RESURFACING, BRIDGE REHABILITATION AND SAFETY IMPROVEMENTS ON I-691

TOWN OF CHESHIRE,
TOWN OF MIDDLEFIELD,
TOWN OF SOUTHINGTON, AND
CITY OF MERIDEN, CONECTICUT

Project No. *0079-0244*

DESIGN-BUILD BEST VALUE PROCUREMENT

CONTRACT TECHNICAL PROVISIONS

DRAFT XXXX XX, 2020

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1. Project Requirements and Provisions for Work

1.1. Project Management

1.1.1. Project Overview

This project consists of resurfacing, drainage upgrades, guiderail replacement, minor bridge work, illuminations upgrades, and sign replacement. This project is located on Interstate 691 (I-691).The roadway project limits extend from log mile 1.32 (Route 5) to log mile 4.84, approx. 350' west of Route 322, in the Town of Southington and the City of Meriden. Construction limits for this project will extend eastward to log mile 1.11 to include illumination upgrades and from log mile 0.0 to 8.70 on Interstate 691 and to limited access sections of Route 66 between log mile 0.0 and 1.95 to incorporate the replacement of traffic signs throughout this corridor.

1.1.2. General

The Contractor shall plan, schedule and execute all aspects of the Work and shall be responsible for coordinating its activities with all parties directly affected by the Work. The Contractor shall document and report all Work in accordance with the Contract requirements. The Contractor shall be responsible for distribution of all plan sets to CTDOT and other parties.

1.1.3. Project Management

The Contractor shall at all times provide a Project Manager (who has been approved by CTDOT who will have full responsibility for the prosecution of the Project and will act as the primary point of contact in all matters on behalf of the Contractor. His responsibilities shall include oversight and integration of design, procurement, construction as well as Quality Control for all activities. The Contractor shall not change this manager without the prior written approval of same by CTDOT; whether or not to give such approval will lie in CTDOT's sole discretion. In the event that the Contractor fails to obtain approval of a replacement before the existing Project Manager leaves, the Contractor shall not be entitled to receive any progress payments hereunder until such time as the approved replacement has started work on the Project.

1.1.4. CTDOT's Role

CTDOT's role in the Project will be similar in structure to its role in Design-Bid-Build projects. CTDOT intends to perform Project oversight, design acceptance/approval and construction acceptance and independent assurance actions for the purpose of ensuring that the Contractor's work meets the requirements of the Contract. Department oversight activities will include design reviews, design acceptance/approval at key design milestones (*i.e.*, Semi-Final Design Submittal, Final Design Submittal) and construction independent assurance and acceptance. CTDOT will also serve as a liaison with regulatory agencies in connection with the Contractor's application for Environmental Approvals/Clearances and amendments thereof. None of CTDOT's oversight activities, however, shall relieve the Contractor from its obligations as defined in the RFP and Contract.

1.1.5. Federal Highway Administration's (FHWA) Role

At this time, it is not anticipated that the Final Design and construction phase of the Project will be designated as a Project of Division Interest.

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1.2. Risk Management

The following is a list of potential significant risks that have been identified by CTDOT. This list may not be all-inclusive. Contractors will be required to identify any other significant Project risks throughout the final design and construction process, and incorporate into the final design mitigation of any and all such risks.

1.2.1. Utilities

Based on existing information, the following utilities are present. The Contractor shall verify all as outlined elsewhere in the Technical Provisions. There are no anticipated impacts to private utilities.

- Algonquin Gas – underground facilities at the vicinity of I-691 Westbound ramps from and on to Route 10 (Highland Avenue)
- Crown Castle Fiber – Aerial facilities at Pratt Street underpass.
- CenturyLink (Level 3) – Underground and aerial facilities at over passes and underpasses.
- Frontier Communications – Underground facilities at over passes and under passes, as well as crossings at end of ramp connections to streets.
- Eversource Energy (Electric) – Underground and aerial facilities at over passes and underpasses.
- Eversource Energy (Gas) – Underground gas facilities located under the highway and in streets at the ends of ramps from I-691.

Current as-build mapping for known utilities are supplied in Appendix B.01.

As with any large project to be constructed, there is a potential that active utility lines may be encountered that have not yet been identified by or to CTDOT. To mitigate this risk, CTDOT has performed a preliminary utility investigation. The Contractor is required to perform its own research and due diligence in an effort to identify all active utilities prior to commencement of construction activities and to adjust its design and construction plans accordingly.

1.2.2. Right of Way

Existing right-of-way boundaries and easements have been identified by CTDOT in the BTC. No additional temporary construction easements have been acquired by CTDOT. Access to land outside these limits is not guaranteed. The Contractor is responsible for the acquisition of any additional property rights for its convenience (i.e., staging, storage, etc.) at no additional cost to the State. Any use of a public park (i.e. Hubbard Park in Meriden), will require additional environmental processing and should be avoided. The Contractor shall contact CTDOT OEP if the use of any public park becomes necessary as part of a Proposal. See the Right-of-Way Section in Chapter 3 for further details.

1.2.3. Geotechnical

It is not anticipated that any geotechnical risks are present in the Project work as described in the Technical Provisions and BTC. If an ATC changes the BTC, and incorporated into the Proposal, the Contractor shall be responsible for submitting a Geotechnical Report including the following items representing potential risks with regard to geotechnical aspects of the Project:

- Varying subsurface soil conditions from those shown in available boring logs. Subsurface conditions are known only immediately at exploration locations. Conditions between exploration locations may differ significantly from those shown in results of any explorations.
- Conflicts with known and unknown obstructions encountered below grade.
- Potential differential immediate, consolidation and secondary settlement across and between substructure units.

1.2.4. Construction/Traffic Sequencing and Staging

The construction sequencing is to the determination of the Contractor and must be coordinated closely with the affected agencies and the BTC. The Contractor will be responsible for obtaining required approvals from any affected third parties. A Traffic Management Plan ("TMP") shall be submitted by the

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Contractor for approval by CTDOT, and shall be implemented prior to any lane closures or outages. The Contractor shall allow CTDOT at least forty-five (45) days for review and possible approval of the TMP.

The construction/traffic sequencing and staging of the Project offers both risks and opportunities. If the Contractor proposes an ATC to expedite the schedule, it will be the Contractor's responsibility to prepare construction/traffic sequencing and staging plans that will not negatively affect the Towns of Cheshire, Middlefield, Southington, and the City of Meriden, as well as regional traffic patterns. Negative effects on access within the Project limits (vehicular user, pedestrians or bicyclist) shall also be addressed in any ATC. CTDOT will not override any restrictions imposed by local governments in these regards.

1.2.5. Roadways or Features Spanned

This Section intentionally left blank.

1.2.6. Hazardous Materials

A Hazardous Materials Investigation has been completed for the Project (See Appendix B.03). Based on the Investigation, lead based paint, asbestos, guano and other miscellaneous hazardous/regulated items have been identified within the Sites.

1.2.7. Community Impacts

Construction activities and traffic management will have a substantial impact on the neighboring communities, including, but not limited to, hospitals, residential, commercial, and tourist attractions. Special attention should be given to noise and dust control, since the adjacent properties make use of outdoor facilities. The Contractor should anticipate that necessary coordination and cooperation with adjacent property owners may affect the construction schedule. Any mitigation of effects on adjacent property or its use by its owners will not be grounds for additional Contract time or compensation.

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1.3. Project Controls

1.3.1. Electronic Document Management

This document contains specifications related to electronic document management, including, but not limited to, the provisions in the text of the Technical Provisions, the Planning and Progress Schedule Special Provision, and a Notice To Contractor – Document Control Coordinator and Construction Contractor Digital Submissions.

The Contractor will be required to provide and manage resources, participate as specified and should take into account all the related requirements when developing its Technical and Price Proposals.

1.3.2. Change Management

The Contractor shall develop and maintain contingency plans for potential problems that may arise during construction that will have an effect on overall Project progress. The plans shall include, but not be limited, to the following:

- Severe weather forecast that may negatively affect operations.
- Equipment breakdowns or malfunctions.
- Incidents on the Site, both in waterways and roadways.
- Incidents involving delivery or removal of material.
- Temporary traffic control equipment breakdowns or staff non-responsiveness.
- Emergency repairs of existing structures.
- The need for responses to natural disasters.
- Necessary replacement of Key Personnel due to injury or illness.
- Incident management staging, equipment and response to incidents on the Site, including MPT areas.
- Unforeseen Site conditions.

- Unmarked utilities.
- Environmental compliance problems.

The Contractor shall discuss with CTDOT any suggested course of action that might be taken should any of these potential issues arise, in an effort to minimize Project construction and schedule delays.

1.3.3. Schedule Management

The Contractor's approach to construction of the Work shall be disclosed to CTDOT by submission of a computerized construction schedule satisfying the requirements of the Mandatory Special Provision for "Project Planning and Progress Schedule" included in Appendix A.01 hereof. These requirements are in addition to, and not in limitation of, requirements imposed in other Sections hereof.

The Contractor shall comply with all Engineering and Construction Directives, including ECD-2016-7 as recently issued by CTDOT which relates to the determination of construction contract time. This directive can be found on CTDOTs web site.

1.3.4. Project Safety

The Contractor shall take all reasonable precautions and be solely responsible for the safety of all its employees and Subcontractors working on the Project, and for other persons on the Site or that would reasonably be expected to be affected by the Project work; the protection of Project construction, materials and equipment shall be dealt with therein; as well as the protection of all other property on, adjacent to, or near the Right-of-Way that one might reasonably expect to be affected by Project work.

From the issuance by CTDOT of a Notice to Proceed until Project Acceptance, the Contractor will provide adequate protection and security for the Site and will be responsible for all damages and losses to any properties at the Site that might be caused by Project operations.

The Contractor will provide appropriate security for the approved staging areas and will be responsible for damage or loss caused by the Project or the Contractor's other actions to any property on the Site that is owned by the Contractor, CTDOT, or any other person.,

The Contractor 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 affect the traveled way or its use. The Contractor 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.

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1.4. Quality Assurance

1.4.1. General

Quality Assurance (QA) is used in this Contract as an umbrella term that includes all activities performed to ensure the proper quality and sufficiency of a product. QA involves responsibilities of both the Contractor and CTDOT. To ensure that goals for Project quality will be met CTDOT has established overall Quality Assurance requirements outlined herein. This includes 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.

1.4.1.1. Quality Assurance Program Elements

Design QA Program

The design QA program for D-B projects includes the following elements:

- Design Quality Control system
- Design Acceptance/Approval system

Construction QA Program

The construction QA Program for D-B projects includes the following core elements:

- Construction Quality Control system
- Construction Acceptance system
- Independent Assurance (IA)
- Qualified/Accredited Laboratories
- Qualified/Certified Inspection & Testing Personnel

1.4.2. Quality Assurance Program Responsibilities

The Contractor shall take the lead role in ensuring the quality of the design and construction of the Project meets or exceeds the requirements. This lead role must be a core principle of the Contractor's daily operations and overall approach to the Project.

1.4.2.1. Contractor Responsibilities

The Contractor shall establish and implement a QC system consisting of a Quality Management Plan (QMP) and Quality Control Plans (QCPs), in order to assure that the Project work quality meets or exceeds the contract design and construction requirements. The written QMP shall provide a comprehensive description of the planning, monitoring and reporting program that the Contractor will implement to ensure and document the quality of its work. The QCPs shall supplement the QMP in addressing specific activities. The QMP, QCP, and related requirements are outlined in greater detail in the remainder of Section 1.5 (and subsections thereto).

The Contractor shall supply an adequate number of QC staff, independent of production staff, to fulfill the requirements of these specifications. The QC staff shall meet the minimum qualifications specified herein.
The Contractor will also provide other resources at the Project site and off site as necessary to comply with the requirements of the Contract. Access and personnel as required by the CTDOT for inspection of QC Laboratories shall also be provide.

Subcontractors, fabricators and suppliers involved in major items, as defined in the Quality Control Plans specification, shall have their own QC program. Depending on the timing, subcontractors, fabricators and suppliers QC programs shall be referenced in the Contractor's QMP or be included as an appendix to the Contractor's original QMP, or addendum thereto. All subcontractors, fabricators and suppliers QC programs shall comply with all conditions of the Contract and Contract Provisions including this and other provisions.

Any costs related to the requirements of Quality Assurance, the Quality Management, or Quality Control (including all subsections) shall be included in the lump sum price for the Project and shall be equitably proportioned into the schedule of value items for QMP or QCP.

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1.4.2.2. CTDOT Responsibilities

CTDOT will be responsible for design acceptance and approval actions, construction acceptance and approval actions, and IA evaluations. One of CTDOT's roles in the Project is to provide verification of the quality of materials and workmanship through acceptance inspection, sampling and testing. CTDOT is also responsible for IA inspection sampling and testing. IA will be used to evaluate the reliability of CTDOT's acceptance personnel and equipment, as well as the Contractor's QC personnel and equipment.

CTDOT has an interest in performing, and a duty to perform, due diligence on behalf of the public in auditing the processes and selected elements of the Project. The Contractor and its agents shall aid CTDOT as much as is practicable in its acceptance inspection and testing, monitoring of the Contractor's QC activities and periodic IA evaluations. While CTDOT will be performing acceptance inspection and testing of the work, independent of the Contractor's QC system, the Contractor maintains sole responsibility for quality, safety and compliance of the Project work.

CTDOT intends to work cooperatively with the Contractor to establish procedures for resolving issues in a timely manner consistent with sections 1.05.01 and 1.05.05 of the Contract General Provisions. At each point in the course of the Project at which specific reviews, inspections or approvals by CTDOT are required, the Contractor shall not proceed beyond that point until CTDOT has completed such review, inspection or approval or waived in writing its right to review, inspection or approval requirements for the subject work or component.

CTDOT reserves the right to check QC laboratory testing equipment, personnel procedures and compliance assurance techniques against specified standards under the IA program. CTDOT also reserves the right to access the QC laboratory facilities, at no additional cost to CTDOT, to observe QC testing, and verify compliance of the testing procedures, testing techniques, and test results with the requirements of the Contractor's approved QA program.

1.4.3. Personnel and Facilities

The Contractor shall furnish all QC staff, facilities, and resources necessary to fulfill the requirements of the Contract. This shall include The Quality Control Administrator (QCA), QC Manager for design (QCMD), QC Manager for construction (QCMC), QC technicians, qualified Laboratories, and other personnel and resources that are acceptable to CTDOT. The Contractor's QC staff will be adequate for the size and complexity of the Project to ensure inspection, sampling, and testing of all major and routine work items such that the compliance of the work can be proven through QC documentation and testing results.

1.4.3.1. QCA

QCA shall be designated by name, in writing, with a resume of their qualifications, for acceptance by CTDOT. The QCA shall not be changed without prior written approval by CTDOT.

The QCA is the person that will be responsible for the overall design and construction quality of the project, implementing quality planning and training, and managing the Contractor's Quality Control (QC) systems and procedures. The QCA will be responsible for drafting, certifying, and implementing the QMP and Quality Control Plans (QCPs) for both design and construction of the Project. The QCA shall report directly to the Contractor's upper management and be available on site as needed to resolve quality related issues and supervise the QCMs. The Design Quality Control Manager and the Construction Quality Control Manager will report to this person. The QCA shall review and approve monthly inspection reports prior to submission to CTDOT. The QCA must attend all bi-weekly QC meeting as described in this provision.

The QCA must be an individual with demonstrated experience designing and implementing QC programs and supervising inspectors. In addition to these requirements, the Quality Control Administrator must meet the following criteria:

- Design or Construction phase experience relevant to the type of work and the scope of the

project (minimum 10 years preferred.)

- Must have experience developing, implementing, and maintaining QC systems (minimum 10 years preferred.)
- Documented advanced training and certifications in quality control principles (exceeding the NETTCP QA Technologist Certification)
- Experience with both Design QC and Construction QC is desirable.

1.4.3.2. Quality Control Managers

QC Managers (QCMs) shall report directly to the QCA and shall have the authority to issue stop work orders for any aspect of the work. QCMs shall also provide, whether themselves or through dedicated and qualified QC technicians reporting to them, the necessary inspections, oversight and services described in this provision and the Quality Control Plan provision. For the duration of the Project, the QCMs must be on site to self-perform or supervise QC technicians performing the required QC functions, for all major and routine items. The QCMs or their qualified representative must attend all daily and bi-weekly QC meeting as described in this provision.

1.4.3.3. QCMD

The QCMD shall be designated by name, in writing, with a resume of their qualifications, for acceptance by CTDOT. The QCMD shall not be changed without prior written approval by CTDOT. The QCMD must be an individual with demonstrated experience implementing QC programs in a design environment. This experience shall include a minimum of 7 years of combined experience in any of the following areas:

- Design phase experience relevant to the type of work and the scope of the Project.
- Previous experience as a Quality Control professional.
- Professional Engineers license in the State of Connecticut.
- Training in QC principles (must meet or exceed the general requirements of the NETTCP QA Technologist Certification).

In addition, the following special experience is preferred for the QCMD:

- Prior supervisory design experience.

1.4.3.4. QCMC

The QCMC shall be designated by name, in writing, with a resume of their qualifications, for acceptance by CTDOT. The QCMC shall not be changed without prior written approval by CTDOT. The QCMC shall be the person that will be responsible for the construction quality of the Project. For the duration of the Project, this person must be on site daily to supervise or self-perform the QC actions. The QCMC must be an individual with demonstrated experience implementing QC programs in a construction environment.

In addition to these requirements, the QCMC must meet the following criteria:

- Training and certification in QC principles consisting of the NETTCP QA Technologist Certification or other certification satisfactory to CTDOT.
- This experience shall include a minimum of 10 years of combined experience in any of the following areas:
    - Minimum of 2 years of demonstrated successful experience implementing QC programs in a construction environment.
    - Construction phase experience relevant to the type of work and the scope of the project.
    - Substitutions allowed – 2 years for Bachelor's Degree in CE, CE Tech., Construction Management, or Construction Engineering. (1 year for Associates Degree in a related field); 1 year for NICET IV certification; (1 year for a NICET III certification).

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In addition, the following special experience is preferred for the Construction Quality Control Manager:

- Prior supervisory bridge construction experience.

1.4.3.5. Quality Control Technicians

Prime Contractor QC staff reporting to the QCMs will be considered Quality Control Technicians (QCTs). QCTs must meet the following minimum qualifications:

- QCTs must be certified NETTCP Quality Assurance Technologists.
- QCTs must have a minimum of 2 years of production experience in the type of work being overseen.
- QCTs inspection personnel must also be certified by NETTCP, ACI, or a CTDOT approved equal certification in the area of inspection that will be performed, such as but not limited to paving, earthwork, and structural concrete.

1.4.3.6. Quality Control Laboratories

All technicians and testing laboratories utilized for inspecting, sampling, handling and testing, shall be certified by the NETTCP or other similar entity acceptable to CTDOT in the appropriate designation for the work and materials being inspected, sampled, handled or tested. All laboratories performing QC testing of Project produced materials shall be qualified through either the AASHTO Accreditation Program (AAP) or NETTCP Laboratory Qualification Program.

1.4.4. QA Submittals

1.4.4.1. Quality Control Personnel

Within seven calendar days of the award of the contract, the contractor shall update and/or submit for acceptance by CTDOT, the resumes of the QC personnel.

1.4.4.2. Quality Management Plan Submissions

Within 30 calendar days of the award of the contract, the Contractor shall prepare and submit for acceptance by CTDOT, a QMP, proposed QC forms as outline in the QMP section, and related information, in accordance with all requirements herein, and those of the Contract and Contract Provisions. The QCA, Project Manager and Project Executive shall sign the QMP submission and any revisions or amendments thereto. Any revisions or amendments made to the QMP shall also be submitted to CTDOT for acceptance.

Within forty-five (45) calendar days of the award of the Contract, the Contractor shall submit to CTDOT for approval a schedule of values of its lump sum bid price allocated for the performance of this item detailing the information required in the basis of payment section of the QMP requirements.

1.4.4.3. Quality Control Plans and Related information

QCPs must be submitted to CTDOT for approval a minimum of 30 days prior to the planned start of work on the applicable area of design or construction. No Project work, which requires a QCP, may be performed without an approved QCP. At a minimum, the QCPs shall comply with the methods and procedures specified herein. Any revisions or amendments made to the QCPs shall also be submitted to CTDOT for acceptance.

Within forty-five (45) calendar days of the award of the Contract, the Contractor shall submit to CTDOT for approval a schedule of values of its lump sum bid price allocated for the performance of this item detailing the information required in the basis of payment section of the QCP requirements

1.4.5. Quality Management Plan

The Contractor shall develop, implement, and maintain a comprehensive Quality Management Plan ("QMP") tailored to the complexity and scope of the work. The QMP shall describe all QC procedures of

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all parties involved (design consultant, sub-consultants, Prime Contractor, subcontractors, producers, fabricators, manufactures, etc.) with the design and implementation of the Project. This work shall be independent of any CTDOT acceptance inspections but shall be a condition of the acceptance of the Project work. The QMP shall include, as a minimum, the following sections, (the contents of each section are outlined later in this provision):

1. Organization
2. Contractor Production Personnel Involvement and Training
3. Design Control
4. Procurement Control
5. Special Process Control
6. Control of Subcontractors, Fabricators, Manufactures and Suppliers
7. Inspection
8. Document Control and Retention
9. Materials and Workmanship Quality Certification
10. Reporting
11. Non-Conforming Items
12. Meetings

The QMP shall identify major and routine items (consistent with the requirements of the QCP provision) and address the reporting, inspection, and attention throughout the process for each. The plan shall be designed to minimize deviations from the performance requirements of the Contract and Contract Provisions, by monitoring and documenting the quality of the Contractor's services, with particular emphasis on the following basic principles:

- Satisfaction of contractual requirements
- Design conformance with applicable requirements as defined in the RFP, the Contract and Contract Provisions
- Construction conformance with design and other requirements of the RFP, the Contract and Contract Provisions

The QMP shall include a method for identifying and resolving any deviations from the performance requirements while maintaining the Project schedule. The QMP shall include a method to prevent similar deviations from occurring once a deviation has been identified and resolved. The Contractor shall modify the plan as needed to meet the requirements of the Contract and Contract Provisions, and the needs of the Project.

The requirements described herein, are not intended to relieve the Contractor from its responsibilities for general oversight of the work, nor to replace the review and oversight of the work carried out by, or on behalf of the Contractor. The implementation of a Contractor's QMP in no way precludes or eliminates the opportunity of CTDOT to conducting a separate independent review and inspection of the work as may be deemed necessary in the sole discretion of CTDOT.

CTDOT will not accept any plan submissions, Early-Release-for-Construction packages or Shop/Working Drawing submittals until the QMP and applicable QCPs have been accepted by CTDOT. The contractor shall not revise any portion of the accepted QMP or QCPs without the prior written consent of CTDOT thereto.

Subcontractors, fabricators and suppliers involved in major items, as defined in the Quality Control Plans specification, shall have their own QC program. Depending on the timing, subcontractors, fabricators and suppliers QC programs shall be referenced in the Contractor's QMP or be included as an appendix to the Contractor's original QMP, or addendum thereto. All subcontractors, fabricators and suppliers QC programs shall comply with all conditions of the Contract and Contract Provisions including this and other provisions.

1.4.5.1. QMP Content and Format

1. Organization

This section shall describe the Contractor's organization, including reporting relationships within and external to the Contractor's organization. The name of the QCA shall be clearly stated and this individual shall report directly to Contractor upper management, independent of design/manufacturing/construction operations. Duties and responsibilities within the said organization shall be stated. An organizational chart shall be prepared to depict graphically the Contractor's organizational structure and major reporting lines and relationships. The organization plan shall clearly state the hierarchy between the QCMs the QCA and Contractor upper management and shall define the role of each person in the resolution of QC issues. If the QCA is not a full time position then the organizational chart shall clearly identify the different reporting relationships when the QCA is present and when that person is not. In the event that the QCA is not available, the QCMs shall have the same authority related to work stoppage and correction of QC issues in the QCA's absence. This shall be clearly outlined in the narrative accompanying the organizational chart.

2. Contractor Production Personnel Involvement and Training

All design and construction production personnel (i.e., staff performing design and construction work activities) and all personnel working under their direction, shall have the "up front" responsibility for ensuring the quality of their work. Production personnel are expected to apply QC "self-checks" or "self-inspection" throughout the process of work production. Production personnel are expected to alert the dedicated QC personnel and CTDOT personnel to non-conforming work, and to correct the deficient work prior to proceeding with additional work built upon that segment or portion of the Project. If it is found that production personnel are not reporting and correcting deficient work on a continued basis action shall be taken by the Contractor to correct the issue and if necessary remove the person or persons from the Project.

Formal QC checks will be performed independently of design production personnel by the design QC staff and Formal QC inspection and testing will be performed independently of construction production personnel by the construction QC staff throughout design and construction. QC inspection must only be performed and reported by the Contractor's QC personnel, as identified in the Contractor's organizational chart and approved Quality Management Plan. Self-checks and inspection performed by construction or design personnel is also a necessary part of QC, but does not by itself satisfy the inspection element of this provision.

The QMP shall detail the Contractor's proposed personnel and plan to provide QC training under the direction of the QCA and QCMs prior to their involvement in production or QC work, as well as how the Contractor will involve the production personnel in the QA process and document how they ensure quality. The plan shall also detail the testing and reporting to CTDOT to be implemented to prove each individuals understanding of their role and responsibility in the QC system prior to working on the Project work.

3. Design Control

This section shall describe how the Contractor, design production personnel and the QCMD monitors and controls quality and conformance with the requirements of the Contract and Contract Provisions during the design process. Design production personnel quality control activities consist of "self-checks" or Frontline QC. This section shall describe the Frontline QC activates the design production personnel will use to ensure all design documents are developed using the applicable specifications throughout the design process, and that the design meets or exceeds the requirements of the Contract and Contract Provisions. The activities described shall include, but are not limited to, checks, inspections, surveillances, or a combination of such methods. The design QC staff is responsible for "independent-checks" or Formal QC at key milestones in the design process described in section 3.4 of the Contract Technical Provisions.

When submitting design information to CTDOT for review, the Contractor shall provide documentation in the form of a certification by the QCMD, persons performing the quality control reviews, and certain other parties as outlined in the Contract Technical Provisions. The

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certification ensures that the design has been reviewed by all parties and that it conforms to the requirements of the Contract and Contract Provisions, and QMP.

The Contractor shall also describe the measures to be taken when an issue is identified and how CTDOT will be included. These measures shall include but not be limited to procedures for documenting, routing, tracking and resolution requests for changes and requests for information. They shall also address the process for the resolution of changes in the design due to field conditions, and the proper documentation and involvement by CTDOT in said changes. It is expected that no non-conforming submissions will reach CTDOT because of this requirement. If an incomplete or non-conforming submission is received by CTDOT, the QMP and or QC plan(s) and actions of the quality control personnel have failed. If this occurs, no additional design submissions will be accepted by CTDOT until the issue(s) with the QC system, including personnel issues, are identified in writing to CTDOT, the QMP or QCP are revised and reapproved by CTDOT and if necessary personnel issues are addressed. Stoppage of design submissions for this reason is not a valid reason for a time extension.

4. Procurement Control

This section shall describe the methods used by the Contractor and the QCMD and QCMC to assure that all materials/equipment purchased for the work are as specified. Included shall be provisions for the review of purchase documents to assure that correct details have been specified, including specification, grade, type, color, country of origin or other aspects as required by specifications, drawings, and the Contract and Contract Provisions.

The QMP shall describe receiving inspection activities to be performed, to determine that the correct material/equipment has been delivered. These activities shall be documented on a “Material Receiving Inspection Report”, including documentation of inspections performed and reviews of Material Test Reports, certificates of conformance, Material Certificates, Certified Test Reports or other documentation required by the Contractor, Designer of Record and the Contract and Contract Provisions. The “Material Receiving Inspection Report” shall also include as an attachment, the Materials Certificate, Material Certified Test Report, and any other forms required by the Contractor, Designer of Record or the Contract and Contract Provisions. The testing and sampling of materials shall meet or exceed the requirements of CTDOT’s 2019 (or most recent update thereof) QA Program for Materials Acceptance and Assurance Testing Policies and Procedures as well as any other requirements of this provision and the Contract and Contract Provisions. In the event of a conflict between documents, the more stringent requirement will apply. CTDOT’s 2019 (or most recent update thereof) QA Program for Materials Acceptance and Assurance Testing Policies and Procedures is available at https://portal.ct.gov/-/media/DOT/documents/dpublications/DMT-Manual_2019_May-1_2reduced.pdf?la=en or by retrieving the document from CTDOT’s website. Testing results shall be considered a measure of the quality being produced. The results shall be provided to CTDOT as soon as practical.

