VTRANS

Vermont Agency of Transportation

REQUEST FOR PROPOSALS

Part 2
Technical Information and Requirements

A DESIGN-BUILD PROJECT

I-91 Bridge Improvements

Bridges 24N & 24S

Rockingham, Vermont

Project No:
Rockingham IM 091-1(66)

November 10, 2015

TABLE OF CONTENTS

1.0 DESIGN-BUILDER'S SCOPE OF WORK

1.1 Scope of Work

The Design-Builder shall determine the full scope of work for the Project through its examination of RFP, and the Project site.

The Design-Builder shall furnish all Design and Construction Services, Quality Control (QC) and Quality Assurance (QA) for design, QC for construction, materials, equipment, labor, transportation, and incidentals required to complete the Work according to Contract Documents. The Design-Builder shall address all items necessary for construction and operation of the completed facility. The Work includes, but is not limited to:

(a) Design and construction of bridge structures (including all necessary bridge foundation work, substructure work, earthwork and support of excavation);
(b) Preparation of administrative submittals
(c) Obtaining and complying with all required environmental permits and off-site activities;
(d) ROW acquisition if required;
(e) Coordination with utility companies for utility relocations if needed;
(f) Coordination with Green Mountain Railroad Corporation (GMRC) for train schedules, railroad flaggers, and general track/GMRC ROW access;
(g) Project survey as needed;
(h) Management of highway and railroad traffic at project sites;
(i) Communicating project-related information to public and local and state government;
(j) Placement and maintenance of traffic control devices and measures;
(k) Construction, maintenance and removal of temporary facilities;
(l) Stream diversion and control as necessary;
(m) Removal and disposal of existing structures;
(n) Reconstruction of roadway approaches along segments of Interstate 91;
(o) Re-grading between northbound and southbound highway embankments and construction of drainage structures;
(p) Revegetation;
(q) Ensuring project safety;
(r) Quality Control and Quality Assurance for design;
(s) Quality Control for construction; and
(t) Overall project management.

1.1.1 Scope of Design Services

Design services shall include the Work listed under Section 1.1, and include, but are not limited to, the following elements, as applicable: surveying, roadway design, preparation of Transportation Management Plan, foundation design, structural design, retaining walls, permanent and temporary traffic control, signs, guardrail, pavement markings, drainage, stormwater management, erosion prevention and sediment control, settlement evaluation and slope stability analysis. Other data collection and technical studies anticipated include: geotechnical investigation, materials analysis, and hydrologic and hydraulic analysis. Design-Builder's scope of work includes any additional

information that the Design-Builder may need for the BTC or any ATC. Any survey, design and subsurface information provided by VTrans is provided for information, is subject to limitations, and must be validated and augmented as necessary to provide the final design.

The Design-Builder shall be responsible for providing complete QC and QA for all engineering and design under the supervision of the Design Manager. All Released for Construction design documents for temporary and permanent structures shall be stamped and signed by a Professional Engineer licensed in the State of Vermont.

1.1.2 Scope of Construction Services

Construction services are anticipated to include the Work listed under Section 1.1 , and include, but are not limited to: survey, construction layout, roadway, traffic management, pavement markings, signs, and other traffic control devices, bridges (including all necessary bridge foundation work, substructure work, superstructure work, excavation, and removal of existing structures), temporary works and structures, excavation support, dewatering, materials analysis, landscaping, drainage structures and other roadway drainage, erosion prevention and sedimentation control/stormwater management, and acquisition and compliance with all environmental requirements, permit conditions, and commitments.

The Design-Builder shall be responsible for providing Construction QC under the oversight of the Construction Manager. All Released for Construction documents shall be stamped and signed by a Professional Engineer licensed in the State of Vermont.

2.0 DESIGN STANDARDS AND REFERENCE DOCUMENTS

The design and construction Work for the Project shall be performed in accordance with the current applicable federal and state laws and 2011 VTrans Standard Specifications and Reference Documents to include, but not limited to the documents listed herein. The Design-Builder must verify and use the latest version of all documents, including interims, revisions, and updates. The Design-Builder shall meet or exceed the minimum design standards and criteria.

All Work on this Project shall be completed using English units.

All references listed below shall be the current version with the current interims as of the date of the RFP release unless otherwise noted.

<u>General Design:</u>

- AASHTO A Policy on Geometric Design of Highways and Streets
- AASHTO LRFD Bridge Design Specifications
- AASHTO Standard Specifications for Structural Supports of Highway Signs, Luminaires and Traffic Signals
- AASHTO Roadside Design Guide
- AASHTO Guide for Design of Pavement Structures
- Bridge Welding Code AASHTO/AWS-D1.5m/D1.5
- ANSI/AASHTO/AWS D1.1 Welding Code

- AASHTO Guide Design Specifications for Bridge Temporary Works
- AASHTO Guide Specifications for Distribution of Loads for Highway Bridges
- AASHTO Maintenance Manual for Roadways and Bridges
- NCHRP Report 476: Guidelines for Design and Operation of Nighttime Traffic Control for Highway Maintenance and Construction
- "Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges," FHWA-PD-96-001
- AASHTO Manual for Bridge Evaluation
- Transportation Research Board Highway Capacity Manual
- FHWA Manual On Uniform Traffic Control Devices – current edition as it is adopted
- Vermont State Design Standards (http://vtransengineering.vermont.gov/publications)
- VTrans Standard Drawings (http://vtranscaddhelp.vermont.gov/downloads/standards)
- VTrans Project Development Process Manual (http://vtransengineering.vermont.gov/sites/aot_program_development/files/documents/publications/PDManual.pdf)
- VTrans Policy on Design Exceptions
- VTrans Structures Design Manual
- VTrans Structures Integral Abutment Bridge Design Guidelines
- VTrans Structures Plan Generation Manual
- VTrans Engineering Instructions (http://vtransengineering.vermont.gov/bureaus/pdb/structures/instructions)
- VTrans Road Design Manual
- VTrans Level of Service Policy
- Vermont's Guide to Highway Work Zones
- VTrans Guardrail Policy
- VTrans Bridge Rail Policy
- VTrans Policy on Earth Retaining Structures
- VTrans Traffic Design Manual
- VTrans Traffic Operations Manual
- VTrans Pavement Management Manual
- VTrans Pavement Design Guide
- VTrans Right-of-Way Manual
- VTrans Hydraulics Manual
- VTrans Hydraulic Evaluation of Bridges
- VTrans CADD Standards and Procedures Manual
- VTrans Geodetic Survey Manual
- VTrans Route Survey Manual
- VTrans Environmental Operations Manual
- VTrans Erosion and Sediment Control Details (http://vtransengineering.vermont.gov/bureaus/pdb/environmental/erosion-prevention)
- VTrans Workzone Safety and Mobility Guidance Document
- The Vermont Stormwater Management Manual (http://www.anr.state.vt.us/dec/waterq/stormwater/docs/sw_manual-vol1.pdf)
- SHRP 2 Renewal Project R19A – "Design Guide for Bridges for Service Life"

- Federal-Aid Policy Guide (FAPG) 625, Design Standards for Highways
- Federal-Aid Policy Guide (FAPG) 626, Pavement Policy
- NCHRP Report 350 Recommended Procedures for Safety Performance Evaluation of Highway Features
- VTrans Approved Products List
- VTrans Standard Specifications for Construction (2011)
- "Bridge Inspector's Training Manual 90," FHWA-PD-91-015
- NSBA/AASHTO Collaboration Standard Steel Details/Guidelines
- AASHTO Guide Specifications for LRFD Seismic Bridge Design
- AASHTO Manual for Assessing Safety Hardware (MASH) – current edition as it is adopted

Geotechnical Work:

- AASHTO Manual on Subsurface Investigations
- "Standard Practice for Description and Identification of Soils" (Visual-Manual Procedure) ASTM D2488-00
- "Design and Construction of Driven Pile Foundations", Vols. 1 and 2, FHWA-HI-97-013 and 014
- "Earth Retaining Structures," FHWA-NHI-99-025
- "Soil Nail Walls," FHWA-NHI-14-007 (GEC 7)
- "Shallow Foundations," FHWA-IF-02-054 (GEC 6)
- "Soil Slope & Embankment Designs," FHWA-NHI-01-026
- "Geosynthetic Design and Construction Guidelines," FHWA-HI-95-038
- FHWA, Bridge Technology, Checklist and Guidelines for Review of Geotechnical Reports and Preliminary Plans and Specifications; FHWA ED-88-053
- "Geotechnical Instrumentation," FHWA-HI-98-034
- "Ground Anchors and Anchored Systems", FHWA-IF-99-015 (GEC 4)
- "Drilled Shafts: Construction Procedures and LRFD Design Methods" (FHWA-NHI-10-016)
- FHWA Geotechnical Engineering Circulars http://www.fhwa.dot.gov/engineering/geotech/library_listing.cfm

Environmental Work:

- AASHTO's Center for Environmental Excellence Practitioner's Handbook No. 4 "Tracking Compliance with Environmental Commitments/Use of Environmental Monitors"
- VTrans Environmental Procedures Manual (http://vtransenvironmentalmanual.vermont.gov/)

Hydraulic Work:

- Hydraulic Engineering Circular No. 18 – "Evaluating Scour at Bridges" FHWA-HIF-12-003
- Hydraulic Engineering Circular No. 20 – "Stream Stability at Highway Structures" FHWA-HIF-12-004
- Hydraulic Engineering Circular No. 21 – "Design of Bridge Deck Drainage" FHWA-SA-92-010
- Hydraulic Engineering Circular No. 23 – "Bridge Scour and Stream Instability Countermeasures" FHWA-NHI-09-111

- Hydraulic Design Series No. 7 – "Hydraulic Design of Safe Bridges" FHWA-HIF-12-018
- FHWA Hydraulic Engineering Circulars
  http://www.fhwa.dot.gov/engineering/hydraulics/policymemos.cfm

Construction Work:

- AASHTO LRFD Bridge Construction Specifications
- AASHTO Construction Handbook for Bridge Temporary Works
- VTrans Construction Manual
- VTrans Quality Assurance Program (Dated March 1, 2010)
- VTrans Materials Sampling Manual (Current)
- VTrans Qualified Laboratory Program
- VTrans Qualified Technician Program
- VTrans Standard Specifications for Construction (2011)
- United States Department of Labor Occupational Safety and Health Administration Regulations
- AASHTO PP65-11 – "Standard Practice for Determining the Reactivity of Concrete Aggregates and Selecting Appropriate Measures for Preventing Deleterious Expansion in New Concrete Construction"
- Rational for the AASHTO PP65 Prescriptive Approach – "Selecting Measures to Prevent Deleterious Alkali-Silica Reaction in Concrete"
- Vermont Occupational Safety and Health Standards

If during the course of the design the Design-Builder has a question regarding the applicability of any particular Standard, Specification or reference document, it is the responsibility of the Design-Builder to identify such and to submit a recommendation to VTrans for review and approval.

Applicable reference documents published by VTrans are included in the RFP Information Package or through the web address provided. The documents and links have been provided for the convenience of the Design-Builder. It is the responsibility of the Design-Builder to acquire any and all additional reference documents needed to complete the work specified herein.

In the event of an apparent conflict between VTrans' Specifications or other design guidelines or standards, and those of any other organization, the VTrans specifications, design standards, and manuals shall take precedence during design unless VTrans has approach a written request from the Design-Builder for a variance from the VTrans standards.

3.0 ENVIRONMENTAL COMMITMENTS

The term environmental commitment includes any action that (1) is intended to avoid, minimize, and mitigate environmental impacts of a project, and (2) is required to be implemented as a condition of project approval as part of the environmental review, clearance or permitting process required for this

project. These actions shall be compiled into a list of items that will be defined as the Environmental Commitments.

The Design-Builder shall be responsible for performing necessary design and fieldwork to support acquisition of necessary permits through the appropriate regulatory agencies. Environmental permitting shall be conducted in accordance with the VTrans Environmental Procedures Manual. The Baseline Project Schedule shall account for any and all regulatory timeframe restrictions. No extension of time will be granted resulting from development of final design or implementation of any ATCs requiring additional permitting. Any additional costs or fines associated with additional environmental permitting or regulatory requirements shall be borne by the Design-Builder.

The Design Build Team shall name an Environmental Commitments Officer (ECO) and shall establish an Environmental Commitments Tracking Database.

3.1 Environmental Commitments Officer (ECO)

The Design Build team shall appoint an individual, independent of the Construction Contractor, to be the project's environmental lead. This individual will be knowledgeable with state and federal permitting requirements and the conditions typically required by permitting agencies on transportation projects in Vermont. Such person shall be knowledgeable in the principles and practice of Erosion Prevention and Sediment Control (EPSC) and possess the skills to assess conditions at the construction site that could impact stormwater quality and to assess the effectiveness of all EPSC measures selected to control the quality of stormwater discharges from the construction site and shall be able to demonstrate related certification(s) and training.

The ECO shall have direct oversight for obtaining all necessary environmental clearances and permits required to complete the Work and shall be the singular point of contact for the regulators on behalf of the Design-Builder. The ECO will be required to be on the Project site weekly and during all major construction operations. The ECO shall be responsible for all inspection and record keeping, correcting any permit violations and for coordinating with regulatory agencies. The ECO shall have the authority to stop construction activities as necessary to maintain compliance with the environmental commitments and/or permit conditions.

The ECO shall be directly responsible for establishing, managing, and updating an Environmental Commitments Tracking Database.

If commitments are not met or if there are any non-compliances or permit violations the ECO shall immediately notify the Resident Engineer.

3.2 Environmental Commitments Tracking

The Environmental Commitments Tracking Database shall function for the purpose of effectively communicating and tracking all Environmental Commitments. The database shall be web based and shall track the need and status of initial acquisition of permits during the design phase and during construction, it shall effectively track that activities on site are meeting the requirements of the permits and that any changes to the project have been coordinated with the appropriate regulatory agencies.

The Design-Builder shall reference AASHTO's Center for Environmental Excellence Practitioner's Handbook No. 4 "Tracking Compliance with Environmental Commitments/Use of Environmental Monitors" (http://www.environment.transportation.org/pdf/programs/PG04.pdf) when developing the Environmental Commitments communication and tracking protocol.

At a minimum, the tracking database shall identify the following information for each commitment:

- Commitment Number
- Type of commitment (design, construction, mitigation, stewardship, or maintenance)
- Commitment Name
- Responsible Agency/Regulator/Source of Commitment (NEPA, USACE, ANR River Management, etc)
- Agency/Regulator Contact Information
- Commitment Details
- Responsible Party – Including identification of specific individual
- Identification if the commitment is open or closed and dates for when opened and closed
- Violations/Non-compliances
- Links to supporting materials – inspection reports, plans, permits, photos, etc.

3.3 Environmental Permits and Resource Reviews

The Design-Builder is responsible for identifying and obtaining all required environmental permits for impacts from the Project and implementing required environmental commitments and mitigation. Unless required by law or identified otherwise by the contract documents, the Design-Builder shall be the applicant for all project permitting. If the Design-Builder proposes ATCs acceptable to VTrans, permitting requirements (including the items listed below) may also change; the Design-Builder remains responsible for obtaining any and all necessary permits required by both State and Federal regulatory agencies and no time extensions will be granted.

The Design-Builder shall be responsible for ensuring that all wetlands, streams, biological, cultural, and historical resources are correctly identified and delineated, noting that more resources may be present than initially identified. Avoidance and minimization should be implemented to the greatest extent possible through the use of LEDPA (Least Environmentally Damaging Practical Alternative).

The Design-Builder shall not proceed with any Work at the project sites until it has been permitted by the appropriate regulators and Released for Construction by the VTrans Resident Engineer.

The Design-Builder shall be responsible for compliance with pre-construction, construction-related permit conditions, as well as post-construction monitoring if required by regulatory agencies as a penalty or mitigation measure resulting from a permit violation.

All efforts and costs necessary for permit acquisition, natural channel design, post-construction monitoring and stream and wetland compensation shall be included in the Design-Builder's Price Proposal. Any fines associated with environmental permit or regulatory violations shall be borne by the Design-Builder.

The items listed below are examples of environmental permits or clearances that may be needed. They are not intended to be all inclusive or a comprehensive list. It shall be the responsibility of the Design-Builder to identify and obtain all necessary environmental permits or clearances.

3.3.1 NEPA Compliance / Environmental Documentation

VTrans has obtained a NEPA Clearance (included in RFP Part 5) for the Project based on the BTC presented in the RFP Part 5. VTrans has processed the Project as a NEPA Programmatic Categorical Exclusion (PACE).

The Design-Builder shall be responsible for re-evaluating the PACE document during the Administrative Submittals as described below.

The Design-Builder shall be aware of and comply with all conditions of the NEPA Clearances and all other Resource Clearances.

3.3.2 Vermont's Land Use Law: Act 250

Act 250 provides a public, quasi-judicial process for reviewing and managing the environmental, social and fiscal consequences of major subdivisions and development in Vermont through the issuance of land use permits. It is Vermont's development and control law that is administered by nine District Environmental Commissions, overseen by the Natural Resources Board. An Act 250 hearing is conducted by a three-member District Environmental Commission. The Commissioners are appointed by the Governor of the State of Vermont. Their responsibility is to consider each application for a land use permit in accordance with the 10 criteria of 10 V.S.A. Chapter 151.

Vermont's Land Use and Development Laws prohibit the commencement of certain categories of development without first obtaining a Land Use Permit. The Base Technical Concept (BTC) is not anticipated to require an ACT 250 Permit; however, Bidders should note that properties adjacent to the project site have been encumbered by ACT 250. It shall be the responsibility of the Design-Builder to determine if an ACT 250 Permit is needed and to obtain it. To determine whether a specific project requires a permit, the Design-Builder shall contact the District Coordinator to obtain a written Project Review Sheet and should request a Jurisdictional Opinion. An Act 250 amendment could be required if an adjacent parcel, that has an existing Act 250 permit, will be affected.

The Design-Builder shall be aware of any applicable past precedence that may trigger jurisdiction under Act 250. For example, removal of median ledge has fallen under Act 250 jurisdiction in the past.

Act 250 permits do not supersede or replace the requirements of other local or state permits. For additional information about Act 250 and its relationship to local or state land use laws, contact the Natural Resources Board, Montpelier, Vermont (802-828-3309), or the District Coordinator.

Additional information is available at the Natural Resources Board Website: http://www.nrb.state.vt.us/

3.3.3 Waste, Borrow, and Staging Areas

The Design-Builder shall be responsible for identifying and obtaining natural and cultural resource clearance from the VTrans Environmental Unit for all activities outside the construction limits shown on the BTC prior to commencing any such activity. The Design-Builder shall complete the VTrans Off-Site Activity Form (http://vtransengineering.vermont.gov/bureaus/pdb/environmental/off-site-activity) and submit the form to VTrans for approval. Refer to RFP Part 4 Section 105.25 through section 105.28 of the special provisions for additional information. Waste, borrow and staging areas may also require the need for other regulatory review and acquisition of permits or amendments to project permits. That coordination shall be done by the DB team via the ECO. No additional time will be granted to cover delays arising from these activities.

If further investigation of proposed waste, borrow, and staging activity locations are required, all additional work required to obtain approval shall be the responsibility of the Design-Builder.

