

Special Provisions for: Chester BRF 025-1(28) &
Chester BRF 025-1(37)

1. LABOR SUPPLY. Available workers for this Contract may be obtained from Manager, Employment & Training, Springfield, VT. The latest edition of the DBE Registry can be obtained from the Office of Civil Rights and Labor's Webpage at the following address: www.aot.state.vt.us/CivilRights/default.htm. Contractors that do not have access to the internet may obtain a copy from the Office of Contract Administration upon request.
2. CONTRACT COMPLETION DATE. This Contract shall be completed on or before September 16, 2011.
3. NOTICE TO BIDDERS. U.S. Department of Labor Davis-Bacon wage rates are applicable to this Contract. Copies of the applicable rates are included in this proposal.
4. CONTACT WITH THE AGENCY. From the time of advertising until the actual bid opening for this Contract, all prospective Contractors, subcontractors, and suppliers shall direct all inquiries related to this project solely to the Agency's Office of Contract Administration at (802) 828-2641. This number may also be accessed via the Agency's TTY/TDD Telecommunications Relay Service at 1-800-253-0191.

The deadline for submitting inquiries related to this project to the Office of Contract Administration is 4:30 p.m. Eastern Standard Time on October 29, 2010. No exceptions will be made to this requirement.

5. NOTICE TO BIDDERS. The Contractor is hereby notified that in the absence of the Engineer, the Agency's Safety Officer and the Agency's Hazardous Materials and Waste Coordinator shall each have the authority to suspend work when they determine that a serious safety or environmental violation exists on the job site. The period of time work is suspended due to a serious safety or environmental violation will not be justification for an extension of time.
6. NOTICE TO BIDDERS - RESEARCH INVESTIGATION WORK PLAN. The Contractor is hereby notified of a Research Investigation Work Plan for this project. A copy of the Work Plan is included in this proposal. The Contractor shall comply with all of the requirements of the Work Plan during the construction of this project.

Compliance with the Work Plan includes the procurement, installation, and access to the Super-Slab[®] slab on grade system provided and installed in accordance with the Contract Documents.

Costs associated with complying with the requirements of the Work Plan will be considered incidental to the Section 900 Contract items under which the work is performed.

7. STANDARD SPECIFICATIONS. The provisions of the 2006 STANDARD SPECIFICATIONS FOR CONSTRUCTION, as modified herein, shall apply to this Contract.

8. SUPPLEMENTAL SPECIFICATIONS AND CONTRACT REQUIREMENTS. The Contractor's attention is directed to the following specifications and contract requirements included in the Proposal form and effective for this Contract:

Required Contract Provisions for Federal-Aid Construction
Standard Federal EEO Specifications
VT Agency of Transportation Contractor Workforce Reporting Requirements
Workers' Compensation; State Contracts Compliance Requirement
General Special Provisions dated July 6, 2010
Bulletin 3.5 Compliance dated July 25, 2008
Vermont Minimum Labor & Truck Rates
Disadvantaged Business Enterprise (DBE) Policy Contract Requirements
U.S. Department of Labor Davis-Bacon Wage Rates
Asphalt Price Adjustment Provisions dated April 6, 2010
Section 514 - Water Repellent, Silane dated April 3, 2007
Stream Alteration Permit #HD-4-0036 dated October 13, 2009
Stream Alteration Permit #HD-4-0037 dated October 13, 2009
Army Corp of Engineers Permit #NAE-2009-2562 dated December 15, 2009
Work Plan for Research Investigation No. WP-2011-1 dated September 17, 2010
Certification for Federal-Aid Contracts
Contractor's EEO Certification Form
Debarment & Non-Collusion Affidavit

9. NOTICE TO BIDDERS - FORM FHWA-1273. The Contract requirements of form FHWA-1273 "Required Contract Provisions Federal-Aid Construction Contracts", Section V "STATEMENTS AND PAYROLLS", part 2 "Payrolls and Payroll Records:", paragraph c of this proposal is hereby modified by adding the phrase ", except that full social security numbers and home addresses shall not be included on weekly transmittals" after the phrase "Section V" at the end of the second sentence.

The Contract requirements of form FHWA-1273 "Required Contract Provisions Federal-Aid Construction Contracts", Section V "STATEMENTS AND PAYROLLS", part 2 "Payrolls and Payroll Records:", paragraph c of this proposal is hereby further modified by adding the following as the third sentence of the paragraph text:

Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number).

The Contract requirements of form FHWA-1273 "Required Contract Provisions Federal-Aid Construction Contracts" included in this proposal are hereby further modified by deleting Section VI "RECORD OF MATERIALS, SUPPLIES, AND LABOR" in its entirety.

10. NOTICE TO BIDDERS - ADDITIONAL CONTRACT REQUIREMENT. For construction and transportation projects over \$250,000.00, a payroll process by which during every pay period the Contractor collects from the subcontractors or independent contractors a list of all workers who were on the jobsite during the pay period, the work performed by those workers on the jobsite, and a daily census of the jobsite. This information and similar information for the subcontractors regarding their subcontractors shall also be provided to the Department of Labor and to the Department of Banking, Insurance, Securities, and Health Care Administration, upon request.

11. NOTICE TO BIDDERS - INCENTIVE/DISINCENTIVE (I/D). The Agency's intent is to have the bridge closure period be as short a duration as possible. To encourage the Contractor to provide a maximum effort to complete the identified work for I/D within the period as defined below, the Agency is willing to pay an incentive.

(a) Dates.

- (1) Bridge 8. The allowable bridge closure period is from 7:00 a.m. on Monday, June 20, 2011 to 11:59 p.m. on Sunday, July 17, 2011, the I/D finish date. During this time, the Contractor will be allowed to work on this bridge 24 hours per day, 7 days per week, including holiday periods. See Special Provision Nos. 15 NOTICE TO BIDDERS - REQUIREMENTS FOR NIGHTTIME WORK and 16 NOTICE TO BIDDERS - NIGHTTIME WORK RESTRICTIONS for additional information and requirements.

The I/D dates as established above for this Contract are absolute fixed dates and will not be changed for any Act of God, omission, improper action, direction of the Engineer, or any other reason unless done so by the Secretary and only under extreme conditions as determined by the Secretary.

- (2) Bridge 9. The allowable bridge closure period is from 7:00 a.m. on Monday, May 16, 2011 to 11:59 p.m. on Sunday, July 17, 2011, the I/D finish date. During this time, the Contractor will be allowed to work on this bridge 24 hours per day, 7 days per week, including holiday periods. See Special Provision Nos. 15 NOTICE TO BIDDERS - REQUIREMENTS FOR NIGHTTIME WORK and 16 NOTICE TO BIDDERS - NIGHTTIME WORK RESTRICTIONS for additional information and requirements.

The I/D dates as established above for this Contract are absolute fixed dates and will not be changed for any Act of God, omission, improper action, direction of the Engineer, or any other reason unless done so by the Secretary and only under extreme conditions as determined by the Secretary.

(b) Identified Work.

- (1) Bridge 8. All work required to open the bridge to two-way traffic including:
- Bridge deck installed and joints cured;
 - First lift of pavement placed on bridge deck;
 - Temporary barrier placed allowing two (2) 11'-0" minimum wide lanes within the project limits;
 - First lift of pavement placed on approaches;
 - Centerline marked with line striping targets.