Prior to receiving materials for the Project, the contractor shall develop a list of items requiring a Materials Certificate, Certified Test Report, Certificate of Conformance, or other reporting required by the Contractor or the Contract and Contract Provisions and submit the list for review and approval by CTDOT. The list shall be developed using the schedule of minimum testing requirements provided in Chapter 9 of the Materials Testing Manual, as well as any other items that require a certification as outlined in the Contract Technical Provisions or as determined by the Designer of Record. The schedule shall be updated and resubmitted immediately when, missing items are identified and added or when changes to the plans modify or add requirements. The Material Certificates and Certified Test Reports may be utilized for Quality Control purposes but shall be utilized by CTDOT for acceptance testing so form and supply of original documents and their routing must be coordinated with CTDOT and comply with the requirements outlined in the Contract and Contract Provisions. Unless detailed otherwise in the contract, as a minimum, receiving inspections will be performed on the following materials:

- Materials requiring a Material Certificate, PC-1, or Certificate of Conformance.
- Source Controlled Material not inspected at the manufacturer.

- Job Controlled Materials (other than concrete, bituminous and soils) which require tracking for testing or payment purposes.
- Equipment that is to be incorporated into the work.
- Structural elements produced off site such as but not limited to; structural steel, precast members, reinforcing steel, retaining walls, bearings, sign supports, crash attenuation systems, precast temporary and permanent barrier burb, temporary structural supports (formwork supports, temporary earth retaining systems, etc.).

After completion of receiving inspection activities, the form, along with associated documents, shall be submitted to CTDOT far enough in advance of the scheduled work to allow for review and any approvals necessary, prior to the incorporation of the material.

5. Special Process Control

This section shall describe the measures including but not limited to inspection, verification, documentation and tracking, contingencies that will be used to assure that any special process produces a product that is in conformance with the Contract and Contract Provisions. Such special processes shall include but are not limited to: welding, high strength bolting, nondestructive examination, critical coatings, surveys, control of critical tolerances, etc., and that the results are properly documented and in conformance with the Contract and Contract Provisions. In addition, the process, personnel, and equipment shall be qualified prior to the work activity; the Contractor shall describe the methods to be used to verify, document and track these requirements.

6. Control of Subcontractors, Fabricators, Manufacturers and Suppliers

It is the Contractor's responsibility to oversee, coordinate and review all work of subcontractors, fabricators, manufacturers and suppliers involved in the Project, ensuring that at each point in the construction of the Project (from raw material to finished product) meets or exceeds the requirements of the Contract and Contract Provisions. This section of the QMP shall describe the measures, including but not limited to, full time supervision of subcontractors, QC requirements for subcontractors, and QC sampling and inspections by the Prime Contractor of subcontractors, fabricators, manufacturers and suppliers work from raw material production to the final product. Full time supervision, at a minimum, shall consist of one supervisory prime Contractor personnel for each site of work knowledgeable and involved in each operation, in addition to the QC inspection personnel.

It is the Contractor's responsibility to notify all subcontractors, fabricators, manufacturers and suppliers of the requirements of this provision, the various performance requirements and any other relevant provisions in the Contract and Contract Provisions. This section shall describe the methods used by the Contractor and the QCMs to assure that all the applicable requirements are passed on to the subcontractors, fabricators, manufacturers and suppliers. Included in this section are the methods used by the Contractor and the QCMs to monitor and control the quality of the work performed by subcontractors, fabricators, manufacturers and suppliers, and obtain the required quality records.

Subcontractors, fabricators, manufacturers and suppliers involved in major items, as defined in this provision below, shall have their own QMP or an addendum to the Contractor's QMP, which shall comply with all conditions of this provision. The Contractor shall be responsible for performing QC on the work of, and reporting on QC activities performed by, subcontractors, fabricators, and suppliers working on major and routine items to ensure compliance with this provision.

In order for CTDOT to arrange for acceptance inspections and testing, following the release for construction and prior to fabrication, under the terms of the Contract and Contract Provisions, the Contractor must notify CTDOT as to the source of supply, proposed date(s) of fabrication or use, and other details. The notification must include the date of beginning of fabrication and the date the material is to be delivered to the Project. The notice must be far enough in advance of the

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fabrication or procurement to provide CTDOT ample time to arrange for inspections. Any material requiring inspection that is procured, fabricated, or delivered without notification or approval shall not be incorporated into the work. Suppliers must furnish properly documented test reports. The contractor must be aware that the governing provisions prohibit the start of fabrication prior to CTDOT's release for construction.

The QMP will take into account and comply with the requirements of the applicable version of the standard specifications relating to testing facility requirements for CTDOT inspectors and technicians.

7. Inspection

This section shall describe how the Contractor and the QCMs will ensure that the specified quality of design, materials and workmanship will be met or exceed the requirements of the Contract and Contract Provisions. The Contractor's program is not related to any inspection carried out by CTDOT.

The Contractor shall describe the system, including but not limited to, applicable specifications, checks, inspections, sampling and testing, surveillances, or a combination of such methods, for both Frontline and Formal QC activities. The QMP shall identify the reporting requirements for each item, and these reporting requirements must be approved by the CTDOT. The detail of the inspection requirements, inspection attributes, and frequency of sampling and testing, shall be documented in the QC Plan for each item of work. QC activities must be provided on a daily basis for each active operation, throughout the production processes. Formal QC activities must be provided on a daily basis for each active operation, throughout the production process.

This section shall outline the identification and tracking of the quality characteristics (key attributes) used to verify that the level of quality conforms to the requirements of the Contract and Contract Provisions.

At a minimum, formal QC activities shall include structured monitoring of the following inspection components to ensure compliance with the Project specifications:

- Equipment; Evaluation of the proposed equipment specifications to ensure the equipment proposed is the proper equipment based on the proposed methods to accomplish the subject work. Visual inspection (including but not limited to observations and measurements) of equipment to be used for, installation of the work and testing material properties are in good working order and properly maintained.
- Environment; Visual monitoring and measurements to ensure physical environmental conditions provided meet specification (including but not limited to Project and manufacturer) requirements for individual materials or products.
- Materials; Visual inspection, sampling and testing to examine specific material properties and physical conditions at each stage of production and placement. Review of material certs, ensuring the correct material type is being used and that it meets or exceeds specification requirements.
- Workmanship; Visual inspection (visual sampling), and measurements of the physical condition at each stage of production ensuring the quality of items produced meet or exceed specification requirements.
- Immediate notification of nonconformance to ensure correction of quality and process deficiencies.

Inspection checklists shall be developed, and submitted for CTDOT concurrence, specific to each work item (or a group of similar work items requiring the same QC inspections sampling and testing), for completion on a daily basis as the work progresses. The checklists shall list the attribute requirements of the contract provisions and QCP as well as the samples, measurements, observations, inspections, etc., to be performed to document and determine the quality of the work.

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The checklist may be made a part of the specific quality control reports outlined else ware in this provision or may be attached to the inspection reports daily.

8. Document Control and Retention

This section shall describe the methods to be used by the Contractor and the QCMD and QCMC to control the use of the various design documents, shop drawings, inspection reports, non-conformance reports (NCRs) procedural documents and other records to assure;

- The latest reviewed documents are used and are distributed to the individuals performing the work.
- All necessary inspection and material testing forms are completed.
- All NCRs are resolved in a timely manner.

The Contractor shall describe the process used to determine what submittals are required by the Contract and the system used to track these submittals and their status.

This section shall also describe how various design documents, shop drawings, inspection reports, non-conformance reports, related procedural documents and other records generated by the Contractor are originated and maintained, received, filed, protected, and authenticated. Quality Control records required for submittal to CTDOT shall be described. Record retention requirements of Section 1.05.13 of the Contract General Provisions shall be made part of the QMP and documented.

9. Materials & Workmanship Quality Certificate

This section shall describe the actions and audits to be performed at major milestones of the Project and at the Project substantial completion to ensure that all of the material and workmanship meet or exceed the Project requirements. Contingency procedures shall be included for the resolution of material and workmanship that fails to meet the Project requirements.

The Contractor shall submit with the As-Built plans a “Materials & Workmanship Quality Certificate” and any related quality documentation, signed by the Contractor's Construction Manager and Quality Control Administrator indicating that all materials and workmanship incorporated in the Project or portion of work, conforms with the requirements of the Contract and Contract Provisions.

10. Reporting

The Contractor shall submit as part of the proposed QMP weekly and monthly reporting forms for approval. The Contractor shall be required to produce and submit to CTDOT, daily, weekly and monthly inspection reports in accordance with the requirements of this provision, the QCP provision and the Contact and Contract Provisions. The QMP shall clearly define what information will be provided as part of the daily, weekly and monthly reports.

The Contractor shall submit samples of all proposed forms and reports to CTDOT for review and concurrence with the QMP submission. Sample forms and reports to be submitted with the QMP for approval by CTDOT shall include, but are not limited to,

- Document Control tracking form.
- Design Control tracking form.
- Material Receiving Inspection Report.
- Inspection forms for major and routine items.
    - Daily, Weekly, Monthly Work Activity / QC Reports.
    - Inspection Checklists.
- Special Process Control forms.
- Non-Conformance Reports.
- Conformance Reports.
- Materials & Workmanship Quality Certificate.

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Daily reports shall document all activities performed by the QCMs and other QC personnel related to the work. This shall include but not be limited to visual inspections, completion of and recording of measurements, sampling and testing, and communications. The daily reports shall be developed and processed in accordance with this provision and the requirements of the QCP provision. This requirement should be coordinated with the development and completion of QC inspection checklists required in the inspections section of this provision. Any forms utilized relative to this provision shall be included with daily reports as attachments.

Daily reports shall be submitted to CTDOT by 12 PM on the Tuesday following the week of the inspection reports, or as agreed to by CTDOT. Except as otherwise authorized by CTDOT, submissions after that time are considered late.

Weekly reports shall include a summary of the work performed and quality results obtained as documented on the daily reports as well as a summary of information not captured in the daily QC reports relative to document control, design control, procurement control, control of subcontractors, special process control, QC inspection, QC sampling and testing, and non-conforming items. For any week that a non-conformance issue is identified, by either the Contractor or CTDOT, actions taken to resolve the non-conformance issue shall be reported. Updates in the weekly report shall continue until the NCR is resolved. Once resolved, the weekly report shall document that supervisory field personnel involved in the work have been informed of any changes implemented to avoid similar deviations. Any revisions or amendments made to the QC Program shall be documented in the weekly report, once submitted and accepted by CTDOT.

Weekly reports shall be submitted to CTDOT by 12 PM on the Tuesday following the week of the inspection reports, or as agreed to by CTDOT. Except as otherwise authorized by CTDOT, submissions after that time are considered late.

Monthly reports shall include a “one month look ahead” with expected QC efforts and procedures for major and routine items. It shall also summarize all open or non-conforming issues from the weekly reports and detail the plan adjustments or changes to resolve these QC issues.

Monthly reports shall be submitted to CTDOT by the fifth business day each month. Except as otherwise authorized by CTDOT, monthly submissions after the due date are considered late.

11. Non-Conforming Items

This section shall describe the protocol(s) for identifying and correcting material and/or workmanship not in conformance with the QMP, QC Plans or the Contract and Contract Provisions. This section shall also address the reporting requirements of the QMP and QCP provisions of this contract for documenting non-conformance, subsequent corrective measures and issue resolution.

This section shall also include provisions for CTDOT or Designer of Record participation in such resolution when design features or the final products are impacted. CTDOT shall be notified of all non-conformance issues and shall have the opportunity to review the actions to be taken for the resolution. If the proposed actions are not acceptable to CTDOT the Contractor shall revised the proposed action and receive approval of CTDOT prior to proceeding with work dependent upon the work in question.

The QC personnel shall implement the use of Non-Conformance Reports (NCRs) and Conformance Reports (CRs) to notify the Contractor and CTDOT of the occurrences and document actions taken to identify, resolve and prevent similar deviations. The NCRs or CRs shall include signatures of the responsible production personnel and QC personnel for each process of the corrective action taken. Upon resolution of a nonconformance issue, CTDOT shall be notified of the actions taken and the QMP and the applicable QCP shall be revised to identify preventive measures that will be taken to prevent similar deviations. The personnel supervising the work shall be instructed to implement the changes on current and future work to avoid similar deviations.

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Even though it is an indication of a failure of the QC system, CTDOT inspectors at any time may determine that work (Production work or QC work) is unacceptable and issue a non-compliance notice or communicate in another way their inspection results. A notice by a CTDOT inspector of unacceptable work shall be resolved to the satisfaction of CTDOT. Upon resolution, the QMP and applicable QCP shall be revised to identify preventive measures that will be taken to prevent similar deviations. Supervisory field personnel involved in the work shall be informed of necessary changes to be implemented to avoid similar deviations.

CTDOT may stop the work and issue a non-conformance notice to the Contractor if the QC inspection or QC reporting is ever found to be inadequate. The Contractor must then submit, to CTDOT, an addendum to the QMP that addresses the inadequacy. Along with a plan to resolve and assure that the work performed during the inadequacy conforms to the Contract and Contract Provisions. If the work does not conform to the contract requirements, the Contractor will develop a repair procedure. The Contractor may resume the work after the approval of the addendum to the QMP by CTDOT. There shall be no claims or adjustments to the contract time for work stopped because of inadequate QC inspection, QC reporting, or correction of deficiencies. QC inspection and reporting will be considered inadequate if:

- QC reports repeatedly omit information or repeatedly contain inaccurate information.
- Daily QC reports are missing.
- Daily QC reports are not created on the same day as the reported work.
- CTDOT staff must perform QC inspection on behalf of the Contractor, including but not limited to, identifying out of date Project documents, or answering questions about contract documents for the Contractor's construction personnel or subcontractors because the Contractor's QC personnel are not present.
- CTDOT staff repeatedly has to request QC personnel's presence in the field because they are needed by production personnel.
- QC personnel are repeatedly not present at major or routine work item operations, as defined in the Contractor's developed QCPs.
- Production personnel are found to be using outdated plan sheets in the field.
- There is work progressing on the job site while the QCM or CTDOT approved representative is not present on the site.
- Contractor supplied QC personnel do not have the proper certifications and qualifications during active involvement with the Project.
- Hold point procedures, as described below, are not followed according to the approved plan and required documentation for verification at holds points are missing.
- The project work is continually not meeting the project specifications or all non-conforming work is not corrected in a timely manner.

Failure of the Contractor or QC personnel to identify, report and correct non-conformance is considered a failure of the QC system. Aside from other requirements of the contract related to non-conforming work, this failure shall require action by the Contractor, up to replacement of QC and production personnel and may result in CTDOT reducing the final lump sum payment for the QMP and QCP as describe in the respective Basis of Payment sections.

12. Meetings

The QMP shall detail the Contractor's plan for Project site meetings to coordinate with CTDOT Inspectors relative to production, QC inspection and testing, and CTDOT Acceptance inspection and testing as well as requirements of production personnel related to each. Pre-production meetings will be held prior to commencement of work for all major items, or other items as demined necessary by CTDOT, to coordinate QC and Acceptance inspection and testing. The Contractor shall coordinate meeting efforts with CTDOT early in the process, to involve Materials Testing personnel to confirm testing requirements for all on-site and off-site production activities.

The Contractor shall establish daily, bi-weekly, and monthly QC meetings, to discuss ongoing issues, anticipated work and corresponding QC activities, and any corrective actions completed.

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Meetings will be held specific to the QMP and general QC requirements. The Contractor, represented by a minimum of the QCA, shall participate with CTDOT, biweekly or at CTDOT's request, in the review and evaluation of progress related to this provision.

13. Basis of Payment

The costs for the work required by this provision and the Contractor's QMP will be compensated as part of the lump sum D-B price. The Contractor shall specify, in a minor schedule of values, the amount of the lump sum price allocated to meet the requirements of this provision.

The minimum minor schedule of value (m.s.v.) price for this item shall be **$350,000** (three hundred and fifty thousand dollars). Failure of the Contractor to bid at least the minimum amount will result in CTDOT adjusting the Contractor's price proposal to include the minimum bid amount for this item.

Within forty-five (45) calendar days of the award of the Contract, the Contractor shall submit to CTDOT for approval a schedule of values of its lump sum bid price allocated for the performance of this item detailing the following:

1. The development costs to prepare the written QMP. Development costs shall not exceed twenty percent (20%) of the total cost of the item.
2. The cost per-month to provide the services of the QMP, including the QCA, QCMD, and QCMC activities, necessary QC personnel, preparing and submitting daily, weekly, and monthly reports, and all other requirements of this provision. A per-month cost will be derived by taking the allocated lump sum bid price, subtracting the development, and dividing the remainder allocated lump sum bid price by the number of contract months remaining from the date of proposed submission of the written QMP to final acceptance of the Project.

Upon approval of the schedule of values by CTDOT, payments for work performed will be made as follows:

1. Upon acceptance of the written QMP, the lump sum development cost from the payment schedule will be approved for payment.
2. Upon timely receipt of all daily, weekly, and monthly reports required each month in accordance with the reporting element, the per-month cost will be approved for payment.

Failure of the Contractor to comply with the requirements of this provision to the satisfaction of CTDOT may result in the withholding of the monthly distribution of the contract lump sum associated with the QMP as well as the monthly progress estimate. Continued failure of the Contractor to comply with the requirements of this provision will result in a negative adjustment to the contract in an amount determined fair and equitable by CTDOT. If the Contractor and the CTDOT cannot agree on a fair and equitable amount of negative adjustment, the amount determined by the CTDOT shall be final.

CTDOT shall apply reductions to the monthly payment portion; which will result in a reduction in the lump sum amount and cannot be recovered, should the Contractor fail to meet the requirements of this provision, including but not limited to:

1. A five percent (5%) reduction to the per-month allotment of the schedule of values will be applied for each day that the services of an acceptable QCA is not provided as required by this specification. The total reduction for any calendar month could exceed the monthly payment for the item.
2. A one percent (1%) reduction to the per-month allotment of the schedule of values will be applied for each day that the required reports have been submitted late, up to a maximum of fifty percent (50%) of the monthly payment per report. This one percent (1%) reduction will apply to each independent report.
3. A twenty-five percent (25%) reduction to the monthly payment will be applied for each bi-weekly QA meeting not attended by the QCA.

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In addition to the QMP requirements above, the Contractor shall prepare Quality Control Plans (QCPs) for work items as outlined in section 1.6.6 below.

1.4.6. Quality Control Plans

The Contractor shall develop, implement and maintain Quality Control Plans (QCP) to supplement the QMP for the design and construction of the Project as outlined herein. QCPs are a critical component of the design and construction of the Project. The requirements are intended to provide the Contractor with real-time information to control the quality of the work. The QC procedures and activities will also assure CTDOT that the Contractor is executing the work in accordance with the Contract.

QCPs shall be recognized as the plan by the Contractor to achieve the level of quality in the work required by the Contract. The QCPs shall be subject to revisions and amendments, as required, in response to actual site conditions, work methods, and to deviations encountered and corrected throughout the duration of the Project.

The QCPs are intended to achieve the following objectives:

- Establish the Contractor's plan for fulfilling the responsibility of achieving the required level of quality for the Project.
- Establish procedures for coordinating and ensuring consistency and quality of work performed by the Contractor, subcontractors, producers, fabricators, manufacturers and any other parties producing work or products for the Project.
- Ensure that the quality of the materials and workmanship of all completed construction work meets the quality requirements set forth by the Contract and Contract Provisions.

The Contractor's Quality Control Administrator shall develop a QCP specific to each of the major and routine work items (or routine item group classifications such as earthwork) as outlined herein. The Quality Control Administrator shall meet with the CTDOT and address all comments to the satisfaction of the CTDOT prior to the work covered by the QCP commencing.

The QCPs shall detail the means and methods of the Contractor and its QCMs and QC personnel, production staff, suppliers, subcontractors, subconsultants and others that will be utilized to assure that the specified quality of design, materials, and workmanship has been achieved or exceeded. The QC requirements related to the design of the Project are outlined herein.

QCPs must include the identification, measuring and tracking of the quality characteristics (metrics) used to verify that the level of quality of design, materials and workmanship conform to the requirements of the Contract and Contract Provisions. The QCPs shall specify the system, including but not limited to, applicable specifications, checks, inspections, surveillances, or a combination of such methods to be employed.

The Contractor is prohibited from performing work if the approved and appropriately certified QC personnel are not on site.

1.4.6.1. Quality Control Plan Content and Format

1. General Requirements

Unless otherwise approved by CTDOT the Contractor shall utilize the NETTCP "Model Quality Control Plan" (Appendix F of the NETTCP QA Technologist Course Manual, January 2014) as a template of minimum required information and format, and incorporate additional CTDOT requirements as detailed below. This model plan is available at the NETTCP website.

In addition to the NETTCP Model Quality Control Plan, all QCPs shall meet or exceed the following bulleted general requirements. Additional requirements for specific aspects of the Project are detailed following this list and shall be incorporated into QCPs where applicable:

- QCP shall cover, as a **minimum**, the following sections;
    - Applicable Specifications

- Quality Control Organization
- Quality Control Laboratories
- Materials Control
- Quality Control Inspection, Sampling and Testing*
- Production Facilities
- Field Operations
- Other relevant contractor defined sections QC plans

* The NETTCP Model Quality Control Plan sections titles and content differ from the minimum requirements above related to QC inspection. The Contractor shall address QC inspection as required by this specification.

- All applicable specifications shall be identified for all work items addressed in a QCP. The Contractor shall list all applicable standard specifications, supplemental specifications, Project special provision(s), Project drawing, etc., to facilitate review of pertinent testing requirements and information that is not contained within the QCP itself.
- The Contractor shall identify the anticipated QC personnel and briefly describe their responsibilities and relevant qualifications for all work items addressed in the QCP. Personnel responsibilities shall clearly define the level of authorization to enforce "hold points" on the work, as outlined below.
- The QCP shall define specific methods and test procedures (identified by ASTM or AASHTO test identification number) that will be employed to verify that the work meets or exceeds the contract requirements, and the measures that will be taken to minimize, identify, resolve and prevent deviations from the requirements of the Contract in regards to materials and workmanship, for each work item listed above.
- The names, certifications, and qualifications of the QC personnel who will perform the QC inspection and/or testing shall be listed. If it is unknown who will perform the inspection and testing, or there is a personnel change, the Contractor shall supply the names and certifications of the inspectors to CTDOT as soon as possible and the name and certifications of the inspectors shall be included with that inspector's first daily QC report.
- The QCP shall identify all laboratories to be used for testing specific material(s) as defined by CTDOT requirements, as well as any relevant accreditations, certifications or qualifications.
- All standard manufactured materials shall be delivered to the Project site with a standard Material Certificate (Certificate of Compliance (COC)) for the corresponding lot of material. A certified test report shall accompany the Material Certificate as required by the contract.
- All fabricators furnishing fabricated structural materials must be approved by CTDOT Division of Materials. The Contractor shall coordinate with CTDOT to facilitate qualification review of anticipated fabricators for use of the subject work item as soon as practical.
- The material types and sources of supply, material properties, mix designs (if applicable), processing of existing materials, and material storage and stockpiling shall be identified for all anticipated materials to be used for the specific work items addressed in the QCP.
- Inspection attributes and schedules shall be identified and address the four primary inspection components (Equipment, Environmental Conditions, Materials, and Workmanship) as noted above. Inspection schedules shall be coordinated with the inspection checklist requirement. Inspection lot and sublot sizes shall be established for each Inspection attribute, unless already established by CTDOT. The QC sampling and testing frequencies specified in the Quality Control Plans shall exceed frequencies specified in CTDOT's QA Program for Materials Acceptance and Assurance Testing Policies and Procedures (July 2009).
- Hold Points, as defined below, shall be established that are acceptable to the CTDOT.
- QCPs shall identify and detail contractor means and methods, production equipment, testing equipment, QC procedures and activities anticipated for all on-site and off-site production of the subject work item. This should provide a clear understanding of the corresponding production, QC activities and procedures that will be utilized to meet the

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quality requirements of the Contract and Contract Provisions. This includes but is not limited to, schedule of operations, production and QC equipment, QC activities during, post, and pre-construction, procedures for corrective actions of non-conforming materials, and QC inspection reporting.

- The QCP shall include, as attachments, any relevant QC plans from other contractor parties that are part of the QC program. This includes all subcontractors, fabricators, manufacturers and suppliers involved with production for the subject work item.
- Except as specifically noted in the specifications, QC results will not be utilized for acceptance of the work. CTDOT will determine whether work is acceptable, through independent Acceptance inspection.

Each QCP shall take into account the schedules of the Project and detail the measures the Contractor will take to ensure that the work being performed meets the requirements of the Contract and Contract Provisions. In addition to the normal measures, the Contractor shall detail measures to be taken in the event of special circumstances, such as accelerated schedules; in part due to the use of accelerated construction methods or restrictions imposed by local authorities and the contract, etc. The Contractor should not expect CTDOT to accept inferior materials or workmanship due to time constraints and it will be the Contractor's responsibility to remove and replace unsatisfactory work.

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2. Major Items

Major items shall include but are not limited to the following items:

- Bituminous Concrete Pavement.[1]
- Bridge Bearings, Bridge Seats and Expansion Joints.
- Bridge Superstructure - Structural Steel.
- Bridge Superstructure - Precast Concrete Elements.
- Bridge Superstructure – Concrete (Including Deck Placement).
- Drainage.
- Electrical Related Lighting, Signals (temporary and permanent), and ITS.
- Existing Structure Demolition.
- Non-Superstructure Precast Elements.
- Retaining Walls or Cast-in-Place Barriers.
- Utilities.
- Other Work Items (as deemed necessary as the work progresses).

[1]The QC Plan requirements for Bituminous Concrete Pavement Section 4.06 shall generally follow the requirements of this provision but shall also include the specific requirements of the mandatory special provision.

In addition to the general requirements stated above, QCPs for major items shall include the following additional requirements. The QCMs shall be familiar with all aspects of work related to major items. No work shall be performed on these items without the QCMs or their qualified representative being present at the site to witness the work and perform required QC activities. The knowledge and oversight shall be such that the QCMs and Contractor can verify, as the work is being produced, that it meets or exceeds the requirements of the Contract and Contract Provisions. Item specific quality control reporting forms shall be developed to document the work performed by the QCMs and related staff, on each of these items. The forms shall be contemporaneously reviewed and signed by supervisory construction personnel and the QCMs and if utilized the QC technicians that performed the QC work. By signing the forms, each person will assert that they are aware of the level of conformance for the work being produced. All work performed by the QCMs and related staff on these items shall be documented and included in the daily, and weekly reports. Any deviations identified shall immediately be brought to the attention of a CTDOT representative and the deviation shall be resolved to the satisfaction of CTDOT.

3. Routine Items

All work not designated as major above shall be considered routine items. In addition to the General Requirements stated above: QC Visual inspections, sampling and testing shall be such that the QCMs can determine that the production work is meeting or exceeding the project requirements as it is installed. QC sampling of materials for routine items shall at minimum exceed CTDOT's minimum testing requirements. Monitoring of the work shall be such that it complies with the hold point requirements of this provision and the QC personnel shall be able to certify, with confidence, in their daily reports that all work was completed in conformance with the Contract and Contract Provisions based on visual inspection, sampling, and testing.

4. Hold Points

Hold points are mandatory points identified within the QCP at which work cannot proceed further until:

- QC inspections, sampling, and testing are performed
- Substantiation of QC visual inspection, sampling and testing are supplied to the satisfaction of the CTDOT, proving that the subject work meets or exceeds the Contract requirements.
- CTDOT has completed any verification / acceptance inspection, sampling and testing necessary.

Hold points shall be established, at minimum, where specification limits are specified and/or at points where the quality of materials or workmanship cannot be determined adequately and or corrected once work proceeds past that point, or as specified in the contract.

Hold points shall take into account the Contractor's proposed material, equipment, construction methods, sampling and testing methods. Hold points shall be developed such that the quality and conformance of each layer or portion of the Project work is determined prior to proceeding with subsequent layers or covering portions of the work so that all parts of the work meet the requirements of the Contract.

The Contractor's QC personnel shall be designated as a primary point of contact for inspection at hold points and CTDOT Project personnel for inspection and release of hold points (based on CTDOT taking no acceptation to the QC information and completion of acceptance inspection or sampling if any). The time necessary to respond to the notification for inspection at the hold, point shall be stated in the QCP, and agreed upon by CTDOT and the Contractor.