It is a requirement of this RFP that the Design-Builder state their intention to/not to use Vermont State ROW for waste, borrow, or staging activities in their Technical Proposal. Failure of a Design-Builder to state their intent to use Vermont State ROW in their proposal shall eliminate the allowance for using the ROW.

Acceptance of a Design-Builder's proposal shall not be considered approval for any waste, borrow, or staging area activities.

3.3.4 Historic Properties

VTrans has completed coordination in compliance with Section 106 of the National Historic Preservation Act and Section 4(f) of the U.S. Department of Transportation Act of 1966. There are currently no anticipated effects to historic properties within the project limits as shown on the BTC Plans.

The Design-Builder shall avoid effects on historic properties during their design effort including, but not limited to, staging areas, haul roads, borrow/disposal areas and any temporary or permanent easements. Should design elements be developed that appear to affect historic properties, the Design-Builder is responsible for notifying the VTrans Resident Engineer. Any needed additional documentation shall be compiled by the Design-Builder and submitted to the VTrans Environmental Section. The Design-Builder shall be responsible for any costs associated with additional documentation and no time extension will be granted.

3.3.5 Archaeologically Sensitive Resource Areas

Archaeologically sensitive resource areas were evaluated as part of the NEPA evaluation and exist outside of the project limits, but in relative proximity to this project. The Design-Builder shall consider archaeologically sensitive areas in their reevaluation of the NEPA document and shall avoid effects on archaeologically sensitive areas during their design effort including, but not limited to, staging areas, haul roads, borrow/disposal areas and any temporary or permanent easements. Should design elements be developed that affect archaeologically sensitive areas, the Design-Builder shall notify the VTrans

Resident Engineer. Any needed additional documentation shall be compiled by the Design-Builder and submitted to the VTrans Environmental Section through the Project Collaboration Site. The Design-Builder shall be responsible for any costs associated with any and all cultural resource surveys, documentation, preservation and/or recovery efforts and no time extension shall be granted.

3.3.6 Rare, Threatened, and Endangered Species

Rare, threatened, and endangered (RTE) species resource areas were evaluated as part of the NEPA evaluation and none were identified. The Design-Builder shall consider RTE species in their reevaluation of the NEPA document and shall avoid effects on RTE species during their design effort including, but not limited to, staging areas, haul roads, borrow/disposal areas and any temporary or permanent easements. Should design elements be developed that affect RTE species sensitive areas, the Design-Builder shall notify the VTrans Resident Engineer. Any needed additional documentation shall be compiled by the Design-Builder and submitted to the VTrans Environmental Section through the Project Collaboration Site. The Design-Builder shall be responsible for any costs associated with any and all RTE resource surveys, documentation, mitigation and/or recovery efforts and no time extension shall be granted.

3.3.7 Wetland and Water Quality Permits

3.3.7.1 Stream Alteration Permit

The Design-Builder shall include documentation of a Title 19 Stream Alteration Consultation for each stream crossing.

3.3.7.2 Construction Stormwater Permits

The Design-Builder shall be responsible for securing and complying with construction-related stormwater permits and shall assume all obligations and cost incurred by complying with the terms and conditions of the permit. Any fines associated with permit or regulatory violations shall be borne by the Design-Builder.

All application materials shall be submitted to the VTrans CEE and VTrans Environmental Specialist for review and comment, prior to submission to the Vermont Agency of Natural Resources.

VTrans shall be identified as the Landowner. Lee Goldstein, Vermont Agency of Transportation, Environmental Specialist, shall be named as the contact and will provide signature as such. The Design-Builder shall be a named as the Principal Operator. All Contractors that will disturb earth shall be named as co-permittees.

Additional information related to construction stormwater permits can be found at the following website: http://www.vtwaterquality.org/stormwater/htm/sw_cgp.htm

3.3.7.3 Operational Stormwater Permits

If an operational stormwater permit is required, the Design-Builder shall be responsible for securing the Permit and shall assume all obligations and cost incurred by complying with the terms and conditions of the permit. Any fines associated with permit or regulatory violations prior to project acceptance shall be borne by the Design-Builder. The Design-Builder shall pay all application fees.

The Vermont Agency of Transportation shall be the sole permittee. Jon Armstrong, Vermont Agency of Transportation, Stormwater Engineer, shall be named as the land owner; Craig Digiammarino, Vermont Agency of Transportation, Environmental Operations, shall be named as the principal operator. All application materials shall be submitted to those named above for review, comment, and signature prior to submission to the Vermont Agency of Natural Resources.

The Design Manager shall submit a certification of compliance within 90 days of the project completion.

Additional information related to the current State Stormwater Discharge Permits can be found at the following website: http://www.vtwaterquality.org/stormwater/htm/sw_appsformswkshts.htm

3.3.7.4 US Army Corps of Engineers Permit

The Design-Builder shall be responsible for all coordination and for securing all required clearances from the US Army Corps of Engineers and shall assume all obligations and cost incurred by complying with the terms and conditions of the permit. Any fines associated with permit or regulatory violations prior to project acceptance shall be borne by the Design-Builder. The Design-Builder shall pay all application fees.

3.3.7.5 Vermont State Wetland Permit

The Design-Builder shall be responsible for all coordination and for securing all required clearances from the Vermont State Wetlands Program and shall assume all obligations and cost incurred by complying with the terms and conditions of the permit. Any fines associated with permit or regulatory violations prior to project acceptance shall be borne by the Design-Builder. The Design-Builder shall pay all application fees.

3.3.7.6 Flood Hazard Area & River Corridor (FHARC)

The Design Builder shall be responsible for all coordination and securing all required clearances from the VT State Rivers Program and shall assume all obligations and costs incurred by complying with the terms and conditions of the permit. Any fines associated with permit or regulatory violations shall be borne by the Design-Builder. The Design-Builder shall pay all application fees.

3.4 Hazardous Materials

All solid waste, hazardous waste, and hazardous materials shall be managed in accordance with all applicable federal, state, and local environmental regulations. The Design-Builder shall notify the VTrans Resident Engineer immediately of all instances involving a spill, discharge, dumping or any other releases of hazardous materials into the environment and shall provide all required notifications and response actions.

The Design-Builder shall conduct a review(s) of all the excavation and staging areas for the presence of hazardous materials prior to use, and shall document and submit the findings to the VTrans Resident Engineer. Hazardous materials encountered during use of such areas or excavations shall also be reported to the Resident Engineer immediately. Failure to immediately inform the Resident Engineer will result in the Design-Builder being responsible to handle and dispose of the material at no additional cost to the Agency.

3.4.1 Lead Paint on Bridge

The existing bridges superstructure paint system may contain lead and shall be considered hazardous to personnel, the environment, and the public.

3.4.2 Lead Contamination of Soils

It is anticipated that the Contractor will encounter lead contaminated soils or airborne contaminants in excavations or earthwork at the southern and northern embankments under the bridges. Refer to the June 2015 report *Limited Lead Soil Sampling Report* completed by Terracon Consultants Inc. included in the RFP Information Package.

The Contractor shall engage the services of a qualified environmental consultant to assess the presence and concentration of lead in soils at areas of disturbance and within the employee work zone and remediate as necessary. Remediation will be necessary to achieve the "Soil Screening Values" outlined in the SMS *Investigation and Remediation of Contaminated Properties Procedure* or to reduce potential worker exposures.

The Contractor shall provide a Lead Contaminated Soils Management Plan for review and acceptance by the Resident Engineer prior to its implementation. The Contractor shall coordinate activities with the Department of Environmental Conservation Hazardous Sites Manager and the AOT Hazardous Materials Coordinator. The Contractor is responsible for engaging a qualified consultant to oversee, monitor, screen, segregate and manage contaminated soils encountered during earthwork. It is anticipated that all soils will be able to remain onsite. If soils are required to be removed from the site for treatment, which work will be paid for as extra work. Contaminated soils shall be managed in accordance with the SMS *Investigation and Remediation of Contaminated Properties Procedure.* In addition, the Contractor shall ensure that on-site workers are properly trained in accordance with the Lead in Construction Standard under 29 CFR 1926.62.

3.5 Environmental Monitoring

The Environmental Commitments Officer (ECO) is responsible for monitoring and complying with all applicable state and federal environmental laws, regulations, and permits (including any given in the NEPA Programmatic Categorical Exclusion and Resource Clearances). Should any non-compliant item(s) be identified during construction by the ECO, the non-compliant item(s) shall be immediately reported to the Resident Engineer and the Construction Manger shall take immediate and continuous corrective action to bring the item(s) back into compliance.

As part of the weekly report requirements, the ECO shall provide written updates to the VTrans Environmental Specialist and to the VTrans Construction Environmental Engineers. VTrans may perform environmental monitoring during construction on a periodic basis. Any resulting Environmental Compliance Report (ECR) will be provided by VTrans to the Design-Builder for appropriate action. Schedule delays and associated costs of any delays and/or shut downs associated with non-compliance as noted in the ECR shall be the responsibility of the Design-Builder. Any monetary fines associated with violations shall be borne by the Design-Builder.

4.0 PROJECT MANAGEMENT AND REPORTING REQUIREMENTS

4.1 Project Kickoff Meeting

Following contract execution, the Design-Builder shall be required to attend and participate in a project kickoff meeting at VTrans National Life Offices in Montpelier, VT. The intent of the meeting is to introduce the Project Team, establish lines of communication, and review administrative items related to the Project. At a minimum, it is required that the Design-Build Project Manager, Construction Manager, Design Manager, PRO, and ECO be present at the meeting. VTrans will provide a Kickoff Meeting Agenda prior to the meeting. A sample agenda is provided in Attachment 4.1.

4.2 Environmental Coordination Meeting

The ECO shall arrange and facilitate an Environmental Coordination Meeting to take place during the Administrative Submittal Phase, prior to submitting the Environmental Commitments Tracking Database. The intent of the meeting shall be to coordinate with all pertinent permitting regulatory agencies and VTrans at a comprehensive meeting at the outset of the Project. The ECO shall be responsible to establish a meeting date, time, and location, invite all pertinent parties, provide an agenda, facilitate the meeting, and provide meeting notes to attendees and post notes to the Project Collaboration Worksite within two (2) business days of the meeting. Meeting notes shall be subject to review and acceptance by the VTrans Environmental Specialist and other VTrans officials as needed. Outcomes of the meeting shall include an understanding of permitting impacts on the project schedule, and to define permitting requirements and conditions. The ECO shall coordinate with meeting attendees a minimum of 2 weeks in advance of the intended meeting date. At a minimum, the Design-Build Project Manager, Construction Manager, Design Manager, ECO, Resident Engineer, and regulators shall be present at the meeting.

4.3 Project Collaboration Meetings

Design-Builder shall attend and participate in project collaboration meetings scheduled and conducted by VTrans Resident Engineer. The meetings shall occur every other week, however the frequency can be modified at the discrepancy of the Resident Engineer. During such meetings, progress during the prior week shall be reviewed as well as planned activities for the upcoming month. The Design-Builder shall collect information from any key subcontractors/sub-consultant responsible for Work completed during the specified duration and Work scheduled during the upcoming reporting duration. At a minimum, these meetings shall be attended by the Design-Build Project Manager, Construction Manager, Design Manager, PRO, ECO, and Contractor's Safety Officer as well as other personnel designated by the VTrans Resident Engineer. Absence of any Key Person must be approved in writing by the Resident Engineer prior to the meeting. Meetings will occur every other week beginning the month after the issuance of the Contract Notice to Proceed and will be located either at the VTrans National Life Offices in Montpelier, VT or at the Project site. Design-Builder shall be responsible for preparing, maintaining and posting meeting notes to the project collaboration website. The meeting notes shall include a system for tracking the status of action items (what, who, when, & where). The meeting notes shall be provided to VTrans within two (2) working days of the weekly collaboration meeting.

4.4 Over-the-Shoulder (OTS) Review Meetings

It is encouraged that the Design-Builder participate in OTS review meetings throughout the development of Project submissions. The meetings may be scheduled at the request of the design-builder or VTrans. They are a chance for the design-builder to receive informal feedback regarding the development of Administrative Submittals, design documents, or construction submittals.

To schedule an OTS meeting, the Design-Builder shall send a request to the Resident Engineer including an agenda for the meeting and the material to be reviewed. The request shall be made two weeks prior to the desired meeting to allow for scheduling the appropriate personnel at the meeting.

4.5 Project Schedule Updates and Management

As part of, and in conjunction with, the weekly reports required by Section 4.6, Design-Build Project Manager shall provide VTrans with any proposed updates of the Baseline Project Schedule for VTrans' review and a progress narrative in accordance with the Special Provisions contained in Part 4. In addition, a weekly progress narrative prepared as part of the weekly reports shall also include the following:

- Affirmation by the Design-Builder that this is the only schedule being executed to perform the Work;
- Details of any aspects of the Work which may jeopardize the completion in accordance with the Contract Documents; and
- Measures being (or to be) adopted to overcome such aspects.

If VTrans believes that the Baseline Project Schedule needs a specific revision it will be requested from the Design-Builder in writing. Design-Builder shall respond in writing within seven (7) calendar days,

either agreeing with VTrans' proposed revision, and henceforth including it in the next Baseline Schedule update, or providing justification why it should not be accomplished. If VTrans and the Design-Builder cannot agree on resolution, the Design-Builder shall proceed under the previously approved Baseline Project Schedule. At no time shall Design-Builder continue to reflect items of non-concurrence from VTrans in Baseline Project Schedule updates.

Design-Builder shall, whenever required by VTrans, provide in writing a general description of the arrangements and methods which the Design-Builder proposes to adopt for the execution of the Work. No significant alteration to the Baseline Project Schedule, or to such arrangements and methods, shall be made without informing VTrans and any alterations made shall reflect the requirement for coordination of the Work with the actions and obligations of VTrans and the Work to be carried out by VTrans' separate contractors. If any alteration affects any such actions, obligations or Work, it shall not be made without the prior approval of VTrans. If the progress of the Work does not conform to the Baseline Project Schedule, as updated herein, VTrans may instruct Design-Builder to revise the Baseline Project Schedule, showing the modifications necessary to achieve completion within the Contract Times.

4.6 Weekly Reports

Weekly reports shall be prepared by the following Design-Builder Key Personnel and submitted to VTrans in electronic format. Reports shall be submitted on Tuesday of each week and shall contain information on progress from the previous week, as well as expected progress for the coming week. Reporting shall continue until VTrans' determination that the Project has achieved Final Completion. Each report shall include at a minimum, the following information:

<u>Design-Build Project Manager Weekly Report:</u>

- Overall Project status update including any Baseline Project Schedule updates.
- Unresolved claims, NCRs, or disputes
- All required EEO documentation.

<u>Construction Manager Weekly Report:</u>

- Status report on all active Work Packages that have been released for construction including photographs and detailed descriptions of progress.
- Planned progress for upcoming week.
- Status report regarding the effectiveness of the TMP.
- Copies of quality control documents, inspection reports, and testing results.
- Records of personnel and equipment.

<u>Design Manager Weekly Report:</u>

- Status updates of all design submittals, right-of-way acquisition, and government approvals.
- Planned progress for upcoming week.

- Transportation Management Plan Weekly Monitoring Results and TMP Modifications Summary.

Public Relations Officer Weekly Report:

- Update regarding public outreach efforts and upcoming press releases.
- Update regarding public perception of the Project.
- Update regarding public feedback on the Project, including effectiveness of the Project traffic control.
- Update regarding changes made to the content of the project website.
- Update regarding use of social media.

Environmental Commitments Officer Weekly Report:

- Status of government approvals.
- Status update regarding permitting compliance.
- Written status update to the VTrans Environmental Specialist and to the VTrans Construction Environmental Engineers.
- Erosion Prevention & Sediment Control Reports.
- Updated Environmental Commitments Database.

Contractor's Safety Officer Weekly Report

- Work zone safety review – as reported by the Contractor's Safety Officer.
- Reportable Incidents
- Areas for Improvement

Failure of Design-Builder to provide complete weekly reports, including but not limited to the weekly Schedule updates, shall be grounds for VTrans to withhold approval for all or part of Design-Builder's Applications for Payment until such time Design-Builder furnishes such complete reports. ECO Weekly Reports shall be sent to the VTrans Environmental Specialist and Construction Environmental Engineer in addition to posting to the Project Collaboration Site.

4.7 Project Records

Design-Builder shall organize and maintain its Project records in a manner that allows such Project records to be filed by Work Packages, as applicable. Additionally, Design-Builder shall develop a tracking log wherein the Project records are provided chronologically, with the file type, description, date received/sent, entity the documentation is from/to, Work Package reference, status and electronic location. If the Project record relates to changes in the Work, preferably only one Work Package shall be referenced in such Project record. If a Project record relates to multiple Work Packages, then all related Work Packages shall be referenced in such Project record. As a condition of Final Payment,

Design-Builder shall provide VTrans with a complete set of all Project records by and between Design-Builder and VTrans created on the Project.

4.8 Field Office

The Design-Builder shall provide the VTrans Resident Engineer with two field offices for the Project. The location of the field offices shall be approved by the VTrans Resident Engineer. In addition to all requirements of the VTrans Standard Specification, each field office shall also each meet the following requirements:

- High Speed Internet capable of transmission speeds of 5 Mbs or greater.
- Two Phone Lines.
- Color printer, color copier and color scanner capable of a minimum of 11x17 paper size.
- Four 24", or larger, flat screen computer monitors.
- Overhead projector or large wall mounted monitor (50" minimum) for use in project meetings.

4.9 Design-Builder's Responsibility for Project Safety

The Design-Builder shall recognize the importance of performing the Work in a safe manner so as to minimize damage, injury or loss to: (i) all individuals at the Site, whether working or visiting; (ii) the Work, including materials and equipment incorporated into the Work or stored on-Site or off-Site; and (iii) all other property at the Site or adjacent thereto. The Design-Builder shall assume responsibility for implementing and monitoring all safety precautions and programs related to the performance of the Work. Design-Builder shall, prior to commencing construction, designate a Safety Representative with the necessary qualifications and experience to supervise the implementation and monitoring of all safety precautions and programs related to the Work. The Design-Builder's Safety Representative shall be an individual stationed at the Site full time who may have responsibilities on the Project in addition to safety. The Safety Representative shall make routine daily inspections of the Site and shall hold weekly safety meetings with Design-Builder's personnel, Subcontractors and others as applicable. Design-Builder shall provide minutes of each safety meeting to VTrans within five (5) days of such meeting.

Design-Builder and Subcontractors shall comply with: (i) all Legal Requirements relating to safety; and (ii) any VTrans-specific safety requirements set forth in the Contract Documents, provided that such VTrans-specific requirements do not violate any applicable Legal Requirement. Design-Builder will immediately report in writing any safety-related injury, loss, damage or accident arising from the Work to VTrans' Resident Engineer and, to the extent mandated by Legal Requirements, to all Governmental Units having jurisdiction over safety-related matters involving the Project or the Work. VTrans shall have the right to suspend any or all Work if Design-Builder fails to comply with its obligations hereunder.

Design-Builder's responsibility for safety under this Section is not intended in any way to relieve Subcontractors and Sub-Subcontractors of their own contractual and legal obligations and responsibility for: (i) complying with all Legal Requirements, including those related to health and safety matters; and (ii) taking all necessary measures to implement and monitor all safety precautions

and programs to guard against injury, losses, damages or accidents resulting from their performance of the Work.