(2) Bridge 9. All work required to open the bridge to two-way traffic including:

- Bridge deck installed and joints cured;
- First lift of pavement placed on bridge deck;
- Temporary barrier placed allowing two (2) 12'-0" minimum wide lanes within the project limits;
- First lift of pavement placed on approaches;
- Centerline marked with line striping targets.

(c) Pay Schedule. The Contractor will receive a lump sum compensation of sixty thousand dollars (\$60,000) for each bridge for which the identified work is completed on or before the I/D finish date.

In addition, the Contractor will be compensated at a rate of six-hundred and forty dollars (\$640) per hour that the identified work for both bridges is completed and opened to two-way traffic prior to 11:59 p.m. of the I/D finish date, up to a maximum total payment as specified herein. A partial hour incentive payment will be made for the hour work is completed, as prorated by the Engineer. The maximum amount payable under the incentive clause shall be \$200,000 (including the lump sum payment(s)).

For each hour after 11:59 p.m. of the I/D finish date that the identified work for either or both bridges remains uncompleted, the Contractor will be penalized at a rate of six-hundred and forty dollars (\$640) per hour. A partial hour disincentive penalty will be assessed for the hour work is completed, as prorated by the Engineer. There shall be no maximum on the disincentive amount.

This penalty is separate from, and will be imposed in addition to, liquidated damages which may be imposed for failure to complete the Contract on time.

(d) Underruns and Overruns. The proposal indicates an estimated quantity for each Contract pay item. The fact that the actual amounts used in the construction of this project may vary from the estimate will not be a basis or cause for changing any of the conditions for I/D.

The Agency recognizes that additional work beyond the work indicated in the Plans is always possible in any construction contract. The Agency is willing to pay for necessary additional work in accordance with the terms and requirements of the Contract and the Standard Specifications for Construction, however, the Contractor shall absorb any resulting construction time within the original project and CPM Schedules, and there will be no adjustments or changes to the I/D dates or I/D conditions.

(e) Payment. Payment will be made as specified in Section 900.

12. NOTICE TO BIDDERS - WORK SCHEDULE SUBMITTAL REQUIREMENTS. A minimum of 60 days prior to each bridge closing, the Contractor will be required to submit a detailed schedule of work required during the bridge closure period. The schedule and subsequent submittals shall be in color and shall include each activity to take place while clearly defining the critical path sequencing during the closure period. Durations within the schedule shall be shown in terms of hours rather than days. The schedule shall also include one activity for each Working Drawing submittal and a review period of two weeks per submittal. The Agency will review the schedule and provide comments within 14 days of receipt.

Updated CPM progress schedules with narratives explaining critical path activities with respect to the Contractor's plan for meeting the completion date shall be provided within five calendar days of a request by the Engineer. Failure to do so shall be cause for delay in the Agency's processing of bi-weekly estimates.

There shall be a pre-closure coordination meeting held on site with all subcontractors, the Contractor's superintendent, the Engineer, the Project Manager, the Public Relations Officer, and the Town of Chester to discuss durations of work, types of night work, work sequencing, etc. The Contractor shall be responsible for setting this meeting up and making appropriate contacts. In addition, weekly meetings between the Contractor, Engineer, and other pertinent parties as determined by the Engineer shall be held to discuss the project progress and future construction activities, and current CPM progress schedules and narratives.

13. NOTICE TO BIDDERS - WORK RESTRICTIONS. The Contractor is hereby notified that after the Identified Work as specified in Special Provision No. 11(b) is completed and the bridges are opened to two-way traffic, the following operations shall take place between the hours of 8:00 p.m. and 5:00 a.m. only:

- Concrete placement for bridge sidewalk;
- Concrete placement for bridge railing;
- All paving operations that cannot be completed while maintaining two-way traffic on Vermont Route 103.

During the concrete placement operations listed above, and for a minimum of two hours after placement is completed, traffic shall be reduced to one lane and the speed of traffic over the bridge shall be reduced to 5 MPH. Any Flaggers or Uniformed Traffic Officers required to maintain one-way alternating traffic and to reduce the speed will be paid for under their respective Contract items. All other costs associated with the lane and speed reduction will be considered incidental to Contract item 641.10.

14. NOTICE TO BIDDERS - BUILDING INSPECTION. For the protection of the Contractor and all property owners, before beginning any construction activities, the Contractor shall deliver to the Engineer a copy of the Contractor's Insurer Inspection Report, inside and out, of buildings within 100 feet of the project limits that may be affected by any construction operations. Included with the Report will be a copy of a complete video CD record of the buildings made as part of the inspection.

Upon completion of project construction, the Contractor's insurer shall again completely inspect, inside and out, and make a complete video CD record of all buildings as part of the inspection. A written copy of the complete inspection report and a copy of the complete video CD record shall be delivered to the Engineer by the Contractor.

The Agency will not accept the project until the Engineer has received all reports and all video CDs. The Engineer will forward the reports and the video CDs to the Project Manager for safe-keeping.

All members of the insurer inspection team shall personally identify themselves to the Engineer prior to beginning each inspection.

All costs involved in performing this work and materials shall be considered incidental to all other Contract items.

15. NOTICE TO BIDDERS - REQUIREMENTS FOR NIGHTTIME WORK. The Contractor is hereby notified that night work may be allowed within the bridge closure period and is required for certain operations specified in Special Provision No. 13. For the purposes of this Contract, "night" shall mean from the hours of 7:00 p.m. until 5:00 a.m. of the following day. The Engineer may abbreviate this time period as necessary for safety considerations.

Night work shall be performed in accordance with the National Cooperative Highway Research Program (NCHRP) Report 476 - "Guidelines for Design and Operation of Nighttime Traffic Control for Highway Maintenance and Construction". A copy of this guideline specification may be downloaded from the following website: http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_476.pdf.

Prior to beginning night work, the Contractor shall design a lighting system and present it to the Engineer for approval. The Contractor shall not perform any night work or activities within the project limits until the lighting system has been fully approved and is in place on the project.

The designed lighting system shall be mobile, shall be mounted separately from other construction equipment, shall illuminate the entire work area to daylight intensity with minimal glare, and shall be a surrounding design that minimizes shadows in the work area as much as possible.

All costs associated with the lighting system will be considered incidental to Contract item 641.10.

16. NOTICE TO BIDDERS - NIGHTTIME WORK RESTRICTIONS. The Contractor is hereby notified that during the bridge closure period, no work shall be performed between the hours of 9:00 p.m. and 6:00 a.m. that creates a noise level exceeding 75 decibels. The decibel level shall be measured from the point of activity to the nearest occupied residence.

Construction activities expected to reach this noise threshold include pneumatic hammers, hoe-ram, and similar impact type equipment.

The Contractor shall provide the Engineer, for the duration of the nighttime work, with a sound level meter capable of measuring this noise criteria during the bridge closure period.

Sound level meters shall be Rion NL-20, CESVA SC-160, Extech 407780, or an approved equal capable of meeting IEC60651: 1979 Type 2 and IEC60804: 1985 Type 2 Standards.

The cost for providing this equipment and meeting the specified noise level criteria will not be paid for separately, but will be considered incidental to all other Contract items.

