controls, signing placement, highway alignment and grade revisions, and bridge detail changes. Previous design packages that were issued as portions of the overall project design in order to support milestones shall be combined and organized in conformance with MassDOT standards. Design Change Notices shall be included without previous revision notation as these are considered coordinated project design. The Record Drawings shall be reissued, restamped, and dated by the respective Record Designers. Field Design Change Notices may continue to include revision notations showing the changes from what was issued for construction in order to document any non-conforming work or changed field condition that necessitated the change. Changes that warrant as-built documentation, but which have not been previously issued as a Design Change Notice or a Field Design Change during construction shall be certified by the Design-Builder and issued as a final "As-Built Revision". The Design-Builder shall also provide other relevant Project data such as bridge shop plans, boring logs, and pile driving records in hard copy sets as well as electronic files for archiving as stipulated in relevant provisions of the MassDOT Standards Specifications for Highway and Bridges, 2026 Edition.

- All Record Drawings shall be consistent with MassDOT Standards, the requirements of the conditions of the Project permits, and as further defined above. Operation and maintenance manuals and instructions shall be provided for all systems and equipment.
- As-built foundation data which differs from the original design shall be revised on the final plans. This shall include information such as additional piles or shafts, changes in diameter, tip elevation, or bottom of footing elevation.
- An additional pdf copy of the As-Built drawings shall also be sent to the affected utility companies. See PUC Form provided in Appendix C for contact information.
- In addition to the As-Built Drainage System File referenced above, provide a GIS Layered Drainage Atlas Map that will follow existing drainage symbology that has been established by MassDOT. See Appendix C.

As-Built Drawings will be compensated as part of a fixed price under Item 900.9:

Payment Items

900.9	PUNCHLIST AS-BUILT REQUIREMENTS FIXED PRICE	LUMP SUM
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10.19 AS-BUILT BRIDGE STRUCTURE RATING REPORTS

As a condition of Final Acceptance, in accordance with Chapter 3 of Part I of the MassDOT Bridge Manual, the Design-Builder shall provide to MassDOT a Structure Load Rating Report establishing the load carrying capacities for each bridge included under this contract, as discussed in RFP Section 4.10.2.2. These reports shall be prepared by a Professional Engineer registered in the Commonwealth of Massachusetts in full compliance with the requirements of Chapter 7 of Part I of the MassDOT Bridge Manual and shall incorporate the findings of the Initial Inventory Inspection. The Rating Report shall be submitted as a design submittal for MassDOT review.

The Rating Report shall be submitted to MassDOT before the bridge is opened in the final condition. This does not apply to opening a bridge in the staged condition, please reference Section 4.10 on load rating requirements for the staged condition.

10.20 CONTINGENCY PLANNING

The Design-Builder shall develop contingency plans for potential problems that may arise during construction that will have an effect on the overall progress schedule. The plans shall be prepared by an emergency response specialist familiar with bridge construction and shall include, but not be limited to the following:

- Poor or severe weather forecast that may impact operations
- Equipment breakdowns, malfunctions or failure, including sufficient additional equipment, parts, supplies, operators and power sources
- Incident involving delivery of material
- Accident within project limits, including Interstate and all associated ramps within the project limits.
- Accident involving delivery of girders or precast concrete elements resulting in damaged units
- Traffic Management plan implementation equipment breakdown or staff non-responsiveness
- Contingency schedule and plan should delivery of necessary materials be delayed or are missing.
- Preliminary contingency plans shall be submitted as part of the technical proposal. More detailed contingency plans shall be developed for acceptance in advance of the associated phase of work.
- Incident within the Project limits.
- Obstructions encountered within excavations.
- Emergency Repairs to the existing structure.
- Emergency Repairs to Utility Infrastructure.
- Incident management staging, equipment and response plan for incidents within the Project limits.
- Homeland security threats to the project or the area that may impact continuity of operations including an evacuation plan.
- Any event that may require altering construction conditions or roadway configurations

Plans should be all-hazards in nature, but should also be narrowly tailored and specific to hazards identified that could impact the project, and should consider critical assets or infrastructure in the area, geographic terrain, abutting entities and properties, and/or environmental concerns in the area. Plans should be developed with the involvement of multiple stakeholders, including but not limited to management staff of the Highway Operations Center, relevant District personnel, public safety and life safety first responders, and other interests. The plans should detail multi-disciplinary actions to be taken throughout the course of an incident from detection to recovery. Plans should also be reviewed with all stakeholders in an appropriate training or exercise forum prior to project commencement of the associated phase of work.