4.10 Vermont Occupational Safety and Health Standards

The Project shall comply with all Vermont Occupational Safety and Health Standards.

5.0 ADMINISTRATIVE SUBMITTALS

Following receipt of Contract Notice to Proceed and the Administrative Submittals Authorization, the Design-Build Team will be authorized to submit Administrative Submittals to the Project Collaboration Site.

The Design-Builder must submit and receive approval for the following documents as part of the Administrative Submittals. The documents must be included in the Work Breakdown Structure as separate Work Packages:

- Baseline Project Schedule
- Schedule of Payments
- Design Quality Management Plan
- Construction Quality Control Plan
- Transportation Management Plan
- Public Relations Plan
- Environmental Commitments Tracking Database
- NEPA Reevaluation
- Geotechnical Investigation Plan

For each submission made, VTrans will review the document in accordance with Section 12.1.1 below and provide written comments back to the Design-Builder. The Design-Builder shall address all comments and resubmit the document to VTrans. This process shall repeat until all comments are satisfactorily addressed.

5.1 Baseline Project Schedule

During the Administrative Submittals the Design-Builder shall submit to VTrans, for its review, comment, and approval, a Baseline Project Schedule that includes, among other items: (a) the order in which Design-Builder proposes to carry out the Work (including each stage of design, right-of-way acquisition (if necessary), Governmental Approvals (including but not limited to permit acquisition, manufacture, delivery to Site, construction, inspection and testing); and (b) the times when submissions and approvals or consents by VTrans are required (provided that such times shall be no less than VTrans' minimum review duration identified in Section 12.1.1 below). This schedule shall be broken

down into Work Packages that are consistent with the Work Breakdown Structure submitted with the Design-Builder's Technical Proposal.

If VTrans does not approve such submission, Design-Builder shall submit a revised schedule to VTrans within seven (7) days of its receipt of VTrans' comments on such Schedule. This process shall continue until such time as a Schedule is so approved by VTrans ("**Baseline Project Schedule**"). VTrans reserves the right to withhold approval for all or part of Design-Builder's Applications for Payment until such time Design-Builder furnishes an approved Baseline Project Schedule.

VTrans' review and approval of the Baseline Schedule or subsequent updates shall not be construed as relieving Design-Builder of its complete and exclusive control and responsibility over the means, methods, sequences and techniques for executing the Work and does not constitute approval or acceptance of Design-Builder's ability to complete the Work within the Contract Time(s).

5.1.1 Schedule Format

The schedule format shall be in accordance with the Special Provisions contained in RFP Part 4, Section 108.03. In addition, a folder containing the latest Baseline Schedule update in electronic format shall be submitted to the Project Collaboration Worksite for each schedule update. The Schedule shall be a Time Scaled Logic Diagram, which shall be neatly organized and plotted time scaled from left to right with suitable notation relating the interface points among sheets. Time Scaled Logic Diagrams shall clearly depict the critical path, as well as activity identifications, activity descriptions, original durations, early start, early finish, late start, late finish, and actual dates as applicable. This schedule format shall be maintained through Contract Completion.

5.2 Schedule of Payments

As part of the Administrative Submittals the Design-Builder shall submit a Schedule of Payments to VTrans for review, comment, and approval. The Schedule of Payments shall be developed in accordance with the information contained below and shall consist of the following information:

- The associated lump sum cost for each Work Package. Work Packages shall match the WBS submitted in Design-Builder's Technical Proposal; and

- A schedule of payments showing the anticipated dates on which Applications for Payment will be submitted for completed Work consistent with the payment provisions in section 13.1 below.

- Each Work Package represents a set of materials, labor and equipment to complete the work. Work packages cannot be for material purchases only. The Design-Builder may request for material payments as per Section 106.09 "Stock Piling of Materials" of the specifications.

The approved Schedule of Payments shall: (i) include costs for each Work Package comprising the Work; (ii) serve as the basis for bi-weekly progress payments made to Design-Builder throughout the Work; and (iii) equal the total lump sum bid price for the Project and will not be used to adjust the total compensation for the Project.

5.3 Design Quality Management Plan

The Design-Builder shall develop and submit a Design Quality Management Plan in accordance with Section 8.0 below.

5.4 Construction Quality Control Plan

The Design-Builder shall develop and submit a Construction Quality Control Plan in accordance with Section 9.0 below.

5.5 Transportation Management Plan

All Federal-aid highway projects are required to have a Transportation Management Plan (TMP) (23 CFR 630 Subpart J). This Project is considered a significant project.

The Design-Builder shall develop a project specific TMP. The TMP shall be developed in accordance with the Transportation Management Plan Guidance Document included with the attached BTC and in accordance with FHWA guidance.

The Design-Builder shall prepare and submit a TMP as part of the Administrative Submittals, and shall include all sections in the Transportation Management Plan Development Document included with the attached BTC.

One critical element of the TMP will be coordination with the local emergency services to ensure continuous access to the highway and particularly the work zone.

5.5.1 Temporary Traffic Control Plan

The Temporary Traffic Control (TTC) plan shall identify Work activities and durations when uniformed traffic officers will be used.

The TTC shall extend an appropriate distance beyond the construction tie-in locations to allow for the required length of tapers, lane shifts and all construction signage per the current editions of the MUTCD.

As part of the TTC, temporary median traffic barrier conforming to NCHRP 350 shall be used by the Design-Builder to separate oncoming Interstate traffic that is adjacent to each other and otherwise unprotected. The median barrier shall be erected with glare screening on top of it that reduces the headlight glare from opposing traffic.

Minimum traffic lane widths shall be as follows:

- During southbound bridge construction (traffic maintained on the existing northbound bridge) it shall be a minimum requirement to maintain one (1) 12-foot lane with 1-foot shoulder offsets to temporary traffic barrier in each direction of travel on I-91 (14-foot wide barrels);

- During northbound bridge construction (traffic maintained on the new southbound bridge) it shall be a minimum requirement to maintain one (1) 12-foot lane with 3-foot shoulder offsets to temporary traffic barrier in each direction of travel on I-91 (18-foot wide barrels)

Temporary workzone speed limits along the interstate shall be a minimum of 50 mph unless directed otherwise by the Resident Engineer.

Minimum Crossover Design Requirements shall be as follows:

- Design Speed = 65 mph (Posted 50 mph) (within work zone)
- eMax = 6.0% and 8.0%
- Superelevation for temporary geometry shall be designed in accordance with AASHTO Method 5

Minimum Pavement for Temporary Detour Crossovers:
Lift 2: 1.5" Type IVS
Lift 1: 2.5" Type IIS
18" Subbase of Dense Graded Crushed Stone

Construction traffic control devices shall be installed, inspected, maintained, monitored, adjusted, and removed by the Design-Builder throughout the duration of the Project.

The Design-Builder shall be responsible for any changes to the TMP resulting from any changes to the sequence of construction or scope of work.

As part of the Temporary Traffic Control Plan, the Design-Builder will be allowed to close the Exit 6 northbound onramp to all vehicles (except emergency vehicles) while traffic is crossed over to the southbound bridge. The intent to close the Exit 6 northbound onramp shall be indicated in the Bidder's Technical Proposal with the dates of closure indicated on the Proposal Schedule.

5.5.2 Transportation Operations Plan

The Transportation Operations (TO) Plan should include elements of travel demand strategies, corridor management strategies, safety strategies, and incident management. The transportation operations plan should also include a discussion of incident management and response. An incident management framework is discussed later in this document.

5.5.2.1 Incident Management Plan

As part of the Transportation Operations (TO) Component, the Design-Builder shall develop a plan to address the Design-Builder's responsibilities in the event of an incident (accident) within the project area. The plan shall include, but is not limited to:

- Coordination with Vermont Emergency Management prior to any field activities.
- A list of emergency services, state officials, local municipal officials, and others that may be affected by an incident.

- A procedure for notifying emergency services, state officials, local municipal officials, and others that may be affected by an incident.
- Procedures for implementing alternative temporary traffic control during an incident.
- Procedures for evaluating the cause of incidents and making revisions to the TMP if necessary.
- Procedures for managing based on "level of incident".

5.5.3 Public Information Plan

The public informational and outreach component must be a collaborative effort between the Design-Builder and VTrans. Press releases, a project website, and other media are strategies that VTrans has employed in the past with success. A Public Relations Officer hired by the Design-Builder is required.

The public informational component of the TMP may include several strategies working in concert to inform road users before and during travel through the work zone. Effective public awareness strategies have included direct mailings to abutters and businesses, paid advertisements in local and regional media, project websites, and public meetings/hearings. Coordination with Town officials and postings at Town Hall can also be elements of an effective public information strategy. The public information component should begin well in advance of the beginning of construction. Initial public meetings, a project website and a roadside sign should be installed at least six weeks before the start of construction. Once the work has begun, the public information strategies become more focused on the motorist on the corridor with static signs, portable changeable message signs (PCMS), and traveler information systems. Additional updates should be considered in advance of major changes to the traffic pattern.

5.5.4 Portable Changeable Message Signs

As part of the Public Informational (PI) Component of the TMP, the Design-Builder shall provide Portable Changeable Message Signs ("PCMS") to provide en-route traveler information about planned construction, delays or other sudden changes in travel conditions throughout the Project duration. The number and location of PCMS shall be incorporated into the TMP. The PCMS shall be placed in a semi-permanent location, protected from traffic, but highly visible to the travelling public. The PCMS shall be operational remotely before any lane closures associated with the Project are established. The Design-Builder shall coordinate the acquisition/implementation with the VTrans Resident Engineer. Final approval of text, location and number of PCMS shall be by the VTrans Resident Engineer.

5.6 Public Relations Plan

The Design-Builder shall prepare and submit a Public Relations Plan (PRP) as part of the Administrative Submittals. To be effective on this project, three broad categories of information shall be developed and included in the PRP. These categories shall be communicated and coordinated between VTrans, the Design-Builder, and the public throughout the Project duration:

- The **Vision** of the Project – answers to questions such as why the Project is needed, what Work will be done, how the Project will benefit the public, how the Project fits into the community, and how the Project fits into the State's broader transportation plans.

- The Project's **Progress** – ongoing messages to keep people informed about how the Project is moving forward, whether it's on schedule and on budget, what disruptions or improvements are coming in the near future, and what beneficial innovations are being used.

- **Coping** during the Project – information that helps people deal with inconveniences caused by the Project, such as details about detours, blocked driveways, traffic restoration plans and construction and noise impacts on local residents and businesses. This shall include describing informational resources that will be available to the public.

The PRO shall use the PRP as the framework for disseminating and responding to information from the public.

VTrans has identified a number of customer groups that must be communicated with during the Project. The PRO shall describe in its Public Relations Plan its approach to communicating with these groups and coordinating with VTrans. The identified groups include, but are not limited to:

- The Town of Rockingham and other local and regional public officials
- Green Mountain Railroad Corporation
- Area residents
- Adjacent Property Owners
- Commuters
- Traveling Public
- Commercial vehicle operators
- State legislators
- VTrans
- FHWA
- Business owners, employees, and customers
- News media
- Emergency response agencies, including police, fire, and ambulance agencies
- Utilities
- Local community organizations
- Delivery and courier services
- School districts
- Water management organizations, environmental permitting agencies, and other local service districts

The Design-Builder's Public Relations Officer (PRO) shall be responsible for providing a point of contact and phone number for the public to use in calling to request information or express concerns during the Project. The PRO shall also be responsible for coordinating preparation and release of public information with VTrans' Resident Engineer.

Public Outreach

The PRO shall develop and enact a strategy for disseminating information about the project to the general public. The strategy shall include email, SMS (text messaging), social media (Facebook, Twitter, etc.), a project website, and Front Porch Forum at a minimum. The PRO shall provide real-time updates including, but not limited to, ongoing explanation of construction activities, traffic updates, safety concerns, accidents, and road closures.

Project Website

The PRO shall develop, maintain, and update a public Project Website for the duration of the project. The website shall be updated by the PRO with written information and photographs about the Project suitable for viewing by the public. Such information will include a Project overview, ongoing explanation of construction activities, progress photos/videos, traffic updates, overall Project Schedule and contact information. Web content shall be updated at least twice a month throughout the duration of the Project.

5.7 Environmental Commitments Tracking Database

As part of the Administrative Submittals Period the Design-Builder shall submit an Environmental Commitments Tracking Database for review, comment, and approval. The Environmental Commitments Tracking Database shall be developed in accordance with the information contained in Section 3.0 above.

5.8 NEPA Reevaluation

As part of the Administrative Submittals the Design-Builder shall conduct a NEPA Reevaluation for the project.

The NEPA Reevaluations shall include any additional NEPA Documentation resulting from development of final design, ATCs, or construction means and methods. Any changes in scope or footprint (as expressed in the PACE documents) proposed by the Design-Builder, that are acceptable to VTrans, may require additional environmental technical studies and analysis. The Design-Builder shall be responsible for any additional environmental permits, studies or analysis to support the Design-Builder's proposed changes in scope. Design-Builder shall be solely responsible for any costs or schedule delays due to permit acquisition, modifications, environmental studies, and NEPA document re-evaluations associated with Design-Builder's development of final design or implementation of ATCs. No time extensions will be granted.

The Design-Builder shall be responsible for compliance with pre-construction and construction-related PACE conditions, commitments, and/or mitigation requirements. The PACE Re-evaluation request must be submitted to the Resident Engineer via the Project Collaboration Site. The Design-Builder shall assume all obligations and cost incurred by complying with the terms and conditions of the permits and certifications. Any fines associated with environmental permits or regulatory violations shall be borne by the Design-Builder.

5.9 Geotechnical Investigation Plan

As part of the Administrative Submittals the Design-Builder shall submit a Geotechnical Investigation Plan for review, comment, and Release for Construction. The Geotechnical Investigation Plan shall be developed in accordance with the information contained in Section 6.2.2 below. The plan shall include a standalone traffic control plan for highway and railroad or will not be Released for Construction until the TMP, and any related traffic control plan inclusive of railroad coordination is Released for Construction.

6.0 BASELINE PROJECT INFORMATION

6.1 Survey

Limited surveys of the project areas were completed in 2013. The survey is included in the RFP Information Package. The Design-Builder may use the survey information provided at his/her own discretion. The Design-Builder shall identify the need for and conduct all additional surveys necessary to complete the Work in accordance with the Contract, VTrans Survey Manuals, Standard Specifications, and any local requirements.

All survey and construction layout necessary for design, construction and operation of the completed roadway, railroad, and structure facilities shall be provided by the Design-Builder. The Design-Builder shall bear sole responsibility for the accuracy of all survey data used in the Design. Prior to use of survey provided by VTrans, the Design-Builder shall review and verify existing survey data and determine the requirements for new and additional survey and mapping data. The Design-Builder shall be responsible for the final precision and accuracy of all survey and mapping work. The Design-Builder shall be responsible for all construction layout work including furnishing all required control. All field notes are to be recorded in Field Survey Notebooks that shall be turned over to VTrans at the end of the Work.

Surveying services shall be performed by or under direct control and personal supervision of a surveyor who is licensed in the State of Vermont as a land surveyor and is experienced in highway and bridge construction.

6.2 Geotechnical Investigations

All geotechnical investigations shall be conducted in accordance with the criteria set forth in this Subsection and shall be supervised by a Design Professional with a minimum of ten (10) years of geotechnical engineering experience. All design calculations and plans shall be prepared, checked, signed and stamped by a Professional Engineer registered in the State of Vermont.

6.2.1 VTrans Geotechnical Investigations

VTrans completed geotechnical subsurface investigations for this Project in 2015 with the intent of providing a general subsurface characterization of the area. The results of the investigations are included in the RFP Information Package. The Design-Builder acknowledges that the geotechnical work performed by VTrans is intended to identify the general subsurface conditions of the site and not

to identify the full range of subsurface conditions the Design Builder may encounter throughout the entire project site.

The Design-Builder may use this information at his discretion and VTrans assumes no responsibility for its accuracy or adequacy with respect to any other subsurface location in the project area.

The Design-Builder shall be responsible for additional subsurface investigations that are required to validate and augment the geotechnical information included in this RFP. The geotechnical investigations performed by the Design-Builder shall meet or exceed the requirements of the AASHTO LRFD Bridge Design Specifications.

6.2.2 Design-Builder Geotechnical Investigation and Data Analysis

The Design-Builder shall prepare a Geotechnical Investigation Plan and submit it to VTrans within forty-five (45) Calendar Days of Contract Notice to Proceed. The plan shall include the criteria or rationale used in developing the plan, and shall incorporate pertinent requirements of AASHTO LRFD Bridge Design Specification, FHWA Publication No ED-88-053 "Checklist and Guidelines for Review of Geotechnical Reports and Preliminary Plans and Specifications", and shall identify the locations of all field investigation locations, in-situ testing sites, and borings, together with their depths, sampling intervals, and a description of both the field and laboratory testing programs utilized. The plan shall also include a traffic control plan, a safety/hazard analysis plan, a plan to locate underground utilities and a list of all permits required to access investigation areas and to perform the geotechnical investigation. The Geotechnical Investigation Plan shall be submitted to VTrans for review and comment.

6.2.2.1 General

The Design-Builder shall be familiar with applicable design references and resources and shall be familiar with the existing site conditions, both native and man-made, shall interpret the existing geotechnical data pertaining to the Project Site, and shall perform all additional subsurface investigations and field and laboratory testing as may be necessary to satisfy itself as to (a) the nature of the soil, rock, groundwater, and subsurface conditions across the Project Site and all variations in groundwater and subsurface conditions; (b) the geological formations within, and attributes of, the Project Site; (c) the nature of the Work to be performed; (d) appropriate methods of construction and selection of equipment; (e) critical combinations of loading; (f) seismic liquefaction potential of site, and (g) all other factors impacting evaluation.

It is the Design-Builder's responsibility to secure access and necessary permits to perform geotechnical investigation. The proposed access shall be reviewed by VTrans.

6.2.2.2 Geotechnical Investigation Requirements

The Design-Builder shall design the geotechnical investigations to fulfill the requirements of the design criteria outlined throughout the RFP. The Design-Builder shall comply with the following in performing field and laboratory investigations:

- Independent geotechnical testing shall be performed in an AMRL accredited laboratory.

- Design-Builder shall determine the coordinate location and ground surface elevation for each boring and field investigation site, and shall show the coordinates, station and offset, and elevation for each individual boring log or investigation record. Coordinates and station and offset shall be referenced to the Project survey control. Elevations shall be referenced to the Project datum and horizontal control system.
- Design-Builder shall classify soil in accordance with the "Standard Classification of Soils for Engineering Properties" (Unified Soil Classification System) ASTM D2487-00, and "Standard Practice for Description and Identification of Soils" (Visual-Manual Procedure) ASTM D2488-00.
- Independent geotechnical testing laboratories shall be approved by VTrans in accordance with the VTrans Qualified Laboratory Program and shall have documentation of calibration within the last year for all equipment used for testing.
- Information obtained using a pocket penetrometer or field torvane shall not be the primary means for development of geotechnical parameters.