Notification to CTDOT Project personnel by the Contractor's QCMs or their qualified representative is required for all hold point inspection anticipated for any specific work operation or testing procedure. Hold points include but are not limited to the following activities: sampling, testing, production, storage, delivery, construction, placement, etc. Project specific hold points shall be identified for all major and routine items in the corresponding QCP and identified in the schedule for major items.

5. Design QC

The Contractor shall develop and implement a QCP for the design of the Project. The design QC should include at minimum; design production personnel self-checks, the selection of design input data, checking for correctness, completeness, compatibility and format, coordination and reviews by contractor construction personnel, and reviewing and approving design output documents for conformance with applicable codes and standards prior to submission to CTDOT. The QCP shall detail the Contractor's proposed personnel to perform the various reviews and inspections necessary such as peer reviews and QC checks by independent parties.

6. Subcontractor, Supplier, and Manufacturer Oversight

In addition to the production oversight required by the Contract, the Contractor shall be responsible to either self-perform the QC for all subcontractors, suppliers, and manufacturers or perform independent assurance inspections, reviews, sampling and testing as appropriate to ensure, the subcontractor's, supplier's, and manufacturer's work product meets or exceeds the contract

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requirements. The QCPs shall detail the measures the Contractor will take to accomplish this requirement.

7. Basis of Payment

The costs for the work required by this provision and the Contractor's QCPs will be compensated as part of the D-B lump sum price. The Contractor shall specify, in the schedule of values, the amount of the lump sum price allocated to meet the requirements of this provision.

The minimum minor schedule of value (m.s.v.) price shall be $750,000.00 (seven hundred and fifty thousand dollars). Failure of the Contractor to bid at least the minimum amount will result in CTDOT adjusting the Contractor's price proposal to include the minimum bid amount for this provision.

Failure of the Contractor to comply with the requirements of this provision to the satisfaction of CTDOT may result in the withholding of the monthly distribution of the contract lump sum associated with the QCPs as well as the monthly progress estimate. Continued failure of the Contractor to comply with the requirements of this specification may result in a negative adjustment to the contract in an amount determined fair and equitable by CTDOT.

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2. Information Supplied To Contractor/ Acknowledgement by the Contractor

2.1. General

The Contractor shall have full responsibility for completing the preliminary and Final Design of all Project elements and acknowledges that it shall be the Engineer of Record for the Final Design, with the exception of the items listed below. The Contractor acknowledges by receipt of such plans that it explicitly understands that while these plans have been advanced to a certain level, the Contractor shall be required to provide a final, complete Project design stamped, sealed and certified by its own Professional Engineers of Record, Licensed and Registered in the State of Connecticut.

CTDOT has developed the BTC to represent CTDOT's preferences and to establish the minimum baseline for this Project. The BTC provides the basis for the minimum requirements for the Contractor's Final Design and construction of the Project. Much of the BTC has been developed to concept level less than that required for a Preliminary Design level and as such the Contractor will be responsible for all Preliminary Design and Final Design work. The Contractor shall independently develop their own CADD drawings and electronic files to provide the necessary design intent and all details required for each design stage.

The BTC provides CTDOT's minimum design requirements for this project. The Contractor shall diligently review and verify CTDOT-supplied documents that describe the BTC (text, plans, specifications, etc.) for errors, omissions, inconsistencies or other defects. The Contractor shall promptly notify CTDOT of any errors, omissions, inconsistencies, or other defects it discovers therein.

By submitting a Proposal, the Contractor acknowledged that CTDOT-supplied documentation presents a feasible concept for the Project, which can and shall be used as the basis for the completion of the Project. The Contractor also acknowledges that the Project can be completed within the schedule, timeframes and milestone durations specified elsewhere in the Technical Provisions, and agrees that it shall have no right to seek additional Contract time or compensation in relations to such matters, except as specifically permitted by negotiated Project changes.

2.2. Reference Documents

All attached historical documents, design reports; preliminary design documents, and BTC documents shall be considered for reference only, except when specific requirements included therein are referenced in the Technical Provisions. It shall be the Contractor's responsibility to evaluate the information included in the reference documents when developing the final design. The Contractor acknowledges by receipt of such documents that it explicitly understands that while these documents have been advanced to the level indicated by CTDOT, the Contractor shall be required to provide a final, complete Project design that is stamped, sealed and certified by its own Professional Engineers of Record, Land Surveyor of Record, and Landscape Architect of Record, for review and approval by CTDOT and possible third parties. The Professional Engineers, Land Surveyor, and Landscape Architect must be registered in the State of Connecticut.

2.2.1. Historical Documents

Previous projects within or near the proposed project limits include:

- Project 79-081: Construction of Relocation of Route U.S. 6A – (1962)*
- Project 79-083: Construction of Interstate – Route 91 – (1962)
- Project 79-093: Construction of Route U.S. 6A – (1968)*
- Project 25-108: Construction of Interstate – Route 691 – (1982)
- Project 79-176: Resurfacing and Safety Improvements on I-691 – (1989)
- Project 25-134: Resurfacing and Safety Improvements on I-691 – (2000)

*Route 6A from the junction of I-91 extending west to Route 322 -West Main Street overpass - in Southington (interchange #4) was renamed to I-691 in 1987.

The above projects' documentation will be made available for reference on the CTDOT Design-Build web page, under project specific information.

CTDOT makes no representations as to the accuracy or completeness of information contained in any documents not obtained from CTDOT, and will not be responsible in any way for the Contractor's reliance on or use of the contents of such documents. See Appendix B for a complete listing of Project-specific documents.

2.2.2. Base Technical Concept

The BTC has been developed in order to define CTDOT's minimum design and construction requirements, which must be met or exceeded by the Contractor's Final Design.

The BTC plans and the Technical Provisions set forth in some detail the scope of the design and construction work required under the Contract. The BTC plans will show location, character, dimensions, and details necessary to communicate the intent and scope of the Project. If the BTC plans do not show complete details, they will show the necessary dimensions and details which, when used along with the other Contract documents, should enable the Contractor to prepare a completed design for the Project. The Technical Provisions also describe the review and submittal process for the Project Final Design.

All BTC documents (plans, specifications, etc.) provided by CTDOT shall be considered to depict the minimum design requirements of the project, except when modified by specific requirements included in the Technical Provisions. It shall be the Contractor's responsibility to evaluate the information included in the BTC documents when developing the Final Design. The Contractor acknowledges by receipt of such documents that it explicitly understands that while these documents have been advanced to the certain level of completion less than a Final Design by CTDOT, the Contractor shall be required to provide a final, complete Project design that is stamped, sealed and certified by its own Designer Of Record, licensed in the State of Connecticut.

Revisions or additions to information in the BTC documents being provided may be necessary, based on comments received during ongoing reviews. CTDOT makes no representations as to the accuracy or completeness of information contained in any documents not obtained from CTDOT, and will not be responsible in any way for the Contractor's reliance on or use of the contents of such documents. See Appendix B for a complete listing of Project-specific documents. Differentiating between a design refinement and a change to the BTC or Proposal is dealt with else ware in the Contract.

All BTC plans have been prepared using Microstation CAD; using CTDOT's Digital Design Environment ("DDE"). CTDOT does not claim that all of BTC plans conform entirely to these standards. The Contractor shall prepare Plans in accordance with CTDOT's Standards. Any changes to the selected DDE standards, including adjustments made as required for Building Information Modeling software (if used), shall be submitted and approved by CTDOT.

The BTC plans and documents included in Technical Provisions are as follows:

- Contract General Provisions
- Contract Technical Provisions including
  - BTC Drawings,
  - Special Provisions
  - Miscellaneous documents (permits, etc.).

2.2.3. CTDOT-Supplied Design Elements and Documentation

Portions of the BTC design have been completed by CTDOT and provided for incorporation into the Final Design. These design elements shall be considered final and not subject to revision by the Contractor or due to the conditions described above in this Chapter. Those design elements and documents include:

- Item #120734A – *Sign Face – Extruded Aluminum (Type IV Retroreflective Sheeting):* The sign details for all Extruded Aluminum Signs in the Project will be developed by CTDOT and

provided for incorporation into the Final Design. There will be no changes allowed to the sign details without approval from CTDOT. A conceptual layout of sign structures in the Project will be developed by CTDOT for incorporation in the Final Design. A request to modify the locations of sign structures may be proposed by the Contractor for the approval of CTDOT.

- Item #1207039A – *Sign Face – Extruded (Type IX Retroreflective Sheeting):* The sign details for all Extruded Aluminum Signs in the Project will be developed by CTDOT and provided for incorporation in the Final Design. There will be no changes allowed to the sign details without approval from CTDOT. A conceptual layout of sign structures in the Project will be developed by CTDOT and provided for incorporation in the Final Design. A request to modify the locations to sign structures may be proposed by the Contractor for the approval of CTDOT.

2.3. Design Exceptions

It is not anticipated that Design Exceptions will be required for this Project. Design Exceptions were not obtained for the BTC. This project has been designated as a 4R freeway project requiring specific improvement only.

The Contractor shall not assume that design exceptions will be granted. Any design change that would result in the need for additional design exceptions, was required to be proposed as an ATC during the procurement process. The proposed design shall not violate the existing approved exceptions.

Design exceptions proposed during the Final Design shall be considered a change and require a request for change in accordance with the Contract General Provisions. In addition to those requirements, the design exception requests, shall meet the documentation and justification requirements of the **Project Development Guide**. Design Exceptions must be approved by CTDOT prior to the Semi-Final Submittal. The Contractor shall make every effort to improve the conditions, which required the exceptions obtained.

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3. Project Design and Construction

3.1. General Description and Existing Conditions

Chapter 1 contains a general description of the Project. Additional information on the existing conditions is also included in the appendices of this document. The BTC plans also contain information regarding the existing conditions and miscellaneous details to be utilized during design.

3.2. Codes, Standards and Specifications

All design and construction documents developed by the Contractor shall be governed by requirements of the Contract and other applicable codes. (Please note: the lists included in Section 3.2.1 are not intended to represent a comprehensive list of all required documents; additional standards may apply). This Project must be designed in English units.

The Contractor shall be responsible for ensuring that the Final Design of pedestrian facilities along the Project limits is compliant with the latest applicable standards under the Americans with Disabilities Act ("ADA"). This does not apply to existing facilities unaltered during construction; however, the level of non-conformity of the existing facility shall not be made worse. Any ADA-compliant provisions in the BTC shall be incorporated into the Final Design and construction. In addition, unless otherwise approved by CTDOT, all sidewalks shall be a minimum of four feet (4') wide with a cross-slope (the slope perpendicular to the path of travel) of no more than 1.5%, after a ten feet (10') transition from existing sidewalk.

The Contractor shall perform supplemental testing, data collection, survey, borings, etc. as necessary in order to complete the design. It is the responsibility of the Contractor to use the latest approved version of the supporting design guidance standards, regulations, etc. in doing so. Unless a specific edition or revision is indicated, reference shall imply that the latest edition or revision of the standard shall apply, including any interim revisions or updates.

For utility-related work, the Contractor shall be responsible for obtaining and ensuring adherence of design and construction to the criteria for each utility.

Unless specified elsewhere, the construction specifications shall conform to CTDOT standards, and with the standards, policies, and specifications identified in Divisions II and III of the CTDOT of Transportation Standard Specifications for Roads, Bridges and Incidental Construction (Form 817), and further amended by the Specifications and Special Provisions included in Appendices to the Technical Provisions. Division I of the Form 817 has been replaced in its entirety for this Project by the Contract General Provisions and by associated Special Provisions.

3.2.1. AASHTO, CTDOT, and Other Applicable Standards

AASHTO, Department, and other reference standards are applicable to the final design and construction documents to be developed by the Contractor, including, but not limited to CTDOT's **Project Development Guide, Bridge Design Manual, Bridge Load Rating Manual and Highway Design Manual, and any applicable Consultant General Memoranda**. CTDOT's Standard Specifications for Roads Bridges and Incidental Construction (Form 817) and other documents are available on CTDOT's website. (Please note: these manuals should not be considered to represent a comprehensive list of all required documents. Additional specifications and Department Standards may apply to the given matter.)

All work performed under this Contract (as it may be amended) shall be in conformance with AASHTO and Department standards, except to the extent that the Contract specifically allows exceptions therefrom. In the case of a conflict between different individual standards, the more stringent requirements shall apply. Where dates are not specified, the most current version shall apply.

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3.2.2. General Exceptions:

Except for Design Build Special Provisions, (a subset of the Mandatory Special Provisions of Appendix A) that have been edited by CTDOT specifically for Design Build, the following interpretive guidelines shall be applied by the Contractor while bidding and developing the final Project specifications and plans:

The term "Engineer":

In general, references to the "Engineer" within Division II and III of the Standard Specifications, Form 817, and the Special Provision or other reference documents, shall mean:

- "CTDOT" for matters concerning contractual acceptance and payment.
- The "Engineer of Record" with concurrence of CTDOT, for matters concerning review of shop drawings, working drawings, and temporary works.
- The "Engineer of Record" with concurrence of CTDOT, for language such as "as directed by the Engineer".

The Contractor shall identify and immediately bring to the attention of CTDOT uses of the term "the Engineer" that do not clearly fall within these meanings. CTDOT will make the final determination of the term's meaning in such instances.

Other terms:

1. Such terms as "Measurement for Payment," "Method of Measurement," or "Payment" shall be disregarded insofar as it is not the intent of the Design-Build Contract that the various components of the Project will be measured for payment.
2. Such terms as "Basis of Payment," or "unit prices" shall be disregarded, except when unit prices are identified herein as applicable to disincentives or incentives based upon the quality of work, in which case the reference shall be taken to refer either to the specific dollar amount set forth in the Standard Specifications or to a unit price proposed by the Contractor and approved by CTDOT.
3. Such terms as "Extra Work," "compensation for," "at CTDOT's expense," "quantity adjustments," "equivalent quantities," or similar phrases shall be disregarded.
4. The term "Special Provision" shall refer to a provision of the Contract.
5. The term "incidental" or any similar term shall mean that the costs shall be included in the Contractor's Price Proposal.
6. The payment of the D-B Lump Sum Price will be full compensation for all Project work except other items identified by CTDOT in the bid proposal form.

3.2.3. Mandatory Special Provisions:

3.2.3.1. Design-Build Special Provisions (not to be altered)

The Design-Build Special Provisions shall be used for the completion of the Project design. These Mandatory Special Provisions contained in Appendix A.01 add to and amend the General Provisions and the Form 817. The Contractor shall not change these Design-Build Special Provisions in any way unless CTDOT determines that it is necessary to do so.

If the Contractor believes there is a situation in which it is necessary to alter a mandatory Design-Build Special Provision, it shall submit to CTDOT in writing what it believes would be the justification for doing so.

3.2.3.2. Special Provisions (to be finalized)

The Special Provisions shall be utilized for the completion of the Project design. These Mandatory Special Provisions contained in Appendix A.02 add to and amend the General Provisions and the Form 817. The Contractor shall not change the Description, Materials or Construction Methods of

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these Provisions, except for updating the term Engineer, consistent with the guidance herein, without the prior consent of CTDOT to its doing so. Any related method of measurement or basis of payment will require revision as part of the Final Design process. The work related to these Provisions will be paid for as part of the lump sum Design-Build Price.

3.2.4. Guidance Special Provisions:

The Guidance Special Provisions are contained in Appendix A.03. Guidance Special Provisions are similar to Mandatory Special Provisions in that they are required to be submitted for the Project if they are applicable to work included in the Final Design. These specifications differ from Mandatory Special Provisions in that they may be modified by the Contractor to meet the specific requirements of the Project. The work related to these provisions will be paid for as part of the lump sum Design-Build Price.

3.2.5. Other Special Provisions:

Other Special Provisions are Special Provisions not contained in Appendices A.01, A.02 or A.03 that may be required to complete the design of the Project or may be necessary for the development of ATCs.

The Contractor shall identify, during the preparation of its Technical Proposal, the need for any other Special Provisions for the anticipated items of work.

The Contractor shall be responsible for seeking out from CTDOT any Special Provisions necessary for the anticipated work, making any revisions necessary as allowed above, and submitting these to CTDOT for review. The Contractor shall contact CTDOT with a list of Special Provisions necessary for the completion of the design, prior to creation of such Special Provisions, since CTDOT may already have a specification that covers the pertinent work which may be provided by CTDOT for implementation into the design. If CTDOT identifies or provides a specification for the purpose, the Contractor shall use it for the Final Design. If CTDOT does not have a specification that covers the pertinent work, the Contractor shall develop a specification for inclusion in the design and submit this to CTDOT for review.

In any event, lack of familiarity by the Proposer with CTDOTs processes for specifications and Special Provisions shall not be a reason for a change order.

The work related to these provisions will be paid for as part of the lump sum Design-Build Price.

3.3. Design Refinements

Design refinements are allowed during the preparation of the Final Design, and are a result of furthering concepts in the BTC from preliminary to a final stage of design, while maintaining the original basic configuration, scope of work, design and construction criteria supplied in the Base Technical Concept. Design refinements shall not result in a change to the quantities of materials required for a particular element of the project by more than 10% or provide a lower quality product in the opinion of CTDOT. Design refinements utilize the same engineering principals, materials, methods of construction and provide the same overall finished product as the BTC and the Proposal.

If a disagreement arises over whether a particular segment of the proposed Final Design represents a design refinement or change, CTDOT shall make the final decision as to the required course of action. CTDOT's possible actions may be to allow a design refinement or to require a request for change be submitted or rejection of the proposed design.

In the event that the Contractor, through design development, proposes changes to its Technical Proposal or the requirements of the BTC or Technical Provisions, it shall submit to CTDOT a request for change in accordance with Section 1.04 of the General Provisions, and include in it a written justification in their technical submission for CTDOT's review and concurrence before incorporating any changes into a Design Submission. Any proposed changes to the BTC that are not demonstrated to be equal or better than the BTC or that are, in the sole opinion of CTDOT, found not to be in the best interest for the State, will be rejected.

The Contractor shall be responsible for temporary and permanent work as well as coordination with third parties that is necessary to complete the Project as a result of Design refinements, Contractor requested changes, and

ATCs (approved by the CTDOT and incorporated in to the proposal) that are incorporated into the Final Design. This includes but is not limited to public outreach, surveys, data collection, permit changes/approvals, temporary conditions, right-of-way acquisitions, and utility adjustments.

3.4. Design Related Submittals and Reviews

This Section outlines requirements related to Final Design Plan submissions, Shop Drawings, Working Drawings, Product Data (Catalog Cuts) and others as determined by the CTDOT.

This project will require a Semi-Final and a Final Design Submission. The requirements for submission and review are detailed in the following sections.

The requirements for Shop Drawings, Working Drawings, and Product Data, follow the design submission and review information.

Prior to their submission to CTDOT for review and possible concurrence or approval the Contractor shall internally review and check all submittals for quality, completeness, constructability, and compliance with the requirements of the Technical Provisions. Failure by the Contractor to perform such quality checks may result in additional comments, required revisions or rejection and resubmissions, and additional time required for their review by CTDOT. Extended review time necessitated by incomplete or noncompliant submissions will not be a reason for a time extension. The Contractor shall provide proof of the quality control checks to the CTDOT with each submittal and retain copies of such internal reviews and disposition of review findings for all submittals made to the CTDOT. The Contractor shall provide copies of this evidence upon request of the CTDOT.

CTDOT will make every effort to review and respond to complete submittals within the timeframe outlined in the Contract. All submissions from the Contractor must be complete and contain sufficient and required information so that the review can be completed and, as appropriate, the submission made to the environmental agencies on a timely basis. All submittals shall be in accordance with the Contractor's Quality Assurance procedures as approved by CTDOT. Both initial submittals and resubmittals will be returned without review if the required Quality Control procedures have not been performed and the information is not provided in accordance with the approved QMP and the applicable QCP, and Contract requirements. With its initial baseline schedule, the Contractor shall submit to CTDOT a schedule for the making of required submissions. The Contractor shall avoid crowding multiple submittals into a relatively short timeframe.

All design submittals shall be created and signed in accordance with the Project Development Guide and Digital Project Development Manual. All design submittals shall be reviewed and delivered by the Contractor in accordance with CTDOT COMPASS User Guide for Contractors and other requirements of the Contract. All submittals shall conform to the NTC - DOCUMENT CONTROL COORDINATOR AND CONSTRUCTION CONTRACTOR DIGITAL SUBMISSIONS, the QMP submitted by the Contractor and other specific requirements of the Contract.
In order to afford CTDOT the ability to schedule staff to provide complete and thorough reviews of submittals, and as part of the satisfaction of the Planning and Progress Schedule requirement, the Contractor shall develop and abide by a reasonable submittal schedule such that, there are not an unreasonable number of submissions or multiple voluminous submittals within a given time period. An unreasonable number of submissions or multiple voluminous submittals may be cause for CTDOT to extend the review time. Extension of any review time by CTDOT will not be grounds for a request for additional time or compensation by the Contractor.

The Contractor shall include with all submittals the following;

- a general narrative identifying which submittal(s) on the submittal schedule the submittal represents, an explanation of the contents of the submittal, any previous submittals this submittal is related to, a listing of items not included in the submittal which are to be submitted at a later date, and any other pertinent information for the reviewers benefit.

CTDOT will provide training of how to use the application, following the COMPASS User Guide for Contractors.

The approval of plans, working drawings, shop drawings and product data or catalog cuts by the Superintendent, Project Manager, Quality Control Manager for Design, and Quality Control Manager for Construction shall be documented by signatures on a transmittal (incorporated into the submission) in a form acceptable to CTDOT.

CTDOT will not accept any plan submissions, Early-Release-for-Construction packages or Shop/Working Drawing submittals until the QMP and applicable QCPs have been accepted by CTDOT. The Contractor shall not revise any portion of the accepted QMP or QCPs without the prior written consent of CTDOT thereto

There will be no direct payment for developing and delivering any Project Plans including all supporting calculations and documentation, and procedures followed by the Contractor as outlined in the approved QMP and applicable QCP. The Plans shall be made available in the specified format through the Contractor's proposed deliverable management system or by printing and delivering to CTDOT representatives, but the cost thereof shall be considered as included in the general cost of the work.

3.4.1. Semi-Final Design Submittal

The Semi-Final Design package shall be submitted as outlined above with the exceptions noted in this section. The submittal will not need to include the following if the design is in accordance with the BTC:

- Hydraulic report.
- Draft Proposal Estimate and Cost estimate.

The Semi-Final Design Submittal shall also include any Early Release Construction ("ERC") packages prepared to-date that involve permanent work.

Acceptance of the Semi-Final Design package must be obtained from CTDOT prior to proceeding to Final Design submittal activities. The Contractor may elect to start Final Design activities at its own risk prior to acceptance of the semi-final design package in accordance to the terms outlined in Section 3.8.

3.4.2. Final Design Submittal

The Final Design Submittal shall consist of detailed, complete and checked drawings, reports and specifications necessary for construction of the complete Project. Acceptance of the Final Design Documents will be in the form of a designation of "Release for Construction."

The Final Design package shall be submitted as above, with the exceptions noted in this section.

The Final Design documents shall include, but not be limited to, the following plans and Special Provisions as required by the **Project Development Guide** and **Digital Project Development Manual**.

- Title Sheet & Index
- Legends & Abbreviations
- General Notes
- Key Plan 20 Scale
- Boring Locations
- Survey Control Plans
- Typical Sections and Pavement Notes
- Construction Details
- Construction Plans
- Bridge Plans
- Profiles
- Intersection Grading Plans
- Drainage Plans
- Drainage Details
- Permit Plans
- Utility Plans
- Utility Details
- Sign and Pavement Marking Plans and Details

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- Traffic Signal Plans
- Temporary Traffic Control Plans
- Traffic Standard Sheets, Guide Sheets and Miscellaneous Details
- Construction Staging Plans
- Lighting General Notes and Legend
- Lighting Plans
- Lighting Details
- Incident Management Plans
- Incident Management Standard Sheets and Details
- Cross Sections

Plan sets and sheet types for partial construction work elements, or Early Release Construction, prior to a completed Final Design shall be coordinated with the Contractor's QC process and CTDOT's oversight as per Section 3.4 of the Technical Provisions.

The submittal will not need to include the following if the design is in accordance with the BTC:

- Proposal Estimate

The Final Design Submittal shall also include any ERC packages prepared to date that involve permanent work.

Within 30 days of acceptance by CTDOT, as applicable, of the final design of all aspects of the Project, the Contractor shall provide the Final Design Documents (plans, specifications, reports, and calculations). All plans, specifications, and reports shall be signed and sealed by the Professional Engineer(s), who must be registered as such in the State of Connecticut, and who must be responsible for each portion of the Project. A written statement shall accompany the Final Design Submittal from the Design Manager indicating that the Final Design Submittal complies with all Contract requirements.

3.4.3. Over-the-Shoulder Reviews

Over-the-shoulder reviews are examinations by CTDOT (or its designated representative) of design documents during the design process. Formal assembly and submittal of drawings or other documents will not be required. Written comments will not be provided and no acceptance of any information presented at meeting will be provided. All information must be formally submitted for review and acceptance. The Contractor must submit a schedule of proposed over the shoulder review meetings to CTDOT.

The meeting should take place during the development of the design at key points prior to formal design submissions. At minimum, over-the-shoulder reviews should be scheduled such that the Contractor will have ample time to address any informal feedback provided by CTDOT in time for each early release construction, semi-final and final design submissions scheduled date for CTDOT review. The Contractor shall forward all draft documents to be reviewed at the meetings a minimum of 48 hours in advance of the meeting.

3.4.4. Design Submittal Review Process

All submittals are subject to review and approval by CTDOT. CTDOT maintains the right to refuse and reject any submittal that does not comply with the requirements related to the preparation and submittal of Contract Documents and the satisfaction of Project requirements. If CTDOT considers a submittal incomplete, CTDOT may reject it due to incompleteness and the Contractor will be required to re-submit it with the appropriate information described below.

CTDOT reviews will consist of examination of design submittals to ensure that Contract requirements, permit requirements and design criteria are being followed, and the Quality Control activities are performed following the approved QMP and QCP procedures. Reviews, at CTDOT's discretion, may include, but are not limited to, review of design documents, electronic files, calculations, reports, specifications, geotechnical data, and other relevant design information.

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It is CTDOT's intent to provide acceptance or concurrence of submittals that meet all applicable Contract requirements as confirmed by the Designer(s) of Record, Project Manager, Quality Control Manager Design, and Quality Control Manager Construction, as necessary conditions for construction to begin on any particular element.

The design submittals will be reviewed according to the following schedule:

- Initial Submission Requiring Department Review Only: CTDOT shall be allowed 21 calendar days from receipt of a complete submission, to review and provide comments for submittals that only require Department review.
    1. Completeness Check: Upon receipt of an official submission, CTDOT will perform a completeness check to determine if the Contractors submission is complete and meets the criteria for review by CTDOT. Incomplete submission will be returned without further review. Upon notification of an incomplete submission from CTDOT, the Contractor shall insert a new schedule activity into the Planning and Progress Schedule with, incomplete submission (*name of submission*) as the activity name. The duration of this activity will encompass the number of calendar days from the end of the Contractor's prepare and submit activity for the subject submittal until CTDOT receives the complete submission. The new activity will be tied as a predecessor to the subject design initial submission. The 21-day review period for the review of the initial submission shall not commence until a complete submission is received by CTDOT.
- Resubmission Requiring CTDOT Review Only: If upon review of a complete submission or resubmission, CTDOT provides design review comments that must be addressed prior to the next scheduled design submission or rejects a submission, CTDOT shall be allowed 21 additional days from receipt of the resubmission. This would normally occur for Early Release Construction submissions, if after the completeness check is completed CTDOT identifies parts of the submission that Contractor has not provided sufficient information or do not comply with the requirements of the Contract. Upon receipt of comments that must be addressed and/or communication by CTDOT that resubmission is required, the Contractor shall insert new activities into the Planning and Progress Schedule, the names revise and resubmit (*design submission name*) and CTDOT Review of Resubmission.
- The Contractor acknowledges that CTDOT has not guaranteed any specific review period for reviews by federal, state (non-DOT) or local agencies, or utility owners. The period of each such review shall be established by the reviewing entity, at its discretion, after a plan submittal has been made to such entity. The initial, provisional assumption for the length of time for external reviews shall be 60 calendar days unless specified otherwise in the Contract Provisions. Resubmissions or incomplete submissions that require outside review shall be incorporated into the Planning and Progress Schedule consistent with the methods described in the bullets above.

The Contractor shall:

- Respond to comments within 14 calendar days of any CTDOT comment on the submittals.