10.21 CONSTRUCTION DIGITAL RECORDING

The Design-Builder shall provide a Digital Camcorder with high-definition flash memory and one (1) 16 GB SD, SDHC or SDXC memory card, two stylus pens, two rechargeable batteries, and a protective bag which fits the camera, or equivalent equipment.

10.21.1 Time Lapse Videography

MassDOT desires time lapse documentation of the Project. The Design-Builder shall be responsible for the development of coordinating, shooting, and producing a short time-lapse movie documenting the replacement of all bridges, conforming to the following minimum requirements:

1. Separate camera coverage of each bridge shall be provided unless the Design-Builder can demonstrate to MassDOT's satisfaction that a single camera location can adequately capture construction on both bridges simultaneously.
2. High definition (1080i or 1080p) color, still photos shall be taken every day at noon throughout the duration of construction. A sufficient number of images shall be taken each day to mitigate any error that may occur in a given photo.
3. Time lapse Digital Video, in high definition 1080p color at sufficiently high resolution to achieve same. The finished video time shall be compressed as required by MassDOT.
4. Images for the movie shall be shot from a fixed location which will be able to show the entire work area as approved by MassDOT. The location shall be identified by the Design-Builder and approved by MassDOT. MassDOT reserves the right to require test images from the proposed location
5. The images shall be taken every two minutes for the periods of significant activity as directed by MassDOT.
6. The images may be taken every 30 minutes for all other periods of construction. The use of a standard two-minute interval for all periods is also acceptable.
7. The final video shall be a total length of approximately two minutes per major project element. Scene changes may be used to omit periods of inactivity provided that the video identifies the facts such as:
 - a. The introduction of the video should note periods of inactivity.
 - b. Each scene change should identify the start and stop date of the scene.

8. The equipment utilized shall be sufficiently robust both physically and electronically to assure quality images. The equipment shall have the capabilities to clearly record the activities regardless of the site conditions, including but not limited to, extreme temperature changes, vibration, lighting conditions, weather cycles and other site factors.
9. The equipment shall be maintained throughout the duration to assure capture of the required information.
10. 3 DVD copies of the finished movies shall be prepared and submitted. MassDOT will retain ownership and all rights to the video. The video shall be non-copyrighted and not copy protected.
11. The movie shall be free of logos, copy rights, trademarks or any other identifying marks not indicated above.

10.21.2 Camera and Internet Requirements

The Design-Builder shall provide live color time-lapse photography which will be available for viewing at all times by MassDOT via the internet.

The Design-Builder shall locate cameras for time lapse photography in fixed locations as needed to sufficiently show the project site. The cameras shall be placed so that they capture all work. Time lapse photography feeds shall be available for viewing via the internet by MassDOT at all times.

The Design-Builder will provide MassDOT with the means to watch all video and time-lapse feeds at one time. All video and time-lapse photography will be available for MassDOT to download and use at any time during the Project. All photographs and video will be the property of MassDOT.

If an account is needed in order to view the photograph and video feeds, the Design-Builder will provide MassDOT with no fewer than 20 accounts.

10.22 DIGITAL CONSTRUCTION DOCUMENTS

After acceptance, all final project documents, including the documents listed in Section 1.1.10 shall be submitted to MassDOT via the Electronic Document Management Methodology (EDMM) as a searchable PDF, with embedded two-way links between associated design drawings and details, working drawings and details, Shop Drawings, other submittals, Requests for Information (RFIs), etc. as applicable.

10.22.1 Accessible Electronic Deliverable Requirements

The Design-Builder is required to provide accessible electronic deliverables. For purposes of this provision “accessible” shall be construed to mean accessible and usable by people with disabilities, including use with assistive technologies. For the purposes of this provision, the term “electronic deliverables” includes, but is not limited to any or all of the following: pamphlets, presentations, specifications, cost estimates, studies, reports, web pages and applications.