17. NOTICE TO BIDDERS. All temporary construction signs shall meet the following requirements:
- A. All sign stands and post installation shall be National Cooperative Highway Research Program Report (NCHRP) 350 compliant.
 - B. As a minimum, roll up sign material shall have ASTM D 4956-01 Type VI fluorescent orange retroreflective sheeting.
 - C. All post-mounted signs and solid substrate portable signs shall have ASTM D 4956-01 Type VII, Type VIII, or Type IX fluorescent orange retroreflective sheeting.
 - D. All retroreflective sheeting on traffic cones, barricades, and drums shall be at a minimum ASTM Type III sheeting.
 - E. All stationary signs shall be mounted on two 4.5 kg/m (3 lb/ft) flanged channel posts or 51 mm (2 inch) square steel inserted in 57 mm (2 ¼") galvanized square steel anchors. No sign posts shall extend over the top edge of sign installed on said posts.
 - F. Prior to placing temporary work zone signs on the project, the Contractor must furnish for the Engineer's approval a detail for temporary work zone signs on steel posts showing stubs projecting a maximum of 100 mm (4 inches) above ground level and bolts for sign post.
 - G. Construction signs shall be installed so as to not interfere with nor obstruct the view of existing traffic control devices, stopping sight distance, and corner sight distance from drives and town highways.
 - H. Speed zones, if used, should be a maximum of 16 kph (10 mph) below existing posted speeds. Temporary speed limit certificates must be approved by the Director of Program Development.
18. NOTICE TO BIDDERS. All retroreflective sheeting on permanent signs (signs to remain after the project is completed) shall be at a minimum ASTM Type III sheeting, unless otherwise shown on the Plans.
19. UTILITIES. Existing aerial facilities owned by Central Vermont Public Service Corporation, Telephone Operating Company of Vermont LLC, and Comcast Communications will be adjusted, as necessary, by employees or agents of the above companies in accordance with the approximate aerial utility relocation route shown on the Plans.

Existing underground facilities owned by the Town of Chester will not require adjustment. The Contractor is cautioned to protect these facilities from damage.

Contacts for the above listed companies are as follow:

Central Vermont Public Service Corp.:	Chris Howland	- (802)747-5660
Comcast Communications:	Doug Wigmore	- (603)556-2975
Telephone Operating Co. of VT LLC:	Judith Paton	- (802)885-7757
Town of Chester:	Graham Kennedy	- (802)875-2737

Employees or agents of the above listed companies are to be allowed free and full access within the project limits with the tools, materials, and equipment necessary to install, operate, maintain, place, replace, relocate, and remove their facilities.

There will be no extra compensation paid to the Contractor for any inconvenience caused by working around and with the companies or their facilities.

The Contractor is advised that exploratory excavation to locate existing underground facilities may be necessary to protect these facilities from damage. Where approved by the Engineer, these utilities shall be located and/or exposed by methods such as air/vacuum excavation and/or hand digging to determine their exact location. This exploratory work shall be classified as Trench Excavation of Earth, Exploratory and payment will be made under Contract item 204.22.

Act No. 86 of 1987 (30 VSA Chapter 86) ("Dig Safe") requires that notice be given prior to making an excavation. It is suggested that the Permit Holder or his/her contractor telephone 1-888-344-7233 at least 48 hours before, and not more than 30 days before, beginning any excavation at any location.

Should the Contractor desire additional adjustments of the utility facilities for his/her convenience, proper arrangements shall be made in conformance with Subsection 105.07 of the Standard Specifications for Construction.

20. HIGHWAY PARKING RESTRICTIONS. Only such trucks and equipment as are necessary for the construction of this project will be permitted to stop or park on the shoulders or right-of-way of the highway or intersecting highways. All trucks or equipment so stopped or parked shall be at least 1.2 m (4 feet) from the edge of the thru traffic lanes. Parking or stopping on the traveled portion of the roadway will not be permitted unless authorized by the Engineer to meet field conditions.

Private automobiles of workers will not be permitted to stop or park on the shoulders or right-of-way of the highway or intersecting highways.

Each of the Contractor's trucks or equipment used for the construction of this project and permitted to park or stop as provided above shall be equipped with flashing light signals on the front and rear and the signals shall be operating at all times when parked or stopped on the highway unless otherwise authorized by the Engineer.

The flashing light signals shall be visibly distinct from and physically separate from the hazard warning system required by Federal and State motor vehicle laws and regulations. At least one of these flashing light signals shall be visible to traffic approaching from any angle at all times.

Qualified traffic control personnel shall be employed whenever the Contractor's vehicles or equipment (including that which belongs to the individual workers) enter or leave the traffic flow. All movement, in or out of the traffic flow, shall be with the flow of traffic.

21. SPECIAL CONSTRUCTION REQUIREMENTS.

A. Unless otherwise permitted in writing by the Engineer and except as otherwise allowed in these Special Provisions, the Contractor shall not work during the holiday periods for Memorial Day, July Fourth, Labor Day, Columbus Day, and Thanksgiving Day. The Engineer shall give a written order designating the time of observance of these holidays and of any additional holidays required by the season, anticipated traffic, and local custom. As specified in Subsection 105.14, construction operations shall not be performed on any Sunday without the specific authorization of the Engineer.

Designated holiday periods shall begin at 12:00 noon on the day before the weekend or holiday, whichever applies, and shall end at 7:00 a.m. on the day after the holiday or the weekend, as appropriate.

B. Except during holiday periods, the Contractor shall maintain a minimum of one-way traffic through the project, or detours if applicable, at all times. During holiday periods, the Contractor shall maintain two-way traffic through the project, or detours if applicable, at all times. Wherever one-way traffic is maintained by the Contractor, the traveling public shall not be delayed more than 10 minutes unless otherwise directed by the Engineer.

C. The Contractor shall maintain a safe access to all drives and intersecting side roads at all times during the construction of this project.

D. Two-way radios shall be provided by the Contractor when requested by the Engineer for use by traffic control personnel. All costs for furnishing and using two-way radios will not be paid for directly, but will be considered incidental to Contract item 641.10.

E. The Contractor shall have available on the project the current editions of the Manual on Uniform Traffic Control Devices (MUTCD) and the Standard Highway Signs (SHS) Book. Information for obtaining these publications may be found at: <http://mutcd.fhwa.dot.gov/index.htm>.

ASPHALT PRICE ADJUSTMENT

22. SUPPLEMENTAL SPECIFICATION - ASPHALT PRICE ADJUSTMENT, dated April 6, 2010, is hereby made a new Subsection of the Specifications, superseding all previous editions and their modifications.

The index price for asphalt cement is \$489.00 per ton.

SECTION 514 - WATER REPELLENT, SILANE

23. SUPPLEMENTAL SPECIFICATION SECTION 514 - WATER REPELLENT, SILANE, dated April 3, 2007 is hereby made a new section of the Specifications, superseding all previous editions and their modifications.

SECTION 641 - TRAFFIC CONTROL

24. 641.02A PUBLIC RELATIONS OFFICER, is hereby made a new Subsection of this Section as follows:
25. 641.02A PUBLIC RELATIONS OFFICER. The Contractor shall provide a person to act as a Public Relations Officer on this project. The name and phone number of the Public Relations Officer shall be supplied to the Engineer, the Town of Chester, the Southern Windsor County Regional Planning Commission, all emergency services, and abutting business owners. The Public Relations Officer's name and phone number shall also appear on all information distributed to the public identifying this person as the contact person concerning work schedule, traffic flow and patterns, access delays, etc.

The Public Relations Officer shall have a minimum of (5) five years experience managing public relations for similarly sized projects, and must provide evidence of relevant certification(s) and training. The Public Relations Officer cannot be the Superintendent for this project.