Unless CTDOT indicates otherwise, comments shall be addressed to the satisfaction of CTDOT prior to the next design submission. A record of disposition of comments shall be provided at the time of resubmission stating disposition, description of any revisions made to the submittal to incorporate disposition including location of such revisions (page number, sheet number, etc.) and evidence of review of disposition by the appropriate quality manager.

The Contractor may request a comment resolution meeting within seven (7) days of receipt of CTDOT comments on a submittal to review comments for understanding. No acceptance of responses to any comments or acceptance of any changes to the design will be provided by CTDOT at a comment resolution meeting.

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The Contractor should be aware that the review time stated above is based on an expectation that the submissions will be scheduled in a reasonable sequence coordinated according to a submission schedule.

If submittals are received after 12 p.m. (noon), the review duration will start on the next calendar day.

3.4.5. Comment Resolution Meeting

Comment Resolution Meetings are intended to provide an opportunity for the Contractor to ask for clarification on review comments previously provided by CTDOT on design submittals. They also provide an opportunity for the Contractor to present draft resolutions to review comments for review by CTDOT (or its designated representative). No acceptance of any information presented by the contractor in the meetings will be provided by CTDOT. The Contractor shall schedule a Comment Resolution Meeting prior to resubmission of any submittals for which CTDOT previously provided review comments. The Contractor shall prepare meeting minutes for all Comment Resolution Meetings.

3.4.6. Resubmittal Process

Re-submittals of any Design Submittal shall be required if CTDOT deems it necessary. Each re-submittal shall address to CTDOT's satisfaction all comments received from a prior submittal. Each resubmittal must be accompanied by a "comment resolution report," identifying all previous comments and the respective responses to them in a format acceptable to CTDOT. The Contractor shall not be entitled to any additional Contract time or compensation due to any re-submittal requirement by CTDOT or any federal, state, or local agency.

The Contractor may continue its design efforts, at its sole risk, during the design submittal or re-submittal review process. Such continuation in no way relieves the Contractor of the responsibility to adequately address comments in the Design Documents.

Resubmittal reviews shall be conducted and the Planning and Progress Schedule revised as indicated in Section 3.4.4.

3.4.7. Release for Construction/Concurrence/Approval/Acceptance

The Contractor acknowledges and agrees that CTDOT must concur with the Design Documents prior to the issuance of a "Release for Construction" designation.

After Design Documents receive CTDOT's "Release for Construction" designation, prior to the minimum number of days specified elsewhere in the Technical Provisions before fabrication may proceed, or seven (7) calendar days prior to proceeding with such work, if not further restricted by other notice requirements, the Contractor shall submit to CTDOT digitally-signed documents in accordance with **COMPASS User Guide for Contractors and CTDOT's Digital Project Development Manual**. In addition, the Contractor shall, at a minimum, provide CTDOT with nineteen (19) print sets of digitally-signed Design Documents (five [5] full-size copies and fourteen [14] half-size copy of each submittal).

3.4.8. Shop Drawings, Working Drawings, Product Data

3.4.8.1 Shop and Working Drawings

All shop and working drawings shall be reviewed and approved by the Contractor's Designer of Record, Contractor's Lead Designer, Project Manager, Superintendent, Quality Control Manager for Construction, and Quality Control Manager for Design. The contractor shall detail the reviews in the Quality control procedures. Upon completion of such review and approval, all shop and working drawings shall be submitted to CTDOT for review as outlined below.

The Contractor shall consult with CTDOT in order to determine all other applicable local agencies, railroads and utilities that may need to review shop and working drawings, and the Contractor shall coordinate the preparation, submittal, and review of all such shop and working drawings to said entities. When permits are required from utilities, or other local agencies, shop and working drawings shall be submitted to them for review and approval in accordance with their requirements.

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No work or fabrication covered by these shop or working drawings shall be done until the drawings have been submitted to CTDOT for review and any comments by CTDOT have been addressed to the satisfaction of CTDOT and the record set of drawings has been provided to CTDOT and applicable subcontractors and suppliers.

The Contractor shall notify CTDOT of any intent to begin fabrication a minimum of thirty (30) days prior to starting such fabrication, in order to allow CTDOT to schedule inspection of the work. In the case of work involving a structure carrying utilities (including rail facilities), or in the case of another affected party or authority, the Contractor shall submit to CTDOT one additional copy of relevant working drawings for each such third party, and the Contractor must allow additional time for review and comment on said drawings by the involved third parties. Unless specified otherwise in the Contract, CTDOT shall be allowed at least sixty (60) working days for review of working drawings. CTDOT will make no direct payment to the Contractor for furnishing any shop or working drawings, but the cost thereof shall be considered to be included in the general Project costs.

When any shop or working drawing is reviewed by CTDOT or an affected third party or involved authority, such review shall not relieve the Contractor from responsibility for omissions; or for errors in dimensions, shop fits, field connections, etc.; or for providing the proper quantity of materials; or for compliance with applicable provisions of the Contract; or for the successful completion of the Project. Any comments or suggestions by CTDOT or outside party concerning shop drawings prepared by the Contractor shall not relieve the Contractor of any of the Contractor's responsibilities for claims by the State or by third parties, as per Section 1.07.10 of the Contract General Provisions.

The Designer that prepares working drawings and is the Engineer of Record for the working drawings (Contractor's Designer), shall secure and maintain at no direct cost to the State a Professional Liability Insurance Policy for errors and omissions in the minimum coverage amount of Two million dollars ($2,000,000). The Contractor's Designer may, at its election, obtain a policy containing a maximum two-hundred-and-fifty-thousand-dollar ($250,000) deductible clause, but if the Contractor's Designer should obtain a policy containing such a clause, they shall be liable to CTDOT to the extent of at least the deductible amount. The Contractor's Designer shall obtain a proper endorsement of its Professional Liability Policy to cover the indemnification clause in this Contract, as the same relates to negligent acts, errors or omissions in the Project work performed by them. The Contractor's Designer shall continue this liability insurance coverage, subject to the continued commercial availability of such insurance, until whichever of the following occurs or concludes on the latest date: (1) a period of three (3) years from the date of acceptance of the work by the Commissioner, as evidenced by a "Certificate of Acceptance of Work," issued to the Contractor; (2) three years after the termination of the Contract; (3) until the expiration of all limitations periods governing claims that might be filed in connection with the Contract or Project; or (4) until any claims proceeding or other formal dispute proceeding in such connection has been resolved, or concluded finally, with prejudice, including all possible related appeals or appeal periods, whichever is later.

The Contractor shall supply to CTDOT a certificate of insurance in accordance with Section 1.03.07 of the Contract General Provisions prior to or at the time that it first submits working drawings for the Project.

3.4.8.2 Shop and Working Drawings for Permanent Work

When required to do so by the Contract or CTDOT, the Contractor shall prepare and submit to CTDOT for review its shop drawings approved by the Engineer of Record, and Lead Designer, Project Manager, Superintendent, Quality Control Manager for Construction, and Quality Control Manager for Design, a minimum of thirty (30) business days before starting any fabrication based upon them. Within those days, CTDOT shall be allowed a minimum of fourteen (14) business days for review and comment on the drawings from the time it receives them. Before it may begin fabrication based on the drawings, the Contractor must address all comments on them by CTDOT to the satisfaction of CTDOT and transmit three (3) final copies (of the format size specified herein)

in accordance with the COMPASS User Guide for Contractors and Contractor Digital Submission Manual (CDSM). The purpose of the full thirty-day period is to allow CTDOT to arrange for inspection of fabrication based on the drawings once that work begins. If and when requested to do so by CTDOT, the Contractor shall also furnish CTDOT with a complete set of the working drawings on reproducible mylar or in another format acceptable to CTDOT. Drawings shall be formatted for twenty-two (22) inch x thirty-four (34) inch sheets with an appropriate border and with a title block in the lower right-hand corner of each sheet. Procedures and other supporting data may be formatted for eight-and-a-half (8½) inch x eleven-(11) inch sheets.

The Engineer of Record shall be required to review the drawings and stamp each drawing as "Approved," "Approved as Noted," or "Revise and Resubmit." Each drawing stamped as “Approved” or “Approved as Noted” shall be transmitted to the Contractor for review and approval in advance of their being forwarded to CTDOT. Each drawing stamped as “Approved” or “Approved as noted” and Lead Designer, Project Manager, Superintendent, Quality Control Manager for Construction, and Quality Control Manager for Design, shall be forwarded to CTDOT for review in advance of fabrication as outlined above. Drawings stamped "Approved as Noted," if CTDOT does not take exception to them, need not be resubmitted for review, but the Engineer of Record’s notes must be appropriately taken into account and implemented by the Contractor. In the case of a drawing that is reviewed and stamped "Revise and Resubmit," the Engineer of Record shall transmit copies of it to CTDOT for the record and two of it to the Contractor. The latter shall take into account and implement all comments on those drawings, and shall then resubmit the required number of copies of the revised drawings for review and approval to the Engineer of Record and shall copy CTDOT on that transmittal. The review and transmittal requirements related to resubmissions will be the same as described above for an initial submission.

If the Contractor proposes a revision of a previously-submitted shop drawing that has been stamped "Approved" or "Approved as Noted," the Contractor shall submit the revised drawing to the Engineer of Record for its review and approval as well as approval of the Lead Designer, Project Manager, Superintendent, Quality Control Manager for Construction, and Quality Control Manager for Design. Any such resubmitted shop drawing shall clearly indicate, in a revision block, the date and precise nature of each revision, as well as its location on the revised drawing. CTDOT and involved third parties shall be allowed the same timeframe for review and comment on the revised drawings as those for initial submissions, as outlined above.

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. Structural steel shop drawings shall be coordinated and detailed with respect to architectural shop drawings, which require interfacing with various components.

Working Drawings Additional Requirements: The working drawings shall be signed, sealed and dated by a qualified Professional Engineer licensed to practice in the State of Connecticut. When required by the Contract or when ordered to do so by CTDOT, the Contractor shall prepare and submit the working drawings to CTDOT for review after they have been received and approved by the Contractor's Design Engineer, Superintendent, Project Manager, Quality Control Manager for Design, and Quality Control Manager for Construction.

These drawings shall be submitted to CTDOT and other involved parties sufficiently in advance of the drawings' proposed use to allow for their review, and for any necessary revisions, without delay of the Project. If the Contractor does not submit the drawings sooner, a minimum of fourteen (14) business days from the time of their receipt by CTDOT shall be allowed for CTDOT to review and comment on the working drawings. The Contractor must address all comments to the satisfaction of CTDOT and transmit three (3) final paper copies in accordance with the COMPASS User Guide

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for Contractors and Contractor Digital Submission Manual (CDSM) before starting any fabrication or work based on the drawings.

Shop and Working Drawings for the Project shall include, but not be limited to the following:

- Traffic controls and equipment.
- Drainage and utilities materials with unique details, whether or not in conformance with CTDOT Standards.
- Lighting equipment and controls.
- Construction phasing and traffic management plans.
- .
- Precast concrete wall layout and fabrication plans.
- Other information specifically required by the Contract.

3.4.8.3 Working Drawings for Temporary Works

Working drawings, demolition plans, and erection drawings shall be stamped by a Registered Professional Engineer licensed in the State of Connecticut. Upon their approval by the Contractor's personnel, these drawings along with any necessary supporting documentation shall be submitted sufficiently (unless specified otherwise in the Contract, at least thirty [30] calendar days) in advance of their proposed use, in order to allow for their review by CTDOT and for the Contractor to address all comments to the satisfaction of CTDOT without delay of the Project. The Contractor must produce and transmit three (3) final paper copies (of the format size specified herein) in accordance with the COMPASS User Guide for Contractors and Contractor Digital Submission Manual (CDSM) before starting any fabrication or work based on the drawings.

Unless otherwise specified, drawings shall be formatted for twenty-two (22) inch x thirty-four (34) inch sheets with an appropriate border and with a title block in the lower right-hand corner of each sheet. Procedures and other supporting data may be formatted for eight-and-a-half (8½) inch x eleven (11) inch sheets.

Working drawings for temporary works shall include, but not be limited to, the following:

- Design and working drawings for support of excavation structures.
- Layout plans.
- Traffic control plans.
- Means and methods submittals.
- Erosion and Sedimentation Control Plans, and other submittals required by Environmental Permits or Permit applications.
- Other information specifically required by the Contract.

3.4.8.4 Product Data (or Catalog Cuts)

When required by the Contract, or when ordered to do so by the CTDOT, the Contractor shall prepare and submit six printed copies and one electronic copy in a pdf file format of the product data.

The product data shall be submitted to the Engineer of Record, sufficiently in advance of the work detailed, to allow for their review and approval, by the Engineer of Record and allow 14 days for CTDOT review and comment (including any necessary revisions, resubmittal, and final review), and acquisition of materials, without causing a delay of the Project.

The Contractor shall submit the product data in a single submittal for each element of construction. The Contractor shall mark each copy of the product data submittal to show applicable choices and options. Where product data includes information on several products that are not required, copies shall be marked to indicate the applicable information. Product data shall include the following information and confirmation of conformance with the Contract to the extent applicable: manufacturer's printed recommendations, compliance with recognized trade association standards, compliance with recognized testing agency standards, application of testing agency labels and

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seals, notation of coordination requirements, Contract item number, and any other information required by the individual Contract provisions. All CTDOT comments must be resolved to the satisfaction of the CTDOT prior to the covered materials or components being installed. Copies of the final Product Data or catalog cuts shall be provided to the Contractor QC personnel and to the CTDOT prior to the work to install the subject material or components.

There will be no direct payment for furnishing any product data, but the cost thereof shall be considered as included in the general cost of the work.

3.5. Ownership and Management of Documents

Provided CTDOT has made required Contract payments to the Contractor, the ownership and management of the Project documents produced by the Contractor shall be as follows:

- Design documents shall become the property of CTDOT once they have been prepared.
- Construction documents shall become the property of CTDOT upon their delivery to CTDOT.
- Information obtained or produced by the Contractor in connection with the performance of its design obligations under this Contract, including studies, technical and other reports and the like shall become the property of CTDOT upon the Contractor's preparation or receipt thereof.
- Permit Applications for Environmental Permit and Clearance documents issued by local, state, or federal agencies shall become the property of CTDOT upon their delivery to CTDOT.

3.6. As-Built Drawings

The Contractor shall maintain a set of the Project's record drawings. These as-built plans shall be updated by the Contractor each time a change is made in the Project work and when each element of the work is completed, so as to maintain a current, accurate as-built set of plans. If a change is made in the record drawings, accordingly-revised plan sets must be distributed to CTDOT far enough in advance of the work based upon said drawings to allow for CTDOT's review, comment and acceptance activities described elsewhere in the Contract. In the case of updating the plan set to reflect installed work, such plans shall be updated within seven (7) days after its installation. The as-built drawings shall be available for CTDOT's review and use at all times.

As a condition of Final Acceptance of the Project, the Contractor shall submit to CTDOT: the Project as-built record drawings depicting the final completed Project, reflecting all changes, with all of the relevant data, including, but not limited to, drainage systems, underground utilities, traffic controls, signing placement, highway alignment, grade revisions, and bridge details. The record drawings and documents shall comply with the current CTDOT Digital Project Development Manual and shall be approved by the QC Manager(s), the QC Administrator, and the Designer of Record prior to their submission to CTDOT for acceptance.

The Contractor shall also provide other relevant Project data such as bridge shop plans, boring logs and pile-driving records for archiving, in hard copy sets as well as in electronic PDF files.

After CTDOT reviews and accepts the documents, the Contractor shall submit to CTDOT a final set of Project documents, free of markups.

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3.7. Early Release Construction Process

The only final construction works that will be allowed for early release construction (prior to the completion of the final design) are as follows:

- Traffic Signal hardware related to temporary signalization
- IMS facilities relocation/maintenance in place
-

The Contractor must request any additional ERC items they wish to pursue for any other construction work for approval of CTDOT prior to award of the Contract. Approval of these requests is at the discretion of CTDOT.

The Contractor's schedule and work plan shall identify the items, portions, segments, or stages of work including temporary construction and temporary traffic management that the Contractor plans to release as ERC packages (*i.e.*, construction to start prior to completion of Final Design Documents).

Description of ERC design packages shall include a summary of all major work activities that will be included in the early-work package as well as a listing of submittals and any other documents to be provided for review.

The Contractor shall schedule over the shoulder reviews prior to the official submission of the ERC Design.

When the Contractor has completed the Design and other necessary preparation for an item or segment and wishes to submit that portion of the Design, the Designer(s) of Record, Project Manager, Quality Control Manager for Design, and Quality Control Manager for Construction shall determine whether or not, and, if so, certify that:

- The Design meets all applicable requirements.
- The Design has been examined and evaluated in accordance with the Contractor's approved Quality Management Plan.
- All required Construction QC Plans for the work item(s) have been approved.
- Said item, portion, segment, or stage is ready for construction.
- The Contractor has obtained all required state, local, environmental, and utilities approvals and permits.

The Contractor's formal ERC Submittal shall include all related:

- Design plans.
- Design calculations.
- Design reports.
- Specifications.
- Electronic files.
- Documentation that the Contractor has obtained all required Governmental Approvals and Utility Owner Approvals.
- Documentation of resolution of comments in the form of a comment resolution report.
- Re-certifications of the revised plans, in the respects described above, from the Designer(s) of Record, Project Manager, Quality Control Manager for Design, and Quality Control Manager for Construction.
- The Project Executive's written approval of the ERC.
- Applicable design and construction submissions required for temporary or incidental construction necessary to complete the permanent work.

CTDOT will then conduct a review of the ERC Design Submittal for said item, portion, segment or stage. Reviews will consist mainly of checks to ensure that Contract requirements, permit requirements, and design criteria are being met or followed and that Quality Control activities follow the Contractor's approved QMP and

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QCPs. Reviews, at CTDOT's discretion, may include, but are not limited to, review of Design Documents, electronic files, calculations, reports, specifications, and other relevant design information. CTDOT must be satisfied that the submittals meet all Contract requirements, and the same must be confirmed by the Contractor's representatives identified above, before work may begin on any particular element. If CTDOT identifies problems with a submission, it will communicate those to the Contractor. The reviews and any necessary resubmittals shall be in accordance with section 3.4.4.

The Contractor shall not commence fabrication or other work until CTDOT's design review is complete; CTDOT provides the "Release for Construction," indicating general concurrence with the Contractor's statement approving construction; and the Contractor provides the plans as outlined in Section 3.4.4.5. CTDOT's concurrence with the Contractor's approval statement will not constitute approval or acceptance of the Design or subsequent construction, nor relieve the Contractor of its responsibility to meet the requirements hereof. Regardless of whether or not CTDOT provides the Contractor with the authority to begin construction on elements of the Project prior to completion of the entire Design, the Contractor shall bear the responsibility for ensuring that construction meets the Contract requirements. Any approved component procured under the ERC process shall have their actual dimensions and unique fabrication information incorporated into all subsequent design and construction submittals. The plans and field work shall reflect all of the information.

CTDOT will not accept ERC submittals without an approved QMP and related QCPs.

3.8. Work at Risk

If the Contractor decides to pursue, completion of the design or ordering of materials before or during the review process, it will be at its own risk, and no costs will be paid for rework of items due to changes made during the review process. No fabrication or physical construction work shall commence until CTDOT issues a "Notice to Proceed" or "Release for Construction" to the Contractor and the required QCPs have been reviewed and all comments from CTDOT have been resolved to CTDOT's satisfaction, and time allowance period stated else ware in the Contract for coordination of CTDOT inspection as passed, for the related work. No payment will be made for "work at risk" until approval of Final Design or approval of early release construction work as applicable and the work has been deemed acceptable by CTDOT. Design submissions will not be reviewed prior to the Quality Control requirements for the design submissions are completed.

3.9. Construction Staging

The construction staging described in the Technical Provisions reflects the requirements for maintaining regional vehicular connections between Cheshire, Middlefield, Southington, Meriden, I-691, and Route 66 while at the same time maintaining traffic flow through the entire Project area. The overall construction staging presented in the Technical Provisions may be revised if the Contractor demonstrates to the satisfaction of CTDOT that it would be beneficial for advancing the Project construction, reducing the construction duration, limiting user cost delays, and limiting detrimental effects on the towns and/or city. The proposed construction activities at differing sites are not necessarily intended to be performed sequentially. Various stages and activities may overlap to the extent that the limitations of operations and maintenance of traffic are preserved.

Detailed construction staging shall be fully designed by the Contractor and is considered part of the Contractor's means and methods. The Contract Provisions and specifications indicate the general traffic management that is required for the Project. Significant variations from the traffic management presented in the Technical Provisions are considered an ATC. Proposers shall clearly describe their proposed construction staging in their Technical Proposals, identifying any schedule amendments or additions to the environmental approvals that may be required as a result of those proposed changes in the construction staging. All construction stages and methods must meet the requirements of Section 3.10, Traffic Engineering, and doing so will require close coordination by the Contractor with CTDOT, the Towns of Cheshire, Middlefield and Southington, and the City of Meriden and final acceptance by CTDOT.

The Contractor is required to include within its Proposal a complete description of its proposed construction staging, the planned duration for each construction stage, and all anticipated negative effects that the construction staging may have on local and regional traffic (motor vehicle, bicycle, and pedestrian), and local

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businesses, residences and emergency services. It is strongly recommended that the Contractor present in its Proposal the logical staging of construction of the temporary construction details and final details of the roadways and bridges (*i.e.*, locations of temporary supports, construction joints, etc.), as well as anticipated negative effects on traffic flow (motor vehicle, bicycle, pedestrian).

The Contractor shall recognize that other construction projects may be underway or in progress within the vicinity of the Site and may have a direct impact on the execution of this Project. The Contractor should evaluate those constructions and coordinate their activities to minimize associated conflicts and delays.

3.9.1. General Approach

The list of activities provided in the Technical Provisions defining the BTC is intended to provide the major work to be completed during each stage, but shall not be considered all-inclusive. The Contractor bears the full responsibility for identifying all required work and developing the Final Design. Any changes to the construction sequence and staging of work listed here is not allowed except through a "Request for Change" as outlined in the Contract General Provisions.

3.9.1.1 Sequence of Construction

For this project, the BTC includes an overall project Sequence of Construction.

This Sequence of Construction is based upon a Notice To Proceed being issued in 2020 and is as follows,

- During 2021, the Contractor may begin performing any preparatory work available and roadway improvements for temporary traffic. Preparatory work may continue into other years provided in complies with all other requirements of the Technical Provisions.

3.9.1.2 Stages of Construction

For each bridge, the Contractor shall develop stage construction plans including the initial preparatory stage bridge improvement stages and a final restoration stage. These plans shall include plans, profiles, and details of the roadways, signing, pavement markings, safety appurtenances, and any other details required for Department approval. Temporary Precast Concrete Barrier Curb ("TPCBC") is required for all work areas where traffic is exposed to hazards, such as but not limited to, removal of the existing roadside protective measures that will remain longer than the end of the work-shift or drop-offs created due to excavation that do not meet the conditions of the "Maintenance and Protection of Traffic" requirements outlined in the BTC. A minimum one-foot-(1')-wide shoulder is required between the travelway and the TPCBC. Permanent lane closures as outlined in the "Section 1.08 – Prosecution and Progress - Maintenance and Protection of Traffic" special provision, diminishing the existing number of travel lanes, will not be allowed except during the active periods for the bridge superstructure replacements.

1. **Initial Preparation Work Stage:** All bridges shall include a preparation stage. This stage shall be completed prior to any construction. During this stage, the Contractor shall construct any roadway improvements required for temporary traffic required. Improvements for temporary traffic may include, but is not limited to: intersection improvements, construction of temporary roadways or roadway widenings, modifications to barriers, drainage improvements, and removal of any rumble strips present. The Contractor shall not construct any preparation work that impacts use of the roadways such as barrier changes until immediately prior to when required for the subsequent stage of work. Preparation work that has the potential to interfere with winter maintenance and/or snow removal operations will only be allowed if in the opinion of CTDOT this work must be performed in advance of the winter season and cannot be performed at the beginning of the following construction season.
2. **Improvement Stages:** All bridges shall include improvement stages, as necessary for the installation of deck patches, membranes, bituminous overlays, guiderail, and the removal of haunches.

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3. **Final Restoration Stage:** All bridges shall include a final restoration stage. This stage shall include the construction of all final restoration work including, but not limited to: site restoration, restoration of intersection improvements, restoration of any temporary roadways or roadway widenings, modifications to barriers, drainage improvements, and restoration of any rumble strips present. The Contractor shall construct the final restoration work once all related improvement work is complete for a particular bridge, unless such restoration work will be impacted by other work still to be completed under the contract. Any final restoration work completed by the Contract that is disturbed by the Contractor under other operations under this Contract shall be repaired by the Contractor at no additional cost to the State. Work that will interfere with winter maintenance and snow removal operations that in the opinion of CTDOT can be performed in advance of the winter season shall be performed.

Changing the staging of construction will require the submission of an ATC, as described in the RFP.

3.9.2. Road Closure Readiness Packages

The Contractor shall also develop and submit Road Closure Readiness Packages with the stage construction plans. The purpose of this plan package is to ensure that all resources are in place prior to the closure and to eliminate possible delays. The information included in this package contains but is not limited to:

- Schedule of Submittals
- Material Acceptance and Delivery Dates
- Confirmation of materials for required construction will be available to meet schedule
- Detailed sequence of activities including staffing, and shift times.
- Description of any special resources
- MPT Coordination

The Contractor shall not proceed with the implementation of a stage of the project without the applicable notice to proceed from CTDOT.

The Notice to Proceed will be issued following approval or approval with conditions by CTDOT of the applicable Stage Construction Plans and Readiness Package as outlined below.

The stage construction plans and readiness packages shall be submitted to CTDOT a minimum of sixty (60) days prior to the anticipated start of the applicable road closure period, which CTDOT will review and provide comments. A minimum of twenty-one (21) calendar days prior to the anticipated closure date, the Contractor shall provide a confirmation report to CTDOT detailing how the Contractor has addressed all Department comments and pending items for the readiness plan along with a proposed press release for issuance by CTDOT. The proposed press release shall detail each effect on the existing traffic configuration and the time which they will occur. Fourteen (14) business days prior to the start of the road closure, the Contractor shall meet with CTDOT to review any outstanding readiness items and coordinate final details for the implementation of the road closure.

3.9.3. Access Restraints

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3.10. Bid Items

3.10.1. Estimated Quantity Items

The BTC includes work items that are variable depending on the Contractor's proposed design and construction of the Project. CTDOT has roughly estimated the quantities based on the BTC to be as shown in the table below. In order to provide sufficient information to establish a price for this work, the Contractor shall make its own assessment of the quantities based upon its plan for the work.

Item No.	Item Description	Unit	Quantity Range
0020765A	Guano Abatement	CF	500
0401152A	Concrete Pavement replacement for Roadway (Full-Depth)	CY	450-540
	Transverse Contraction Joint -(Paid under Item No. 0401152A)	LF	500-600
	Transverse Expansion joint -(Paid under Item No. 0401152A)	LF	1500-1700
0404101A	Bituminous Concrete Patching-Partial Depth	SY	1500-1800
0406125A	Bituminous Concrete Surface Patch	SY	2000-2400
0415001	Pressure Relief Joint	SY	750-900
0406195A	Filling Joints and Cracks in Bituminous Concrete Pavement	LF	85000-102000
0601192A	Surface Patch	SF	5500-6600

The Contractor shall include the cost of these items in the Lump Sum D-B price and supply a lump-sum-schedule-of-values items as detailed in the RFP. The Proposal Price for the Project will not be revised in relation to this work unless the Contractor can prove the existence and influence of a differing site condition or CTDOT makes a Project change that significantly alters the work.

3.10.2. Estimated Cost Items

CTDOT has determined that the BTC has the necessity for the items in the table below and they have quantities that cannot be estimated reasonably prior to construction.

Item No.	Item Description
0101143A	Handling & Disposal of Regulated Items
0406180A	Hot Mix Asphalt Smoothness Adjustment
0406999A	Asphalt Adjustment Cost (D-B Project)
0970006	Trafficperson (Municipal Police Officer)

Work will be measured and paid for as follows:

3.10.3.1 Measurement and Payment

The sum of money identified in the Schedule of Values on the Price Proposal Form as "Estimated Cost" for each of these items of work will be considered the bid price for them, even though payment will be made as described below. The estimated cost figure is not to be altered in any manner by the Proposer. Should the Proposer alter the amount shown, the altered figures will be disregarded and the original price will be used to determine the total amount for the Contract.