6.2.2.3 Geotechnical Investigation Report

For each structure, the Design-Builder shall document all geotechnical data and findings including, without limitation, a summary of existing information, results of the field subsurface investigations and mapping, results from the laboratory tests, and geotechnical and foundation analyses and design. The results of the geotechnical investigations, laboratory results, and geotechnical recommendations shall support design and construction efforts. The Design-Builder shall assess, and include in the reports, the potential effect, if any, to existing structures. The documentation shall be consolidated in the form of Final Geotechnical Reports signed and stamped by a Design Professional Engineer registered in the State of Vermont. The reports shall be completed and Released for Construction prior to completing design or installation of the structures, shoring, or other geotechnical related construction features.

Design-Builder shall use the findings and design and construction recommendations included in the Geotechnical Investigation Report to develop the foundation design for the buried structure. The Design-Builder shall review the construction documents to assure that all geotechnical requirements and recommendations from the Geotechnical Investigation Report are appropriately incorporated. The design QA and QC documents shall document how each specific geotechnical recommendation or requirement is addressed in the construction documents, and shall reference the drawings that incorporate the pertinent results.

6.3 Preliminary Hydraulics

VTrans has completed a preliminary hydrologic analysis and hydraulic analysis for bridges 24N and 24S. This information is included as part of the BTC.

6.4 Drainage Inventory

The Design-Builder shall prepare a detailed inventory of the existing drainage system components throughout the Project area, combined with visual field investigations to list: drainage area, flow capacity, material type, condition, and cover. The findings shall be formally presented to the VTrans Resident Engineer in written report format.

6.5 Right-of-Way

VTrans has reviewed the existing right-of-way (ROW) based on the Base Technical Concept in the RFP and has obtained a ROW Clearance; however, the Design-Builder shall be responsible for any right-of-way modifications resulting from either design modifications or construction issues. Any changes in scope or footprint, proposed by the Design-Builder, may require additional ROW. The Design-Builder shall be responsible for acquiring any additional ROW, for VTrans, to support the Design-Builder's proposed changes in scope. All right-of-way acquisition shall be performed in accordance with the Uniform Act pursuant to 42 USC Chapter 61 as amended (1987). Design-Builder should note that they are solely responsible for any costs or schedule delays due to additional ROW acquisition associated with Design-Builder's design changes and no time extensions will be granted.

It is a requirement of this RFP that the Design-Builder state their intention to/not to access the Interstate 91 ROW through the existing ROW fence in their Technical Proposal.

There is no guaranty that ROW access through the ROW fence will be approved.

Request for access through the ROW fence made after the submission of the Technical Proposal will not be permitted without payment of the fair market value after the award of the contract, with the exception of access to the local town highways directly intersecting or within the Project area.

It is a requirement of this RFP that the Design-Builder state their intention to/not to use any part of the Interstate 91 ROW for waste, borrow, or staging areas in their Technical Proposal.

Acceptance of a Design-Builder's proposal shall not be considered approval for any waste, borrow, or staging area activities.

6.5.1 Changes to Right-of-Way

The Design-Builder shall be responsible for any permanent right-of-way modifications resulting from ATCs, methods of temporary access, or construction means and methods. Any changes in scope or footprint, proposed by the Design-Builder, may require additional ROW. The Design-Builder shall be responsible for acquiring any additional ROW, for VTrans, to support the Design-Builder's proposed changes in scope. All right-of-way acquisition shall be performed in accordance with the Uniform Act pursuant to 42 USC Chapter 61 as amended (1987). The Design-Builder shall be solely responsible for any costs or schedule delays due to additional ROW acquisition associated with Design-Builder's design changes and no time extensions will be granted.

In addition to permanent right-of-way, the Design-Builder will be responsible for any temporary right-of-way modifications for additional temporary facilities during construction including, but not limited to, additional construction entrances, haul routes, staging and storage areas, stockpile areas, cranes, erosion prevention and sediment control, field offices, and construction fencing. Design-Builder shall note that they are solely responsible for any costs and schedule delays due to acquisition of additional temporary rights associated with the Design-Builder's design and no time extensions will be granted.

6.6 Existing Utilities

The locations of all known utilities are shown in the BTC in their approximate locations. The Design-Builder shall check and verify the location of all existing utilities and service connections both underground and overhead in accordance with the Vermont Dig Safe Law: 30 VSA Chapter 86. The Design-Builder should be aware that not all utility owners subscribe to the Dig Safe Program. It is the Design-Builder's responsibility to ensure that all utility companies have been notified and all utilities have been marked prior to commencing their Work. Any damages to the utilities which are shown on the plans or designated by Dig Safe shall be the Design-Builder's responsibility.

The Design-Builder shall make every effort to prevent debris from falling into catch basins. Should any debris fall inside a structure, it shall be removed immediately. The Design-Builder shall maintain the existing closed drainage system located within the project limits for the duration of the project. If temporary modifications are required to facilitate the proposed work, the Design-Builder shall restore the drainage system to a condition approved by VTrans prior to project completion. Temporary modifications shall meet the requirements of the VTrans Hydraulics Manual and provide sufficient surface drainage and roadway safety.

The Design-Builder shall be responsible for coordination of the Project construction with all utility companies for the utilities that may be affected. The Design-Builder shall be responsible for coordinating the Work of its own forces, its subcontractors, and the various utilities. The resolution of any conflicts between utilities and the construction of the Project shall be the responsibility of the Design-Builder. No additional compensation or time will be granted for any delays, inconveniences, or damage sustained by the Design-Builder or its subcontractors due to interference from utilities or the operation of relocating utilities.

The Design-Builder shall be responsible for utility designations, utility locations (test holes), conflict evaluations, cost responsibility determinations, utility relocation designs, utility relocations and adjustments, replacement land rights acquisition and utility coordination required for the Project. The Design-Builder shall be responsible for all necessary utility relocations and adjustments to occur in accordance with the accepted Baseline Project Schedule. All efforts and cost necessary for utility designations, utility locates (test holes), conflict evaluations, cost responsibility determination, utility relocation designs, utility relocations and adjustments, utility reimbursements, replacement land rights acquisition and utility coordination shall be included in the Design-Builder's Price Proposal.

The Design-Builder shall accurately show the final location of all utilities on the as-built drawings for the Project.

6.7 Storage of Materials

Materials shall be stored so as to ensure the preservation of their quality and fitness for the Work. Stored materials, even though approved before storage, may be inspected prior to their use in the Work; they shall meet the requirements of the Contract at the time of use. Stored materials shall be located so as to facilitate inspection. Upon approval, portions of the right-of-way not required for public travel may be used for storage purposes and for the placing of the Design-Builder's plant and equipment, but any additional space required therefore shall be at the Contractor's expense. Private property shall not be used for storage purposes without written permission of the owner and/or lessee. All storage sites shall be restored to their original condition at the Design-Builder's expense. The storage of all materials shall be in accordance with permitting requirements.

6.7.1 Explosive and Flammable Materials

The Design-Builder's attention is directed to the applicable provisions of the Vermont Statutes Annotated as amended which (1) authorize the State Fire Marshal to make, publish, enforce, and from time to time to alter, amend, or repeal rules and regulations pertaining to fire prevention and public safety concerning the safekeeping, storage, use, manufacture, sale, handling, transportation, or other disposition of blank cartridges, gun powder, dynamite, nitroglycerine, crude petroleum or any of its products including liquefied petroleum gas, explosives, flammable gases and flammable fluids, compounds or tablets, any other explosive, or any substance that may spontaneously or acting under the influence of any contiguous chemical or physical agent ignite, inflame, or generate inflammable or explosive vapors or gases to a dangerous extent, and (2) may prescribe the location, materials, and construction of buildings and other facilities to be used for storage of such products. Attention is further directed to the regulations applying to explosives while being transported by carriers in motor vehicles, railroad cars, or vessels in conformity with the regulations adopted by the US Department of Transportation, the US Coast Guard, or the Secretary of Transportation under the provisions of Title 5 VSA § 2001 and Subsection 107.11.

7.0 TECHNICAL PROJECT REQUIREMENTS

7.1 Base Technical Concept

Each Bidder shall review the BTC to better understand the design requirements of the Project. The Bidder may propose ATCs for approval by VTrans as described in Part 1 of the RFP.

If the Bidder chooses the BTC for their Proposal, they shall perform an independent evaluation and shall be solely responsible for utilizing and developing this concept, and shall prepare final design documents in accordance with all pertinent VTrans design standards.

The Design-Builder is solely responsible for assessing existing conditions, presenting design and engineering solutions, and defining means and methods for complying with the requirements of the RFP.

7.2 Existing Bridge 24N and 24S Structural Condition Concerns

7.2.1 General Concerns

The Design-Builder shall limit activities on Bridge 24N and 24S so that additional dead load is not increased beyond the weight of the temporary median barrier.

It is assumed that the weight of the temporary median barrier will not exceed 400 pounds per linear foot.

7.2.2 Steel Truss

VTrans has identified several structural concerns with the existing Bridges 24N and 24S. VTrans will monitor the condition of the steel elements prior to construction and following the implementation of the temporary traffic control plan.

If the result of any VTrans inspection is a recommendation to make structural repairs, VTrans will design the repairs and provide structural details to the Design-Builder. The Design-Builder shall immediately make the repairs to the satisfaction of the VTrans Resident Engineer. The costs for making the repairs shall be paid for as extra work.

7.2.3 Concrete Deck and Bituminous Pavement

The existing concrete bridge decks are deteriorated to the point where the condition is causing failures in the existing bituminous concrete pavement wearing surface. In an effort to reduce the impact loading on the existing structure that will remain open during temporary traffic control, prior to implementation of the crossover traffic control pattern the Design-Builder shall cold plane a depth of 1.5-inches of pavement for the full width and length of the bridge deck remaining open and extending 25-feet beyond the ends of the bridge. The extents of the cold planning shall be coated with emulsified asphalt by the Design-Builder in accordance with the Standard Specifications and paved with 1.5-inches of Type IV bituminous concrete pavement. This work shall be part of the overall lump sum price proposal. This work is the minimum scope that VTrans requires of the Design-Builder. Maintenance and repairs to provide a safe and passable concrete bridge deck with smooth wearing surface (no-potholes) shall be the responsibility of the Design-Builder throughout the life of the project.

7.3 Structure Removal

Structure removal shall conform to the requirements of the VTrans Standard Specifications. In addition, structure removal shall comply with the following:

1) Submit a Demolition Plan for each structure to VTrans for Review, Comment and Release for Construction.
2) Remove the existing bridge superstructure, bearings, and approach slabs completely.
3) Remove the existing bridge substructures, including pile caps and piles, and approach structures to a minimum of two (2) feet below the proposed finished grade or subgrade, whichever is lower.

4) Disposal of rubble from demolition of the existing bridges must be at an approved or permitted facility.

5) The existing bridges superstructure paint system may contain lead and shall be considered hazardous to personnel, the environment, and the public. The removed structural steel will become the property of the contractor. The contractor shall indemnify and hold the state, town, their officers, and employees harmless concerning the contractor's use or disposition of the structural steel. As part of the demolition plan, the Design-Builder shall specifically address containment of the lead during demolition of the existing structures. The Contractor is responsible for all state and federal clearances associated with handling and disposing of the lead paint on the existing structures.

7.4 Structures Improvements

The scope of bridge Work includes the design and construction of:

- Bridge No. 24 Northbound over Green Mountain Railroad Corporation and the Williams River – Complete Structure Replacement
- Bridge No. 24 Southbound over Green Mountain Railroad Corporation and the Williams River – Complete Structure Replacement

The Design-Builder shall, at a minimum, design the proposed structures in accordance with the applicable references listed in Section 2.1. All bridge design and construction documents shall be stamped and signed by a Professional Engineer licensed in the State of Vermont.

7.4.1 Reinforcing Steel

Reinforcing steel used on the project shall be in accordance with the VTrans Bridge Design Manual, VTrans Structural Engineering Instruction (SEI) 12-001, the VTrans Standard Specifications for Construction, and the VTrans Project Specifications.

In accordance with SEI 12-001, Level III reinforcing steel shall be used for the following bridge locations:

- Bridge superstructure concrete, including decks, slabs, haunches, curbs, and railing;
- Back walls and curtain walls above the bridge seat;
- Pier caps (non-integral piers); and
- Tunnels or substructures in a tunnel-like environment likely to be exposed to salt water or salt spray from plowing conditions.

In addition, Level III reinforcing steel shall be used in pier tables throughout the top 12", or for the maximum thickness of the deck slab, whichever is greater.

Following construction of the new structures, the final condition of the concrete deck shall allow for 2.5" minimum top cover over reinforcing following all grooving and grinding operations.

7.4.2 Geometry

Overall bridge geometry, including bridge width and cross slope, are provided in the design concepts. Design-Builder shall provide final bridge geometry including, but not limited to: horizontal alignment, vertical profile, all elevations, plan dimensions, girder framing, top of deck elevations, bottom of slab elevations, beam cambers, etc. All survey and construction layout shall be provided by Design-Builder as necessary for design, construction and operation of the completed facilities.

7.4.3 Minimum Service and Fatigue Life Requirements

The bridges shall be designed and constructed for a minimum 100-year service life. The AASHTO LRFD Bridge Design Code is currently calibrated for a 75-year bridge design life. The Design-Builder will need to provide design methodology, construction techniques, and construction materials that result in an overall project that exceeds the requirements of the design code.

The bridges shall be designed and constructed for infinite fatigue life and shall be designed with an emphasis on being low maintenance throughout its service life.

7.4.4 Approach Slabs

Structural approach slabs will be required for the bridges. Approach slabs shall conform to the requirements of the VTrans Structures Manual. Any revisions shall be submitted to VTrans for review for conformance to VTrans Standard Specifications and Design Standards.

7.4.5 Future Bridge Pavement

The bridges shall be designed for future 3” depth of bituminous concrete pavement overlay.

7.4.6 Live Load

The Design–Builder’s attention is directed to the following minimum live load design requirements:

Bridge Design Loading: AASHTO HL-93

Maximum Allowable Live Load Deflection: L/800

7.4.7 Wind Loads Exposure Criteria

The wind pressures at various heights shall be determined in accordance with criteria as specified for the AASHTO LRFD Bridge Design Specifications.

7.4.8 Load Rating

The Design-Builder shall perform structure load ratings for each bridge in accordance with AASHTO Manual for Bridge Evaluation, Load and Resistance Factor Rating. The rating shall be completed for

the AASHTO HL-93 design loading and for Vermont's Legal Load vehicles as specified in the VTrans Structures Manual.

The Design-Builder shall prepare and deliver to VTrans a load rating report for each structure (2 reports). Each report shall contain a completed copy of VTrans' current load rating summary sheet referencing the controlling structural element(s) sealed and signed by a professional engineer licensed in the State of Vermont, rating assumptions, and pertinent analysis calculations. If the rating is completed with a refined methodology, the Design-Builder shall also provide influence lines and distribution factors such that VTrans can evaluate future overloads permits.

7.4.9 VTrans Bridge Inspection

VTrans will inspect each bridge before they may be opened for public use. The Design-Builder shall notify VTrans two weeks prior to when each bridge is complete and ready for VTrans inspection. The Design-Builder shall provide access for the bridge inspection. At a minimum, the Design Manager shall be present for the VTrans inspections of each bridge.

7.4.10 Requirements for I-91 Bridge 24 North and 24 South

This section covers the specific design and construction elements of new bridges, bridge replacements, and geotechnical components. The goal of the design and construction of all structural systems and components is to provide functionality, durability, constructability, ease of maintenance, and safety consistent with the context of the Project Site. This section contains allowable types of structures, however if Bidder's proposed structure deviates from RFP Part 5 Base Technical Concept, Bidders must submit an Alternative Technical Concept.

7.4.10.1 Bridge 24N & 24S Substructure

Piers shall be located so that they do not encroach any closer to the Williams River than the existing piers. Piers shall be located outside of the existing railroad right-of-way. Abutments shall be located at the beginning and end of the bridges.

7.4.10.1.1 General

Bridge substructures shall not include:

- Experimental elements
- Timber elements
- Masonry elements
- Fiber reinforced polymer elements
- Stay-in-place sheet piling
- Exposed pile bents
- Battered drilled shafts

7.4.10.1.2 Specific Substructure Requirements

- The maximum compressive stress in the concrete substructures shall not exceed 0.6f'c under any construction load condition or the Service I Load Combination.

- The reinforcing ratio in the substructures shall not exceed 3.5% and the stress in the reinforcing shall not exceed 30 ksi during construction.

- KL/r for substructure columns shall not exceed 80.

7.4.10.2 Bridge 24N & 24S Superstructure

Bridge superstructures shall not include:

- Experimental bridge types
- Truss Elements
- Timber elements
- Masonry Elements
- Fiber reinforced polymer elements
- Tied arch trusses
- Cable stayed bridges
- Extradosed bridges
- Suspension bridges
- Delta Frames
- Any bridges with structural support systems of the bridge at or fully above the roadway surface

Superstructure types allowed are as follows:

- Welded steel plate girders
- Welded steel box girders
- Post-tensioned concrete box girders
- Pre-cast concrete I girders

The Design-Builder shall not design bridges with intermediate hinges.

The Design-Builder shall not design bridges with fracture critical components. The Design-Builder shall not design a bridge that utilizes floor beams or stringers.

7.4.10.2.1 Welded Steel Plate Girder Bridge Considerations

If the Design-Builder chooses welded steel plate girders, a minimum of 4 girders in each direction of traffic is required.

Welded steel plate girders shall meet the minimum requirements of Section 506.

7.4.10.2.2 Welded Steel Box Girder Bridge Considerations

If the Design-Builder chooses a steel box girder design, a minimum of 2 boxes in each direction of traffic is required. .

Steel box girders shall have a minimum interior clearance of 48” vertically and horizontally.

Drain holes shall be provided in the bottom flange at a minimum spacing of 50-ft and at all low points. Drain holes shall be covered with vermin guards consisting of 20-gauge galvanized metal screening (1/4” opening).

The inside of steel box girders shall be painted in accordance with the Special Provisions. The top coat shall be the color white.

Concrete deck slab shall be transversely post-tensioned.

7.4.10.2.3 Post Tensioned Concrete Box Girder Bridge Considerations

The vertical clearance inside each box segment shall be a minimum of 6'-0". Exceptions for a narrow width near the web(s) are permitted as needed provided a minimum continuous envelope of 6'-0" high x 2'-6" along the length of the box is maintained. The 6'-0" height dimension of the envelope, to be measured from the bottom slab of the box, shall clear all tendon ducts, anchorages, blisters, deviation saddles, etc.

Design each box segment with minimum 2" diameter ventilation or drain holes located in the bottom flange adjacent to the webs. Provide additional drains at low points against internal barriers / deviators.

Provide drains to prevent water (including condensation) from ponding near post-tensioning components, face of diaphragms, deviators, blisters, ribs and other obstructions. Show details on the design plans. As a minimum, provide the following:

1. Drains that may be formed using 2" diameter permanent PVC pipes set flush with the top of bottom slab.
2. A small drip recess, ½" by ½" around bottom pipe inserts.
3. Drains at all low points against barriers, blisters, etc.
4. Drains on both sides of box, regardless of slopes.
5. Vermin guards for all drains and holes

No Freyssinet / reinforced concrete hinges are allowed.

Segment top slab shall be transversely post-tensioned.