The Contractor's Public Relations Officer shall compose and distribute informational flyers to all residents and businesses within and along the border of the construction zone and those on affected side streets. The distribution list will be approved by the Engineer prior to delivery. The flyers shall be distributed as directed by the Engineer but as a minimum, shall be distributed prior to commencing construction activities to forewarn the public of the project. A flyer distribution will also be required to select residences and businesses when construction activities directly affect them. A minimum of two weeks prior to their issue/distribution, the Public Relations Officer shall submit draft copies of all flyers to be distributed to the public, and all press release texts to the Engineer so they may be relayed to the Agency's Project Manager for review and comment.

The Public Relations Officer shall maintain a website for this project to provide information about the status of the project and scheduled activities. The website shall be operational prior to the initial press release and shall be updated daily to convey information in a timely manner. The address to the website shall be included on all correspondence.

A minimum of 60 days prior to the bridge closure, the Contractor's Public Relations Officer shall submit an initial press release to the local television stations, statewide television stations known to be received in the area, radio stations, and newspapers. Once construction begins, the Public Relations Officer shall submit a press release on a weekly basis to the local television stations, radio stations, and newspapers. These releases shall indicate changes in traffic patterns, work zones, and times so as to give the public some advance warning which may result in the diversion of traffic away from the construction zone.

These releases shall include a map/plan indicating construction area activities.

The Contractor's Public Relations Officer shall contact all involved parties, (including but not limited to the list of interested/affected parties given in the first paragraph of this provision) and all affected utility companies and departments to invite and schedule a weekly on-site meeting to update/communicate with them on anticipated construction activities.

The Contractor's Public Relations Officer shall contact emergency personnel on a daily basis to alert them of construction activities/locations, and to update them on lane restrictions, traffic flow, or any other activities that may affect emergency access.

The Public Relations Officer shall also contact emergency personnel immediately in the event of any unanticipated/unexpected occurrences which may affect emergency access.

The Contractor's Public Relations Officer shall also provide weekly updates to Town of Chester Public Works Director Graham Kennedy [Tel.: (802)875-2737] and the Southern Windsor County Regional Planning Commission [Tel.: (802)674-9201] as to anticipated construction activities/schedule and to update these parties as to the extent of public relations work performed to date.

26. 641.06 METHOD OF MEASUREMENT, is hereby modified by adding the following paragraph:

The quantity of Public Relations Officer to be measured for payment will be on a lump sum basis for providing public relations for the Contract work.

27. 641.07 BASIS OF PAYMENT, is hereby modified by adding the following paragraph and pay item:

The accepted quantity of Public Relations Officer will be paid for at the Contract lump sum price.

<u>Pay Item</u>	<u>Pay Unit</u>
641.12 Public Relations Officer	Lump Sum

SECTION 652 - EROSION PREVENTION & SEDIMENT CONTROL PLAN

28. SECTION 652 - EROSION PREVENTION & SEDIMENT CONTROL PLAN, is hereby made a new Section of the Specifications as follows:
29. 652.01 DESCRIPTION. This work shall consist of designing, furnishing, and submitting for acceptance modifications to the Contract Erosion Prevention & Sediment Control Plan (hereinto known as the EPSC Plan), becoming a co-permittee with the Agency of Transportation, State of Vermont on associated permits, monitoring the EPSC Plan using an On-Site Plan Coordinator, and maintaining the erosion prevention and sediment control measures to ensure the effectiveness of the EPSC Plan.
30. 652.02 MATERIALS. Materials required for the field work maintenance of the EPSC Plan shall meet all requirements of the appropriate Section of the VAOT Standard Specifications for Construction.

Materials including manuals, checklists, forms, and other supporting documentation necessary to meet the requirements of these provisions and maintain compliance with associated permits shall be made available to the Engineer by the Contractor and maintained on site by the Contractor. Supporting documents associated with the requirements of General Permit 3-9020 are available upon request to ANR or from the ANR Stormwater web page. The *VTrans Erosion Prevention and Sediment Control Plan Contractor Checklist* and *Low Risk Site Inspection Form* are available from the VTrans Construction Environmental Engineer.

31. 652.03 QUALIFICATIONS. Modifications to the EPSC Plan shall be prepared and signed by a Licensed Professional Civil Engineer registered in the State of Vermont or a qualified professional in erosion prevention and sediment control, certified by CPESC, Inc. or equivalent, hereinafter called the "Preparer."
32. 652.04 EROSION PREVENTION & SEDIMENT CONTROL PLAN. The EPSC Plan, developed using a combination of structural, non-structural, and vegetative practices to adequately prevent erosion and control sedimentation, and meeting the requirements of the *VTrans Erosion Prevention & Sediment Control Plan Designer Checklist (Non-Jurisdictional and Low Risk)* or the *Vermont Standards & Specifications for Erosion Prevention & Sediment Control* based on area of disturbance and risk, has been included in the Contract Documents.

The Contractor shall use the EPSC Plan included in the Contract and, at the onset of construction as well as throughout the duration of the project, modify it to describe changing conditions and illustrate how the criteria of the determined risk will be upheld. For Non-Jurisdictional and Low Risk projects, the Contractor shall use the *VTrans Erosion Prevention and Sediment Control Plan Contractor Checklist*. For Moderate Risk projects, the Contractor shall modify the Contract EPSC Plan in accordance with the General Permit 3-9020 Parts 4 through 6. If a modification to the EPSC Plan at a Low or Moderate Risk project alters any criteria of the determined risk, an updated Risk Evaluation shall be prepared.

The Contractor may use the Agency's EPSC Plan sheet(s) as a basis for necessary modifications; however, if necessary to convey the sequential nature and phases of construction activities and associated erosion prevention and sediment control measures, several plan sheets showing successive site conditions are recommended.

All work shown in the EPSC Plan shall be included in the Contractor's CPM Progress Schedule, as required by Subsection 108.03.

33. 652.05 SUBMITTALS. Three sets of the modified EPSC Plan as well as the updated Risk Evaluation, stamped and signed by the Preparer, shall be submitted to the Construction Engineer as Construction Drawings in accordance with Section 105. Submittals shall occur after award of the Contract but not later than the Pre-Construction Conference to allow time for review by the Agency. An Acceptance Memo or comments will be provided to the Contractor within 10 working days.

The Contractor shall respond to comments as soon as possible, but not more than 10 days after the date of VTrans initial correspondence. Agency review time for response to comments will be completed within an additional 10 working days. Modifications or additions to the EPSC Plan will not be considered as an acceptable delay of the work under Subsection 108.11.

All subsequent modifications to the EPSC Plan and updates to the Risk Evaluation will be reviewed and forwarded to the ANR by the Agency as appropriate.

Construction activities for EPSC Plan modifications that do not require authorization from the ANR shall commence only after the EPSC Plan has been accepted by the Agency. Construction activities for EPSC Plan modifications that do require authorization from the ANR shall commence only after that authorization has been granted.