CTDOT will pay the Contractor consistent with Section 1.09.04 in General Provisions of the Contract. Prices negotiated for this work shall be consistent with the applicable special provision for the unit of measure and method of measurement.

For the Item "Trafficperson (Municipal Police Officer)" payment shall also be as follows:

CTDOT will pay the Contractor its actual costs for "Trafficperson (Municipal Police Officer)" plus an additional 5% as reimbursement for the Contractor's administrative expense in connection with the services provided. The 5% markup will be paid when CTDOT receives from the Contractor cancelled check(s) or receipted invoice(s) as proof of payments. The invoice must include a breakdown of each officer's actual hours of work and actual rate applied. Mileage fees associated with Trafficperson services are not reimbursable expenses and are not to be included in the billing invoice. The use of a Municipal police vehicle authorized by

CTDOT will be paid at the actual rate charged by the Municipality. Upon receipt of the invoice from the Municipality, the Contractor shall forward a copy of it to CTDOT. No payment on such an invoice will be made until and unless CTDOT has reviewed the invoice and approved the payment. The rate charged by the Municipality for use of a Uniformed Municipal Police Officer or a Municipal police vehicle shall not be greater than the rate that the Municipality normally charges others for similar services.

Work under these items performed without prior approval from CTDOT will not be measured for compensation.

3.11. Survey

3.11.1. General

All available survey files needed to generate the BTC Project plans were provided by CTDOT's District No. 3 Surveys and will be made available to Proposers. The Contractor is responsible for verifying and updating the existing survey data and obtaining any additional survey as required for use in the preparation of the construction documents. Any additional survey shall comply with CTDOT's Location Survey Manual.

3.11.2. Project Survey Control

All mainline horizontal and vertical control is included in the survey files provided. Any additional survey control for this Project shall be tied into the horizontal and vertical control provided by CTDOT. Temporary benchmarks are shown on the Survey Control Plans contained in the BTC.

Survey Data, from preliminary design through as-built data after construction, shall be on the datum used in the digital files provided by CTDOT. Care should be used with electronic CAD data during the entire Project that no translation or rotation of data occurs.

Prior to establishment of any additional survey control, CTDOT's Survey Section at District 3 shall be contacted for advice on nearby control and procedures needed in order to achieve the required accuracy for the Project. The Survey Section can be reached at (203) 389-3110. 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 CTDOT's Survey Section.

3.11.3. Project Datum

The base survey control shall be held and maintained for supplemental survey and construction layout throughout the duration of the Project. The supplied survey control shall be verified within itself for distance and elevation between other supplied control points only. The Contractor shall not attempt to rotate, translate, or apply a different conversion factor to the benchmarks or horizontal control.

3.12. Highway Design

3.12.1. General

The existing vertical and horizontal alignments for both direction of Interstate 691 are not anticipated to change. The existing horizontal stopping sight distance will be determined by the Contractor through field investigation and will be revised as needed to meet the current standard as provided in the Roadway Design Criteria section below.

The Contractor shall review and address any substandard design elements along the project limits that multiple crash patterns can be attributed to. Wherever correction is needed to meet the current standard, it shall be proposed to CTDOT for implementation.

This includes the section on I-691 westbound before Exit 4 off-ramp to Route 322 (West Main Street). The existing climbing lane between Interchanges 4 and 5 of I-691 westbound allows slower travel for heavy vehicles, such as large trucks, to ascend a steep grade and without slowing traffic. However, where the

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climbing lane ends, the length is found insufficient for heavy vehicles to gain the required speed for this type of facility. Moreover, between the climbing lane merge and the deceleration lane to the Exit 4 off-ramp is an expansive shoulder that encourages motorist destined for Route 322 to pass on the right. This unsafe maneuver in conjunction with slow moving vehicles has contributed to a number of sideswipe and rear end crashes. Also, the flat unpaved area immediately behind the shoulder is often used as a truck rest stop and should be prohibited.

The Contractor shall remove existing guiderails within the project limits that do not meet current CTDOT standards and shall be upgraded. The design of the guiderails and/or median barriers shall be MASH-Compliant Roadside Safety Hardware as detailed by state and federal guidelines and shall be cost effective.

In addition to its meeting all other requirements applicable to the Design hereunder, the Contractor 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 consistent with the improvements presented in the Project Plans.

The Design shall meet the requirements of the referenced design standards. Any changes to the BTC highway design may require amendment to the environmental approvals and would require approval through the ATC process.

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3.12.2. Roadway Design Criteria

The following sections contain design criteria for the various roadways in the Project. These criteria shall be used for the design of the roadways.

DESIGN FEATURES:

Functional Classification:	I-691 Urban Freeway
Type of Roadside Development:	Urban
Federal-Aid System:	Yes
Roadway Configuration:	Divided 2 lanes in each direction with climbing lanes
Proposed Improvement Type:	4R Freeway Project
Design Traffic Volume:	Between 66,600 and 79,900 vpd
Pavement Type:	5” PMA S0.5 Traffic Level 3 0-2.5” HMA S0.375 Traffic Level 2 1” HMA S0.25 Traffic Level 2
Control of Access:	Full Control of Access (Limited Access Highway)
CTDOT:	Highway Design Manual (2003) Bridge Design Manual (2003)
AASHTO:	A Policy on Geometric Design of Highways and Streets (2011) LRFD Bridge Design Specifications (2012)

Design Element	Standard	Existing	Proposed
Highway			
Design Speed	65 - 70 mph	70 mph	70 mph
Travel Lane Width	12 ft	9 – 12 ft	12 ft
Shoulder Width	10 ft Right 8 ft (4’ Paved & 4’ Graded) Left	10 ft – 15 ft Right 3 ft – 4 ft Left	Match Existing
Cross Slope Travel Lane	1.5% – 2%	1.5% - 2.5%	1.5% - 2%
Cross Slope Shoulder (W≥4 ft)	4% Right 4% - 6% Left	1% - 4% Right 4% - 8% Left	4% Right 4% - 6% Left
Stopping Sight Distance (SSD)	730 ft	*	730 ft *

Minimum Radius	2050 ft	1883 ft	Match Existing
Superelevation Rate (e_{max})	6%	6%	6%
Maximum Grade	4%	4%	4%
Sag/Crest Vertical Curve (K Value)	247 Crest 181 Sag	196 Crest 123 Sag	Match Existing
Intersection Sight Distance	N/A	N/A	N/A
Clear Zone	30 ft	30 ft	30 ft
Bridge			
Bridge Width (Curb to Curb)	28 ft	>28 ft	28 ft
Minimum Vertical Clearance	16 ft Existing Bridge 17.5 ft Ped Bridge 18 ft Overhead Signs 20'-6" ft Freeway over Railroad	14'-3" Existing Bridge	Match Existing

*Design Exception may be required; further investigation at different locations required. Contractor shall analyze and document as required.

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3.12.3. Pavement Design

3.12.3.1 General

The major pavement improvements for the Project include confirmation of the existing pavement composition and condition, reconstruction of shoulders for traffic staging, milling of bituminous concrete pavement, concrete pavement replacement (full depth for joint and mid-slab crack repairs) or crack filling and patching of deteriorated bituminous concrete pavement, cross slope correction with wedging, and bituminous concrete structural overlay.

It is expected that no subsequent changes to the specified pavement structure or treatment strategy will be required by the Contractor. Certain changes may be allowed as an ATC following review and final approval from CTDOT Pavement Management Unit. Any proposed changes to the pavement structure or treatment strategy must be done following the AASHTO 1993 Pavement Design Guide procedure. Justification showing adequacy of the design to meet the structural requirements must be provided by the Contractor accompanying the proposed change.

3.12.3.2 Existing Pavement Information

The pavement compositions and thicknesses listed below are estimations based on research of currently available as-built project information. The Contractor should reference the following CTDOT legacy projects for additional information:

- Project No. 0079-0093, Construction of Route 6A (1971)
- Project No. 0079-0176, Resurfacing and Safety Improvements on Route I-691 (1992)
- Project No. 0171-0355, VIP Resurfacing (2001)
- Project No. 0079-0219, VIP Resurfacing (2003-2004)
- Project No. 0170-3365, VIP Resurfacing (2015)

The existing pavement structure is approximately as follows for each site:

Mainline

Travel Lanes

- 3”-4” Bituminous Concrete Pavement, on
- 9” Reinforced Concrete Pavement (12-foot slab width/40-foot joint spacing), on
- 6”-18” Subbase

Climbing Lanes

- 12”-13” Bituminous Concrete Pavement, on
- 6”-18” Subbase

Shoulders

- 6” Bituminous Concrete Pavement, on
- 6” Calcium Chloride Stabilized Base, on
- 6”-18” Subbase

Ramps

Composite Sections (from the mainline up to the gore area, typically)

- 2”-3” Bituminous Concrete Pavement, on
- 9” Reinforced Concrete Pavement, on
- 6”-18” Subbase

Flexible Sections (from the gore area to intersecting roadway, typically)

- 12”-13” Bituminous Concrete Pavement, on
- 4” Calcium Chloride Stabilized Base, on
- 6”-18” Subbase

Pressure Relief Joints

- 14.5”-16” Bituminous Concrete Pavement, on
- 6”-18” Subbase

Bridges

- 2.5”-4” Bituminous Concrete Pavement, on
- Membrane Waterproofing, on
- Concrete Deck

Pavement Coring

CTDOT has obtained a portion of the required pavement cores for this Project to confirm existing pavement thicknesses. The full results of the coring data are included in Appendix B of these Technical Provisions.

Pavement coring was performed in May/June/July of 2019 on I-691 (both directions) for the mainline travel lanes, shoulders, and westbound climbing lane (coring was not performed on any ramps within the project section). Using the results of the coring, in-place bituminous concrete pavement depths are as follows:

- Travel Lanes = 3.5”-7.0”, average 4.85 inches (on 9 inch concrete pavement)
- Shoulders = 4.75”-9.375”, average 6.77 inches (on granular base material)
- Climbing Lane = 7”-8.5”, average 7.75 inches (on granular base material)

The Contractor is responsible for obtaining representative pavement cores on all ramps within the project limits to verify the depth, bond quality, and overall condition of the existing bituminous

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concrete overlay as well as the limits of the underlying concrete pavement if applicable. The included ramps are as follows:

- 691 W001 (Exit 8 WB off-ramp to US Route 5)
- 691 E002 (Exit 8 EB on-ramp from US Route 5)
- 691 E003 (Exit 8 EB off-ramp to US Route 5)
- 691 W004 (Exit 8 WB on-ramp from US Route 5)
- 691 E005 (Exit EB on-ramp from Center Street)
- 691 W006 (Exit 7 WB off-ramp to State Street Extension)
- 691 W007 (Exit 7 WB on-ramp from Colony Street)
- 691 E008 (Exit 7 EB on-ramp from Lewis Avenue)
- 691 E009 (Exit 7 EB off-ramp to Columbia Street)
- 691 W010 (Exit 6 WB off-ramp to Lewis Avenue)
- 691 W011 (Exit 5 WB on-ramp from Route 71)
- 691 E012 (Exit 5 EB off-ramp to Route 71)
- 691 W013 (Exit 4 WB off-ramp to Route 322)
- 691 E014 (Exit 4 EB on-ramp from Route 322)
- 691 W015 (Exit 4 WB on-ramp from Route 322)
- 691 E016 (Exit 4 EB off-ramp to Route 322)

The Contractor is also responsible for taking all additional cores should further pavement composition data be required.

3.12.3.3 Pavement Treatment Scope

The proposed pavement treatment is as follows for each site. The work operations are listed in order for the anticipated construction sequence:

Mainline (travel lanes, climbing lanes, and shoulders included)

- Shoulder improvements for traffic staging (see section below)
- Milling of bituminous concrete pavement
  - Remove the entire bituminous concrete overlay to expose the concrete pavement surface
- Concrete pavement joint rehabilitation within travel lanes using the following items
  - Concrete Pavement Replacement for Roadway (Full-Depth)
  - Bituminous Concrete Surface Patch (special provision includes milling for shallow concrete repairs using asphalt pavement)
- Repair remaining distresses in deteriorated bituminous concrete pavement after milling within climbing lanes and shoulders using the following items
  - Bituminous Concrete Patching – Partial Depth
  - Bituminous Concrete Surface Patching
  - Surface Patch
  - Filling Joints and Cracks in Bituminous Concrete Pavement
- Reconstruction of pressure relief joints at bridges, located between concrete pavement and approach slabs (see section below)
- Bituminous concrete overlay placed curb-to-curb
  - 5” PMA S0.5 Traffic Level 3 (placed in two equal lifts), on
  - HMA S0.375 Traffic Level 2 (wedge course, placed in lifts varying in thickness between 0” min. and 2.5” max. to develop cross slope as needed), on

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- 1” HMA S0.25 Traffic Level 2

Use the 1” HMA S0.25 leveling course to cover exposed concrete pavement as repairs are completed to protect the surface from further deterioration by traffic loads. Traffic will not be allowed to travel directly on concrete pavement for more than five (5) days. Milling of the mainline should also be restricted to one (1) mile sections to allow concrete pavement repairs to be completed and covered in the 5-day time restriction.

HMA S0.25 Traffic Level 2 may be substituted as the wedge course mix, or used in conjunction with HMA S0.375 Traffic Level 2. HMA S0.25 may be placed in lifts varying in thickness between 0” min. and 1.5” max. in a wedge application. This mix is able to be more effectively placed at lower lift thicknesses approaching 0”.

Maintain the existing pavement elevation at bridges and overpasses as well as where there is less than a tenth of a mile between structures. Reduce the surface course of the bituminous concrete overlay to 2” PMA S0.5 Traffic Level 3 (placed in a single lift) curb-to-curb in this case. This will result in a total overlay thickness of approximately 3”. Permanent and temporary transitions that are required due to roadway elevation changes should be formed per special provision “Section 4.06 – Bituminous Concrete”.

It is suspected that the existing load transfer mechanism at the concrete pavement joints consists of I-shaped dowel beams. It is assumed that dowel beams were included in the original construction of the slabs, and partially replaced during the previous pavement rehabilitation project, which used traditional circular dowel bars for full depth concrete joint repairs. If I-shaped dowel beams are encountered within the project limits, an increased quantity of expansion joint repairs will be used to allow for joint movement and reduce the probability of future joint lock-up.

Shoulders/Staging

The existing shoulders are not expected to be adequate to support mainline traffic volumes for an extended duration of time based on available pavement composition and condition information. Furthermore, milling of the shoulders flush to the depth of the adjacent concrete pavement surface would result in a reduced pavement thickness that may not be sufficient to support vehicles for even a limited duration.

The shoulders will not be allowed to be used as an area for live traffic staging without first performing one of the intermediate improvements shown below. The treatment that is selected will depend on how long traffic is needed to travel on the shoulder in order to perform the adjacent work in the travel lanes. In either case, after the required staging duration is completed and traffic is shifted off of the newly constructed intermediate shoulders, place the bituminous concrete overlay curb-to-curb per the provided mainline treatment scope.

Follow the mainline pavement treatment scope for areas where traffic will not need to travel on the shoulders for staging (milling, patching, crack filling, and overlay).

Short-Term Staging Option

- Remove existing pavement down to the top of existing granular subbase material
  - Check the condition of the subbase for preparation/grading/formation, remove unsuitable material, and replace as necessary with Processed Aggregate Base in 2”-4” courses to the elevation of the bottom of concrete pavement
- Place Processed Aggregate Base to 6” below the concrete pavement surface
  - Additional removal of existing subbase may be needed to facilitate placing processed material in courses of suitable thickness
- Place pavement base course flush with concrete pavement
  - 6” PMA S1 Traffic Level 3 (placed in one single lift)

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The short-term staging option intermediate treatment scope shown above should be used in order to perform typical concrete pavement repairs in the adjacent travel lanes. It is expected that this work will be completed and covered within 5 days (per the previous section requirements), and thus will not require an extended staging duration.

Long-Term Staging Option

- Remove existing pavement down to the top of existing granular subbase material
    - Check the condition of the subbase for preparation/grading/formation, remove unsuitable material, and replace as necessary with Processed Aggregate Base in 2”-4” courses to the elevation of the bottom of concrete pavement
- Place pavement base course flush with and to match concrete pavement
    - 9” PMA S1 Traffic Level 3 (placed in two equal lifts)

The long-term staging option intermediate treatment scope shown above should be used for areas that will require an extended staging duration, greater than the time allowed for concrete repairs. This is expected to be approximately a full construction season or longer. This option includes approximately 1000 feet at the leading and trailing end of bridges for any structure work that will require extended traffic staging.

Based on best available information, the calcium chloride stabilized base material supporting the existing bituminous concrete pavement in the shoulders is still present from the original design and construction. This material should be fully removed when reconstructing shoulders down to the existing subbase in preparation of traffic staging.

It would also be acceptable to use the existing westbound climbing lane prior to milling for temporarily staging traffic in the short term while concrete pavement repairs are completed in the adjacent travel lanes. Staging is not allowed on the climbing lane once milling is performed.

Pressure Relief Joints (abutting approach slabs)

- Remove existing pavement down to the top of existing granular subbase material
    - Check the condition of the subbase for preparation/grading/formation, remove unsuitable material, and replace as necessary with Processed Aggregate Base in 2”-4” courses to the elevation of the bottom of concrete pavement
- Place pavement base course flush with and to match concrete pavement
    - 9” PMA S1 Traffic Level 3 (placed in two equal lifts)
- Bituminous concrete overlay placed curb-to-curb
    - 5” PMA S0.5 Traffic Level 3 (placed in two equal lifts), on
    - HMA S0.375 Traffic Level 2 (wedge course, placed in lifts varying in thickness between 0” min. and 2.5” max. to develop cross slope as needed), on
    - 1” HMA S0.25 Traffic Level 2

Ramps

Composite Sections

- Confirm pavement structure type limits by coring, or other means acceptable to the Engineer of Record
- Fine milling of bituminous concrete pavement
    - Remove the entire bituminous concrete overlay to expose the concrete pavement surface
- Concrete pavement joint rehabilitation within travel lanes using the following items
    - Concrete Pavement Replacement for Roadway (Full Depth)
    - Bituminous Concrete Surface Patch

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- Repair remaining distresses in deteriorated bituminous concrete pavement after milling within shoulders using the following items
  - Bituminous Concrete Patching – Partial Depth
  - Bituminous Concrete Surface Patching
  - Surface Patch
  - Filling Joints and Cracks in Bituminous Concrete Pavement
- Bituminous concrete overlay placed curb-to-curb
  - 2” PMA S0.5 Traffic Level 3 (placed in a single lift), on
  - HMA S0.375 Traffic Level 2 (wedge course, placed in lifts varying in thickness between 0” min. and 2.5” max. to develop cross slope as needed), on
  - 1” HMA S0.25 Traffic Level 2

- Flexible Sections
  - Confirm pavement structure type limits by coring, or other means acceptable to the Engineer of Record
  - Fine milling of bituminous concrete pavement, approximately 3” depth
  - Repair remaining distresses in deteriorated bituminous concrete pavement after milling within travel lanes and shoulders using the following items
    - Bituminous Concrete Patching – Partial Depth
    - Bituminous Concrete Surface Patching
    - Surface Patch
    - Filling Joints and Cracks in Bituminous Concrete Pavement
  - Bituminous concrete overlay placed curb-to-curb
    - 2” PMA S0.5 Traffic Level 3 (placed in a single lift), on
    - HMA S0.375 Traffic Level 2 (wedge course, placed in lifts varying in thickness between 0” min. and 2.5” max. to develop cross slope as needed), on
    - 1” HMA S0.25 Traffic Level 2

Bridge Overlay
No increase in the total overlay thickness is allowable, and there shall be no increase in the dead load for any bridge structure as a result of pavement improvements.

The milling depth and bituminous concrete overlay mix type used for resurfacing of bridges will depend on the existing wearing surface thickness. If possible, incorporate a total overlay thickness of 3” minimum at each location using the 2” PMA S0.5 surface course option. If the existing overlay thickness at any bridge is found to be 2.5”, use the 1.5” PMA S0.375 option provided instead.

Use the following treatment for resurfacing of bridges where deck repairs are needed and the entire wearing surface will be replaced:

- 2” PMA S0.5 Traffic Level 3 (or 1.5” PMA S0.375 Traffic Level 3), on
- 1” HMA S0.25 Traffic Level 2, on
- Membrane Waterproofing

Reconstruction

Use the following full depth pavement structure for areas of reconstruction due to failed flexible pavement sections within the project limits:

- 5” PMA S0.5 Traffic Level 3 (placed in two equal lifts), on
- 1” HMA S0.25 Traffic Level 2, on
- 9” PMA S1 Traffic Level 3 (placed in two equal lifts), on

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- 10” Processed Aggregate Base

Reconstruction may also require removal of some portion of concrete pavement. If partial removal of concrete pavement slabs is necessary for full depth bituminous concrete pavement reconstruction, no slab should be reduced by more than 50% of the current length. If removal of more than 50% of the slab is needed, the entire slab should be removed and the full depth flexible pavement section as specified above should be extended back to the next concrete pavement joint.

3.12.4. Pavement Patching

The Contractor is responsible for maintenance of the existing pavement throughout the duration of construction within the Project limits. The work under this item shall consist of patching any pavement surfaces, which have become rutted, broken, damaged, delaminated, or otherwise unserviceable, and at such other locations as CTDOT may designate. An estimate of the cost for this work has been included in Section 3.11.2. - Estimated Cost Items for pavement patches. CTDOT will utilize this estimated cost for designated pavement patching. All patches must be approved by CTDOT prior to the repairs being made.

3.13. Traffic Engineering

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3.13.1. General

The Contractor is responsible for the final design of all traffic engineering aspects of the Project.

3.13.2. Maintenance and Protection of Traffic Plan

The MPT concepts presented in the Technical Provisions have been coordinated closely with affected agencies including the Town of Cheshire, the Town of Middlefield, the Town of Southington, the City of Meriden, and emergency services serving the area. If an ATC changes these MPT concepts and Stages, the Contractor will be responsible for obtaining required approvals of said changes from affected third parties with relevant authority.

The construction staging sequence and MPT concepts may be revised if included in an ATC approved by CTDOT.CTDOT Changes to the number of traffic lanes indicated under the staging concepts will not be allowed.

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Pedestrian facilities including ADA compliance shall be maintained wherever pedestrian travel is currently permitted on all open roads. The Contractor is not responsible for maintaining pedestrian travel on closed roadways. The Contractor will be responsible for maintenance and providing an acceptable operating condition of the travel lanes within the Site. Any proposed changes to the requirements of this section are considered to be Alternative Technical Concept (ATC) and must be submitted for pre-approval before incorporation into the Technical Proposal.

Current traffic movements through intersections in the surrounding Project area shall be modified to accommodate traffic detours during construction. The Contractor shall facilitate the necessary detours and maintenance of intersections, including early notifications to the stakeholders of upcoming road closures and detours. The Contractor must notify CTDOTs Permit Office a minimum of two (2) weeks in advance of any lane or ramp closures, detours or restrictions of widths or heights.

The Contractor shall also be aware of any and all permit requirements relating to oversized/overweight vehicles that he may be using for the construction of the project. The Contractor is fully responsible for obtaining these permits.

A detailed MPT Plan is required for all major construction elements. Plans shall be drawn to scale and include all proposed traffic control devices, signing and pavement markings. Traffic management of all bicycle, pedestrian, and vehicular traffic must be maintained within the limits

of work throughout construction. The Contractor shall provide traffic mitigation plans as needed for the intersections within the proposed detour routes.

The MPT Plan shall depict the intended staging and lane requirements during construction. The requirements of the MPT plan include:

- Vehicular, bicycle and pedestrian access to local businesses and tourist attractions is to be maintained at all times during construction. The use of the detours discussed above for this purpose is acceptable.
- Installation of Temporary Precast Concrete Barrier Curb to protect traffic operation from construction and maintain minimum of 11-foot wide vehicle travel lane*[s]* and 1-foot wide shoulders on all roads during construction as specified in Section 1.08 Prosecution and Progress and Maintenance and Protection of Traffic specifications.
- Temporary pavement markings and construction signs shall be installed during the stage construction in conformance with Section 1.08 Prosecution and Progress and Maintenance and Protection of Traffic specifications.
- Traffic signal monitoring, with the potential for traffic signal timing. Monitoring of signal timings, suggested changes, and implementation shall be coordinated and implemented by the Contractor. The Contractor shall coordinate all work with CTDOT and obtain approval from CTDOT prior to implementation.
- Implementation of detours as necessary.
- Police detail or officers as required. Certified flaggers may also be used if the traffic volume and conditions meet CTDOT, the City of Meriden, and the Towns of Cheshire, Middlefield and Southington criteria for flaggers. The Contractor shall coordinate this effort with CTDOT.

Lane Closure Restrictions for Interstate Highways State Routes and Local Roads

The Contractor shall maintain and protect traffic on Interstate Highways and State Routes as shown on the accompanying “Limitations of Operations” charts (below), which dictates the minimum number of lanes that must remain open for each day of the week.

On Holidays and within Holiday Periods, all Hours shall be ‘E.’

‘E’ = maintain existing traffic operations = all available travel lanes, including exit only lanes, climbing lanes and all available shoulder widths shall be open to traffic during this period.

In accordance with CTDOT’s directive CD-2016-2, the Contractor will be allowed to halt traffic for a period not to exceed 15 minutes to perform necessary work for the erection and setting of overhead signs and sign supports, the removal of overhead signs and sign supports, as approved by CTDOT, between 12:01 A.M. and 5:00 A.M. on all non-Holiday days. If more than one 15-minute period is required, the Contractor shall allow all stored vehicles to proceed through the work area prior to the next stoppage.

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Route: I-691 Eastbound Location: On Ramp from I-84 to Lane Add at Exit 7 Number of Through Lanes: 2							
Hour Beginn-ing	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Mid	1	1	1	1	1	1	1
1 AM	1	1	1	1	1	1	1
2 AM	1	1	1	1	1	1	1
3 AM	1	1	1	1	1	1	1
4 AM	1	1	1	1	1	1	1
5 AM	1	1	1	1	1	1	1
6 AM	E	E	E	E	E	1	1
7 AM	E	E	E	E	E	1	1
8 AM	E	E	E	E	E	2	1
9 AM	2	2	2	2	2	2	2
10 AM	2	2	2	2	2	2	2
11 AM	2	2	2	2	2	2	2
Noon	2	2	2	2	2	2	2
1 PM	2	2	2	2	2	2	2
2 PM	2	2	2	2	2	2	2
3 PM	E	E	E	E	E	2	2
4 PM	E	E	E	E	E	2	2
5 PM	E	E	E	E	E	2	2
6 PM	2	2	2	2	2	2	1
7 PM	1	1	2	2	2	2	1
8 PM	1	1	1	1	1	1	1
9 PM	1	1	1	1	1	1	1
10 PM	1	1	1	1	1	1	1
11 PM	1	1	1	1	1	1	1

On Holidays and within Holiday Periods, all Hours shall be "E."

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"E" = maintain existing traffic operations = all available travel lanes, including exit only lanes, climbing lanes and all available shoulder widths shall be open to traffic during this period

Route: I-691 Eastbound Location: Lane Add at Exit 7 to Lane Drop at Exit 10 Number of Through Lanes: 3							
Hour Beginn-ing	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Mid	1	1	1	1	1	1	1
1 AM	1	1	1	1	1	1	1
2 AM	1	1	1	1	1	1	1
3 AM	1	1	1	1	1	1	1
4 AM	1	1	1	1	1	1	1
5 AM	1	1	1	1	1	1	1
6 AM	E	E	E	E	E	1	1
7 AM	E	E	E	E	E	2	1
8 AM	E	E	E	E	E	2	1
9 AM	2	2	2	2	2	2	2
10 AM	2	2	2	2	2	2	2
11 AM	2	2	2	2	2	2	2
Noon	2	2	2	2	2	2	2
1 PM	2	2	2	2	2	2	2
2 PM	2	2	2	2	2	2	2
3 PM	E	E	E	E	E	2	2
4 PM	E	E	E	E	E	2	2
5 PM	E	E	E	E	E	2	2
6 PM	2	2	2	2	2	2	2
7 PM	2	2	2	2	2	2	2
8 PM	1	1	1	1	2	2	1
9 PM	1	1	1	1	1	1	1
10 PM	1	1	1	1	1	1	1
11 PM	1	1	1	1	1	1	1

On Holidays and within Holiday Periods, all Hours shall be "E."

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"E" = maintain existing traffic operations – all available travel lanes, including exit only lanes, climbing lanes and all available shoulder widths shall be open to traffic during this period.