Reinforcing steel contained in web walls and superstructure bottom slabs need not be Level III, however any reinforcing steel extending into the concrete deck, including haunches, shall be Level III.

Longitudinal and transverse concrete deck tensions shall be limited to a maximum of 0 ksi under construction service load cases.

Segment walls shall be vertically post-tensioned if the design cannot meet the AASHTO limit on principal tension stresses in the web.

All piers shall be designed and constructed to be integral to the concrete superstructure. No bearings will be allowed at the piers.

Use AASHTO LRFD Bridge Design Specifications Article 5.8.6 for segmental bridge shear and torsion design.

7.4.10.2.4 Pre-Cast Concrete I Girder Bridge Considerations

If the Design-Builder chooses pre-cast concrete I girders, a minimum of 4 girders in each direction of traffic is required.

Reinforcing steel contained in the Pre-Cast I Girders need not be Level III, however any reinforcing steel extending into the concrete deck, including haunches, shall be Level III.

Pre-cast concrete I girders shall meet the minimum requirements of Section 510.

Pre-cast I girders shall be aged a minimum of 90 days prior to placement of the concrete bridge deck.

7.4.10.2.5 Decks

- All exposed concrete bridge decks shall be constructed with a skid resistant texture consisting of a surface having both a microtexture (grinding) and a macrotexture (grooving).
- All bridge decks with non-post-tensioned transverse concrete joints shall receive membrane and pavement in accordance with the VTrans Structures Manual. Membrane waterproofing shall be in accordance with Item 520.10, “Membrane Waterproofing, Spray Applied”.
- Exposed cast-in-place solid concrete bridge decks shall be a minimum thickness of 9-inches, inclusive of a ½” integral wearing surface. Other bridge decks will be considered, however they must have an exposed concrete surface with a minimum ½” integral wearing surface following diamond grinding activities.
- Exposed concrete bridge decks shall be constructed with “Longitudinal Deck Grooving” (macrotexture) in accordance with section 509.
- All overhang bracket hardware embedded into the deck shall be galvanized.
- Open grating decks and orthotropic decks will not be allowed.
- Partial depth precast concrete deck panels/forms will not be allowed.
- Stay in place metal forms will be allowed.

- For any structure length over 200 feet in length, the Contractor shall pour the positive moment regions of the largest span first and then pour the adjacent positive moment regions 72 hours after the first pour. The Contractor shall wait a minimum of 24 hours to pour the remaining negative moment regions. The contractor shall include a concrete deck placement procedure as part of the Project concept submitted in the Proposal.
- Full depth precast deck panels, post-tensioned across all joints, transverse and longitudinally, will be allowed. Precast panels shall be over poured and ground to a final minimum thickness of 9" inclusive of a ½" integral wearing surface. Other precast deck panels will not be allowed.
- All decks and approaches shall meet Ride Quality Requirements.

7.4.10.2.6 Deck Joints

- All bridges shall be continuous over pier supports. It is preferred to have jointless bridges.
- The Design-Builder shall include joint locations and the type of joints as part of their Project concept submitted in the Proposal.
- Plate type joints shall have removable plates and troughs.
- A stainless steel or FRP downspout system will be required at open joints for the purpose of collecting stormwater. Downspouts at bridge joints shall extend down to the proposed ground and shall outlet onto a stabilized surface.
- Modular expansion joints shall be designed and tested for fatigue loading by the Contractor or the supplier, and shall have a rated service life of 70 years.

7.4.10.2.7 Deck Drainage

- Deck drainage shall be designed to meet the requirements of the VTrans Hydraulics Manual and shall be in accordance with the BTC.
- Deck drains shall be a minimum of 12" x 12". Downspouts shall be a minimum of 8" x 8" square or 8" diameter round.
- The number of deck drains shall be consistent with the hydraulic requirements and the BTC. If deck drains are used, they shall preferably be located adjacent to substructures. All components of a deck drain within the concrete deck shall be stainless steel, inclusive of drainage grate and hopper, and shall include a stainless steel or FRP downspout system to collect the deck drainage and convey it to a stabilized surface. The piping system shall be designed to preclude damage from freezing and to allow for ease of maintenance.
- Longitudinal piping of the bridge drainage system will not be allowed. If a deck drain is required by hydraulic requirements to be located within the span and away from substructures, then the drain shall be located outside of the railroad right-of-way below and the down spouts shall extend one foot below the underside of the superstructure. A stabilized surface with minimum dimensions of 8-ft x 8-ft shall be located below the drain.

7.4.10.2.8 Crash Tested Bridge Barrier

- All bridge railing shall meet the requirements of crash tested Test Level – 5 barrier in accordance with NCHRP-350.
- Bridge approach railing shall be designed to be compatible with the bridge railing as well as adjacent guardrail.
- Cast-in-place concrete barrier shall be constructed with level III (stainless steel) reinforcement throughout. If precast Concrete barrier is used, stainless steel reinforcement and connecting hardware is required.

7.4.10.3 Bridge Bearings

Bridge bearings shall be designed and constructed for accessible for hands on inspection, maintenance, and replacement. All bridges with bridge bearings shall include a bearing jacking plan as part of the design drawings to help facilitate future bearing maintenance and/or replacement needs.

7.4.10.4 Phased Construction

Longitudinal phased construction joints shall not be allowed in any bridge deck of the proposed structures.

7.4.10.5 Bridge 24N and 24S Maintenance and Inspection Manual

As part of the project, the Design-Builder shall prepare a comprehensive Bridge Maintenance and Inspection Manual for use by VTrans following construction. The manual shall provide checklists for inspection, field inspection forms, photographs of key elements in their as-built condition, and a set of record plans. The manual shall be prepared and submitted to VTrans for review and comment a minimum of 30 days prior to the first bridge 24N or 24S inspection.

7.4.10.6 Bridge 24N and 24S Bridge Inspection Construction Considerations

All elements of the superstructure shall be accessible by ladder or from either fascia of the bridge by a “Snooper” truck with a 50-foot arm.

Welded Steel Plate Girders shall include detailing and construction for a safety handrail in accordance with NYSDOT BD-SG15E. The detail is included in the RFP Information Package.

Closed shape box girders shall be made accessible for interior inspection during and after construction. Access doors shall swing into the box girders. Access doors shall be lockable at both ends of the bridge.

- Access openings at diaphragms shall be a minimum of 36" wide and 48" tall. Bottom flange access openings shall be a minimum of 32" wide and 42" long.
- Separate openings through diaphragms shall be provided for inspection personnel and utilities.

- Access shall be provided at the end of each bridge in front of each abutment.
- Provide an access opening through all interior and end diaphragms. If the bottom of the diaphragm access opening is not flush with the bottom flange, provide ramps to facilitate equipment movement.
- Design entrances to the box girders with in-swinging, hinged, steel solid doors and locking system. Design the end diaphragms of a continuous unit access opening with in-swinging, hinged and 0.25" mesh screen doors.
- Analyze access opening sizes and bottom flange locations for structural effects on the girders.
- Provide a minimum of 2'-6" clearance for future maintenance between end diaphragm and abutment wall and between end diaphragms of two adjacent structural units.
- Provide nonmetallic conduit, energized wiring with junction boxes, and lights so as to enable VTrans to adequately light for access and safe passage through the box segments. The Design-Build Team shall determine the necessary details regarding number of plug-ins, lights, etc. to ensure safe passage. Lighting and electrical outlets shall be spaced at not more than 50-ft. Ensure design and installation meets all requirements of the latest edition of the National Electric Code. At a minimum, provide a light and a nonmetallic electrical outlet and light at the following locations:
    1. All ingress and egress access openings
    2. Both sides of diaphragms where girder is continuous
- Provide connection to an external electrical source to energize the interior lighting and junction boxes. Electrical connection shall be made to the bridge without external attachment to the bridge components. Ensure design and installation meets all requirements of the latest edition of the National Electric Code. The Design-Builder shall be responsible for all electrical design, coordination with local electric company, permitting, and construction associated with energizing the interior bridge lighting. The electrical design shall also compliment the needs of the project Road Weather Information System (RWIS) system that is required to be installed.
- Provide one commercial grade step ladder of sufficient length to facilitate future maintenance inspections, inside each superstructure.
- Box girders shall prevent access of vermin and birds. All openings on the bridge including those near abutments, joints and pier-caps shall be enclosed and/or sealed off with ¼" stainless steel mesh screens to prevent access of vermin and birds. All connection hardware shall be stainless steel.
- Box girders that are not accessible for interior inspection will not be allowed.

7.4.11 Bridge Encounter Ride Quality Requirements

Description: The surface smoothness requirements of this project for bridge encounters defined as 25 feet of entry pavement, entry approach slab, bridge deck, exit approach slab and 25 feet of exit pavement including all joints and pavement transitions within this length of roadway.

Materials and equipment: Provide diamond grinding and smoothness measuring equipment conforming to the following:

Diamond Grinding Equipment:
For exposed concrete bridge decks, provide grinding equipment that is a power driven, self-propelled machine specifically designed to smooth and texture Portland cement concrete with diamond blades or diamond impregnated cylinder rings. The equipment shall be at a minimum 35,000 pounds including the grinding head, and of a size that will grind a strip at least 4 feet wide. The effective wheel base of the machine shall be no less than 12 feet. The equipment shall have a positive means of vacuuming the grinding residue from the pavement surface, leaving the surface in a clean, near-dry condition.

The equipment shall be capable of grinding the surface in the longitudinal direction without causing spalls or other damage at cracks, joints and other locations. Grinding equipment that causes raveling, aggregate fractures or disturbance to the joints shall not be permitted. The equipment shall be capable of correcting the pavement profile and providing proper cross slope on the concrete pavement.

Provide equipment with an effective wheelbase of at least 12.0 feet; a set of pivoting tandem bogey wheels at the front of the machine and rear wheels or tandem bogies that travel and track in the fresh cut surface.

The equipment shall be maintained to ensure it is in proper working order, with attention paid to the "roundness" of the match and depth control wheels. Any wheels found to be out of round shall be immediately replaced.

Smoothness Measuring Equipment:
For all bridge decks, furnish and maintain properly calibrated, documented, inertial based non-contact road profiling equipment during the paving operations. The equipment may be lightweight, low-speed, high-speed, full-size, motor vehicle mounted, non-motor vehicle (trailer) mounted, and/or portable profiling equipment. The profiling equipment shall export raw profile data in an unfiltered ERD file format.

Initial smoothness measurement: The initial smoothness measurement shall be collected prior to any grinding or corrective action. Collect initial surface smoothness measurements for both wheelpaths in each proposed travel lane during one continuous pass. The wheelpaths are located parallel to the centerline or baseline of the roadway or ramp and approximately 3.0 feet inside all lane edges, measured transversely. Start the profile measurement approximately 250 feet before the approach slab/pavement interface at the entry end and continue to approximately 250 feet after the approach slab/pavement interface at the exit end.

Notify the VTrans Resident Engineer a minimum of 24 hours prior to surface smoothness measurements. Do not perform any measurements until all final wearing courses are in place within the bridge encounter lanes being measured and all concrete surfaces have reached specified curing and loading requirements. Remove all dirt and debris from the surface of the travel lanes prior to performing the surface smoothness measurements. Provide temporary pavement markings for all travel lanes that are of sufficient size to be visible during surface smoothness measurements. Ensure the path of the profiler is parallel to the lane edges at all times during data collection.

Develop an International Roughness Index (IRI) according to ASTM E 1926 for the bridge encounter using a continuous 25 foot base length analysis for each wheelpath and calculate the Mean IRI (MRI) for each travel lane. The MRI is the average of the IRI values for the right and left wheelpaths in each travel lane. Submit two copies of the summary report from FHWA's Profile Viewing and Analysis (ProVAL) software and two electronic copies of all bridge encounter profiles in ProVAL compatible format to the VTrans Resident Engineer.

Grinding simulation: For exposed concrete bridge decks, prior to commencing grinding operations, the ProVAL Grinding Simulation shall be used to develop a grinding strategy and to simulate the grinding head depths across the bridge. The grinding head depths and locations shall be incorporated into the Blanket Grinding Work Plan to obtain the desired predicted IRI outcome through the bridge encounter.

Blanket grinding work plan: For exposed concrete bridge decks, the Design-Builder shall submit a written Blanket Grinding Work Plan to the VTrans Resident Engineer. The plans shall indicate the equipment, personnel, grinding patterns, and grinding depths that will be used to achieve the bridge encounter smoothness requirements. The Engineer shall approve of the Contractor's plan prior to the Design-Builder starting grinding work. Blanket diamond grinding of the exposed concrete bridge deck shall be completed in accordance with the approved Blanket Diamond Grinding Plan. Do not exceed 0.25 inches of material removed by diamond grinding without approval from the VTrans Resident Engineer.

At a minimum the plan must meet the following requirements:

1. Grind concrete bridge deck until the surface meets the smoothness required.
   a. Meet the straight-edge requirements after grinding for all locations.
   b. Maximum depth of grinding is ¼ inch.
   c. Concrete thickness and reinforcement cover requirements are met.
2. Provide a uniform finished texture.
3. Perform grinding in a longitudinal direction.
   a. Begin and end grinding at lines normal to the bridge centerline.
4. Do not damage the deck.
5. Create a surface in a parallel, corduroy-type texture consisting of grooves between 1/16 and 1/8 inches wide.
   a. The peaks of the ridges need to be approximately 1/16 inch higher than the bottom of the grooves.
6. Maintain cross slope drainage.
7. Remove grooving and grinding residue with a vacuum attached to the grooving or grinding machine. Prevent residue from flowing across the roadway surface or remaining on the surface. Dispose of grooving and grinding residue at an appropriate disposal facility.
8. Provide uniform transverse and longitudinal slope of the concrete deck with no depressions or misalignment of slope greater than 1/8 inch in 10-ft when tested with a 10-ft straightedge.
9. Perform longitudinal diamond grooving in accordance with the special provisions.

Bridge encounter smoothness requirements: Following grinding or paving operations, each travel lane of each bridge encounter shall meet the following smoothness requirements:

- Maximum MRI value of 100 inches/mile for any travel lane of a bridge encounter.
- Maximum IRI value of 250 inches/mile for any 25-foot segment of a bridge encounter.

Final smoothness measurements: Upon completion of the blanket diamond grinding activities or pavement operations, the Design-Builder shall re-measure surface smoothness in accordance with the above procedure. Corrective action shall be taken if the final smoothness measurements exceed the allowable smoothness requirements.

7.5 Roadway Elements

Segments of Interstate 91 shall be reconstructed to facilitate construction of the proposed bridge structure replacements under this Project.

7.5.1 Interstate 91 Bridge Approaches

As detailed in the BTC typical section, the minimum roadway width along each interstate barrel shall be 38-feet from face of guardrail-to-face of guardrail, consisting of 10-ft outside paved shoulders, two 12-ft paved lanes, and 4-ft paved median shoulders. The Design-Builder shall widen the approaches and construct full depth and full width approaches to create a uniform width typical section along the Interstate 91 corridor in the vicinity of each structure.

Overall roadway geometry, including roadway width, and cross slope are provided in the Base Technical Concept. Design-Builder shall provide final roadway geometry including, but not limited to: layout, horizontal and vertical roadway, all elevations, plan dimensions, etc.

At the approaches to each bridge, subbase material transitions as detailed in the VTrans Structures Manual shall be used.

7.5.2 Pavement Design

Interstate Route 91 (I-91) approaches to each bridge shall be reconstructed to facilitate construction of the proposed structural improvements under this Project. VTrans has completed a pavement design. The Design-Builder must use the pavement design provided by VTrans, or design an alternative pavement design that is reviewed and approved by VTrans.

<u>Minimum Pavement Design for Mainline Interstate Lanes:</u>
Lift 4: 1.75” Type IIIS
Lift 3: 3.5” Type IIS
Lift 2: 3.5” Type IIS
Lift 1: 3.5” Type IIS
Subbase: 24” Subbase of Dense Graded Crushed Stone
Sand Cushion: 18” of Sand Borrow or Dense Graded Crushed Stone
(54” of total frost free material)

Minimum Pavement Design for Mainline Interstate Shoulders:
Lift 3: 1.75" Type IIIS
Lift 2: 3.5" Type IIS
Lift 1: 3.5" Type IIS
Subbase: 27.25" Subbase of Dense Graded Crushed Stone
Sand Cushion: 18" of Sand Borrow or Dense Graded Crushed Stone
(54" of total frost free material)

The final roadway design shall meet the following minimum requirements:

- Design Speed = 70 mph
- eMax = 8.0%

Superelevation shall be designed using AASHTO method 5.

7.5.3 Drainage Improvements

The drainage design shall incorporate an adequate system of surface and subsurface drainage and surface protection, with sufficient capacity for the design rainfall run-off, so as to prevent (a) erosion of the slopes that could result in erosion rills and gullies and (b) build-up of groundwater that could result in slope instability. In addition, surface drainage systems, consisting of drain rocks, filter fabric, and drain pipes, must be provided at locations where the embankments cross over creeks, streams, or valleys. Notwithstanding the requirements of the relevant Standards, the design shall address the long-term performance of the drainage and erosion control system for each embankment or fill under local conditions.

The Design-Builder shall maintain the existing drainage ways located within the project limits for the duration of the project and shall make every effort to prevent debris from falling into catch basins or active flowing waterways. Should any debris fall inside a structure, it shall be removed immediately. The Design-Builder shall maintain any existing closed drainage systems located within the project limits for the duration of the project. If temporary modifications are required to facilitate the proposed work, the Design-Builder shall restore the drainage system to a condition approved by VTrans prior to project completion. Temporary modifications shall meet the requirements of the VTrans Hydraulics Manual and provide sufficient surface drainage and roadway safety.

Permanent relocations of existing drainage ways due to proposed conflicts or features of the proposed Project shall be clearly indicated. Permanent modifications shall meet the requirements of the VTrans Hydraulics Manual and provide sufficient surface drainage and roadway safety.

7.5.4 Winter Maintenance Requirements

VTrans Maintenance District 2 personnel will maintain the traveled portion of Interstate 91 during inclement weather. The maintenance will be performed in accordance with the VTrans Snow and Ice Control Plan for State and Interstate Highways.

Additional snow and ice removal from shoulders and gore areas may be required following a storm. The Design-Builder shall be required to assist VTrans, or their snow removal contractor, during snow and ice removal operations affecting project related traffic control devices.

The Design-Builder shall be responsible for clearing snow and ice from closed portions of Interstate 91, and for clearing snow and ice from their work area. The Design-Builder shall also be responsible for cleaning snow and ice from all signs or project related traffic control devices.

7.6 Traffic Elements

7.6.1 Traffic Control Devices

The Project shall include all signs (permanent and construction), pavement markings, rumble strips, guardrail, and Road Edge delineators, Milepost signs and 1/10 mile markers. A striping and signing plan is required from the Design-Builder for final approval by VTrans and shall be included as a planned Work Package. All existing traffic control devices and guardrail within the Project limits shall be modified or replaced to ensure the final Project limits meet current VTrans Standards and MUTCD requirements for traffic control devices. The Design-Builder shall provide a copy of the manufacturer's recommendations for installation of guardrail terminals. The Design-Builder shall notify the VTrans Resident Engineer two (2) weeks prior to the installation of guardrail for a site review.