34. 652.06 MONITORING EROSION PREVENTION & SEDIMENT CONTROL PLAN. The Contractor shall designate a person (On-Site Plan Coordinator) who is directly responsible for the on-site implementation of the EPSC Plan. This person shall generally be on-site on a daily basis during active construction and have the authority to halt construction activities if necessary. The On-Site Plan Coordinator shall have demonstrated experience in construction practices as they relate to erosion prevention and sediment control as well as a general understanding of State and Federal environmental regulations and permits pertaining to the National Pollutant Discharge Elimination System Construction Program. The On-Site Plan Coordinator shall be proficient at reading and interpreting engineering and EPSC plans. Preference will be given to a Licensed Professional Civil Engineer registered in the State of Vermont or a qualified professional in erosion prevention and sediment control, certified by CPESC, Inc. or equivalent. The qualifications of the On-Site Plan Coordinator shall be included in the EPSC Plan. The Engineer, if not satisfied with the performance of this individual, may at any time request a replacement.

During active construction and periods of inactivity, the On-Site Plan Coordinator shall be responsible for inspections and reporting.

- (a) Active Construction. Inspections shall occur once every seven calendar days and within 24 hours of the end of a storm event that results in a discharge of stormwater from the site. During the winter construction season (October 15th to April 15th, inclusive), inspections at all sites shall occur daily.

For Non-Jurisdictional and Low Risk projects, inspections shall be conducted using the Agency's *EPSC Plan Inspection Report (Non-Jurisdictional and Low Risk Projects)*.

For Moderate Risk projects, inspections shall be conducted using the *General Permit 3-9020 Inspection Report for Moderate Risk Projects* referenced in the Permit and available upon award of the Contract.

Immediate action shall be taken to correct the discharges of sediment, including halting or reducing construction activities as necessary, until the discharge and/or the condition is fully corrected. Corrective actions shall be recorded on the monitoring reports and shown on the EPSC Plan. Each report shall be signed by the On-Site Plan Coordinator.

(b) Inactive Construction. Periods such as shutdown during the winter season shall require inspection and reporting of erosion prevention and sediment control measures. The Contractor shall contact the Engineer prior to conducting any inspections. The inspections shall be conducted at least once every 30 days and within 24 hours of any storm or significant snow melt event that may cause stormwater runoff to leave the construction site. The Contractor shall provide, within 24 hours, the necessary personnel, equipment, and materials to repair or correct any deficiencies identified during inspection. All deficiencies and corrective measures taken shall be documented on the reports.

Copies of all reports shall be submitted to the Engineer within 24 hours of inspection or when corrective measures were taken. Copies of all reports shall be kept on site in the Contractor's project files.

35. 652.07 MAINTENANCE OF EROSION PREVENTION & SEDIMENT CONTROL PLAN. This work shall consist of providing all labor and equipment necessary for field maintenance of erosion prevention and sediment control items in the Contract, and providing materials and labor necessary for installing, monitoring, maintaining and, where necessary, removing additional measures needed to correct deficiencies that develop during construction that lessen the performance of the EPSC Plan. Erosion prevention and sediment control measures shall be maintained by the Contractor and removed when authorized by the Engineer. The Contractor shall establish vegetation in all areas disturbed during removal of the erosion prevention and sediment control measures.

Any maintenance required due to the failure of the Contractor to follow the EPSC Plan in its accepted form shall be performed at no additional cost to the Agency.

36. 652.08 METHOD OF MEASUREMENT. The quantity of EPSC Plan to be measured for payment will be on a lump sum basis in the complete and accepted work.
The quantity of Monitoring EPSC Plan will be measured to the nearest 1/4 hour for the actual number of authorized hours spent monitoring, reviewing, and reporting on the construction site(s), including waste, borrow and staging areas or other support activities, as it relates to the EPSC Plan. Travel time and other time not spent at the construction site(s) or time not authorized will not be measured for payment (i.e. travel expenses, clerical staff time, copying, miscellaneous expenses, overhead, etc.).

The quantity of Maintenance of EPSC Plan will be on a lump unit basis for all such field maintenance provided for in the Contract, excluding waste, borrow and staging areas or other support activities.

37. 652.09 BASIS OF PAYMENT. The accepted quantity of EPSC Plan will be paid for at the Contract lump sum price. Payment will be full compensation for the initial preparation of modifications, submittals, and all incidentals necessary to complete the work. Subsequent modifications to the EPSC Plan during Construction will be considered incidental to Contract item 652.10.

Partial payments will be made as follows:

(a) The first payment of 50 percent of the lump sum price for the EPSC Plan will be paid for upon acceptance of the EPSC Plan for the entire project.

- (b) The second payment of 35 percent of the lump sum price for the EPSC Plan will be made on the first estimate following the completion of 50 percent of the project.
- (c) The third payment of 15 percent of the lump sum price for the EPSC Plan will be made when the project is substantially complete.

The accepted quantity of Monitoring EPSC Plan will be paid for at the Contract unit price per hour. Payment will be full compensation for performing the work specified. Payment will not be made unless a report for the monitoring is submitted to and accepted by the Engineer.

The accepted quantity of Maintenance of EPSC Plan will be paid for as specified for force account work in Subsection 109.06. Payments will be drawn against the Contract Lump Unit amount. To provide a common proposal for all bidders, the Agency has entered an amount in the proposal to become part of the Contractor's total bid. Maintenance related to material supply and disposal areas shall be performed in accordance with Subsection 105.29.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
652.10 EPSC Plan (Bridge 8)	Lump Sum
652.10 EPSC Plan (Bridge 9)	Lump Sum
652.20 Monitoring EPSC Plan	Hour
652.30 Maintenance of EPSC Plan (N.A.B.I.)	Lump Unit

SECTION 690 - FUEL PRICE ADJUSTMENT

38. SECTION 690 - FUEL PRICE ADJUSTMENT, is hereby made a new Section of the Specifications as follows:

39. 690.01 GENERAL REQUIREMENTS AND CONDITIONS

- (a) This specification contains price adjustment provisions for fuel used on Vermont Agency of Transportation (Agency) construction projects. This price adjustment clause is being inserted in this Contract to provide for either additional compensation to the Contractor or a payment to the Agency, depending upon an increase or decrease in the average price of diesel fuel or gasoline during the construction of this project.
- (b) These provisions apply to this Contract only as specified herein through the fuel usage factors set forth in Table 1. No further fuel price adjustments will be allowed under this Contract.
- (c) It is understood by the Contractor that a price adjustment increase may cause the Agency to decrease the quantities of the Contract pay items subject to adjustment under these provisions. Provisions providing for decreased quantities and item cancellation in this paragraph are separate and take precedence, notwithstanding any other provisions of this Contract.
- (d) No price adjustment will be paid for work performed after the Contract Completion Date, as modified by Change Order, if applicable.

- (e) Price Adjustment, Fuel will be determined for a pay item if each of the following criteria is met:
 - (1) The pay item is included in the original awarded Contract;
 - (2) The original awarded Contract bid quantity for the pay item equals or exceeds the quantity threshold indicated in Table 1.
- (f) Any increase in the total Contract amount due to fuel price adjustment will not be justification for an extension of time under Subsection 108.11.

40. 690.02 PRICE ADJUSTMENT PROCEDURES

- (a) Prior to advertising for bids, Index Prices for both a gallon of diesel fuel and a gallon of gasoline will be established by the Agency using retail prices reported by the Energy Information Administration (EIA) for the New England Region. The Index Prices will be set monthly using the first EIA posting falling either on or after the 1st calendar day of that month. The Contract Index Prices will be the most recent Index Prices set by the Agency at the time of advertising for bids. These prices are included below and will be the base from which price adjustments are computed.

The index price (retail) for gasoline is \$2.72 per gallon. The index price (retail) for diesel fuel is \$3.04 per gallon.