Route: I-691 Westbound Location: On Ramp From 15 NB to Exit 5 On Ramp Number of Through Lanes: 3							
Hour Beginn-ing	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Mid	1	1	1	1	1	1	1
1 AM	1	1	1	1	1	1	1
2 AM	1	1	1	1	1	1	1
3 AM	1	1	1	1	1	1	1
4 AM	1	1	1	1	1	1	1
5 AM	1	1	1	1	1	1	1
6 AM	E	E	E	E	E	1	1
7 AM	E	E	E	E	E	1	1
8 AM	E	E	E	E	E	1	1
9 AM	2	2	2	2	2	2	1
10 AM	2	2	2	2	2	2	2
11 AM	2	2	2	2	2	2	2
Noon	2	2	2	2	2	2	2
1 PM	2	2	2	2	2	2	2
2 PM	2	2	2	2	2	2	2
3 PM	E	E	E	E	E	2	2
4 PM	E	E	E	E	E	2	2
5 PM	E	E	E	E	E	2	2
6 PM	2	2	2	2	2	2	2
7 PM	2	2	2	2	2	2	2
8 PM	1	1	2	2	2	2	2
9 PM	1	1	1	1	1	1	1
10 PM	1	1	1	1	1	1	1
11 PM	1	1	1	1	1	1	1

On Holidays and within Holiday Periods, all Hours shall be "E."

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"E" = maintain existing traffic operations = all available travel lanes, including exit only lanes, climbing lanes and all available shoulder widths hall be open to traffic during this period.

Route: I-691 Westbound Location: Exit 5 On Ramp to I-84 Off Ramps Number of Through Lanes: 2							
Hour Beginn-ing	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Mid	1	1	1	1	1	1	1
1 AM	1	1	1	1	1	1	1
2 AM	1	1	1	1	1	1	1
3 AM	1	1	1	1	1	1	1
4 AM	1	1	1	1	1	1	1
5 AM	1	1	1	1	1	1	1
6 AM	E	E	E	E	E	1	1
7 AM	E	E	E	E	E	1	1
8 AM	E	E	E	E	E	1	1
9 AM	2	2	2	2	2	2	1
10 AM	2	2	2	2	2	2	2
11 AM	2	2	2	2	2	2	2
Noon	2	2	2	2	2	2	2
1 PM	2	2	2	2	2	2	2
2 PM	2	2	2	2	2	2	2
3 PM	E	E	E	E	E	2	2
4 PM	E	E	E	E	E	2	2
5 PM	E	E	E	E	E	2	2
6 PM	2	2	2	2	2	2	2
7 PM	1	2	2	2	2	2	2
8 PM	1	1	1	1	1	1	2
9 PM	1	1	1	1	1	1	1
10 PM	1	1	1	1	1	1	1
11 PM	1	1	1	1	1	1	1

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Liquidated Damages per Hour

ROUTE I-691 EASTBOUND

2 Lane Section (I-84 Off Ramps to Lane Add at Exit 7)		
If Working Periods Extends Into	A.M. 1 Lane Closure	P.M. 1 Lane Closure
1st Hour of Restrictive Period	$ 500	$ 500
2nd Hour of Restrictive Period	$ 9,000	$ 2,000
3rd Hour or any Subsequent Hour of Restrictive Period	$ 15,000	$ 4,000

ROUTE I-691 WESTBOUND

2 Lane Section (Exit 5 On Ramp to I-84 Off Ramps)		
If Working Periods Extends Into	A.M. 1 Lane Closure	P.M. 1 Lane Closure
1st Hour of Restrictive Period	$ 500	$ 500
2nd Hour of Restrictive Period	$ 500	$ 4,000
3rd Hour or any Subsequent Hour of Restrictive Period	$ 500	$ 10,000

The above liquidated damages apply to those hours shown on the Limitation of Operations charts designated with a “2” or “E” for 2-lane sections.

For each hour shown on the Limitation of Operations charts designated with an “E”, liquidated damages of $500 per hour shall apply if all available shoulder widths are not available to traffic.

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Liquidated damages in the amount of $500 shall apply for each hour that the Contractor interferes with existing traffic operations on any ramps during the non-allowable hours.

LIQUIDATED DAMAGES PER HOUR

ROUTE I-691 EASTBOUND

3 Lane Section (Lane Add at Exit 7 to Lane Drop at Exit 10)			
If Working Periods Extends Into	A.M. 1 Lane Closure	A.M. 2 Lane Closure	P.M. 1 Lane Closure
1st Hour of Restrictive Period	$ 500	$ 7,000	$ 500
2nd Hour of Restrictive Period	$ 500	$ 40,000	$ 500
3rd Hour or any Subsequent Hour of Restrictive Period	$ 500	$ 60,000	$ 500

ROUTE I-691 WESTBOUND

3 Lane Section (On Ramp From 15 NB to Exit 5 On Ramp)			
If Working Periods Extends Into	A.M. 1 Lane Closure	A.M. 2 Lane Closure	P.M. 1 Lane Closure
1st Hour of Restrictive Period	$ 500	$ 500	$ 500
2nd Hour of Restrictive Period	$ 500	$ 8,000	$ 500
3rd Hour or any Subsequent Hour of Restrictive Period	$ 500	$ 15,000	$ 500

The above liquidated damages apply to those hours shown on the Limitation of Operations charts designated with a “3” or “E” for 3-lane sections.

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For each hour shown on the Limitation of Operations charts designated with an “E”, liquidated damages of $500 per hour shall apply if all available shoulder widths are not available to traffic.

Liquidated damages in the amount of $500 shall apply for each hour that the Contractor interferes with existing traffic operations on any ramps during the non-allowable hours.

Access during Construction

Access to local businesses and residences in the Project area must be maintained during construction. Temporary closures and detailed construction sequencing must allow traffic to be maintained during the construction of the project. The Contractor will be responsible for maintenance of traffic and providing an acceptable operating condition of the travel lanes within the Project area. The Contractor shall facilitate the detours and maintenance of intersection operations.

The Contractor will be required to maintain access (vehicles, bicycles, and pedestrians) to adjacent businesses and recreational facilities at all times during construction.

Access to all work zones shall be detailed in the Maintenance and Protection of Traffic Plans.

Temporary Roadside Elements

All temporary roadside design elements including but not limited to highway guiderails, construction barriers, sign supports, and drainage outlets shall be designed in accordance with the most current AASHTO Roadside Design Guide. All items supplied shall be listed on the CTDOT Qualified Product List (QPL). Any Item supplied that is not listed on the QPL, for which a category containing like items is listed on the QPL, will be rejected.

The structural design of all temporary roadside elements including all components, support poles, appurtenances, and anchorages shall be designed in accordance with the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals. The sign supports shall be designed without the assistance of any guying wires or external supports.

Proposed signing plans shall include the layouts showing locations of existing and proposed ground mounted and overhead signs, special sign details, legend, sign lighting and structural and foundation requirements. Any required electric service shall be provided by the Contractor in coordination with the local electric utility.

The Contractor will be responsible for the maintenance of all temporary roadside elements and the resolution of any found to be impeding safe operation of traffic, subject to the oversight and discretion of CTDOT.

Temporary Pavement Markings

The Contractor will provide temporary pavement markings as required within the Project limits to provide a complete traffic pattern at all times during the Project. The Contractor will be required to design and install pavement markings in accordance with Department and MUTCD work zone standards and specifications. All lane configurations during all stages of construction shall be delineated with temporary pavement markings. Temporary lane configurations on other roadways that will remain in place at the end of the workday or for more than thirty-six (36) hours shall be delineated with temporary pavement markings. All temporary pavement markings exposed throughout the winter shall be Epoxy Resin Pavement Markings, unless otherwise directed by the CTDOT.

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Two options for temporary pavement markings that are not to be exposed throughout the winter are allowed:

1. Temporary Plastic Pavement Marking Tape:
   Under this option, the Contractor shall cover all temporary and existing conflicting pavement markings with black temporary plastic pavement tape. Removal of temporary plastic pavement markings through the use of grinding will not be allowed. The temporary plastic tape pavement marking shall be maintained for the duration of the Project.
2. Hot-Applied Paint Pavement Markings:
   Under this option, the contractor shall grind off all temporary and existing conflicting pavement markings during all stages of construction. Black temporary plastic pavement tape may be used in lieu of grinding. At the completion of staged construction, all pavement areas that were affected by grinding of markings shall be milled to a minimum depth of 2" and replaced with new pavement that matches the specified pavement in the vicinity of the bridges. Other non-destructive methods for removal in lieu of grinding off existing or temporary pavement markings and repaving may be proposed through the ATC process. Upon completion of this work, all previous markings shall be re-established with permanent pavement markings according to the project specifications.

Regardless of the option chosen, the Contractor shall promptly respond to all requests by CTDOT to refresh or remove markings within the Project limits during the construction period.

Temporary Barrier

The Contractor shall provide TPCBC for MPT operation. Movable precast concrete barrier may be substituted for standard TPCBC. The type of movable barrier proposed shall be submitted for approval by CTDOT.

Traffic Signals

The Contractor is required to maintain the operation and functionality of all traffic signals in the project limits, according to the special provisions "Temporary Signalization" and "Temporary Detection."

If traffic counts are required for the final design due to an ATC proposed by the Contractor, the Contractor shall obtain them at no cost to CTDOT. Prior to detouring traffic, the Contractor shall submit to CTDOT for approval, temporary signalization plans with revised timings based on capacity analysis using the latest version of Synchro Software. The analysis along with recommended revisions and changes to signals and intersections in order to provide acceptable levels-of-service during peak hours of traffic shall be forwarded to CTDOT for review and approval.

The Contractor is expected to have a Monitoring Plan in place and make controlling-signal-timing changes to accommodate the changes in the traffic patterns. The Monitoring Plan must be prepared by the Contractor and submitted for approval to CTDOT before the commencement of construction activities that may delay or disrupt AM or PM peak-period traffic. The Monitoring Plan must include proposed staffing by the Contractor for all identified intersections during each peak traffic period during *all stages* of construction. The Plan shall define the methodology to be used to react to traffic problems identified during the monitoring. All signal timing changes must be approved by CTDOT and the Town where applicable, and if approved will then be implemented by the Contractor.

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Transportation Management Plan (TMP)

The need for a Transportation Management Plan ("TMP") has been evaluated by CTDOT and it has been determined that the development of a TMP is required for this Project. The Contractor is required to submit a TMP to CTDOT in accordance with the FHWA guidance document titled "Developing and Implementing Transportation Management Plans for Work Zones." This document can be found on the FHWA website at

http://www.ops.fhwa.dot.gov/wz/resources/publications/trans_mgmt_plans/index.htm

Documentation of the TMP pertinent to the Project Design shall be included in the Design Report which is required with the standard milestone submissions.

Elements of the TMP shall be presented in the Contract plans (such as the Temporary Traffic Control Plan(s)) and specifications.

Temporary Changeable Message Signs

The Contractor shall provide temporary changeable message signs outside of the immediate construction area in order to provide advance warnings to motorists. The Contractor shall work with CTDOT to finalize the changeable message sign locations and text. Such signs shall not be placed on private property or on sidewalks. The locations of the temporary changeable message signs shall be shown in the contractor's Maintenance and Protection of Traffic plans. It should be assumed that a minimum of two (2) Changeable Message Signs will be required for each bridge. The Contractor however will determine the final number of Changeable Message Signs required for each bridge.

Remote Controlled Changeable Message Signs shall include one (1) industrial-grade cellular telephone and be equipped with a modem to control the sign and a security system to prevent unauthorized access. The security system shall allow access only through use of a code or password unique to that sign. If the proper code or password is not entered within 60 seconds of initial telephone contact, the call will be terminated. Remote control for the Remote Controlled Changeable Message Sign shall be by cellular telephone and touch tone modem decoder.

The Contractor should be aware that multiple construction projects are planned in the immediate vicinity of the Project. It shall be the responsibility of the Contractor to work with contractors on those adjacent projects and determine a common plan of advance warning and changeable message signs that works for all stages of construction.

The Contractor will be responsible for supplying and maintaining the temporary changeable message signs. The Contractor will promptly respond to all Department requests to relocate or update text on the changeable message signs during the Project.

3.13.3. Permanent Roadside Elements

All permanent roadside design elements, including, but not limited to highway guiderail, vehicle barriers, sign supports, drainage outlets, railings, curbs, light poles, gates, rumble strips, and fences shall be designed in accordance with the most current AASHTO Roadside Design Guide and AASHTO-MASH criteria, CTDOT Highway Design Manual Chapter 13, CTDOT Standard Drawings, CTDOT Bridge Design Manual, Special Provisions and CTDOT's Qualified Products List. Use Class B Type II W-beam rail elements (10 gauge) for installations on expressways, limited access highways, and ramps.

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All permanent roadside design elements, including, but not limited to highway guiderail, vehicle barriers, sign supports, drainage outlets, railings, curbs, light poles, gates, rumble strips, and fences shall be maintained and protected during construction. Any damage to these elements or equipment shall be repaired or replaced in kind at no cost to CTDOT.

Any roadside barrier that is impacted (altered, damaged, removed, or removed for access even if the intent is to remove it temporarily) during construction must be replaced with barrier conforming to current CTDOT requirements including appropriate transitions to existing roadside barrier. Roadside barrier will include concrete barrier, metal beam rail, attachments, transitions, and anchorages. If one section of concrete barrier is impacted, then the entire length of concrete barrier and guiderail attachments must be replaced transitioning back to existing barrier.

3.13.4. Permanent Pavement Markings

The Contractor shall provide permanent pavement markings as required within the project and construction work limits as necessary for the proper prosecution of the Project. The Contractor must design and install pavement markings in accordance with Department and MUTCD standards and specifications. All pavement markings longitudinal lines shall be Type 1 Epoxy Resin Pavement Markings conforming to CTDOT Standard Specifications for Roads, Bridges, Facilities and incidentals Construction, Form 817; and conforming to the special provisions for Type 1 Epoxy Resin Pavement Markings. All pavement marking symbols and legends shall be Epoxy Resin Pavement Markings conforming to CTDOT Standard Specifications for Roads, Bridges, Facilities and incidentals Construction, Form 817.

3.13.5. Permanent Signing

The Contractor shall provide permanent sheet aluminum signs, side mounted extruded aluminum signs, overhead extruded aluminum signs and sign supports as required within the project and construction work limits. The Contractor must design and install all signing in accordance with Department and MUTCD standards and specifications, and in accordance with the BTC conceptual signing plans – and extruded aluminum sign detail included in the RFP. The Contractor shall provide signing and pavement marking plans, cross-sections for each overhead sign support and side mounted extruded aluminum sign support, and guide sheets for sheet aluminum signs.

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3.14. Geotechnical

3.14.1. General

Geotechnical work will be needed for the Project. Test borings shall be drilled at each proposed drilled shaft foundation for cantilever and mast arm sign foundations. No other geotechnical work is anticipated for the Project. The Design-Builder shall conduct all work, if deemed necessary, to complete any geotechnical investigations, reporting and design for the Project.

3.14.2. Existing Geotechnical Information

Archive boring and foundation information from the drawing sets for the existing bridges and other sources can be found from Legacy Plans noted in Section 2.2.1. – Historical Documents.

3.14.3. Geotechnical Study by the Contractor

Geotechnical explorations and preparation of test boring logs for the sign foundations shall be performed in accordance with CTDOT's Geotechnical Engineering Manual, and any relevant Consulting Engineering Memoranda. Geotechnical reports are not deemed necessary for the test borings drilled at each proposed drilled shaft foundation for cantilever and mast arm sign foundations but test borings shall be prepared. The test boing logs will need to be prepared and submitted by the Design-Builder as part of the final design. This work, and any additional Geotechnical work deemed necessary, shall be included in the proposal price.

The Contractor shall meet all requirements and obtain all governmental approvals necessary for geotechnical explorations, including "Call before You Dig" requirements, and all approvals and permits required for access road grading, drilling, and groundwater protection from inter-aquifer contamination. Any rock core samples recovered from test borings drilled for proposed drilled shaft foundations at cantilever and mast arm sign foundations shall remain the possession of the design-build contractor for use by the drilled shaft designer/foundation installer. All other rock samples shall be delivered for review by CTDOT to a location agreed upon by CTDOT.

3.14.4. Geotechnical Reports

If found necessary, final Design Geotechnical reports will need to be prepared and submitted by the Design-Builder as part of the final design. The reports will be prepared in conformance with CTDOT's Geotechnical Engineering Manual.

3.14.5. Geotechnical Design

All geotechnical analysis, design and report preparation shall be completed in conformance with CTDOT's Bridge Design Manual, CTDOT's Geotechnical Engineering Manual and the AASHTO LRFD 7th Edition unless otherwise approved by CTDOT. The Proposer shall clearly identify in the Proposal the methodology for geotechnical analysis and design to be used in the Final Design.

3.14.6. Geotechnical Design Criteria

In addition to requirements identified above, if geotechnical design is deemed necessary, the Contractor shall be responsible to:

- Select and design all temporary earth support systems required for the Project. Any temporary earth support systems that will remain in place and become part of the permanent construction shall meet the "Buy America" regulations.
- Select dewatering systems based on their construction means and methods.
- Protect existing structures.

3.15. Bridge Design and Other Structures

3.15.1. General

The Project includes maintenance of the roadway bridges over thirteen (13) bridges located in the Town of Southington and the City of Meriden, and under one (1) bridge in the City of Meriden.

The general scope of work at each bridge is as follows:

Bridge Nos. 01921, 01922, 01942, 01944, 02069, 02070, 02071, 02340, and 02341 in Southington and Meriden

- Patch the existing concrete bridge decks.
- Apply waterproofing membrane (cold liquid elastometric).
- Install bituminous concrete overlay.
- Construct MASH-compliant leading and trailing endblocks that can accommodate attachment of MASH-compliant bridge guide rail (MBR) systems and are capable of future compatibility with tie-in to MASH-compliant parapets (as replacement to existing parapets).
- Install MASH-compliant bridge rail system at leading and trailing bridge ends and attach to new endblocks.
- Remove haunches, as applicable.
- Prepare Load Rating Packages

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Bridge Nos. 02055, 02080, 02114, and 02160 in Meriden

- Patch the existing concrete bridge decks.
- Apply waterproofing membrane (cold liquid elastometric).
- Install bituminous concrete overlay.
- Construct MASH-compliant leading and trailing endblocks that can accommodate attachment of MASH-compliant bridge guiderail (MBR) systems and are capable of future compatibility with tie-in to MASH-compliant parapets (as replacements to existing parapets).
- Install MASH-compliant bridge rail system at leading and trailing bridge ends and attach to new endblocks.
- Replace median bridge mounted guiderail with MASH-compliant system. Refer to Section 3.16.5.
- Remove haunches, as applicable.
- Prepare Load Rating Packages.

Bridge No. 01966 in Meriden, Route 71 over Interstate-691

- Remove haunches.

A more detailed summary of the Project bridge structures is included in the following sections.

The final design and details of the bridges in this Project will be the responsibility of the Contractor. This narrative will specify components and concepts that were developed for the purpose of establishing a minimum level of design and details that must be met or exceeded by the Contractor.

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3.15.2. Demolition of Structures

Partial or complete removal of endblocks is anticipated.

3.15.3. Bridge Superstructure Replacement

Replacement of bridge superstructures is not anticipated.

3.15.4. Bridge Substructures

Bridge substructure work is not anticipated.

3.15.5. Design Criteria

The design of the bridges and structures shall comply with the Connecticut Department of Transportation Bridge Design Manual, all applicable Engineering and Construction Directives and Bulletins, Engineering Directives and Bulletins, Construction Directives and Bulletins, and any applicable CE General Memoranda.

The Contractor must determine bituminous concrete overlay thicknesses prior to milling operations through field investigations. A minimum of four (4) representative depth measurements shall be taken per span up to 100 feet in length. An additional measurement shall be taken for each 25 feet in span length. Depth measurements must be taken at each bridge end along the gutterline in each shoulder, at a minimum. Additional depth measurements shall be taken at equal distances along the gutterline. If depth of overlay varies across the structure, it shall be clearly marked to aid in the removal operations. All test pit locations must be filled with bituminous material following measurement.

Proposed bituminous concrete overlays on bridges must provide an average thickness of no greater than the existing average overlay thickness.

Median barrier for Bridge Nos. 02055, 02080, 02114, and 02160 shall be MASH Tested (TL-3 or greater) barrier as detailed in FHWA Longitudinal Barrier Code B-241 as requested by Minnesota Department of Transportation, Texas Department of Transportation Rail Type T-631,

or approved equal. The post height may be modified to achieve the required 31 inch projection for Metal Beam Rail above roadway.

Bridge joint selection shall be as outline in the CTDOT Bridge Design Manual.

Refer to Section 3.16.8 for additional information on Load Rating Packages.

3.15.6. Drawings and Calculations

The CTDOT will treat the information submitted in the Technical Proposal as a Preliminary Design submission and will provide comments on this at the time a Notice to Proceed is issued. During the Final Design process, CTDOT will require the submittals noted in Section 3.4.4.

3.15.7. Materials and Samples

Materials shall be as specified in the BTC. Approval of substitution for alternate materials is not guaranteed. Proposed changes of materials must be submitted as an ATC, unless otherwise stated in the Technical Provisions.

3.15.8. Load Rating Packages

For those bridges noted below, the Contractor will be required to prepare and submit an updated Load Rating Package that is in accordance with the latest version of the CTDOT's Bridge Load Rating Manual. These packages will be based on the initial report, as-built conditions and any changes resulting from work to be performed as part of the project, for each of the eight (8) bridges carrying Interstate-691. The bridge load ratings shall include the paving trains and milling machines proposed to be used on the Project. The Load Rating Package must be approved by CTDOT prior to beginning removal of bituminous concrete overlay operations on the bridges.

Bridges 01921, 01922, 01942, 01944, 02069, 02071, 02114, and 02133 have a Load Rating Package on file in ProjectWise. As part of the final design, the Contractor shall verify that the final design will result in a bridge with equal or lesser dead loads than the rating on file. Should the dead loads increase, or the Load Rating Package on file not be LRFR, the Contractor shall update the rating and submit the Load Rating Package to CTDOT for review as part of the final design, along with all supporting calculations. The Contractor shall perform load ratings for these bridges for all applicable vehicles as indicated in the CTDOT's Bridge Load Rating Manual. The Contractor shall ensure that the final design will result in a bridge with a sufficient load rating. A sufficient rating is defined as a rating of greater than 1.0 for the paving train and milling machines that the Contractor is electing to use.

Bridges 02055, 02069, 02071, 02080, 02125, 02160, 02340, and 02341 do not have an LRFR Load Rating Package on file in ProjectWise. As part of the final design, the Contractor shall perform load ratings for these bridges for all applicable vehicles as indicated in the CTDOT's Bridge Load Rating Manual. The Contractor shall ensure that the final design will result in a bridge with a load rating that exceeds 1.0 for the proposed paving and milling operations, as defined above, and submit the Load Rating Packages to the CTDOT for review as part of the final design, along with all supporting calculations.

The submission of a Load Rating Package, along with supporting calculations, will also be required as part of any Early Release for Construction package for items that are part of or that may impact the load rating of any of the bridges. Acceptance by the CTDOT of any Load Rating Package noted above will be required as part of the CTDOT's acceptance of the final design and any Early Release for Construction packages.

The Contractor shall notify the CTDOT's Oversize/Overweight Permit Unit before implementing any traffic detour, roadway or lane closure, or any actions that will result in a lane width or height restriction, or other actions that may interfere with existing or proposed oversize/overweight permits. The Contractor must notify the Oversize/Overweight Permit Unit before closing any

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bridge to traffic. The Oversize/Overweight Permit Unit can be contacted by email at "DOT.OSOWPermits@ct.gov".

The Contractor shall inform CTDOT's Oversize/Overweight Permit Unit immediately following final paving of bridges under this project. The notification shall be by email and include the Bridge number and indicate that the new Load Rating Package has been prepared for the bridge. The Oversize/Overweight Permit Unit can be contacted by email at "DOT.OSOWPermits@ct.gov".

3.16. Drainage Design

3.16.1. General

The Contractor will be required to conduct field reviews of all existing drainage systems within the project limits and submit a Drainage Report based on the assessment from the field review. The Drainage Report should describe the existing systems, and provide recommendations for improvement to the drainage systems. Recommendations shall be supported by calculations based on existing and any proposed conditions.

The Contractor shall rehabilitate or replace existing pipes, particularly metal pipes or culverts, as indicated in Drainage report. At minimum, the Contractor shall aim to prolong the service life of the metal pipes under the roadway without expanding the required permits or impacting private property.

Additionally, the Contractor will be limited to perform work on pipes that do not convey watercourses; these will be addressed by future rehabilitation projects.

The Contractor shall include a drainage design in the Final Design for all temporary and permanent conditions. The drainage analysis, including but not limited to gutter flow and pipe capacity, shall be included in the drainage design.

Submission of all drainage requirements in the semi-final and final submission shall be as required by the **Project Development Guide**. The design of any modifications shall comply with CTDOT's **Drainage Manual**.

The Contractor will be responsible for supplying CTDOT with all the required documentation for obtaining the applicable permits such as DEEP IWGP and USACE SV or modifications of existing permits necessitated by such changes. CTDOT will not allow the Contractor to revise the Project schedule nor approve additional permits other than specified above because of any change to the drainage design or associated permits.

3.16.2. Existing Drainage Information

Existing drainage information is available in digital plan form in Historical Documentation, Section 2.2.1., and in digital surface form as described in Surveys, Section 3.8. Plans and locations shown on existing survey may not reflect real world conditions of the existing drainage systems. It is the responsibility of the Contractor to perform field investigations or survey as necessary. All pipes, drainage structures and outlets that make up different systems shall be inspected to prior to the creation of the drainage report

3.16.3. Drainage Reports

A Final Design Drainage Report will need to be prepared and submitted by the Design-Builder as part of the final design. The report will be prepared in conformance with CTDOT's Drainage Manual. Cross culverts that convey watercourses shall be evaluated for condition and be included in the report. Recommendations on repairs or replacement for culverts shall be

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provided, as these will warrant further evaluation. Inspections of existing drainage systems are required to provide recommendations for replacement or improvement to them.

3.16.4. Drainage Design Criteria

The design of drainage shall comply with the Connecticut Department of Transportation Drainage Design Manual, all applicable Engineering and Construction Directives and Bulletins, Engineering Directives and Bulletins, and Construction Directives and Bulletins.

Pavement overlay areas shall be constructed with proper cross slope, as stated by current roadway design standards, to ensure drainage conveyance. Typical sections for, but not limited to, normal crown and Superelevated sections, gutterline profiles, and Superelevation data shall be shown on plans to ensure proper cross slope construction. Prior to placement of the final overlay course, it shall be determined by survey that the proper cross slopes have been established.

If curbing is to be removed, existing catch basins and other pertinent drainage structures shall remain in use due to established connections to drains and sub-drains. With the removal of curbing, all affected Type “C” catch basin shall be converted to Type “C-L” catch basins, unless a different resolution is approved. Adjacent roadside areas need to be established to accommodate proposed pavement runoff without erosion occurring along the embankment.

3.16.5. Drainage Modifications and Restorations

All catch basins, manholes and other pertinent drainage structure tops will need to be reset due to pavement construction activities; replacement of these tops is permissible as deemed necessary. Metal cross culvert, that do not convey watercourses, shall be replaced or repaired as determined from the recommendations in the drainage report. All pipes, drainage structures, and outlets shall be cleaned to restore function to the drainage systems. All work associated to drainage modifications and restoration

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3.17. Lighting and Electrical

3.17.1. General

This Section contains information regarding the design and construction of lighting and electrical components. References to “Sections” and “Articles” refer to Divisions II and III of the CTDOT of Transportation Standard Specifications for Roads, Bridges and Incidental Construction (Form 817), and further amended by the Specifications and Special Provisions included in Appendices to the Technical Provisions. Division I of the Form 817 has been replaced in its entirety for this Project by the Contract General Provisions and by associated Special Provisions.

3.17.2. Design Criteria

The lighting and electrical system shall be installed in compliance with the Divisions II and III of Form 817, Contract General Provisions, the National Electrical Code, and the requirements and details in the Technical Provisions. The Contract Technical Provisions include a complete 40’ scale permanent Illumination design, which the Contractor shall comply with when installing the lighting system. Any proposed modifications to this illumination design shall be reviewed and approved by the CTDOT prior to installation. The provided illumination design is based on limits of existing metal beam rail and cable guide rail. The Contractor is permitted to modify light standard foundation off-sets and luminaire bracket lengths if the proposed railing limits differ from existing. The Contractor shall adhere to the following design requirements and revise the design accordingly; for mainline poles, where guide rail is present, the foundation shall be installed 2’ behind railing and the pole shall have a 12’ bracket arm. Where no guide rail is present, the foundation shall be installed 7’ from edge of roadway and the bracket length shall be 15’. For light standards installed on ramps, foundation off-sets and bracket lengths are not dependent on railing limits and shall remain as indicated on the provided design. Foundation offsets are to be measured to the centerline of the foundation to the edge of roadway.