7.6.1.1 Signs

The Design-Builder shall prepare a detailed inventory of the existing roadway signs throughout the Project area, combined with visual field investigations to list: sign type, sign dimensions, sign text, mile marker location, offset from baseline, GPS coordinates, and condition. The findings shall be formally presented to the VTrans Resident Engineer in written report format.

The Design-Builder shall be responsible for any new signs required by the project design. Any signs throughout the project or on adjacent roadways that require relocation/replacement due to construction activities shall be the responsibility of the Design-Builder.

All Type B Guide signs shall be designed using the Clearview font. The Design-Builder shall accomplish the sign panel design using design software. All Type B Guide Sign post bolts shall be tightened to the appropriate torque values in the presence of a QA Inspector and documented.

7.6.1.2 Pavement Markings

All permanent and temporary pavement markings shall be in accordance with VTrans Standard Specifications and the latest Manual on Uniform Traffic Control Devices (MUTCD).

Removal of pavement markings by grinding will not be allowed in existing or proposed finished pavement surfaces.

All permanent pavement markings shall be durable pavement markings consisting of polyurea paint in accordance with Section 646 of the Standard Specifications. Pavement markings across bituminous

concrete areas shall be recessed. Pavement markings across concrete bridge decks shall not be recessed.

7.6.1.3 Rumble Strips

All existing rumble strips shall be reconstructed as part of this project.

7.7 Railroad Elements

Disturbances within the Green Mountain Railroad Corporation (GMRC) ROW and disturbances to the railroad track may be allowable with proper coordination and planning. Any impacts to the GMRC track structure must be reviewed and approved by VTrans and the GMRC. If the track structure is disturbed, the Design-Builder shall reconstruct the track in accordance with railroad specifications:

Minimum Track Structure for GMRC:
Ballast: Minimum 12” depth below cross tie
Subballast: Minimum 6” depth of Subbase of Crushed Gravel, Fine Graded
Geotextile under Subbase
Granular Borrow or Earth Borrow

Borrow shall be earth borrow, conforming to Item 203.30 in the 2011 VTrans Standard Specifications for Construction (with the approval of the Resident Engineer) or shall be Granular Borrow conforming to VTrans Item 203.32. See Geotechnical Section for additional information.

The final railroad design shall meet the requirements of the AREMA Manual for Railway Engineering (current edition).

If disturbed, the existing rails shall be removed and reset. Within the proposed limits of disturbance, including subballast and ballast transitions required by AREMA, the existing 7”x9” timber cross ties shall be removed and replaced with new 7”x9”x8’-6” timber cross ties. Tie plates, spikes, and other track material shall be replaced with new track material in accordance with AREMA code requirements and applicable VTrans specifications. All railroad design and construction documents shall be stamped and signed by a Professional Engineer licensed in the State of Vermont.

The Design-Builder shall be responsible for coordinating with the GMRC prior to entering the railroad ROW. The Design-Builder shall also be responsible for arranging railroad flaggers when entering the railroad ROW. In accordance with the anticipated timeframe required to be working and passing through the railroad ROW, VTrans has included the special provision item of “Maintenance of Railroad Traffic” to pay for railroad flaggers. VTrans will pay for up to 3,400 hours of railroad flaggers, any requirement to using railroad flaggers beyond the 3,400 hours shall be the sole responsibility of the Design-Builder (coordination and payment).

7.8 Geotechnical Elements

7.8.1 Foundation Design

Foundation and geotechnical design for Structures shall follow the documents referenced in Section 2.1, and shall provide a seismic liquefaction potential design for all foundations. Differential settlement shall not exceed 1.0" at an individual pier or abutment location, or 2.0" between adjacent piers or abutments. Downdrag shall be investigated and included in the design.

All substructures shall be required to bear on sound ledge, or are required to be supported by deep foundations.

VTrans will not allow reuse of any concrete or any piles/deep foundations from the existing structures.

Foundation members used in tension, such as micropiles, anchored piles, or drilled shafts shall be limited for use under temporary construction loading and under infrequent extreme event load cases. The use of tension piles for other loading conditions will be considered non-responsive.

Post tensioned anchors shall be limited for use under temporary construction loading and under infrequent extreme event load cases. Grout filled HDPE encapsulation shall be specified for permanent applications and anchor testing shall be required in accordance with section 6 of the 2010 AASHTO LRFD Construction Specifications.

Tension members designed for tension shall be subject to an appropriate field testing program to determine the required capacity is achieved.

A bridge concept that uses tie downs during temporary construction loading will not be considered non-responsive. Tie downs shall not be proposed for use for any loading condition other than temporary construction loading.

7.8.1.1 Driven Pile Foundation Design

The Design-Builder's responsibilities shall include, but not be limited to, the following:

- Selection of pile type and capacities.
- Selection of resistance factors used in the design based on the method used to determine the nominal pile resistance.
- Selection of test pile lengths and locations.
- Selection of the hammer driving system(s).
- Handling and driving piles without damage.
- Performance of the test pile program, including number and distribution of dynamic load tests, personnel and equipment. VTrans will observe the installation of test piles and all pile testing.
- Selection of production pile lengths.
- Development of the driving criteria in accordance with specifications.
- Development of a Foundation Plan for the Installation of Piles.
- Driving piles to the required capacity and minimum penetration depth.

7.8.1.2 Drilled Shaft Foundation Design

The Design-Builder's responsibilities shall include, but not be limited to, the following:

- Selection of diameter, length and locations.
- Selection of resistance factors used in the design based on the method used to determine the nominal shaft resistance.
- Details of how the load tests (when proposed) will be used to establish installation criteria.
- Selection of installation methods.
- Selection of integrity testing methods.
- Performance of the test shaft program. VTrans may observe the installation of test shafts, load and integrity testing.

If drilled shaft foundations are proposed for the Project, the drilled shaft Contractor shall, with submission of the Design-Builder's Proposal, submit proof and details of the following (submit as separate tabbed section if applicable. Qualifications will not be evaluated for scoring, but will be considered as a pass/fail requirement if proposing drilled shafts):

(a) Three projects in the past five (5) years where the Contractor or subcontractor performing the Work has successfully installed drilled shafts of similar diameter and length as required for this Project, and a minimum of one project requiring similar over-water installations.

(b) The foreman for this work having supervised the successful installation of drilled shafts on a minimum of two projects in the last two (2) years.

(c) The drill operators having had a minimum of one (1) year of experience installing drilled shafts with similar diameters and lengths, and in similar conditions. Include details describing the equipment and methods used, difficulties encountered and how they were overcome, and the results of any testing performed. For each project cited, include the name, telephone number, and email address of someone who can be contacted as a reference.

(d) When required by design, the Contractor shall submit the proof and details for the independent testing organization retained for the Osterberg Cell Load testing as follows:

  (1) Three projects in the past five (5) years where the testing firm performing the work has successfully performed Osterberg Cell Load Testing of drilled shafts with similar diameter and length as required for this Project, and a minimum of one project requiring similar over-water installations.

  (2) The foreman for this work having supervised the successful Osterberg Cell Load Testing of drilled shafts on a minimum of two projects in the last two (2) years, and;

  (3) The test operators having had a minimum of one (1) year of experience performing Osterberg Cell Load Testing on drilled shafts with similar diameters and lengths, and in similar conditions. Include details describing the equipment and methods used, difficulties encountered and how they were overcome, and the results of any testing performed. For each project cited, include the name, telephone number, and email address of someone who can be contacted as a reference.

The Contractor or subcontractor will not be permitted to install drilled shafts without the approval of the submitted qualifications by VTrans.

If load tests are anticipated the Contractor shall provide to VTrans additional supporting information for review, evaluation, and approval.

Submission of the qualification information above does not alleviate the Design-Builder from submission requirements under SUBMITTALS AND PRECONSTRUCTION REQUIREMENTS section of the Drilled Shaft Special Provision. Qualification requirements shall be strictly enforced. Approvals are subject to previous satisfactory field performance.

7.8.2 Seismic Loading

VTrans has designated Bridges 24N & 24S as critical bridges, as specified in Section 3.10, of the AASHTO LRFD Bridge Design Specifications. A critical bridge is expected to remain open to all traffic, including emergency and defense vehicles, after the design earthquake. VTrans has selected a design earthquake with a 2,500 year return period for this project to meet the requirements of a critical structure.

VTrans completed a geotechnical seismic hazard evaluation for the Base Technical Concept. The seismic hazard evaluation report is included in the Base Technical Concept. The evaluation included a site specific seismic response analysis and subsequent liquefaction potential and seismic slope stability analyses for the proposed structures. This seismic hazard evaluation shall be used for design.

If Bidders submit an Alternative Technical Concept the site specific seismic hazard evaluation shall be updated as part of the ATC for the specific bridge structures that are proposed.

7.8.3 Fill/Embankment Design/Slope Stability

The Design-Builder shall design and construct stable cut slopes and embankment slopes and evaluate stability for interim construction stages, end of construction condition, and design-life conditions. The minimum factor of safety against slope failure shall be per the AASHTO LRFD Bridge Specifications for the life of the road or slope, determined by the Bishop, Simplified Janbu, Spencer or Morgenstern and Price limit equilibrium methods. Slopes in soil shall be designed in accordance with the publication "Soil Slope and Embankment Designs," FHWA-NHI-05-123, 2005. Analysis shall consider the effects of deterioration and loss of soil resistance due to local climatic and construction conditions. All slopes shall be designed to minimize scour and erosion due to rainfall and runoff. Adequate surface/subsurface drainage and erosion control provisions shall be incorporated in the design and construction of all slopes. Cut slopes in rock shall be designed to minimize rockfall and at an angle that assures stability. Cut slopes in rock shall not necessitate rockfall fences, nets or other rockfall mitigation devices.

The Design Builder shall analyze settlement and utilize methods to minimize differential settlement of the approach to the bridge structures (bump at the bridge) for new construction and provide construction recommendations to address soil-structure interaction to accommodate the unique construction methods applied to the Project.

7.8.3.1 Embankment Settlement

Design-Builder shall design and construct embankments and slopes to experience short and long term settlements less than the allowable limits. Design-Builder shall, for VTrans review, conduct an analysis to estimate soil settlements due to self-weight and settlement of foundation soils due to embankment and other anticipated loads. Settlement shall include immediate settlement in granular soils, and both immediate and consolidation settlements in cohesive soils. The soils properties for the analysis shall be obtained by approved sampling and testing methods. The Design-Builder shall design embankments in order to limit total long-term settlements to two (2) inches during a period of fifty (50) years after completion of the construction or modifications to the embankment. Differential settlement across fill/Structure interfaces shall be limited to 0.5" over 25 feet.

7.8.3.2 Fill/Embankment and Reinforced Soil Slope Considerations

Alternative methods of embankment construction shall be considered for safety and cost-effectiveness. The main considerations shall be to provide adequate safety factors for external and internal stability, global (overall) stability, and bearing capacity, and to reduce the settlement to within the allowable range as specified herein. In addition, the design must provide for durability, adequate surface and subsurface drainage, slope protection, and erosion control for the slopes.

7.8.3.3 Soil Improvement

Alternative soil improvement techniques that increase soil strength and reduce compressibility in order to increase the safety factors for external, internal, and global stability, and reduce settlements to the allowable range specified herein, may be allowed by VTrans in the design if they are suitable for local conditions and selected fill/embankment installation methods. Techniques such as vertical drains, surcharge, stone columns, vibro-compaction, lime columns, cement columns, deep soil mixing, grouting, and the use of lightweight fill may be included in the design in order to expedite the consolidation of areas, where it is required to increase bearing capacity or reduce post-construction settlements. Selection of the type of soil improvement method shall be restricted to methods which have documented successful results in equivalent soil conditions for equivalent applications and shall be based on the engineering properties of the subsoil, material quality, performance, availability, and installation time.

The performance of all ground improvement techniques shall be verified with a pre-production field testing program developed to demonstrate that the proposed methods and design will provide the ground improvement level required to satisfy the performance requirements specified herein.

7.8.4 Additional Construction Considerations

7.8.4.1 Temporary Excavation Support

Any temporary or permanent support of excavation that is necessary to maintain the safety of the traveling public, the railroad, or structural integrity of nearby structures or utilities shall be considered critical and shall be designed by the Design-Builder and detailed in the plans.

Temporary excavation support required during construction shall be designed to withstand all anticipated loading. Working drawings for temporary supports shall be prepared in accordance with RFP Part 4.

Surcharge pressures due to traffic, railroad operations, construction materials and equipment, structures, and point, line and area loads shall be included in lateral earth pressure evaluations.

Design-Builder shall indicate on the Working Plans special requirements for the installation and removal of temporary bracing systems that relate to the designs of underpinning and protection walls, such as levels of bracing tiers, the maximum distances of excavation below an installed brace, and the amount of preloading.

All temporary shoring shall be designed and reviewed using the same design quality management procedures outlined in this RFP for permanent structures.

7.8.4.2 Dewatering and Groundwater Control

Excavations left open to precipitation, that extend below groundwater levels, that encounter water seepage, or that are made in existing bodies of water, will require dewatering or groundwater control. Design-Builder shall evaluate and implement dewatering and groundwater control. The Design – Builder shall be responsible for acquiring and complying with any permitting associated with dewatering activities and monitoring its impacts on adjacent structures. The Design-Builder shall also ensure that dewatering areas are not within or impacting wetlands and/or archaeologically sensitive areas.

7.9 Hydraulic Elements

7.9.1 Hydrologic and Hydraulic ("H&H") Design

The proposed structures shall be designed and constructed by the Design-Builder to meet all applicable hydraulic requirements, including current FEMA, FHWA, and VTrans guidelines as described in the VTrans Hydraulics Manual (including current Errata Sheet) and the VTrans Hydraulic Evaluation of Bridges manual.

At minimum, the hydraulic design for the structure shall meet the following requirements:

- Includes full HEC-RAS modeling of existing and proposed conditions for all storm flow frequencies as defined by the VTrans Hydraulic Manual.
- Based on a Bank Full Width.
- Includes a scour analysis.

In accordance with 23 CFR 650.115, the Design-Builder shall prepare and submit a final H&H Analysis for the proposed structure improvements. These analyses shall be submitted to VTrans for review prior to the Released for Construction Plans.

The H&H Report and HEC-RAS files shall be submitted to VTrans in accordance with Section 11.0 below.

The Aquatic Organism Passage shall be designed in accordance with the "Guidelines for the Design of Stream/Road Crossings for Passage of Aquatic Organisms in Vermont" using the Stream Simulation Method. The Design-Builder shall coordinate the design with the River Management Engineer and the Fisheries Biologist.

A scour analysis shall be performed in accordance with accepted design and analysis procedures outlined in FHWA publications HEC-18, HEC-20, and HEC-23. Scour Counter Measures are not acceptable for design.

7.10 Proposed Utilities

Utilities shall not be placed on the structures without VTrans authorization. If authorized, the Design-Builder shall have a Design Professional assess the structure for stresses induced by the Utility on the structure, and shall incorporate the resulting design into the Plans and Design-Builder Specifications.

7.10.1 Multi-Duct Conduit System for the Accommodation of Fiber Optic Cable

In accordance with Special Provisions in Part 4 of this RFP, the Design-Builder shall incorporate the design and installation of a multi-duct conduit system inside of either the north or south closed box superstructure of Bridge 24 into the Project Work. The conduit system shall be incorporated into a Work Package and undergo a Design Quality Review prior to submission to VTrans for review and Release for Construction.

As part of the multi-duct conduit system, the Design-Builder shall provide two (2) vaults at each end of the bridges. The vaults shall be installed in the median in accordance with the special provisions. One of the two specified conduits shall be connected to each vault.

7.10.2 Road Weather Information System (RWIS)

As part of the project, the Design-Builder shall be required to provide the necessary elements to support installation of an RWIS Station and bridge deck monitoring equipment. VTrans will contract directly and separately with a vendor to supply the RWIS station and monitoring equipment. The Design-Builder shall provide a design for the electrical power feed and shall provide the following hardware in accordance with the BTC Plans:

- Power Drop Stanchion
- Meter Pedestal
- 100-Amp Breaker Panel
- Wired Conduit from Power Drop, to Meter Pedestal, to Breaker Panel
- 2" Dia PVC Conduit from RWIS Station to midway point on the median barrier rail on the Northbound Bridge
- Bridge Deck Monitoring Pole Base Installed on the median fasica of the northbound bridge at the midway point of the bridge

The VTrans vendor will install an RWIS station at the location identified on the BTC Plans and will make the necessary connections to the power feed. The vendor will then run wire through the 2" conduit to the bridge deck monitoring equipment on the bridge.

8.0 DESIGN QUALITY MANAGEMENT (DQM) PLAN

8.1 General

The Design-Builder shall prepare a DQM Plan as an Administrative Submittal, following contract execution, fulfilling the requirements as set forth herein. The Design QC and QA procedures shall be organized by each type of engineering discipline (such as structural, civil, geotechnical, hydraulics and utilities). These procedures shall specify measures to be taken by the Design-Builder (1) to ensure that appropriate quality standards are specified and included in the drawings, specifications, and other design submittals; (2) to control deviations from such standards, it being understood and agreed that no deviations from such standards shall be made unless they have been previously approved by VTrans; and (3) for the selection of suitable materials and elements of the Work that are included in the Project, and preparation and implementation of geotechnical instrumentation and monitoring.

In general, Design QC shall include review of methodology; math and engineering computations; technical accuracy; conformance to Contract requirements; review of form, content and grammar, and coordination with other design disciplines and sequence of construction. Design QA shall evaluate whether the designer assessed the problem appropriately, applied the correct analyses, and assigned qualified personnel to the tasks. The QC and QA Plans shall specifically include constructability reviews.

All QC and QA procedures proposed by the Design-Builder for the design process shall be included in the DQM Plan. Procedures shall be included for preparing and checking all drawings, specifications, and other design submittals to VTrans to ensure that they are independently checked by experienced professionals prior to submission.

Drawings, specifications, and other design submittals shall be stamped, signed and dated by a responsible Vermont licensed engineer where required under the Contract provisions or by applicable laws. It is anticipated that the DQM Plan shall rely upon the Design-Builder's use of licensed professionals who are governed by statutory requirements and standards of care.

The DQM Plan shall set forth the level, frequency and methods of review for the adequacy of the design of the Project including the methods for independent review of the final drawings, specifications, and other design submittals to ensure compliance with VTrans' functional requirements for the Project as outlined in the Contract.

The DQM Plan shall set forth the procedures for coordinating Work performed by different persons in the same or adjacent area, Work element or Project feature, or in related tasks to ensure that conflicts, omissions or misalignments do not occur between drawings or between the drawings and the specifications and to coordinate the review, approval, release, distribution and revision of documents

involving such persons. The DQM Plan shall also set forth the procedures for ensuring QC and QA requirements are met for adequate right-of-way and avoidance of utility conflicts.

The DQM Plan shall set forth the procedures for preparation of a geotechnical instrumentation plan, ensuring that the plan is properly implemented, and evaluating monitoring data for action, if required.

The DQM Plan shall identify those elements of the Contract, drawings, specifications, and other design submittals, if any, requiring special construction QC and/or QA attention or emphasis, including applicable standards of quality or practice to be met, level of completeness and/or extent of detailing required, or Special Provisions.