- (b) For the duration of the Contract, Posted Prices for both a gallon of diesel fuel and a gallon of gasoline will be established monthly by the Agency. The Posted Prices will be established in the same manner as the Index Prices.
- (c) A Price Adjustment will be paid or credited for diesel fuel and/or gasoline only when the Posted Price of diesel fuel and/or gasoline increases or decreases 5 percent or more over its respective Index Price.
- (d) Payment for Price Adjustment, Fuel will be based upon the quantity of fuel incorporated in the work as determined by the fuel usage factors in Table 1 of this specification for both diesel fuel and gasoline, multiplied by the algebraic difference between the Posted Price and the Index Price for either diesel fuel or gasoline, respectively.
- (e) Payment for Price Adjustment, Fuel shall be computed as follows:

PA = Price Adjustment (LU in \$)
IPD = Index Price, Diesel Fuel (\$/gallon)
IPG = Index Price, Gasoline (\$/gallon)
PPD = Posted Price, Diesel Fuel (\$/gallon)
PPG = Posted Price, Gasoline (\$/gallon)
FUFD = Fuel Usage Factor, Diesel Fuel (gallon/unit)
FUGF = Fuel Usage Factor, Gasoline (gallon/unit)

For $PPD/IPD \leq 0.95$ or ≥ 1.05 and $PPG/IPG > 0.95$ and < 1.05 :

PA = FUFD X Pay Item Quantity X (PPD - IPD)

For $PPD/IPD > 0.95$ and < 1.05 and $PPG/IPG \leq 0.95$ or ≥ 1.05 :

$$PA = FUFG \times \text{Pay Item Quantity} \times (PPG - IPG)$$

For PPD/IPD and PPG/IPG ≤ 0.95 or ≥ 1.05 :

$$PA = [FUFU \times (PPD - IPD) + FUFG \times (PPG - IPG)] \times \text{Pay Item Quantity}$$

- (f) The Contract bid prices for the applicable pay items will be paid under the Contract. The price adjustment, when such adjustment is required as specified in part (c) of this Subsection, will be made subsequent to the month in which the applicable Contract work was performed and will be entered on the next bi-weekly estimate.
- (g) Payment for Price Adjustment, Fuel shall be debited or credited against the Contract price (Lump Unit) bid for Price Adjustment, Fuel.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
690.50 Price Adjustment, Fuel (N.A.B.I.)	Lump Unit

Table 1

Pay Item Fuel Usage Factors and Quantity Thresholds

Work Category	Pay Item No.	Usage Factor Units		Diesel Fuel (FUFDF)		Gasoline (FUFG)		Quantity Threshold	
		Metric	English	Metric	English	Metric	English	Metric	English
Excavation	203.15	GAL/CM	GAL/CY	0.38	0.29	0.2	0.15	2,500	3,000
	203.16	GAL/CM	GAL/CY	0.51	0.39	0.24	0.18	2,000	2,500
	204.25	GAL/CM	GAL/CY	0.46	0.35	0.21	0.16	2,000	2,500
	208.30	GAL/CM	GAL/CY	0.46	0.35	0.21	0.16	1,500	2,000
	208.35	GAL/CM	GAL/CY	0.51	0.39	0.24	0.18	1,500	2,000
Borrow	203.30	GAL/CM	GAL/CY	0.38	0.29	0.20	0.15	2,500	3,000
	203.31	GAL/CM	GAL/CY	0.38	0.29	0.20	0.15	2,500	3,000
	203.32	GAL/CM	GAL/CY	0.38	0.29	0.20	0.15	2,500	3,000
Granular Backfill For Structures	204.30	GAL/CM	GAL/CY	1.31	1.00	0.21	0.16	1,200	1,500
Cold Planing, Bituminous Pavement	210.10	GAL/SM	GAL/SY	0.16	0.12	0	0	11,000	15,000
Subbase	301.25	GAL/CM	GAL/CY	1.11	0.85	0.73	0.56	750	1,000
	301.35	GAL/CM	GAL/CY	1.11	0.85	0.73	0.56	750	1,000
Reclaimed Stabilized Base	310.20	GAL/SM	GAL/SY	0.05	0.04	0	0	30,000	35,000
Pavement	406.25	GAL/T	GAL/TON	3.37	3.06	0.95	0.86	450	500
	406.27	GAL/T	GAL/TON	3.37	3.06	0.95	0.86	450	500
	490.30	GAL/T	GAL/TON	3.37	3.06	0.95	0.86	450	500
Concrete	501.32	GAL/CM	GAL/CY	0.98	0.75	0.33	0.25	750	1,000
	501.33	GAL/CM	GAL/CY	0.98	0.75	0.33	0.25	750	1,000
	501.34	GAL/CM	GAL/CY	0.98	0.75	0.33	0.25	750	1,000
Stone Fill	613.10	GAL/CM	GAL/CY	0.51	0.39	0.24	0.18	1,500	2,000
	613.11	GAL/CM	GAL/CY	0.51	0.39	0.24	0.18	1,500	2,000
	613.12	GAL/CM	GAL/CY	0.51	0.39	0.24	0.18	1,500	2,000
	613.13	GAL/CM	GAL/CY	0.51	0.39	0.24	0.18	1,500	2,000
Guardrail	621.20	GAL/M	GAL/LF	0.59	0.18	0.16	0.05	1,500	5,000
	621.205	GAL/M	GAL/LF	0.59	0.18	0.16	0.05	1,500	5,000
	621.21	GAL/M	GAL/LF	0.59	0.18	0.16	0.05	1,500	5,000
	621.215	GAL/M	GAL/LF	0.59	0.18	0.16	0.05	1,500	5,000

SECTION 900 - SPECIAL PROVISION ITEMS

SELF-CONSOLIDATING CONCRETE

41. DESCRIPTION. This work shall consist of furnishing and placing self-consolidating portland cement concrete for structures and incidental construction. Self-consolidating concrete is a highly workable concrete that can flow through densely reinforced or complex structural elements under its own weight and adequately fill voids without segregation or excessive bleeding, and without the need for vibration.

The portland cement concrete shall consist of a homogeneous mixture of cement, fine aggregate, coarse aggregate, water, admixtures, and pozzolans, proportioned and mixed in accordance with these provisions.

The work under this Section shall be performed in accordance with these provisions and Section 501 of the Standard Specifications.

All references to "Table 501.03A" in Section 501 shall be read as and shall mean "Table A" of this Section.

42. CLASSIFICATION AND PROPORTIONING. Classification and proportioning shall meet the requirements of Subsection 501.03, with the following exceptions:

Proportioning of Self-Consolidating Concrete shall meet the following requirements:

Table A

Class	Min.*** Cem. Mat. (lbs./ ft ³)	Max. Water- Cem. Mat. Ratio	Inverted slump cone Flow* (in.)		Air Content (%)	28-Day Comp. Strength (psi)	56- Day** Permea- bility, Coulomb	VSI Rating	T ₅₀ Seconds	
			Min	Max					Min	Max
SCC	611	0.44	20	28	6.5 ± 1.5	3500	2500	=/< 1	2	5

* A higher maximum flow greater than 28 inches may be allowed if the Visual Stability Index (VSI) is 1 or less.
 ** The permeability may be tested prior to 56 days but results must still be 2500 coulombs or less.
 ***A 20% fly ash or 25% GGBFS replacement of total cement content is required.