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Where temporary lighting is required, the Contractor shall comply with sections 3.17.4.7, 3.17.5, 3.17.6 of this provision the specifications included in the Appendix of the Technical Provisions.

3.17.3. Existing Conditions

A partial listing of existing facilities and conditions are as described below and shown on the provided illumination design. The Contractor is hereby notified that existing conditions for illumination on the plans were developed from existing sources, such as aerial survey, highway construction plans and large scale as-built drawings for the original Project. The plans provided by CTDOT are in no way meant to construe accurate survey of actual conditions. The Contractor is responsible for verifying existing conditions depicted on the plans or contained elsewhere in the specification, any changes found shall be immediately reported to CTDOT personnel and the Designer of Record. The Contractor shall fully investigate the existing facilities within the contract limits to confirm their existence. The Contractor shall fully investigate if any of these facilities will be in conflict with any temporary or permanent construction proposed under this contract, as well as any means and methods proposed by the Contractor. It is the Contractor's responsibility to obtain the existing lighting circuit plans and become familiar with the existing circuit layout. Under no circumstances will a disruption of the proper nighttime illumination of the existing highway be allowed.

The Contractor shall be responsible for verifying the location of and protecting all lighting and electrical facilities below and above the ground. Prior to the start of construction, the Contractor shall contact "Call Before You Dig" and CTDOT District 1 Electrical Maintenance (860-556-3156) to mark out all existing underground circuits prior to performing any work on or adjacent to the lighting and electrical facilities.

In areas adjacent to existing lighting and electrical system equipment "to remain", the Contractor is required to exhibit caution in these areas when excavating (see provided illumination design to determine which items are "to remain"). Any damage caused to the conduit/equipment will be the responsibility of the Contractor, and will be replaced by the Contractor at the Contractor's expense, as directed by CTDOT. Mark out of the lighting and electrical facilities by others will not relieve the Contractor of responsibility for repair of damage caused by the Contractor or the Contractor's sub-contractors. Maintenance of the existing lighting and electrical systems is the full responsibility of the Contractor.

The existing lighting circuitry is three (3) phase, 480 volt, and is fed from an outdoor lighting control cabinet located at Center Street in the Town of Meriden. The lighting circuits are energized from a central photocell and lighting contactor located in the control cabinet. The lighting circuits are energized from dusk until dawn and de-energized during daylight hours.

The existing light standards provide a 35' luminaire mounting height over the roadway and are equipped with 200-watt high pressure sodium roadway luminaires with semi-cutoff optics.

The existing illumination was installed under State projects 79-108 & 82-302.

3.17.4. Materials

The following materials shall be used for the lighting, electrical design and construction.fene

3.18.4.1. Luminaires

The roadway luminaires shall be full-cutoff cobra head type, LED, 480-volt, and shall meet the requirements of the specification contained in the Appendix for: "LED Luminaire – Type 1" & "LED Luminaire – Type 2". Roadway luminaire mounting heights, lumen output, and distribution patterns are noted in the provided illumination design. The roadway luminaires shall be installed per the provided illumination design and in compliance with Section 10.04 of CTDOT's standard specification Form 817.

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The underbridge luminaires shall be wall mounted or pendant type, LED, 480-volt, and shall meet the requirements of the specification contained in the Appendix for: "LED Wall Mounted Luminaire (TYPE 2)" & “Underbridge Luminaire – LED (Pendant Mounted)”. The underbridge luminaires shall be installed per the provided illumination design and in compliance with Section 10.06 of CTDOT’s standard specification Form 817. Branch circuit conductors for underbridge lights shall be No. 10 AWG, THHN/THWN, 600 volt contained in ¾” surface-mounted fiberglass conduit. 3/4" Fiberglass conduit shall meet the requirements as set forth in the "Materials" section of the specifications for underbridge luminaires contained in the Appendix.

3.18.4.2. Conductors

Branch circuit Conductors shall be No. 2 AWG with XHHW insulation rated at six hundred (600) volts and shall conform to the requirements of Section M.15.11 of the 817. Insulation shall be colored cross linked polyethylene (XLP). Three-phase color coding shall be: black, red and blue. Conductors shall be installed in compliance with Section 10.12. Tap conductors for underbridge lights and within the light poles shall be No. 10 AWG, THHN/THWN insulation rated at six hundred (600) volts.

A single grounding conductor shall be installed throughout all lighting circuits and shall be No. 8 bare copper, soft-drawn, in compliance with Article M.15.13 of CTDOT’s standard specifications Form 817. The grounding conductor shall be bonded to all light standards, RMC, cast-iron junction boxes, steel handhole covers and ground rods in compliance with Section 10.15.

Cable in duct shall consist of three No. 2 AWG copper conductors with XHHW insulation, rated for 600 volts, contained in a 1¼” diameter schedule 40 polyethylene duct. Insulation shall be colored cross linked polyethylene (XLP). Three-phase color coding shall be: black, red and blue. Cable in duct shall conform to the material requirements set forth in Article M.15.12 of CTDOT’s standard specifications Form 817.

3.18.4.3. Conduit

Surface mounted RMC shall be 2” and installed at the locations indicated on the plans and shall meet the requirements of M.15.09 of CTDOT’s standard specifications Form 817.

Surface mounted fiberglass Conduit for the Lighting-branch conductors shall be 2” in conformance with the specification included in the appendix for “2” Fiberglass Conduit – Surface”. 2” fiberglass (surface) shall be installed at the locations indicated on the plans and at locations where the contractor is unable to pull conductors through existing RMC cast in structure.

Surface mounted Conduit for underbridge lighting-branch conductors shall be three-quarter-inch (¾”) fiberglass, and shall meet the requirements as set forth in the "Materials" section of the specifications for underbridge luminaires contained in the Appendix.

Polyvinyl chloride conduit shall be 2½” in diameter and shall conform to the requirements set forth in Article M.15.08-3 of CTDOT’s standard specifications Form 817. PVC conduit shall be schedule 80. PVC conduit shall only be installed in trench.

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Liquid-tight flexible conduit for underbridge lights shall be LFNC-B (Liquidtight Flexible Nonmetallic Conduit) with a trade size diameter of ¾". LFNC shall be listed for UL Standard UL1660 and marked for outdoor applications. LFNC shall be flame resistant and UV/sunlight resistant. LFNC and fittings shall be wet location rated.

All conduits shall be installed in compliance with Section 10.08 of CTDOT's standard sections Form 817 and the specifications contained in the appendix.

3.18.4.4. Junction Boxes and Handholes and Miscellaneous Materials

Galvanized cast iron junction boxes shall have internal dimensions of eighteen by twelve by eight inches (18"x12"x8"), and shall meet the requirements of Article M.15.10 of CTDOT's standard specification Form 817. The cast-iron junction box shall be installed in compliance with Section 10.09 of CTDOT's standard specification Form 817.

Fiberglass junction boxes shall have internal dimensions of 16"x14"x6" and shall meet the requirements of the specification contained in the appendix for: "16"x14"x6" NEMA 4X Non-metallic Junction Box".

Concrete handholes shall be Type 1, fabricated of Class F concrete, shall have internal dimensions of thirty by thirty by thirty-six inches (30" x 30" x 36"), and shall meet the requirements of Section 10.10 of CTDOT's standard specification Form 817. Concrete handholes shall have overlap type covers.

Breakaway Fuse holders shall be of watertight rubber or molded plastic housing. They shall be rated for six hundred (600) volts. Fuses shall be UL-listed, slow-blow, current-limited and rated at 10 amp, 600 volt, and 100,000 AIC.

3.18.4.5. Light Standards

Light standards shall be fabricated of 6063 (T6) aluminum and shall conform to the dimensional requirements as indicated in the plan details. Light standards and their installation shall conform to the requirements of Section 10.03 of the 817. Light standards with luminaire bracket arms shall be designed to withstand a 90 mph wind load. Foundation mounted light standards shall be mounted on an AASHTO approved TB1-17 breakaway base. Anchor base light standards for bridge or retaining wall mounting shall be non-breakaway.

3.18.4.6. Illumination Control Equipment

Illumination control equipment shall conform to the requirements of Section 10.17 of the 817 and the details included with the illumination plan set.

3.18.4.7. Temporary Lighting

Materials for temporary lighting shall include breakaway fiberglass poles, PVC conduit and conductors, cable in duct, and pre-assembled aerial cable. Where temporary illumination units are necessary, the materials and construction methods shall comply with the pertinent specifications (contained in the appendix or CTDOT's standard specifications Form 817) for the items listed above. Under no circumstances will portable light trees/flood lights or similar devices be allowed to provide temporary lighting.

3.17.5. Methods

The lighting and electrical system shall be installed in compliance with the Form 817, the National Electrical Code, and the requirements as set forth in the Technical Provisions and details.

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The Contractor shall abide by CTDOT's lockout/tagout procedures when access to a circuit is required. The contractor shall contact the District Electrical Supervisor of District 1 Electrical Maintenance at telephone number (860) 566-3156 hen access to a circuit is required.

Prior to trenching and excavation, the Contractor shall contact "Call Before You Dig" and the CTDOT's District 1 Electrical Maintenance to ensure that all existing underground facilities will be properly marked out.

For surface-mounted conduit, expansion fittings shall be installed in the conduit at all locations subject to expansion or movement. Conduit in trench shall be installed at a depth of twenty-four inches (24").

Where new conductors are to be installed in existing RGS conduit in structure, the Contractor shall remove the existing conductors and clean the conduit prior to installing new conductors as indicated on the plans. At locations where existing conduit cast in structure is unusable (due to breaks or permanent obstructions), 2" surface mounted fiberglass conduit and non-metallic junction boxes are to be installed along the back face of the parapet in conformance with the plan details. Where existing RGS conduit in structure is re-used, all existing conduit bonding bushings shall be removed and new insulated bonding bushings shall be installed on the threaded conduit ends.

At locations where light standard anchorage bolts in structures (parapet) are unusable (i.e. rotted/damaged), the Contractor is to provide a professional engineered anchorage repair procedure to CTDOT for review and approval.

Unless where noted, the illumination design assumes that all existing conduits cast into bridge parapets, wingwalls, and retaining walls are in suitable condition to allow the removal of the existing conductors and the installation of new conductors. Where the condition of the existing conduit will not allow the installation of new conductors, the Contractor shall install 2" fiberglass surface mounted conduit in conformance with the plan details.

All existing underbridge luminaires shall be removed and replaced per the provided permanent illumination design plan. All surface conduit and conductors feeding the underbridge luminaires shall be replaced in their entirety. The underbridge luminaires shall be installed in strict conformance with the electrical specifications and guide sheets included in the Appendix.

All removed illumination equipment classified as "Regulated Materials" (HPS lamps, ballasts, etc.) shall be properly disposed of as described in the specification for "Handling and Disposal of Regulated Items".

The Contractor will be required to coordinate with Eversource for the installation of the new illumination control cabinet and the removal of the existing illumination cabinet. While preliminary electric service coordination with Eversource has been carried out by the CTDOT, it is the Contractor's responsibility to finalize the utility coordination, schedule the required utility work, and pay any costs associated with the utility installation work. The Contractor shall contact Mr. Mark S. Bear of CTDOT Facilities Electrical (860-594-2796) to file the proper Eversource "Customer Request for Service" forms to authorize the utility work and establish the monthly energy billing. The removal date of the existing utility meter shall be noted and reported to the Engineer of Record and Mr. Bear so that the monthly energy billing can be terminated.

3.17.6. Temporary Illumination

The Contractor shall organize the Project work so that any portion of roadway that has existing roadway illumination and is open for use to the traveling public remains lighted. Temporary lighting shall provide an average illuminance level off .9 foot candles on the roadway surface (travel lanes only) and a uniformity ratio (Average/Min) of 3:1 in conformance with IES standards.

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It is the Contractor's responsibility to develop a strategy to maintain the highway illumination during construction. Highway illumination may consist of existing lighting, new lighting, temporary lighting, or any combination thereof. It is the Contractor's responsibility to stage the installation of service cabinets, poles, lights, and circuitry so that all roadways of the kind described above remain lighted. If it is necessary to install temporary poles, lights, or circuitry to maintain the integrity of the highway illumination system, such work shall be submitted to CTDOT and Designer of Record for approval prior to installation.

Prior to the start of any work, that will interfere with the existing lighting system, the Contractor and CTDOT District Electrical Maintenance personnel shall inspect the system for lighting outages, pole knockdowns, and circuit malfunctions. Deficiencies will be noted and repaired by CTDOT personnel prior to the start of work by the Contractor.

Once the Contractor's work interferes with or impacts the existing roadway lighting system, maintenance of that system within the Project limits becomes the Contractor's responsibility. The repair of lighting system malfunctions occurring outside of the Project limits, caused by the Contractor's work, shall also be the Contractor's responsibility. District personnel will note the start and end date of the Contractor's responsibility for maintenance of any existing lighting system. The Contractor shall maintain the illumination throughout the duration of the Project, until the project is accepted by the State. The Contractor shall supply to the District personnel and to CTDOT District Electrical Maintenance Supervisor, the names and phone numbers of a primary and back-up representative, to be contacted should a problem with the lighting system occur.

Project personnel that are made aware of a lighting outage or pole damage/knockdown within the Project limits shall immediately notify CTDOT Highway Operations at (860) 594-3447.

The following procedures will be followed for lighting outages:

1) Once notified of a lighting outage, CTDOT Electrical Maintenance personnel will assess the situation, and in the case of a pole knockdown, may clear the pole from the roadway and make safe any exposed wires.
2) Project personnel and the Contractor's designated representative shall be notified after the lighting outage has been assessed by CTDOT Electrical Maintenance, transferring responsibility for further repairs to the Contractor.
3) Upon notification, the Contractor shall be responsible to repair the lighting system before the normal nighttime operations. If this cannot be achieved, the Contractor shall make the lighting operational prior to the next normal nighttime operation, up to a maximum of 24 hours from the time the Contractor was notified of the problem. The Contractor shall contact the Project personnel to discuss the situation, the steps to be taken to bring the lighting back on line, and the time frame for doing so.
4) For isolated individual luminaire outages (not a continuous circuit), the Contractor shall repair such luminaires within 48 hours from the time that the Contractor became aware of the outage.

The Contractor shall follow standard "lock-out," "tag-out," and "Call Before You Dig" procedures when working on the lighting circuit. Both the Contractor and CTDOT Electrical Maintenance shall have mutual access to active lighting control cabinets.

The Contractor shall be reimbursed for any costs associated with the maintenance of the existing lighting system that are generated by factors beyond its control. Any such reimbursement would be paid as outlined in the Contract General Provisions Section 1.04.05 and cover damage caused by the general public or by normal system aging related to

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component failures (lamp burn-out, ballast/starter failure, cable splice failure, etc.). The Contractor shall be responsible for repair of damage to the existing lighting system incurred as the result of the Contractor's operations, such as, but not limited to, damage caused by improper wiring methods. All repairs or replacements necessitated by the Contractor's operations shall be made by the Contractor at its expense.

The Project personnel will maintain a log book of any lighting repair work performed, which will include a description of the repairs, and the date the work was performed. The log book will be made accessible to CTDOT Electrical Maintenance personnel.

Temporary illumination circuitry shall consist of pre-assembled aerial cable of the type and size as indicated in the appendix.

The Contractor shall notify the CTDOT and the Designer of Record when aerial cable cannot be installed due to construction activities. The Contractor shall suggest another method for installation of the cable.

Alternate options may include installing cable in duct underground, or installing surface-mounted cable in duct or PVC conduit with cable along the backside of a bridge parapet or temporary concrete barrier curbing. Temporary cable in duct/conduit or aerial cable lying directly on the ground will not be allowed. The option of surface-mounting duct or conduit to the backside of a parapet or barrier will be allowed only when construction activities make it necessary, and where the surface-mounted conduit will not expose workers to a high voltage hazard. The Contractor must obtain CTDOT approval prior to installing temporary circuitry not installed overhead, unless otherwise indicated on the plans.

When temporary circuitry is installed in trench, standard warning tape procedures shall be followed as set forth in the Contract General Provisions Section 1.05.15. When temporary circuitry is surface mounted to the backside of a parapet or barrier wall, the Contractor shall install warning placards, which read: "Live Electricity." Warning placards shall be installed at the beginning, end, and at intermittent points 100 feet apart along the exposed length of the duct/conduit. All temporary lighting circuits shall include a continuous No. 8 bare copper grounding conductor connected to all light standards and effectively grounded as per the NEC."

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3.18. Incident Management System ("IMS")

3.18.1. General

The Connecticut Department of Transportation operates an Incident Management System (IMS) within the limits of the proposed project. The system includes a series of CCTV Cameras, Traffic Flow Monitors (TFM), Variable Message Signs (VMS), Highway Advisory Radio Stations (HARS) and an optical fiber communications systems used to monitor and advise public safety personnel and the traveling public of traffic conditions. The system operates twenty-four (24) hours per day, seven (7) days a week. A number of IMS appurtenances are on or in the vicinity of the proposed bridge projects. Because of the importance of the system and its service, the contractor will be required to maintain the IMS during construction with limited service disruptions as outlined below and directed by CTDOT. The Contractor shall review and become thoroughly familiar with those provisions and limitations.

Removing an IMS appurtenance from service in lieu of relocation is not acceptable.

The Contractor will be responsible for performing the following tasks:

- The Contractor shall review the plans for the existing IMS appurtenances provided by CTDOT to gain a thorough knowledge of the appurtenances on or near the bridges being reconstructed under this project.

- The Contractor shall review the Notices to Contractor and all information provided for limitations relating to the IMS appurtenances and service.
- No new IMS appurtenances are proposed for this project, however the Contractor must maintain and protect all existing IMS appurtenances during construction and maintain IMS service during the hours indicated by CTDOT. The Contractor will organize and conduct a pre-construction condition survey with CTDOT, to include Highway Operations and District 4 Construction, of all existing appurtenances to document existing conditions.
- The Contractor will develop IMS mitigation and protection plans for the appurtenances impacted by the project. The plan should include but not be limited to protection of conduits, cameras and TFM's on or near the bridges. The plan also must indicate a schedule for IMS shutdowns or service interruptions in accordance with the limitations set for by CTDOT.
- Relocation of any existing IMS appurtenances shall include the Contractor supplying new appurtenances and foundations designed to current design codes and standards compatible with existing systems.
- The Contractor shall revise or modify the IMS mitigation and protection plan as directed by CTDOT. Upon the satisfaction of CTDOT a written approval of the plan will be issued.
- No work on the bridges or the IMS can begin without a fully approved plan for mitigation and protection of the IMS appurtenances or service connections.
- The Contractor must show that any new or relocated CCTV cameras will provide sufficient visual coverage of the corridor, highways, ramps and/or turning roads. Visual coverage from new CCTV camera locations may be obtained with limited selective clearing and tree trimming. The Contractor shall contact and work with CTDOT – Highway Operations staff to assure that sufficient coverage is provided. The Contractor is fully responsible for assuring that adequate visual coverage is maintained should they decide that the CCTV Camera is to be relocated.
- The Contractor shall only splice the existing IMS fiber-optic communications system at existing splice points in the cable. No new or additional splice points will be allowed for this project.

3.18.2. Existing Conditions

The Contractor will be responsible for locating, verifying the location of and protecting all IMS below and above the ground. Prior to the start of construction, the Contractor shall contact "Call Before You Dig" and all utility companies within the towns within the project area. The Contractor shall also contact Robert Kennedy of CTDOT - Highway Operations at 860-594-3458 to mark out IMS conduit and appurtenances.

In areas adjacent to existing incident management system equipment, the Contractor is required to hand excavate. Any damage caused to the IMS conduit/equipment will be the responsibility of the Contractor, and will be replaced by the Contractor at the Contractor's expense, as directed by the state. Mark out of the IMS will not relieve the Contractor of responsibility for repair of damage caused by the Contractor or the Contractor's sub-contractors.

3.18.3. LIMITATION OF OPERATIONS

The Incident Management System shall be maintained in normal working operation at all times. The Contractor will not be allowed to perform any work that will disrupt the normal operation of the IMS as follows:

- On Monday through Friday from 5:00 a.m. to 9:00 p.m.
- On Saturday and Sunday.
- On the day before or after any of the Legal Holidays listed below:
    - New Year's Day
    - Good Friday
    - Memorial Day
    - Independence Day
    - Labor Day

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  - Thanksgiving Day
  - Christmas Day
- On the Friday, Saturday, Sunday and Monday following Thanksgiving Day.
- On the Friday, Saturday and Sunday immediately preceding any of the above Legal holidays celebrated on a Monday.
- On the Saturday, Sunday and Monday immediately following any of the above Legal holidays celebrated on a Friday.

In order to maintain continuous operation of the Incident Management System, the Contractor shall adhere to the requirements in "Installation Qualifications".

In the event that the Contractor needs to remove an Incident Management System device from service, the Contractor shall notify Mr. Robert Kennedy at the Newington Operations Center (860) 594-3458 at least ten (10) working days prior to any scheduled work operation. An Incident Management System device shall consist of CCTV Cameras, Traffic Management System Cabinets (TMSC), Mini-Hub Cabinets, Traffic Flow Monitors (TFM), Variable Message Signs (VMS), Highway Advisory Radio (HAR) site equipment, electrical power and fiber optic cable including any associated fiber optic communications plant equipment.

All Project related scheduled work that will require the downtime of the Incident Management System, such as but not limited to the splicing of the fiber optic trunkline cable, shall be performed on a non-holiday weekend as specified above and as approved by Mr. Robert Kennedy, Newington Operations Center. The scheduled work performed on the approved non-holiday weekend shall be completed in a fifteen (15) hour work window. The Contractor shall identify the work that will be performed during this work window as well as a list of the approved staff to be performing work on the Incident Management System. Any deviation in the fifteen (15) hour work window must be approved by the Newington Operations Center staff.

Prior to the scheduled start of work on the Incident Management System, the Contractor shall contact the Newington Operations Center to determine if there are any on-going incidents on the highway system. The Incident Management System will not be removed from service until any on-going incidents on the highway system are cleared and approval is granted by the Newington Operations Center staff.

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3.18.4. PROPRIETARY ITEMS

The Contractor is hereby notified that the following items, if replacement is required, shall be furnished by the specific manufacturer:

Item	Description	Manufacturer
1113059A	Traffic Flow Monitor	EIS Electronic Integrated Systems
1112210A	Camera Assembly	American Dynamics, Inc.
1112217A	Camera Lowering Device Assembly	MG2 Type B

3.18.5. LIQUIDATED DAMAGES

In order to minimize the hazard, cost and inconvenience to the traveling public, pollution of the environment and the detriment to the business area, it is necessary to limit the time of construction which interferes with traffic and the operation of the IMS in the vicinity of the project and along adjacent highways. Removing an IMS appurtenance from service in lieu of relocation is not acceptable.

Equipment Operations

CCTV Camera/Variable Message Sign/Traffic Flow Monitor -
For this Contract, an assessment per day for liquidated damages, at a rate of Two Thousand Dollars ($2,000) per day shall be applied to each calendar day or fraction thereof that a CCTV

camera, Traffic Flow Monitor (TFM) or Variable Message Sign (VMS) are not operational. This amount shall be charged for each CCTV camera, TFM or VMS not operational in the system due to the contractor's construction activities. The contractor is cautioned that interruption to the fiber-optic communication system cable service will impact additional CCTV cameras, TFMs and VMS beyond the project limits and that these liquidated damages shall be applied to each of those cameras or VMS as well.

IMS Fiber-Optic Communications Trunkline
For this Contract, an assessment per day for liquidated damages, at a rate of Two Thousand Dollars ($2,000) per CCTV Camera, Traffic Flow Monitor (TFM) or Variable Message Sign (VMS) site that is not operational resulting from an outage of the IMS fiber-optic cable communications trunkline shall be applied to each day or fraction thereof that the IMS fiber-optic communication system is not operational.

Response Time:
For this Contract, an assessment per day for liquidated damages, at a rate of One Thousand Dollars ($1,000) shall be applied for repairs that are not commenced more than 8 hours after notification of each CCTV Cameras, Traffic Flow Monitor and/or Variable Message Sign (VMS) site failure.

3.18.6. INCIDENT MANAGEMENT SYSTEM DESIGNER QUALIFICATIONS

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3.18.7. INCIDENT MANAGEMENT SYSTEM INSTALLATION QUALIFICATIONS

All project management, construction, installation, and inspection services shall be performed by individuals who have performed the same job function on at least three previously completed construction and installation communication projects of comparable size and complexity.

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3.19. Environmental Compliance

3.19.1. General

The Contractor is responsible for developing plans and specifications in full conformance with CTDOT's Best Management Practices ("BMPs"), existing Project environmental permits, and all applicable environmental laws and regulations.

3.19.2. Hazmat

CTDOT has completed an initial investigation of the Sites and have identified hazardous materials present at bridges, sign supports, and luminaries shown in the BTC. The locations of hazardous materials are located in the Hazardous Material Report in Appendix B.03. The Contractor is hereby notified that these hazardous materials requiring special management or disposal procedures will be encountered during various construction activities conducted within the project limits. The Contractor will be required to implement appropriate health and safety measures for all construction activities impacting these materials. These measures shall include, but are not limited to, air monitoring, engineering controls, personal protective equipment and decontamination, equipment decontamination and personnel training. Removal and disposal of these materials shall meet all requirements set forth in the specifications given. CTDOTCTDOTCTDOTCTDOT

3.20. Landscaping

3.20.1. General

Landscaping for this Project shall include restoration of the existing and proposed side slopes of the roadways for the limits of the project.

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Note that "restoration" as described here refers to improvements to the existing plantings or installation of planting where none are provided currently as noted in the Technical Provisions. Any plantings not specifically described in the Technical Provisions that are damaged or disturbed by construction activities shall be replaced by the Contractor at their own cost and at no cost to the State.

3.20.2. Design Criteria

The following criteria shall be used for the design and construction of landscaping.

Conservation Seed Mix

This work shall consist of furnishing, placing and shaping topsoil in all areas that are disturbed be work described in the Technical Provisions, or where designated by the Engineer of Record. Topsoil shall be place to a minimum depth of 4 inches. This work shall be in accordance with Section 9.44 Topsoil of the Form 817.

The restoration of disturbed areas will consist of furnishing and placing topsoil and conservation seed mix. No additional plantings are required for the areas within the State right of way outlined in the BTC where conservation seed mix is appropriate. This does not preclude the cases where a different slope treatment is necessary such as but not limited to situations due to slope steepness or areas under bridges. Furthermore, if the contractor chooses staging and laydown areas outside of the right of way, plantings may be required based on private property agreements.

This work is described in Conservation Seed Mix specification as contained in Appendix A.01.

Landscaping Establishment

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Hazard Trees

Trees and shrubs shall be trimmed or removed to provide sightlines throughout the Project area. The Contractor shall not perform any trimming or clearing without contacting CTDOT a minimum of 7 days in advance to review the limits of any proposed trimming or clearing.

3.20.3. Drawings

Plans shall delineate slopes and areas that shall have topsoil, turf establishment, and sightline trimming. Plans shall be submitted demonstrating both horizontal and vertical sightline.

3.21. Administration and Coordination

3.21.1. Introduction

Public involvement and communications are essential to the Project's development and construction. CTDOT has worked with stakeholders and elected officials on this Project to facilitate open communication and information sharing about the Project. To continue this outreach and to fulfill related commitments, the Contractor will be required to perform all coordination and public outreach during the final design and construction of the Project. CTDOT will assist and attend meetings as needed, however the development and implementation of this plan will be the responsibility of the Contractor.

The Contractor, working closely with CTDOT, shall engage the public and communicate Project information as required. The Contractor will be required to use all available resources to communicate Project information including, but not limited to, broadcast and print media, variable message signs, Department-maintained Design-Build website, social media, existing

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Department websites and other websites, fliers, fact sheets, newsletters, email, presentations, briefings, meetings, and signs. The Contractor will perform public involvement and communications and shall prepare all materials, presentations, and any other media required for communicating Project information to all interested persons, groups and government organizations. All materials, where appropriate, shall incorporate the Project's message points, which will be reviewed for acceptance by CTDOT. All costs for the preparation of these materials and the Contractors participation shall be included in the Design-Build Lump Sum price. The materials shall include, at a minimum:

- Information for bi-weekly construction updates, including twenty-one-day look-ahead schedules, detailed updates for the upcoming two weeks: including anticipated problems and any changes in information to be provided to the public.