Deliverables, or components thereof, such as plans, drawings, schedules, field notes, measurements or calculations that cannot reasonably be made accessible will be exempt from these requirements, subject to review and approval by MassDOT. Conformance with the following standards (“Accessibility Standards”) is required to ensure accessibility of electronic deliverables:

Web Content Accessibility Guidelines (WCAG) 2.0 Level AA -- <http://www.w3.org/TR/WCAG20/> and when applicable

Enterprise IT Accessibility Standards -- <https://www.mass.gov/guides/enterprise-it-accessibility-standards>

Prior to delivery, the Design-Builder is responsible for confirming deliverable compliance with the Accessible Electronic Deliverable Requirements (see Guidelines for Consultant/Contractor Accessible Electronic Deliverable Creation provided in Appendix C). The Design-Builder shall be responsible for curing each instance of non-conformance identified by MassDOT with the foregoing accessibility requirements at no additional cost.

10.23 FINAL CLEAN-UP

As a prerequisite to Final Acceptance of the Project by MassDOT, the Design-Builder shall remove and dispose of all debris, excess materials, temporary structures, and construction equipment from the Right-of-Way and all parts of the Project shall be left in a neat and presentable condition.

10.24 BRIDGE OPENING FOR TRAFFIC PROCEDURE

Before a new bridge or altered existing bridge is opened for traffic in a staged or final condition, the following procedure shall be followed:

Step 1: Request a Bridge Inspection

The Design Builder shall submit a request for bridge inspection to the State Bridge Inspection Engineer and District Bridge Inspection Engineer through the Project Manager. The request shall provide 60-day notice for the inspection and include final bridge plans and a proposed timeframe for the inspection. Bridge plans shall show all construction staging of the bridge for the inspectors' reference and indicate the stage of construction that is currently being requested.

Step 2: Submit a Letter Requesting Bridge Opening

After MassDOT (or a MassDOT representative) has performed the bridge inspection, a letter requesting bridge opening addressing the following items shall be submitted and accepted by MassDOT in order to open the bridge. The letter shall be addressed to the State Bridge Engineer and copy the State Bridge Inspection Engineer, State Load Rating and Overload Engineer, District Bridge Inspection Engineer, and District Bridge Engineer and include the following:

- The letter to MassDOT requesting that the existing or proposed bridge be opened to traffic in the staged or final condition. The letter shall include a description of the current construction phase or final condition, the design loading of the structure, any changes to the rating values since the last submission of preliminary rating values, the controlling rating vehicle; and shall append plans, latest inspection reports, and preliminary rating values or Rating Report to the letter.
- Stamped bridge plans depicting current construction staging of the bridge and traffic lanes on the bridge.
- Stamped structural design calculations including the preliminary load rating calculations as described in Section 4.10.2.2.

If the letter is requesting a new bridge to be opened in the staged or final condition, the final inspection report may not be required as long as MassDOT has confirmed that the bridge inspection will be performed.

SECTION 11.0: PARTNERING

MassDOT intends to encourage the foundation of a cohesive partnership with the Design-Builder and its Subcontractors. This partnership will be structured to draw on the strengths of each organization to identify and achieve reciprocal goals. The objectives include effective and efficient Contract performance and completion within budget, on schedule, and in accordance with the Contract Documents.

This partnership will be bilateral in makeup and participation will be totally voluntary. Any cost associated with effectuating this partnership will be agreed to by both parties and will be shared equally with no change in Contract price. The Design-Builder shall pay all costs and submit paid invoices to MassDOT for 50% reimbursement. It is anticipated that the beginning phase of the work will include some education and training in the Partnering process. This will be followed by a team-building workshop attended by the Design-Builder's key on-site staff and Department personnel. Follow-up workshops should be held periodically throughout the duration of the Contract as agreed to by the Design-Builder and MassDOT.

An integral aspect of partnering is the resolution of issues in a timely, professional, and non-adversarial manner and in accordance with the Contract Documents. See Partnering Documents in Appendix E for additional information and guidance.

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