If silica fume is used, the maximum shall be 24 kg/m³ (40 lbs/yd³) and shall be a direct replacement of the cement. The total batch weight of silica fume ignored shall be substituted with portland cement. Exceptions: For a one cubic yard batch, use 50 lbs of silica fume; and for a one cubic meter batch, use 34 kilograms of silica fume.

Cylinders shall be made a minimum of 70 days prior to the pre-pour meeting and submitted when the cylinders are 14 days of age. The specimens will undergo rapid chloride permeability testing at the VAOT Materials and Research AASHTO accredited laboratory at 56 days of age. If required due to time constraints, the cylinders may be tested at an age of less than 56 days, but the permeability results shall not be more than 2500 coulombs for the results to be acceptable. The test batch shall be a minimum of 3 cubic meters (4 cubic yards).

The cylinder test specimens shall be submitted with the following additional data regarding fabrication of the specimens:

- (1) Compressive Strength at 4, 7, 14, 28 days of age (14 and 28 day strength results can be submitted at a later date);
- (2) Test Batch Results (air content, water/cementitious ratio, flow, VSI rating, and T₅₀).

The Engineer may require a period of up to 60 calendar days from the date the aggregate is available for testing to test the material(s) and redesign the mix.

Strict adherence to the requirements of Subsection 501.07 is required when using concrete with GGBFS or fly ash. The setting time may be retarded in cool weather, or accelerated in hot weather. The Engineer, after consultation with the Agency's Structural Concrete Engineer, may require that the curing period, as designated in Table 501.17A of Subsection 501.17, be extended.

43. BATCHING. Batching shall be performed in accordance with the requirements of Subsection 501.04, with the following exceptions:

Prior to constructing a new testing laboratory or modifying an existing laboratory, the Contractor shall submit to the Agency for approval, two sets of drawings and specifications detailing the proposed location, dimensions, and materials to be used. The details shall include the location of all testing equipment, benches, desk/file cabinet, sink, doors, windows, electrical or gas connections, and lighting, ventilating, and heating equipment.

The laboratory and all testing equipment shall be maintained in operating condition. Equipment which, during concrete operations, becomes worn or damaged to the point of being unsuitable for testing purposes, shall be replaced or repaired by the Contractor. A testing laboratory shall be required at each plant site at least one month prior to the start of batching operations, and shall remain at the site either until concreting operations on the project are completed and the concrete has been accepted, or as otherwise directed by the Materials and Research Engineer.

44. MIXING AND DELIVERY. Mixing and delivery shall be performed in accordance with Subsection 501.05, with the following exceptions:

No transit mixer or agitator shall be charged with the ingredients of the concrete unless an authorized Agency representative is present.

Transit mixer maximum load size shall be limited to 80 percent of the manufacturer's rated mixing capacity; however, legal vehicle load restrictions shall not be exceeded. The mixer shall be capable of combining the ingredients of the concrete into a thoroughly mixed and uniform mass and of discharging the concrete with a satisfactory degree of uniformity.

Agitators, when loaded, shall not exceed 80 percent of the manufacturer's rated mixing capacity or legal load restrictions, and shall be capable of maintaining the mixed concrete in a thoroughly mixed and uniform mass and of discharging the concrete with a satisfactory degree of uniformity.

The mixing speed may need to be reduced to get proper mixing action due to the nature of the high flow of the concrete.

When a transit mixer or agitator is used for transporting concrete, mixing during transport shall be at the speed designated by the manufacturer of the equipment as agitating speed.

If additional mixing water is required to maintain the specified flow and is added with the permission of the Engineer, a minimum of 20 revolutions of the transit mixer drum at mixing speed shall be required before discharge of any concrete. At no time shall the total water introduced into any mix exceed the maximum water-cementitious material ratio shown in Table A.

45. FIELD TESTS. Field tests shall be performed accordance with Subsection 501.06, with the following exceptions:

Slump tests will not be required.

Flow tests shall be performed in accordance with ASTM C 1611, Procedure B. Do not tamp the self-consolidating concrete inside the cone. The concrete flow will be tested on the first 2 loads and at a minimum of every 30 cubic meters (40 cubic yards), including the yardage of the first two loads.

Air content tests shall be made in accordance with the pressure method in AASHTO T 152, except that the air meter shall be filled in one lift by using a scoop and dropping the concrete into the center of the pot from a distance of 150 mm (6 inches) from the top edge of the pot with no rodding. Only tap the sides of the pot if needed prior to running the test.

For strength testing, if there are three or more consecutive placements of under 7.5 cubic meters (10 cubic yards), then a test shall be done on the third placement, or after 15 (20) consecutive cubic meters (cubic yards) have been placed, whichever is greater.

Test cylinders shall be made in accordance with AASHTO T 23, except the cylinders shall be filled in one lift using a scoop and dropping the concrete into the center of the mold from a distance of 150 mm (6 inches) from the top edge. The mold shall not be rodded, vibrated, or tapped on the sides unless needed. The cylinders shall be tested for compressive strength in accordance with AASHTO T 22.

T₅₀ Spread Flow tests shall be performed in accordance with ASTM C 1611, Appendix X1. The T₅₀ test shall be done every time the flow test is run.

Visual Stability Index (VSI) tests shall be performed in accordance with ASTM C 1611, Appendix X1 and shall be done on each completed flow test.

46. WEATHER AND TEMPERATURE LIMITATIONS - PROTECTION OF CONCRETE. Protection of concrete shall meet the requirements of Subsection 501.07, with the following exceptions:

When using concrete with GGBFS or fly ash, strength gain may be retarded in cool weather. When the ambient air temperature is 10°C (50°F) or less, the Engineer, after consultation with the Agency's Structural Concrete Engineer, may require special preparation and protection of the concrete and its components and that the curing period, as designated in Table 501.17A of Subsection 501.17, be extended.

47. FORMS. Forms shall meet the requirements of Subsection 501.09, with the following exceptions:

The Contractor shall design falsework and forms for full hydrostatic head pressure of the concrete. Forms shall be water tight and sufficiently rigid to prevent distortion due to the pressure of the concrete and other loads incident to the construction operations, including vibration, which should not be needed.

The specifications for forms regarding design, water tightness, filleted corners, beveled projections, bracing, alignment, removal, reuse, and oiling also apply to metal forms.

48. PLACING CONCRETE. Placing concrete shall meet the requirements of Subsection 501.10, with the following exceptions:

A pre-placement meeting shall take place a minimum of seven (7) calendar days prior to concrete placement. Attendees at the pre-placement meeting shall include, but not be limited to, the Contractor's Project Superintendent, the Engineer, the Agency's Structural Concrete Engineer, and the concrete producer. The Contractor shall provide a placement plan detailing the horizontal length of the pour(s), the location(s) at which the self-consolidating concrete will be deposited, and the timing of placement.

Self-consolidating concrete shall not be deposited in the forms more than 6 meters (20 feet) horizontally from its final position.

As the final elevation is reached for the pour, the concrete will need to be placed closer to its final resting place in order to minimize the amount of manpower needed to move the concrete.

Dropping of unconfined self-consolidating concrete more than 1.5 meters (5 feet) will not be permitted.

Unless otherwise specified, self-consolidating concrete shall not be consolidated with mechanical vibrators. If the Engineer requests the use of a vibrator, it shall be of an approved type and design, operating within the concrete. It shall be used as little as possible to avoid segregation of the concrete.