The DQM Plan shall identify the firm, discipline, name, qualifications, duties, responsibilities and authorities for all persons and entities proposed to be responsible for Design QA and QC activities, including subconsultants.

Design QC and QA functions, including scheduled activities for Design QC and QA identifying the drawings, specifications, and other design submittals to be delivered to VTrans for its review at each stage of the design or Work phase of the Project shall be described in the DQM Plan.

8.2 Design Quality Review

Prior to the submission of any documents to VTrans, the drawings, specifications, other design submittals, and construction submittals shall be subject to quality reviews by the Design-Build Team. The criteria used in such review shall include (1) conformity of the final drawings, specifications, and other design submittals with the Contract; (2) assurance that all materials, equipment and elements of the Work provided for in such documents which shall be incorporated into the Project have been provided for and designed to perform satisfactorily for the purpose intended; (3) the technical and grammatical accuracy, appearance, and organization of such documents; (4) verification that such documents have been checked and signed by the drafter, designer, and reviewers; (5) where required under the Contract, generally accepted architectural or engineering practices or applicable law, verification that such documents have been stamped, signed and dated by the appropriate discipline Vermont registered engineer; and (6) assurance that such documents fully provide for constructability, compatibility of materials and conformity to acceptance criteria for inspections and tests as provided in the Contract.

All formal comments and responses to those comments, generated through the quality review process shall be attached to Attachment 8.2 and included in the submittal to VTrans. The QA for design will replace those efforts normally undertaken by VTrans for design-bid-build projects. Failure to provide the written certification, or if the QC and QA is incomplete may cause VTrans to reject the submittal.

Design-Builder's DQM Plan shall address interim design submissions for each Work Package identified in the Work Breakdown Structure (WBS), related to Preliminary Plans (30%); Final Plans (90%); and Contract Plans (100%) that VTrans requires; design review meetings/schedule; publishing and distribution of design review meeting notes and design submission status; and other Design Development Services requirements.

The DQM Plan shall clearly demonstrate that all design related documents (reports, design calculations, plans, specifications, special provisions and estimates) are technically reviewed by competent, independent reviewers, including procedures to correct errors and deficiencies in the design documents prior to submitting them to VTrans for review. Minimally, the Plan shall identify design engineer, detailer, checker, QA reviewer, and Engineer of Record by organization, name and resume, including subconsultants and interfaces among design consultants.

8.2.1 Design Review

The Design Manager shall facilitate a complete independent QA review by engineers experienced in the appropriate disciplines(s). The review shall verify that the drawings, specifications, and other design submittals were prepared in such a manner as to ensure that they will be acceptable to VTrans. The Design Manager shall use the form provided in Attachment 8.2 to certify in writing to VTrans that the submittal has undergone QC checking by the design engineer and independent QA review by competent engineers not involved in the design or plan production.

8.2.2 Constructability Review

The Construction Manager shall facilitate a complete independent Constructability Review of the drawings, specifications, and other design submittals. The purpose of the review is to ensure that the documents contain sufficient information to allow the project to be constructed without any interpretation needed. The Construction Manager shall use the form provided in Attachment 8.2 to certify in writing to VTrans that the submittal has undergone a Constructability Review. The form, along with any review comments, shall be submitted to VTrans as part of the Work Package Submittal.

8.3 VTrans Review of Design Work and Release for Construction

For each Work Package identified in the WBS; drawings, specifications, and other design submittals shall be submitted to VTrans for review and Release for Construction in accordance with the Contract. The Design-Builder shall make submittals in logical subsections that generally correspond to VTrans' concurrent engineering process, including but not limited to: (i) Preliminary Plans (30%); (ii) Final Plans (90%); and (iii) Contract Plans (100%). For each submission, the Design-Builder shall provide to VTrans electronic files, in PDF format, of the interim design submissions as described herein. Reviews must be completed by VTrans and returned to the Design-Builder prior to advancing design to the next stage.

VTrans will provide timely reviews in accordance with section 12.1.1 below and (where applicable) Release for Construction of interim design submissions, drawings, specifications, and other design submittals consistent with the turnaround times set forth in Design-Builder's schedule, provided that VTrans shall have fifteen (15) working days (inclusive of the winter shutdown period) after receipt of such submissions to act upon such submissions. Submittals made after 5:00 PM will be considered submitted on the following working day. Any review comments made by VTrans will be provided, in writing, to the Design-Builder.

Where VTrans review comments result in rejection of a submission or a change to the certified documents following the submission of any 100% Work Package document, the revised documents

shall undergo another design quality review, shall be certified by the Design Manager and shall be resubmitted to VTrans for review.

The Design-Builder shall be solely responsible, at no additional cost to VTrans, for the schedule impacts and costs of revisions arising from VTrans' review of the drawings, specifications, and other design submittals for consistency with the requirements of the Contract and caused by the Design-Builder's noncompliance with Contract requirements.

VTrans' review, comment, and/or Release for Construction of drawings, specifications, and other design submittals shall not be deemed to transfer any liability from the Design-Builder to VTrans. VTrans will perform all design reviews and conferences within the time limits identified in section 12.1.1 below, unless specifically stipulated otherwise, and the Design-Builder shall provide responses and revisions in accordance with the Contract provisions.

8.4 Construction Plans and Specifications

Prior to the Design-Builder commencing construction, the construction documents must receive written acknowledgement from VTrans stating that the subject Work Package documents are Released for Construction. To be submitted to VTrans for review, Work Packages must meet the following minimum requirements:

- Work Package must be a logical subdivision of construction that includes materials, labor and equipment to complete the work and must be identified as such in the WBS.
- 90% and 100% Work Package documents must contain: plans, specifications, special provisions, a complete list of quantities for each specific Work Package, a list of QC material sampling and testing requirements based on quantities, and QC testing and inspection qualifications matrices.
- Work Package documents must undergo design quality reviews and be part of certified submissions at Preliminary Plans (30%), Final Plans (90%) and Contract Plans (100%) levels.
- Each Work Package title sheet must be stamped and signed by the Design Manager to be Released for Construction.

8.5 Design Quality Assurance and Quality Control of Field Changes

Proposed field changes, which affect the design of a Work Package or any portion thereof as shown on the Construction Documents, shall be subject to Design QA and QC measures and procedures commensurate with those applied to the original design of the portion of the work package being changed. Further, all changes described in this Section shall undergo a design quality review and be part of a certified submission to VTrans with the additional written acknowledgement and approval of the change by the Design Manager with recommendation of Release for Construction by VTrans Resident Engineer. In accordance with the requirements of the original design, design changes shall not be constructed prior to receiving written Released for Construction from the VTrans Resident Engineer.

9.0 CONSTRUCTION QUALITY ASSURANCE

In accordance with 23 CFR 637, this project is subject to a construction quality assurance program to assure that the materials and workmanship incorporated into the construction project are in conformity with the requirements of the Released for Construction plans and specifications.

It is intended that the Construction Quality Assurance on this project be governed by the VTrans Quality Assurance Program (QAP), dated March 1, 2010, inclusive of any subsequent addendums or revisions.

Under the QAP, VTrans will retain a Construction Quality Assurance Manager (QAM) to facilitate the Construction QA functions.

Under the QAP referenced above, the Design-Builder will be responsible for all Construction related Quality Control functions.

In accordance with the VTrans Quality Assurance Program, this project has been determined to be a Level 1 Inspection Project.

9.1 Quality Assurance Program Elements

In accordance with FHWA guidance, the Construction Quality Assurance Program consists of the following core elements:

- Contractor Quality Control
- Agency Acceptance
- Independent Assurance
- Personnel Qualification
- Laboratory Accreditation/Qualification

9.1.1 Contractor Quality Control

FHWA defines Construction Quality Control as "The system used by a contractor party to monitor, assess, and adjust their production or placement processes to ensure that the final product will meet the specified level of quality."

Design-Builder and Producer Quality Control sampling and testing personnel shall be certified personnel. Laboratories used for QC sampling and testing shall meet the definition of a qualified laboratory.

The Design-Builder shall be responsible for the quality of construction, workmanship, and materials incorporated into the Project. The Design-Builder shall prepare a QC Plan as an administrative submittal for VTrans approval. The Design-Builder's QC Plan shall define a system to be used by the contractor to monitor, assess and adjust their production of placement processes to ensure that the final product will meet the specified level of quality. QC measures shall ensure that operational techniques and activities provide materials of acceptable quality. Design-Builder sampling, testing, inspection,

and corrective action shall be performed to maintain continuous control of a production of placement process.

9.1.1.1 QC Staff Roles, Responsibilities, and Qualifications

Included as a section of the QC Plan, full detailed resumes with references shall be submitted to VTrans identifying the Design-Builder's QC staff for all personnel that will be employed in a supervisory or management position. The Design-Builder shall provide QC Personnel who are specifically designated for the purposes of controlling the project quality and shall not be assigned to work on any production type of tasks. The persons or organizations performing QC shall have sufficient authority and organizational autonomy to identify quality problems, and to initiate, recommend, and verify implementation of solutions. The Design-Builder QC personnel shall include, but not be limited to, the D-B Project Manager, Design Manger, Construction Manager, Testing Technicians, and Inspection Technicians.

The QC Testing and Inspection Technicians shall not be assigned to perform different tasks at the same time. The QC Testing and Inspection Technicians shall hold current certifications such as NETTCP, or ACI for the types of materials testing that they are assigned to perform.

9.1.1.2 General QC Plan Requirements

At a minimum, the Construction QC Plan must address the following:

A. List by discipline the name, qualifications, duties, responsibilities and authorities for all persons proposed to be responsible for Construction QC, include an organizational chart;

B. How QC activities will be reflected in the Project progress schedule integral to Work Package requirements;

C. Submittal schedule integral to Work Package requirements;

E. Systems based inspection and testing requirements, including a detailed description of inspection and testing activities and frequencies (VTrans Material Sampling Manual frequencies are not intended for QC testing and will be considered inadequate) for each element of work, for example: concrete, structural steel, project layout, etc.;

F. QC sampling, testing, and analysis plan with frequencies, location and methods for each Work Package that includes a description of how random locations for testing and sampling are determined;

I. Identify the laboratory(s) to be used for each type of testing;

J. Specify documentation for QC activities and retention procedures;

K. Procedures for corrective action when QC criteria are not met.

The Design-Builder's QC Plan shall contain separate inspection plans for each construction work item included in the Project whether performed by the Design-Builder or a subcontractor or vendor.

The Design-Builder shall provide QC inspection for all Work activities and Work Packages for conformance with the construction requirements in the Contract.

The Design-Builder's QC Plan shall use industry standard inspection procedures.

9.1.1.3 Design-Builder QC Sampling and Testing Plan

The Design-Builder shall provide to VTrans a testing plan for each material type that meets the minimum frequencies referenced above for separate QC testing. The testing plan shall be developed using a random selection process and shall reflect the proposed total Work Package quantity as calculated in the Project drawings, specifications, and/or other design submittals. Sampling and testing frequencies and methods defined by the VTrans QAP and/or the Materials Sampling Manual shall not be considered appropriate for QC sampling and testing.

9.1.1.4 Records

The Design-Builder shall prepare test and inspection reports for QC sampling and testing activities and all records shall be uploaded to the Project Collaboration Site.

9.1.1.5 QC Inspection Documentation

Each of the Design-Builder's QC inspectors and technicians shall summarize their daily inspections, tests and material sampling activities in a daily report. Copies of the inspector's records shall be provided to the VTrans Resident Engineer as part of the weekly reporting requirements of Section 4.6 above. At a minimum, the daily reports shall consist of the following key points of record:

1. Project Name.
2. Firm Name.
3. Work performed by the firm, subcontractor, or material supplier, identified by Work Package notation.
4. Weather conditions.
5. Inspections performed and their results.
6. Communications.
7. Type, location, and results of all tests performed.
8. Delays encountered.
9. Identify any safety related problems and corrective action taken.
10. Identify all non-conforming Work and the corrective action taken.
11. Signature of inspector.
12. Any noted attachments.
13. Reviewed By: Date:

9.1.2 Agency Acceptance

9.1.2.1 VTrans Resident Engineer

The VTrans Resident Engineer will be the single authority for VTrans for the duration of the Project. For the purpose of construction quality, the Resident Engineer will hold final authority for determining the acceptance of materials incorporated into the Project. The acceptance decision will consider results of QAM acceptance sampling and testing as described below.

Prior to Substantial Completion of each Work Package, the Resident Engineer, or their designee, shall be responsible for reviewing and verifying that the Work has been completed in conformance with the Contract Documents. The Design-Builder shall be required satisfy all Work Package requirements and rectify any non-conformances prior to the certification. Signoff from the Resident Engineer, or their designee is required for payment approval for each Work Package.

Prior to VTrans acceptance of the project the, Resident Engineer, or their designee, will complete a final review of all materials and certifications to ensure that the materials used in the acceptance program indicate that the materials incorporated in the construction Work, and the construction operations controlled by sampling and testing, were in conformity with the approved plans and specifications. The Resident Engineer will note any exceptions to the Project's plans and specifications and will request any final explanations from the Design-Builder to justify why the materials were incorporated into the Work.

9.1.2.2 Quality Assurance Manager

A Quality Assurance Manager (QAM) will be procured by VTrans and will report directly to the Resident Engineer. The QAMs role will be to support the Resident Engineer with management and execution of the VTrans quality assurance and quality acceptance functions during construction. The QAM's duties are anticipated to include planned and systemic action necessary to provide confidence that the product or facility will perform satisfactorily in service. QA measures will ensure that operational techniques and activities provide materials of acceptable quality. QA sampling, testing, and inspection will be performed to assure the processes and determine the degree of material compliance with the Contract.

9.1.2.3 Preparatory Inspection Meetings

Prior to the start of construction for each Work Package, VTrans will hold a Preparatory Inspection Meeting to ensure that all Project personnel have a thorough understanding of the upcoming Work. The purpose of the Preparatory Inspection Meeting is to provide coordination and communication between the Design-Builder's production personnel, QC personnel, and the QAM's QA personnel, as well as VTrans' Resident Engineer and Independent Assurance (IA) personnel.

The Preparatory Inspection Meeting will include discussions relating to what construction, inspection, sampling, and testing activities will be accomplished, by whom it will be performed, and where, when, and how the Work will be done. The Preparatory Inspection Meetings are to ensure that all parties have the same understanding of the design intent, to discuss any needed interpretation of the plans, to ensure that all parties have the appropriate plans, specifications and any special details, and are aware of safety regulations and procedures that need to be followed. At this time the Design-Builder's QC inspection checklists for the specific Work Package or activity shall be reviewed amongst the meeting attendees to confirm understanding of roles and responsibilities.

The Preparatory Inspection Meetings will be completed prior to the beginning of construction for each scheduled Work Package. VTrans' IA personnel will be invited to attend the Preparatory Inspection Meetings and will attend at their own discretion. The Meetings will be planned and conducted by the

QAM. Meeting notes will be recorded by the QAM to document any clarifications and understandings related to the construction of the item that are not documented elsewhere. Meeting notes will be posted to the Project Collaboration Worksite. Meeting notes shall be reviewed by the Design-Build Team for accuracy and any comments shall be provided to VTrans within two (2) working days after the meeting and before beginning construction of the Work Package. Preparatory Inspection Meetings are classified as hold points and shall be identified in the Design-Builder's QC Plan and in the Baseline Project Schedule.

9.1.2.4 Non-Conforming Work

During construction and placement of materials, the QAM will reject, order rework, or accept as is, workmanship or materials that are not in accordance with the specifications. The Design-Builder will then have the opportunity to correct the workmanship or materials in order to bring the work in accordance with the specifications. The non-conformance process presented below is followed for completed work or materials that do not meet the plans or specifications.

9.1.2.4.1 Non-Conformance Report (NCR)

The Design-Builder and VTrans are responsible for identifying non-conforming work. Any work not meeting the plans, specifications and contract requirements is to be deemed non-conforming. The QAM will prepare a non-conformance report (NCR) for review by the Resident Engineer. This report will detail the area of the problem, and cite from the plans, specifications or contract, how or why the work does not conform. The NCR will be submitted to the Resident Engineer in writing within 24 hours of identification, and a copy posted in Project Collaboration Site for all parties to review.

9.1.2.4.2 Non-Conformance Remediation

Following issuance of an NCR, the Design-Builder shall be responsible for developing a Disposition of Non-Conformance Report (DNC). The DNC shall clearly explain the non-conformance, identify the cause of the non-conformance, establish a procedure for remediation of the non-conformance, and provide preventative actions so that the non-conformance is not repeated. The DNC shall be formally approved by the Design Manager, Construction Manager, and Design-Build Project Manager prior to being submitted to Project Collaboration Site.

The DNC has several avenues for remediation depending on the severity of the problem. Among them are:

- Remedy the situation—Design-Builder corrects deficient work.
- Design-Related NCR Issue—The Construction Manager will request design review of the non-conformance. The Construction Manager is responsible for providing detailed information for the design team to review. The Design Manager will evaluate and determine the effect of the non-conformance on performance, safety, durability, long-term maintenance, and the life of the item. Remedial actions will be proposed in the DNC and will be documented and stamped by the Design Manager (VT PE Stamp). The Design Manager shall also provide a Design Quality Certification, stating that remedial actions to be used have undergone the same level of Design Quality as required for the original design.
- Price Reduction—A disposition of "use as is" must be accompanied by written approval from

the Design Manager related to the adequacy of the element. VTrans may request a price reduction related to the non-conformance. VTrans will have the sole authority to accept or reject the proposed price reduction. Should VTrans determine to reject the price reduction, the Design-Builder shall be solely responsible for costs associated with the removal and replacement of the non-conforming work.

- Remove and Replace—The Design Manager may require the Design-Builder to remove and replace any non- conforming work.

Remediation must have VTrans Resident Engineer concurrence prior to implementation.

9.1.2.4.3 Rejection of Work

If VTrans does not agree with the remedial actions set forth in a DNC, it has the authority to call for rejection of the non-conforming work.

9.1.2.4.4 NCR Tracking

The Design-Builder shall maintain an on-going log of all NCRs and DNCs. The log shall be maintained on the Project Collaboration Site for all parties concerned to review and shall be updated on a daily basis as needed. The Design-Builder shall number each NCR sequentially; give a brief description and status of the non-conforming work, and, if the NCR has not been closed, an expected closure date. VTrans will not grant acceptance for any portion of work that has an outstanding NCR.

9.1.2.5 Rejected Material

The following action shall be undertaken with regard to defective materials:

A. Rejected by Construction QC: The Design-Builder may remove any rejected material and replace it with new material at no additional cost to VTrans. Any such new material shall be sampled, tested and evaluated for acceptance in accordance with the RFP requirements and the Construction QA Plan. QC sampling and testing shall be the responsibility of the design-build team at no additional cost to VTrans. QA sampling and testing shall be performed by VTrans.

B. Rejected by VTrans: The Design-Builder shall develop a corrective action plan to remove or rework any rejected material and replace it with conforming material at no additional cost to VTrans. Consideration shall be given to other surrounding materials which may be damaged during removal of the defective work.