- Photographs of Project activities for posting on the Design Build website immediately after completion of milestones (such as completion of substructure, superstructure erection, Stage I construction, etc.). The Contractor shall provide photographs of Project activities to CTDOT for its use throughout the Project.

Presentation slides, presentation boards, and graphics for one Public Information Meeting in the town of East Hartford and one Public Information Meeting in the town of Willington. If an ATC is proposed or if the Contractor's Final Design or project activity because of certain laws or regulations necessitates additional Public Information Meetings, the meetings shall also be included in the Design-Build proposal price.

Daily traffic updates and alerts.

- Detour maps of each detour route for use on the website and distribution to media, stakeholders groups, etc.

Briefings and Meetings

The Contractor must:

- Conduct bi-weekly coordination meetings with Department and other stakeholders as determined by CTDOT, and must record and submit meeting minutes to CTDOT for approval.

- Prepare, provide and conduct briefings and meetings for interested neighborhood groups, business and professional groups, and other organizations.

- Conduct, organize, prepare for and attend meetings and hearings with stakeholders, construction meetings, Semi-Final design, public hearings, and meetings before milestones and major traffic changes; and prepare and provide graphics, other visual aids, and handouts for public meetings and hearings.

Hold briefings for the community within the first occurring thirty (30) days prior to the start of each of the four bridge superstructure replacements. The briefings shall be coordinated with CTDOT and shall specifically address traffic management and upcoming construction activities. This shall be coordinated with CTDOT.

Public Information

The Contractor must:

- Develop a Project Public Involvement Plan to keep stakeholders informed during all stages of design and construction.

- Provide information and content for CTDOT's Design Build Project website to be maintained by CTDOT, including announcements for public meetings and hearings, agendas, presentations, and minutes, plans, detour routes, etc. that may be posted by CTDOT on the Design Build Project website.

- Provide photographs and video footage of Project activities to CTDOT throughout the Project for posting on the Design Build Project website, especially right after completion of milestones.

- Prepare, provide and distribute bi-weekly construction updates, including ninety-(90-)day look-ahead schedules, detailed updates for the upcoming two weeks; including anticipated problems and any changes in information to be provided to the public. The Contractor will provide any metrics needed by CTDOT for Project reporting.

- Develop and conduct a public communications plan. The plan shall be prepared and submitted for acceptance by CTDOT prior to implementation. This plan will include but not be limited to updating the public on the status of the Project; coordinating briefings (for elected and municipal officials, for example); and providing strategic planning, coordination, and staffing for public meetings.

- Provide and distribute any other content as requested by CTDOT for public outreach.

Public Information Materials

The Contractor must:

- Conduct all public information meetings required during the project duration. This shall include reserving meeting rooms and all costs associated with using said rooms. Provide a stenographer to record all meetings and comments received during these meetings. Provide interpreters for languages other than English as required for each meeting. Provide set up prior to the start of meetings and clean up after completion of meetings. Provide all audio visual equipment required to conduct the meeting for the given size of the room and audience.

- Produce multi-lingual (English and Spanish*[Insert other languages if required as a result of local outreach activities]* newsletters and fact sheets at key points in the Project; and shall design a template for a general Project fact sheet, providing a draft copy to CTDOT for its approval. The goal of these materials will be to provide the basic information about the Project to the public and a record of the Project for the future.

  Prepare presentation boards, slide shows, and displays.

- Prepare and distribute "camera-ready" detour maps of any detour route to media, stakeholder groups, etc. and for use on the Project website. "Camera-ready" shall be taken as meaning as complete in technical content and ready to be printed for distribution to the public.

3.21.2. Police, Fire, Public Transit, CTDOT Highway Operations, Town Officials and Emergency

The Contractor shall supply all materials to CTDOT for the preparation of updates on Project work. All information shall be forwarded to CTDOT's [No. 1]District 4 for formal review prior to the Contractors coordination with State Police, local Police, Fire, Public Transit, CTDOT

Highway Operations, Town Officials and Emergency Responders from the Towns of Cheshire, Middlefield, Southington, and the City of Meriden*[List impacted Towns and Cities]*. The Contractor, along with CTDOT, will be required to hold meetings with the emergency response and public entities personnel listed above, in order to review with them upcoming construction work and Maintenance and Protection of Traffic ("MPT") plans. These meetings must occur at least thirty (30) days prior to any major construction sequence. At any of the Emergency Personnel's request, these meetings may occur more frequently. The Contractor shall also coordinate with Emergency Responders for adjacent projects.

3.21.3. Coordination with Other Projects

In addition to the requirements of Section 1.05.07 of the General Provisions, during the construction phase of the Project the Contractor shall be required to coordinate its efforts with local and government agencies including the municipalities of Cheshire, Middlefield, Southington, and Meriden*[List impacted Towns and Cities]*, community groups, adjacent land owners, utility companies and other planned Department projects that may be under design 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 Contractor shall review design plans and shall coordinate and monitor the work of any entity performing or proposing work adjacent to the Project. The Contractor must anticipate allocating responsible personnel to this aspect of the Project. [*Delete the following sentence and list, if there are no known projects requiring coordination:* Coordination of the Contractor's work with that of any entity working on projects adjacent to the Site includes, but is not limited to, work on the following projects:]

- Project No. 079-240 – Interchange Configuration of Interstate 91, 691 and Route 15, Meriden and Middletown*
- Project No. 171-402 –Safety Improvements-Design and Installation of STPA Traffic Signal, various locations in District 1**
- Project No. 171-4134/171-414 – Incidental Management System Installations Along I-91 and I-691, Meriden, Middletown, Southington, Middlefield, Cheshire, Berlin, Rocky Hill and Newington***

*Project No. 079-240 is in the study phase and construction date has not yet been determined.

**CTDOT anticipates that under Project No. 171-402 will include work on the intersection of I-691 W Exit 4 ramp and Route 322 (West Main Street) or Intersection No. 131-233 to233 to replace the traffic signal equipment and installation of pavement markings at the off-ramp. Project No, 171-402 should be completed by July 2020.

***Project No. 171-414 spans the entire length of Interstate 691 and terminates at the divided highway section of Route 66 near Middlefield town line. The proposed work involve the installation of 9 closed circuit television cameras, 3 variable message signs and approximately 8.9 miles of fabric optic cables. CTDOT anticipates that under Project No. 171-414, there will be lane closures along Interstate 691 and ramp closures for a period not to exceed 10 minutes to perform necessary work for trenching and conduit installation across the ramp pavement. Project No. 171-414 is anticipated to begin prior to this project and is scheduled to be completed by December 2020. However, the Contractor will be responsible to coordinate its work on the Project in the event of an unforeseeable delay occurs to prevent Project No. 171-414 to complete on schedule.

The Contractor will be responsible to coordinate its work on the Project with any entity's work on other public or private projects in the area on and adjacent to the Site. At times it may be necessary for the Contractor to allow adjacent Department project's contractors free and

unobstructed access to and through the Project area. This will not be deemed justification for a Project claim or delay. The aforementioned types of access include temporary lane closures on I-691 and associated ramps/turning roads, roadway reconstruction work on adjacent town roads, and detours of traffic using local roadways.

Any alterations or deviations from the traffic management plan due to conflicts with an adjacent project's maintenance and protection of traffic ("MPT") plan shall be coordinated by the Contractor with CTDOT.

3.21.4. Coordination of Traffic Officers

The Contractor shall coordinate, to the satisfaction of all, Project MPT requirements through CTDOT's field representatives and the District [*Number (No.)]*4 Office. CTDOT handles traffic persons in various ways.

State Police Officers shall be managed in accordance with the Standard Specifications, Article 9.70 as revised by the RFP and Contract Provisions, with respect to orders and payments issued to them.

After the Contractor submits and CTDOT approves the number of State Police to be used, in accordance with the Standard Specifications, CTDOT will engage the appropriate State Police Officers. CTDOT will cover the costs for the approved services of State Police Officers by making a direct payment for them to CTDOT of Emergency Services and Public Protection. Payment for State Police Officers used by the Contractor for its convenience, not approved by CTDOT, is the responsibility of the Contractor. No separate payment item for State Police Officers is included in the Contract.

Any costs associated with coordination of State Police Officers shall be included under the D-B Lump Sum Price.

3.21.5. Coordination with Local Events and Venues

In addition to the requirements of Section 1.05.07 of the General Provisions, during the construction phase of the Project, the Contractor shall be required to coordinate its efforts with local events and venues, including but not limited to those arranged by private entities, government agencies (including but not limited to the municipalities of Hartford, East Hartford, West Hartford, Glastonbury and ManchesterCheshire, Middlefield, Southington, and Meriden), community groups, adjacent land owners and UCONN sporting events that may occur 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 Contractor shall review available schedules for the entity performing or proposing events adjacent to this project. The Contractor must anticipate allocating responsible personnel to this component of the project.

3.22. Environmental Approvals

3.22.1. Acquired Environmental Approvals

The BTC developed by CTDOT requires certain design, construction, and mitigation measures to be taken for this Project. CTDOT has already taken significant steps to clear the way for said measures, including obtaining initial determinations for the need for any necessary permits from regulatory agencies and meeting with those agencies and with the public to discuss the Project. Project Need Determination Forms (PNDF) have not been prepared by CTDOT, but initial assumptions of possible activities to be undertaken by Proposers under this project have been discussed internally. These assumptions are preliminary and not guaranteed to be fully representative of the final means and methods to be undertaken by the Contractor. Proposers shall fully review the available materials provided in Appendix B.02 and determined exclusion areas for construction, storage of materials and

equipment as depicted on Highway plans in Appendix B.01. These materials are for all preliminary information developed by CTDOT and shall identify any information shown that is potentially in conflict with their proposed means and methods in their Proposal, including all temporary and final work and means and methods of construction.

Based on the preliminary information available, a General Permit for Discharge of Stormwater and Dewatering Wastewaters from Construction Activities will be required for this project. Should the Contractor perform work beyond the given limits, additional permits including but not limited to a General Permit for Discharge of Stormwater and Dewatering Wastewaters from Construction Activities may be required. Any work which takes place as part of this project which triggers a permit of any kind will be the full responsibility of the Contractor. Proposers shall identify in their proposals if additional permitting efforts are necessary. All permits shall be reviewed and signed by the CTDOT.

The Contractor will limit work within regulated wetland areas as delineated on survey to less than 5000 square feet and will not be allowed to work in watercourses. The Contractor should be conscious of drainage pipes, outlets and appurtenances, and not damage any that are not to be replaced during the construction phases. If drainage infrastructure or appurtenances are damaged during construction, there repair will be the responsibility of the Contractor along with all design and regulatory requirements as required by CTDOT, in order to bring the damaged areas back into compliance

Requirements for environmental compliance by the Contractor are outlined in Chapter *1.10* of the General Provisions.

Any changes or revisions of the conditions of the Project by the Contractor through its final design or through the submission and approval of an ATC shall make it necessary for the Contractor to provide all documentation required for any application for any such environmental approval or any amendment of any such environmental approval. Any such changes of Project conditions must be coordinated through CTDOT, since CTDOT is the official applicant for such approvals.

The Contractor is encouraged to develop a close working relationship with CTDOT for the purpose of ensuring that its designs will be acceptable to CTDOT and to regulatory agencies from an environmental perspective. CTDOT takes no responsibility for any time delay or cost associated with related submissions that are refused, rejected, conditioned or modified by CTDOT or any regulatory agency, or for any redesigns that such agencies or CTDOT require from the Contractor.

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3.22.2. Stormwater Pollution Control Plan

The creation of a Stormwater Pollution Control Plan which shall include stormwater management measures is required to be included by the terms of the General Stormwater Permit. This may also require designing and constructing improvements by the Contractor to any outfalls within the project found to be deteriorated or substandard. The Contractor will be responsible for supplying CTDOT with all the required documentation for obtaining the applicable permits or modifications of existing permits necessitated by such changes. CTDOT will not allow the Contractor to revise the Project schedule because of any change to the drainage design or associated permits.

3.22.3. Cultural Resource Environmental Commitments

NHPA Section 106 historic properties determination of effect has been reached based upon an understanding that there will be no use of or impacts to Hubbard Park--to include the pedestrian bridge connecting the two aspects of the park across the interstate corridor in Meriden--nor work outside the existing State-owned transportation ROW. Any changes to these conditions will need to be coordinated through the CTDOT Office of Environmental Planning.

3.23. Utilities

3.23.1. General Statement

CTDOT has conducted preliminary coordination with the owners of utilities to be affected by the Project. Final utility coordination will be the responsibility of the Contractor, which should expect to devote resources to such coordination as may be necessary in order to complete the Project.

The Contractor will be required to protect existing utilities from construction activities and shall comply with the requirements of Section 5.4.

The Contractor shall provide sixty (60) days' notice to CTDOT of any need to have a utility owner relocate any of its facilities. If the Contractor damages any utility assets, it shall notify the affected utility owner(s) and CTDOT of same, and it shall assume any costs related to repair of those assets.

The Contractor shall ensure that any utility work that it performs on the Project complies with the latest "Buy America" provisions.

Any proposed change to the BTC that results in an increase in utility relocations or modifications will constitute an ATC. All justifications for the utility adjustments shall be stated in the ATC submission.

3.23.2. Contractor Responsibilities

The Contractor shall coordinate with CTDOT regarding any Project activities that may affect the services or facilities of a private, state or municipal utility entity. The Contractor will be responsible for coordinating with CTDOT and utility owners to arrange for required utility relocations on the Project. Other Sections in this Chapter and the BTC plans contain detailed information regarding that work.

The Contractor shall meet with CTDOT and all owners of affected utilities within thirty (30) days from the award date for the purpose of briefing such utilities on proposed construction schedules, detours, etc.

If during the development of the design the Contractor realizes that the proposed design will change the Project's effects on any utilities, the Contractor shall immediately notify CTDOT of same. The Contractor shall then be required to submit preliminary design plans to CTDOT for review and approval prior to incorporating the changes into the Project. In addition, the Contractor shall be responsible to communicate changes or alterations of the proposed construction to the affected utilities and to assume responsibility for all additional costs and negotiations regarding the effects on utilities.

Permits may be required to work in the vicinity of existing utilities. It will be the responsibility of the Contractor to obtain any such permits sufficiently in advance of the work's commencement. Any costs related to acquisition of utility permits will be borne by the Contractor.

3.23.3. Ascertaining the Location of Utilities

The utilities shown on the BTC survey are based on limited investigations and are not guaranteed to be accurate or comprehensive. Utilities shown on available as-built maps in Appendix B01 are approximate in location and can change due to utility company operations. The Contractor bears full responsibility for ascertaining the existence and exact location and size of all utilities on the Site.

Existing Utilities Known to CTDOT

The BTC documents and all other documentation reflect the early coordination process engaged in by CTDOT. The Contractor will be responsible for confirming all existing conditions in the field prior to commencing work.

The following is a list of utility owners with facilities on the Site and those that are likely to be affected by the construction, as determined during the preliminary investigations by CTDOT. Additional utilities may be affected by certain Project activities depending on the final design and the construction methods chosen by the Contractor.

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3.5.5.1.1. Department of Transportation Electrical

CTDOT maintains electrical services throughout the Project that feeds power to applicable bridges, roadway lights, and IMS facilities. The BTC includes specific locations of all new lighting features as this is considered part of the final design. In general, the new features replace existing features and, can be found on the Illumination Plans in Appendix B01 Existing IMS locations and plans are located in Appendix B01 and as detailed in Section 3.18..

The Contractor will be responsible for the final design, detailing and construction of such facilities.

3.5.5.1.2. Communications

Crown Castle Fiber and Contact Person:
Mr. Terence J. Shea
Fiber Construction Manager
1781 Highland Avenue, Suite 102
Cheshire, CT 06410
Telephone: (203) 649-3905
Mobile Telephone: (860) 420-6471

CenturyLink and Contact Person:
Mr. Renoy Thomas
Business Analyst – OSP Relocations
175 E. 2nd Street
Tulsa, OK 74103
Renoy.thomas@centurylink.com
NationalRelo@centurylink.com
File Number: 154952 CT

Southern New England Telephone dba Frontier Communications and Contact Person:
Ms. Lynne DeLucia
Manager - Engineering and Construction
1441 North Colony Road
Meriden, CT 06450-4101
Project Contact: Stephen Barret – stephen.barrett@ftr.com
Thomas Delorenzo – thomas.a.delorenzo@ftr.com

The proposed work is not anticipated to impact existing communication aerial lines that cross above or below I-691 nor any crossing underground conduits. The Contractor is responsible for the coordination of any relocation or any work to protect and maintain in place required to complete the work under this contract. The work shall comply with CenturyLink requirements.

3.5.5.1.3. Power – Gas

Eversource Gas and Contact Persons:

Mr. James Shea,
Lead Engineer – Gas Project Engineering
107 Selden Street, Mail Stop NUE2
Berlin, CT 06037
Project Contact: Kenneth H. Cook III, PE - (860) 665-3640
kenneth.cookiii@eversource.com

The proposed work is not anticipated to impact existing gas lines and facilities, which are located under the highway and perpendicular to entrance and exit ramps on off

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freeway roadways. The Contractor is responsible for the coordination of any relocation or any work to protect and maintain in place required to complete the work under this contract. The work shall comply with Eversource - Gas requirements.

3.5.5.1.4. Power - Electric

Eversource – Electric Distribution and Contact Person:

Mr. Thomas Woronik,
Supervisor – Construction Engineering
22 East High Street
East Hampton, CT 06424
(860) 267-3891
Thomas.Woronik@eversource.com

Eversource – Electric Transmission and Contact Person:

Ms. Susan J. Bellion,
Project Siting Specialist
56 Prospect Street
Hartford, CT 06103
(860) 728-4628
Susan.bellion@eversource.com

The proposed work is not anticipated to impact overhead or underground electric facilities within the Project. The Contractor is responsible for the coordination of any relocation or any work to protect and maintain in place required to complete the work under this contract. The work shall comply with Eversource requirements.

Algonquin Gas Transmission Company
Mr. Kenneth Ruel
Area Supervisor
252 Shunpike Road
Cromwell, CT 06416
(860) 894-1600 Ext. 1608
Kenneth.Ruel@enbridge.com

The proposed work is not anticipated to impact the existing gas lines and facilities within the Project. However, Algonquin does have high pressure natural gas steel pipeline crossings at the vicinity of I-691 westbound ramps to and from Route 10 (Highland Avenue). The Contractor is responsible for the coordination of any relocation or any work to protect and maintain in place required to complete the work under this contract. The work shall comply with Algonquin Gas requirements.

3.23.4. Special Requirements for Commencement of Work near Utilities

There is buried utilities under the sides of the roadway and embankments throughout the Project which may be susceptible to damage from construction equipment.

The Contractor shall provide the Utility companies with a detailed description and plans for construction activities within the Project limits for review and comment. The Contractor shall also provide detailed decriptions of any necessary crane operations within the project limits. The Contractor must demonstrate to CTDOT that all utility company concerns and comments have been addressed prior to the commencement of construction activities involving heavy equipment or delivery vehicles within the Project limits.

Special attention must be given to the operation of cranes and the operation of construction equipment within the project limits. There are overhead utilities in the approximate area of bridges within the Project Area.

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CTDOTThe Contractor shall comply with the "Call Before you Dig" requirements contained in the General Provisions of this Contract for all work.

3.23.5. Meetings and Cooperation with Utility Owners

The Contractor shall coordinate meetings with the owners of utilities whose facilities or services will likely be affected by Project activities, in order to make certain that Project construction can be completed. Such meetings may entail, for instance, obtaining information, or coordinating activity scheduling, design review, inspections, or various kinds of approvals. The Contractor shall notify CTDOT of all utility coordination meetings and shall not conduct a meeting without a Department representative being present. The Contractor shall copy CTDOT on all correspondence with utility owners related to the Project.

The Contractor shall immediately notify CTDOT if the Contractor becomes aware that a utility owner(s) is not cooperating in providing needed work or approvals. CTDOT agrees to make reasonable efforts to assist the Contractor in obtaining the cooperation of utility owners, but such assistance shall not be relieve the Contractor of its sole responsibility for the satisfactory compliance of its Contractual obligations in this regard. The Contractor shall incorporate all utility phases of construction into the overall work schedule. No additional time or compensation will be provided as a result of delays due to a need for utility coordination or staging.

The Contractor shall be responsible for all work associated with or necessitated by the need to continue expeditious Project completion despite the presence of or conflicts with utilities on the Site.

CTDOT will be responsible for checking and verifying material quantity and labor hours submitted by the utility companies in requests for compensation for costs or damages connected with the Project.

3.23.6. Avoiding Relocations

The location of utilities and the potential effects on the Project of utility relocations shall be considered by the Contractor in developing any proposed changes to the BTC, with the following goals:

- Avoiding relocations.
- Protecting the utility in place to the extent practicable, if a relocation is not reasonably avoidable.
- Minimizing potential costs and delays related to relocations.

3.23.7. Scheduling and Cost Risks

The Contractor shall be solely responsible to communicate to affected utilities and to CTDOT any changes or alterations that the Contractor proposes to make regarding utility relocations contemplated in or necessitated by the BTC. In addition, the Contractor shall also be responsible to communicate to those parties any changes or alterations that it proposes to make regarding the proposed construction staging, insofar as they might affect the timing of utility relocations. Should the Contractor propose for its convenience any relocations other than those described in the Technical Provisions, the Contractor shall be responsible for any additional costs and any scheduling changes caused by those relocations.

In the event of any changes to the scope of utility relocation work contemplated in or necessitated by the BTC, it shall be the Contractor's responsibility to mitigate any negative effects that those changes might have on the Project progress or schedule; and CTDOT will not grant additional payment or Contract time to the Contractor in connection with those changes. This includes effects on the meeting of Project milestones with related incentives or liquidated damages.

3.23.8. Utility Work Prior to Schedule Submission

If the Contractor anticipates that utility work will need to start before the first submission of a schedule required by the Contract, the Contractor shall inform CTDOT of the relevant facts, providing an Initial Schedule detailing when each early utility activity is required to start either (1) at the pre-construction conference, or (2) at the time of the initial schedule submission required by the Contract, whichever is earlier.

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3.24. Right of Way

3.24.1. CTDOTGeneral Statement

No right-of-way acquisitions have been included in the BTC and no right-of-way acquisitions have been acquired by CTDOT. No acquisition for construction access or temporary work zones are anticipated at this time. The Proposer must evaluate and verify that the Right-of-Way limits shown on the survey and on the BTC plans are adequate for completion of the Project prior to submitting its proposal. Any proposed need for acquisition of any property easements or acquisitions for construction of the permanent or temporary work at the Site will constitute an ATC. The Proposer will be required to propose and gain approval of the ATC as outlined in the RFP.

Should permanent property acquisitions or temporary property rights be deemed necessary for the construction of the work at the site, through CTDOTs acceptance of an ATC proposal for the completion of the project, CTDOT will acquire the pertinent property acquisitions or rights. The Proposer agrees to the condition, through its submittal of the ATC and Proposal that CTDOT cannot guarantee a timeframe for the acquisitions or rights and shall not be liable for time impacts or increased costs to the project related to additional acquisitions or rights based on a proposal that requires such. The Proposer also agrees, through submission of the ATC that, potential additional costs for property acquisition or rights may be the responsibility of the Proposer as determined through the ATC process.

Should the Contractor require any additional property rights for its convenience during construction, for storage and staging areas on or off the site, it shall provide CTDOT with copies of said agreements prior to impacting or occupying property. These agreements will be subject to review and approval by CTDOT. The Contractor must ensure that all the conditions included in these agreements are met prior to the final acceptance of the Work.

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3.25. Railroad

3.25.1. General Statement

No railroad interactions are proposed with the project and are not included in the BTC. No proposed construction or temporary work zones are anticipated to interfere with any railroad business or property at this time. The Proposer must evaluate and verify that any proposed work on bridge overpasses do not interfere on railroads. Any proposed construction needs that intrude on railroad property, permanent or temporary within the project limits will constitute an ATC. The Proposer will be required to propose and gain approval of the ATC as outlined in the RFP.

The proposed work is not anticipated to impact existing railroad facilities, which are located beneath Bridge 02114. The Contractor is responsible for the coordination of any work beneath the bridge and any necessary railroad easements. The work shall comply with State and Federal railroad requirements.

3.25.2. Contractor Responsibilities

The Contractor shall coordinate with CTDOT regarding any Project activities that may affect the services or facilities of the railroad. The Contractor will be responsible for coordinating with CTDOT and railroad owner to determine the area of disturbance on the Project.

Construction easement may be required to work in the vicinity of the railroad facilities. It will be the responsibility of the Contractor to obtain any rights to use an easement sufficiently in advance of the work's commencement. Any costs related to acquisition of construction easement and damages within the property will be borne by the Contractor.

3.25.3. Railroad Contact

Genesee and Wyoming Railroad Services, Inc. and Contact Person:

Jacob Smith
Director of Public Projects
Genesee & Wyoming Railroad Services, Inc.
13901 Sutton Park Dr., STE 345
Jacksonville, FL 32224
(904) 900-6320 Ext. 3755
Jacob.Smith@gwrr.com

CTDOT

3.26. Construction

3.26.1. General

Before construction activities may begin for a specific segment or component of the Project, the Contractor must have met all requirements for and have received a designation of “Release for Construction” from CTDOT, as well as the other requirements of the Technical Provisions related to pre-construction submittals, approvals and notifications. These pre-construction submittals include, but are not limited to, shop drawings, working drawings, testing, schedule and public information.

All design and construction documents shall be prepared using the English system.

The Contractor shall construct the work in compliance with the Contract Provisions, with the following objectives as guides:

- Attain the highest quality product possible.
- Keep the Stakeholders informed of the work and use public outreach to reduce congestion.
- Successful performance of the Design-Build Project.
- Completion of the Project within the estimated Contract time.

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- Completion of the Project within the Proposed Price.
- Successful application of ABC technologies.
- Maximum beneficial use of innovation. Innovate when possible in order to achieve the best results possible.
- Minimize the detrimental effects of the work on the Transportation System and the neighboring community.
- Maintain or improve, to the maximum extent possible, the quality of existing traffic operations, both in terms of flow rate and safety, throughout the duration of the Project.
- Minimize the number of different Traffic Control phases, *i.e.*, number of different diversions and detours for a given traffic movement.
- Take advantage of newly-constructed portions of the permanent facility as soon as possible when it is in the best interest of traffic operations and construction progress and quality.
- Maintain direct access to adjacent properties at all times, with the exception of areas of limited access right-of-way where direct access is not permitted.
- Properly coordinate with entities working on adjacent construction projects and on maintenance of existing facilities.

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3.26.2. Submittals

All submittals shall be made in accordance with the Contract Provisions. Unless otherwise specified, the Contractor shall seek guidance from District personnel administering the Contract as to the proper recipient(s) of such submittals to.

3.26.3. Construction Survey

The majority of the requirements related to construction staking are included in Section 9.80 - "Construction Staking" of Form 817. Construction shall not commence on a given segment of the project until baseline and stakeout is performed in accordance with the requirements of the 817 and the Contract Provisions.

Baselines

The construction baselines shall be staked in the field, offset and maintained throughout Project construction. Baseline stations shall be staked at every fifty (50) feet (stations and half-station), point of curves, points on curves, points of tangency, and other locations as necessary. The control shall originate from the Project survey control and be verified by physical features. Record baselines are included on the base survey. The Contractor shall be responsible for tying any newly-created baselines to the record baseline.

3.26.4. Issue Escalation/Resolution

The Contractor shall have the necessary personnel available at all times to resolve construction issues in order to expedite the construction progress and ensure a quick resolution of Project issues that otherwise would delay and, in some cases, hinder the progress of Project construction. CTDOT representatives shall be kept apprised of all issues and proposed solutions and will be afforded a review of proposed solutions or resolutions prior to their implementation.

Lines of communication between Contractor personnel and Department personnel should always be open, and cooperation in the field shall be treated as being of paramount importance in resolve Project issues as soon as possible.

In the event that an issue cannot be resolved at a certain staff level in a timely manner, either due to its complexity or lack of sufficient authority, the Contractor and Department representatives shall promptly elevate the issue in their respective chains of command, as

appropriate and necessary, in order to resolve the issue in as timely and effectual a manner as practicable.

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