9.1.2.6 Witness and Hold Points

Witness and Hold Points will be required by the Design-Builder where notification of VTrans is required for VTrans' option of observing or visually examining a specific Work operation or test. Witness Points shall be identified within the Baseline Project Schedule which require notification of VTrans. Work may proceed beyond a witness point with or without participation by VTrans provided proper notification has been given. Hold Points are mandatory verification points identified within the Baseline Project Schedule beyond which work cannot proceed until mandatory verification is performed and a written release is granted by VTrans. Witness and Hold Points shall be identified in

the construction process using the Baseline Project Schedule where critical characteristics are to be measured and maintained, and at points where it is nearly impossible to determine the adequacy of either materials or workmanship once Work proceeds past this point.

All witness and hold points for each Work Package shall be clearly identified at the 90% design submission.

VTrans reserves the right to add additional Hold Points at any time during construction.

9.1.2.6.1 Witness and Hold Point Coordination

The QAM will be physically present for all Witness and Hold Points. VTrans' Resident Engineer or designee will be designated to handle responses to the Design-Builder with written reports or releases for hold and witness points.

9.1.2.6.2 Hold Points – Minimum Requirements

The Design-Builder shall, at minimum, identify all Preparatory Inspection Meetings, design submissions, Environmental submittals, Certifications and Permits, and VTrans Releases for Construction as hold points and shall identify other hold points in its Baseline Project Schedule to allow VTrans to perform verification and acceptance inspection, sampling and testing, and its IA testing.

9.1.2.6.3 Witness Points – Minimum Requirements

The Design-Builder shall identify witness points in its Baseline Project Schedule to allow VTrans to perform verification inspection and its IA testing function.

9.1.2.7 Substantial Completion Inspection

The QAM will be responsible for performing a Substantial Completion Inspection for each Work Package jointly with the VTrans Resident Engineer, the Design-Build Project Manager, the Construction Manager, and the Design Manager. A punch list will be maintained by the QAM for each Work Package and will be created at the time of Substantial Completion Inspection. The Substantial Completion Inspection will be performed on all definable features of the Work, against Work Package Plans and Specifications designated "Released for Construction", and other related Construction Documents and will note any discrepancies. The QAM will review the Project records to ensure that all items addressed by non-conformance reports, including areas where VTrans verification testing and VTrans Independent Assurance testing produced discrepancies, have been corrected or have been included on the punch list for corrective action.

VTrans will monitor the progress of the Design-Builder's punch list for each Work Package. VTrans will review the Design-Builder's punch list documentation prior to the final acceptance walkthrough to determine that all punch list activities have been performed and will physically verify correction of the punch list items in the field.

9.1.3 Independent Assurance

In accordance with the QAP, The Vermont Agency of Transportation conducts an *Independent Assurance (IA) Program* in accordance with 23 CFR Part 637.207 to provide an unbiased and independent evaluation of the *Acceptance Program.* IA is used to independently assess the process not the product. The results of IA sampling, testing, or inspection are used to affirm the integrity of acceptance data. If IA testing or inspections indicate a potential problem with the quality of the material or workmanship then the findings may be used to initiate additional sampling, testing or inspections.

9.1.4 Personnel Qualification

All personnel performing sampling and testing for use in the acceptance decision, verification, or independent assurance are required to be certified in the appropriate area of inspection and testing and qualified in accordance with the VTrans Quality Assurance Program.

9.1.5 Laboratory Accreditation/Qualification

All laboratories where acceptance sampling and testing is performed are required to be qualified in accordance with the Agency's Qualified Laboratory Program. Laboratories performing Quality Assurance/Acceptance testing will not be allowed to perform Quality Control testing.

10.0 PLAN PREPARATION

10.1 Drafting Standards

All plans shall be prepared in accordance with the standards listed including, but not limited to: the VTrans' Structures Design Manual, the VTrans CADD Standards and Procedure Manual, and the VTrans Structures Plan Generation Manual.

The Released for Construction plans shall be furnished by the Design-Builder with appropriate signature blocks and Professional Engineer seal on the title sheets indicating approval for construction.

10.2 Electronic Files

All plans shall be submitted in electronic format using the specified versions of MicroStation CADD software. Files shall be submitted in both DGN & PDF formats, by way of the Project Collaboration Worksite. The files will use standard VTrans cell libraries, level structures, linetypes, text fonts, and naming conventions as described in the VTrans CADD Standards and Procedure Manual, and the VTrans Structures Plan General Manual.

11.0 SUBMITTAL REQUIREMENTS

All submittals to VTrans shall be transmitted to VTrans in electronic format through the Project Collaboration Worksite. Upon successfully uploading a complete submission to the Project Collaboration Site, the Design-Builder shall send an email notification to the VTrans Resident Engineer

(and distribution list as defined by the Resident Engineer). The email shall identify the appropriate Work Package and shall contain a link to the submission. Upon request from the VTrans Resident Engineer, in addition to the electronic submission, one (1) hardcopy of each submission shall be transmitted to the VTrans Resident Engineer. The hard copy shall be certified that it is identical to the electronic copy.

CADD and PDF submissions shall be made in accordance with the current VTrans guidance, available at the following website: http://vtranscaddhelp.vermont.gov/downloads/cadss

11.1 Project Collaboration Worksite

Throughout the course of the Project, the Design-Builder shall be required to participate and use a Project Specific Collaboration Worksite for the purpose of sharing electronic information and making electronic submissions to VTrans. All operation and maintenance of the Project Collaboration Worksite will be completed/supervised by VTrans. VTrans will provide a file organization structure similar to that shown in the RFP Information Package.

11.2 Final Project Submittal Requirements

Design-Builder shall provide, prior to Final Application for Payment, a complete set of Project records that includes, but is not limited to the following:

11.2.1 Project Correspondence

The Design-Builder shall compile all relevant Project correspondence. The correspondence shall be organized by subject and arranged in chronological order.

11.2.2 Project Reports

All reports required by the Contract Documents shall be submitted in their final form.

11.2.3 Project Permits

All permits required for the Project shall be compiled separately for the project and submitted, including NEPA documentation and all Resource Clearances. All final project permit documents shall be uploaded to the Project Collaboration Site.

11.2.4 Project Calculations Book

All calculations required to substantiate the Project design shall be compiled and submitted. All calculations shall be sealed and signed by a Professional Engineer licensed in the State of Vermont.

11.2.5 Project Design Plans

All Work Package design plans shall be compiled into a single cohesive design plan set. The title sheet shall be sealed and signed by the Design Manager.

11.2.6 Original Working Drawings

All original working drawings and calculations shall be compiled for the project and submitted.

11.2.7 Construction Documentation

All documentation required during construction shall be organized and compiled for submission to VTrans. The construction documentation provided by the design-build team is expected to consist of, but is not limited to:

- Daily construction QC Inspection Reports
- QC Materials Testing Reports
- QC Materials Certifications
- Project Field Books
- Construction Photo Documentation
- Payment Requisitions

11.2.8 As-Built Plans and Record Documents

The final plan milestone is separate Record (As-Built) Plans for the project. These plans will show all adjustments and revisions to the Construction Plans made during construction and serve as a permanent record of the actual location of all constructed elements. The plans shall also include all geotechnical investigation information (location plans and logs). The Design-Builder shall prepare the Record (As-Built) Plans and submit to VTrans for review and approval. The Design-Build Project Manager, Design Manager, and Construction Manager shall certify in writing to VTrans that the Record Plans are accurate and true. The final approved Record Plans shall be posted the Project Collaboration Site. The plans shall be submitted in DGN and PDF formats.

11.2.9 As-Built Load Rating Calculations

Following the development of as-built Plans and Record Documents, the Design-Builder shall reexamine the Load Rating Calculations. After review of As-Built conditions, the Design-Builder shall either issue a written certification that the load ratings provided as part of the design development are still accurate, or shall provide updated as-built load rating calculations.

12.0 VTRANS SERVICES AND RESPONSIBILITIES

12.1 Duty to Cooperate

VTrans shall, throughout the performance of the Work, cooperate with Design-Builder and perform its responsibilities, obligations and services in a timely manner to facilitate Design-Builder's timely and efficient performance of the Work and so as not to delay or interfere with Design-Builder's performance of its obligations under the Contract Documents.

12.1.1 VTrans Reviews

VTrans shall provide timely reviews and (where required) response to submittals, interim design submissions and Construction Documents consistent with the turnaround times set forth in Design-Builder's Schedule, provided, however that, unless stated otherwise in the Contract Documents, VTrans shall have fifteen (15) working days (inclusive of the winter shutdown period) after receipt of such submissions to act upon such submissions. Holidays defined in Part 4 of this RFP shall be excluded from the fifteen (15) day timeframe.

13.0 PAYMENT

13.1 Bi-Weekly Progress Payments

On or before the Saturday of each alternating week, the Design-Builder shall submit for VTrans' review and approval its Application for Payment requesting payment for all Work performed as of the previous two weeks and coinciding with the progress reflected in the weekly Baseline Project Schedule update. The Application for Payment shall be shall be accompanied by all supporting documentation required by the Contract Documents. Payment shall be made in accordance with the following earned value calculation:

Design-Builder shall identify each Work Package, and the value in dollars of such Work Package, in accordance with the provisions above. Applications for Payment shall be made based on the following earned values:

- Design-Builder shall earn twenty three percent (23%) of the value of a Work Package upon initiation of the respective Work Package.
- Design-Builder shall earn an additional seventy five percent (75%) of the value of a Work Package upon Substantial Completion of the respective Work Package.
- Design-Builder shall earn the final two percent (2%) of the value of each Work Package upon final acceptance of the Project. 2% shall be to cover costs related to punch list items, demobilization, record drawings, and project closeout.

QC and QA shall be an integral part of each Work Package. Prior to each Application for Payment that includes completed Work Packages, the Design-Builder shall develop a checklist of all required material certifications, QC and QA tests, measurements, permits, or other requirements including the resolution of all non-conformance reports related to the respective Work Package. The Design-Builder shall coordinate with the VTrans Resident Engineer to complete the checklist. The finalized and completed checklist shall be submitted with application for payment that includes any completed Work Packages.

The Application for Payment shall constitute Design-Builder's representation that the Work has been performed consistent with the Contract Documents, has progressed to the point indicated in the Application for Payment, and that title to all Work will pass to VTrans free and clear of all claims, liens, encumbrances, and security interests upon the incorporation of the Work into the Project, or upon Design-Builder's receipt of payment, whichever occurs earlier.

13.2 Tax Compliance

If the Design-Builder is found to not be in good standing with respect to, or in full compliance with a plan to pay, any and all taxes due the State as required in Title 32 VSA Section 3113, money otherwise owed to the Design-Builder will be withheld.

13.3 Claims and Withholdings

For the protection of the State, creditors and, other claimants of the Design-Builder, payments due the Design-Builder may be held for the use of the State, if the Agency so elects, until the Design-Builder has fully settled for or paid for all materials and equipment used in or upon the Work and labor done in connection therewith and fully settled for or paid for all damage claims or liabilities incurred in connection with said Work. Upon satisfactory settlement of all such accounts, full payment will be paid to the Design-Builder.

13.4 Design-Builder's Payment Obligations

In accordance with articles in Section 107.01 of the Special Provisions, the Design-Builder will pay Design Consultants and Subcontractors, in accordance with its contractual obligations to such parties. Design-Builder will impose similar requirements on Design Consultants and Subcontractors to pay those parties with whom they have contracted. Design-Builder will indemnify and defend VTrans against any claims for payment and mechanic's liens.

13.5 Substantial Completion of Work Packages

For each Work Package defined by the Work Breakdown Structure, the Design-Builder shall notify VTrans when it believes the Work, or to the extent permitted in the Contract Documents, a portion of the Work, is substantially complete. Within seven (7) days of VTrans' receipt of Design-Builder's notice, VTrans and Design-Builder will jointly inspect such Work to verify that the Work Package is Substantially Complete in accordance with the requirements of the Contract Documents. If such Work Package is Substantially Complete, VTrans shall prepare and issue a Certificate of Substantial Completion that will set forth: (i) the date of Substantial Completion of the Work Package or portion thereof; (ii) the remaining items of Work that have to be completed before final payment; (iii) provisions (to the extent not already provided in the Contract Documents) establishing VTrans' and Design-Builder's responsibility for the Project's security, maintenance, utilities and insurance pending final payment; and (iv) an acknowledgment that warranties commence to run on the date of Substantial Completion, except as may otherwise be noted in the Certificate of Substantial Completion.

VTrans, at its option, may use a portion of the Work which has been determined to be Substantially Complete, provided, however, that: (i) a Certificate of Substantial Completion has been issued for the portion of Work addressing the items set forth above; and (ii) Design-Builder and VTrans have obtained the consent of their sureties and insurers, and to the extent applicable, the appropriate Governmental Units having jurisdiction over the Project.

13.6 Substantial Completion of the Project

Refer to RFP Part 4 for the definition of the Substantial Completion Date.

13.7 Final Acceptance and Final Payment

Design-Builder shall notify VTrans when it believes the Work, or to the extent permitted in the Contract Documents, a portion of the Work, is finally complete. Within seven (7) days of VTrans' receipt of Design-Builder's notice, VTrans and Design-Builder will jointly inspect such Work, both construction Work and all final Project submittals to verify that it is complete in accordance with the requirements of the Contract Documents. VTrans will make the Final Acceptance of the Work in accordance with Section 105.19 of the Special Provisions, whereupon Design-Builder will provide VTrans with a Final Application for Payment. VTrans shall make final payment by the time required in the Agreement, provided that Design-Builder has completed all of the Work in conformance with the Contract Documents.

At the time of submission of its Final Application for Payment, Design-Builder shall provide the following information:

- An affidavit that there are no claims, outstanding permit violations, mitigation requirements, environmental commitments, obligations or liens outstanding or unsatisfied for labor, services, material, equipment, taxes or other items performed, furnished or incurred for or in connection with the Work which will in any way affect VTrans' interests;
- A general release executed by Design-Builder waiving all claims, except those claims previously made in writing to VTrans and remaining unsettled at the time of final payment, which claims shall be specifically listed in an attachment to the general release;
- Consent of Design-Builder's surety to final payment;
- All operating manuals and other deliverables required by the Contract Documents. Project records must be logically organized and easy to follow with a cover letter that lists all of the Project records and where they can be found; and
- Certificates of Insurance confirming that required coverage will remain in effect consistent with the requirements of the Contract Documents.

Upon making final payment, VTrans waives all claims against Design-Builder except claims relating to: (i) Design-Builder's failure to satisfy its payment obligations, if such failure affects VTrans' interests; (ii) Design-Builder's failure to complete the Work consistent with the Contract Documents, including defects appearing after Final Acceptance; and (iii) the terms of any indemnifications required by the Contract Documents.

13.7.1 Retainage

The Agency shall not withhold retainage on the Contract; the Design-Builder shall not withhold retainage on any subcontract; and subcontractors shall not withhold any retainage on any of their subcontracts.

14.0 ATTACHMENTS

ATTACHMENT 4.1	SAMPLE KICKOFF MEETING AGENDA
ATTACHMENT 8.2	SUBMISSION CERTIFICATION FORMS

END OF PART 2
TECHNICAL INFORMATION & REQUIREMENTS

ATTACHMENT 4.1

SAMPLE KICKOFF MEETING AGENDA

1. Introductions and Project Roles – Round Table

2. Overview of Contract Milestones
    a. Substantial Completion per RFP: Date TBD
    b. Contract Completion per RFP: Date TBD

3. Technical Concept Presentation (Design-Build Team)
    a. Work Breakdown Structure
    b. Structural Design and Construction
    c. 100-Year Service Life Considerations
    d. Stream Simulation Design and Construction
    e. Excavation Support Design and Construction
    f. Traffic Management and Smart Workzone
    g. Waste, Borrow, and Staging Areas
    h. Baseline Schedule

4. Administrative Submittals Discussion
    a. Baseline Project Schedule
    b. Transportation Management Plan
    c. Public Relations Plan
    d. Design Quality Management Plan
    e. Construction Quality Control Plan
    f. Environmental Commitments Database
    g. NEPA Reevaluation
    h. Schedule of Payments

5. Payment Structure
    a. 20% - Start of Work Package
    b. 75% - Substantial Completion of Respective Work Package
    c. 5% - Final Acceptance of Project

6. Right-of-Way (Design-Build Team)
    a. Temporary ROW Needs

7. Environmental Commitments (Design-Build Team)
    a. Environmental Coordination Meeting
    b. Discussion of Anticipated Environmental Commitments
    c. Permit Requirements – ECO as applicant unless otherwise required by Contract or law
    d. ECO is the single point of contact

8. Public Relations (Design-Build Team)
    a. Strategy
    b. Website
    c. Press Releases
    d. Social Media

9. Official Communication
    a. Use Minimum Distribution List for Email
        i. Greg Wilcox
        ii. Mahendra Thilliyar
        iii. Todd Sumner
        iv. Scott Burbank
        v. Aaron Guyette

10. Project Collaboration Meetings
    a. VTrans Resident Engineer Runs the Meeting
    b. Meeting Notes Recorded by Design-Build Team
    c. Minimum Attendance List in RFP, as well as other designees requested by Resident Engineer

11. Project Collaboration Site – Discussion of Accounts and Access
    a. All Submissions Through the Project Collaboration Site
    b. Project Records, Reporting, Pictures – Updated Regularly (Daily)

12. Weekly Reporting Requirements
    a. Design-Build Project Manager
    b. Construction Manager
    c. Design Manager
    d. Public Relations Officer
    e. Environmental Commitments Officer

13. Submissions to VTrans
    a. Upload to SharePoint
    b. Email to Distribution List
        i. Greg Wilcox
        ii. Mahendra Thilliyar
        iii. Todd Sumner
        iv. Scott Burbank
        v. James Westcott
        vi. Aaron Guyette
    c. Check PDF for active comments prior to submitting
    d. Check PDF to be sure it is not secured

14. Utility Coordination

15. VTrans Districts

16. Field Offices

17. Questions

ATTACHMENT 8.2

STATE OF VERMONT – AGENCY OF TRANSPORTATION

DESIGN QUALITY REVIEW CERTIFICATION

Work Package _____

Quality Control Review Certification

As part of the Design Quality Review, I _____, the Design Manager and Engineer of Record for this Project, certify that the design team has completed a Quality Control Review of the plans, specifications and construction quality documents for the above referenced Work Package. The review comments were provided to the design team and were addressed to my satisfaction. Both the review comments and the review comments responses are attached to this document.

Name: _____

Signature: _____

Date: _____

Title: Design Manager

Quality Assurance Review Certification

As part of the Design Quality Review, I _____, an independent reviewer not associated with any design production work for this project, certify that I have completed a Quality Assurance Review of the plans, specifications, construction quality documents and quality control review for the above referenced Work Package. My review comments were provided to the design team and were addressed to my satisfaction. Both the review comments and the review comments responses are attached to this document.

Name: _____

Signature: _____

Date: _____

Title: _____

ATTACHMENT 8.2

STATE OF VERMONT – AGENCY OF TRANSPORTATION

DESIGN QUALITY REVIEW CERTIFICATION

Work Package _____

Constructability Review Certification

As part of the Design Quality Review, I_____, the Construction Manager for this Project, certify that I have completed a Constructability Review of the plans, specifications and construction quality documents for the above referenced Work Package. The review comments were provided to the design team and were addressed to my satisfaction. Both the review comments and the review comments responses are attached to this document.

Name: _____

Signature: _____

Date: _____

Title: Construction Manager