HIGH PERFORMANCE CONCRETE, CLASS A LOW CEMENT

49. DESCRIPTION. This work shall consist of furnishing and placing high performance portland cement concrete at the locations indicated in the Plans and as directed by the Engineer.

The work under this Section shall be performed in accordance with these provisions, the Plans, and Section 501 of the Standard Specifications.

50. MATERIALS. The coarse aggregate shall be conditioned so that 24 hours prior to the anticipated concrete placement time, the total moisture percentage is a minimum of 0.75% greater than the absorption percentage for that aggregate. The minimum moisture percentage shall be maintained throughout the 24 hour period.

51. CLASSIFICATION AND PROPORTIONING. Proportioning of High Performance Concrete, Class A Low Cement shall meet the following requirements: .

HPC Class	Req.** Cem. Mat. kg/m ³ (lbs./cy)	Maximum Water- Cem. Mat. Ratio	Max. Slump mm (in.)	Air Content (%)	Coarse Aggregate Gradation Table	28-Day* Comp. Strength MPa (psi)	28-Day* Modulus of Rupture MPa (psi)
A Low Cement	362 (611)	0.44	150 (6)	7.0 ± 1.5	704.02B	30 (4000)	4.48 (650)
* The listed 28-day compressive strength or modulus of rupture will serve as the basis of designing or approving the concrete mix.							
** See tables located below for required cementitious materials.							

Required Cementitious Materials

Cement kg/m ³ (lbs/cy)		Fly Ash kg/m ³ (lbs/cy)		Silica Fume Admixture kg/m ³ (lbs/cy)		Cementitious Materials kg/m ³ (lbs/cy)
266 (449)	+	72 (122)	+	24 (40)	=	362 (611)

OR

Cement kg/m ³ (lbs/cy)		GGBFS kg/m ³ (lbs/cy)		Silica Fume Admixture kg/m ³ (lbs/cy)		Cementitious Materials kg/m ³ (lbs/cy)
248 (418)	+	90 (153)	+	24 (40)	=	362 (611)

OR

Blended Silica Fume Cement (8.0%) kg/m ³ (lbs/cy)		Fly Ash kg/m ³ (lbs/cy)		Cementitious Materials kg/m ³ (lbs/cy)
290 (489)	+	72 (122)	=	362 (611)

OR

Blended Silica Fume Cement (8.0%) kg/m ³ (lbs/cy)		GGBFS kg/m ³ (lbs/cy)		Cementitious Materials kg/m ³ (lbs/cy)
272 (458)	+	90 (153)	=	362 (611)

The Contractor will be responsible for providing a workable mix design.

52. METHOD OF MEASUREMENT. The quantity of Special Provision (High Performance Concrete, Class A Low Cement) to be measured for payment will be the number of cubic meters (cubic yards) of concrete placed in the complete and accepted work, as determined by the prismatic method using dimensions shown on the Plans or as directed by the Engineer, including the volume of precast concrete stay-in-place forms, but excluding the volume of steel or other stay-in-place forms and form filling materials. No deductions will be made for the volume of concrete displaced by steel reinforcement, structural steel, expansion joint material, scuppers, weep holes, conduits, tops of piles, scoring, chamfers or corners, inset panels of 38 mm (1½ inches) or less in depth, or any pipe less than 200 mm (8 inches) in diameter.
53. BASIS OF PAYMENT. The accepted quantity of Special Provision (High Performance Concrete, Class A Low Cement) will be paid for at the Contract unit price per cubic meter (cubic yard). Payment will be full compensation for performing the work specified, including designing the mix, satisfactory finishing and curing, and for furnishing all forms, materials, including joint filler and bond breaker, labor, tools, admixtures, equipment, including automatic temperature recording units, trial batches, and incidentals necessary to complete the work.

The cost of heating materials and protecting the concrete against cold weather, and any additional cost for cement, will not be paid for separately but will be considered incidental to Special Provision (High Performance Concrete, Class A Low Cement).

The cost of furnishing testing facilities and supplies at the batch plant and the setting of inserts, bench marks, and bridge plaques furnished by the Agency will not be paid for separately but will be considered incidental to Special Provision (High Performance Concrete, Class A Low Cement).

Costs for all materials, labor, and incidentals for steel or other stay-in-place forms and form filling materials will not be paid for separately, but will be considered incidental to Special Provision (High Performance Concrete, Class A Low Cement).

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
900.608 Special Provision (High Performance Concrete, Class A Low Cement)	Cubic Yard

GUARDRAIL APPROACH SECTION TO BRIDGE RAILING

54. DESCRIPTION. This work shall consist of furnishing and erecting guardrail approach sections to concrete or combination bridge railing as shown in the Plans and as directed by the Engineer.

The work under this Section shall be performed in accordance with these provisions, the Plans, and Section 621 of the Standard Specifications.

55. MATERIALS. Approach sections meet the requirements of National Cooperative Highway Research Program (NCHRP) Report 350 for the Test Level (TL) specified.

56. SUBMITTALS. Fabrication Drawings shall be submitted to the Structures Engineer for approval in accordance with Subsection 105.03.

57. METHOD OF MEASUREMENT. The quantities of Special Provision (Guardrail Approach Section To Concrete Bridge Railing) and Special Provision (Guardrail Approach Section To Combination Bridge Railing) to be measured for payment will be the number of units installed in the complete and accepted work, measured within the pay limits shown on the Plans.

58. BASIS OF PAYMENT. The accepted quantity of Special Provision (Guardrail Approach Section To Concrete Bridge Railing) will be paid for at the Contract unit price for each. Payment will be full compensation for furnishing, transporting, handling, and placing the materials specified, including terminal connector, and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
900.620 Special Provision (Guardrail Approach Section To Concrete Bridge Railing) (TL-2)	Each
900.620 Special Provision (Guardrail Approach Section To Concrete Bridge Railing) (TL-3)	Each

PRECAST APPROACH SLAB

59. DESCRIPTION. This work shall consist of constructing the Super-Slab™ system at the approach slab locations indicated in the Plans.
60. MATERIALS. The Super-Slab™ system is proprietary to The Fort Miller Co., Inc. and consists of reinforced precast concrete slabs with lane-to-lane ties and uniform support under the slabs.
- Concrete shall meet the requirements of Section 540. All other materials shall be as required by The Fort Miller Co., Inc.
61. SUBMITTALS. The Contractor shall submit five (5) sets of Fabrication Drawings and Construction Drawings for approval in accordance with Subsection 105.03 prior to the beginning of construction.
- Working Drawings shall be submitted to the Engineer for approval a minimum of four (4) weeks before work is to begin and shall include the following:
- (a) Precise layout of the precast slabs that identifies the exact type and number of slabs needed and their locations.
 - (b) Each unique type of precast slab unit, including details and list of materials required for fabrication, handling, and procedures for placement of the precast slabs.
62. HANDLING. Precast slabs shall be designed for loadings during the handling and installation stages in accordance with Section 5.2 of the latest edition of the PCI Design Handbook - Precast and Prestressed Concrete.
63. TRAINING. The Contractor shall make the necessary arrangements with The Fort Miller Co., Inc. to have a technical representative conduct training on the installation techniques and requirements of the Super-Slab™ system. Attendance at this training is mandatory for the Engineer, project superintendent, construction foreman, project surveyor, grout suppliers, grout installers, equipment operators, and any subcontractors involved in installation of the approach slabs. The training shall be conducted within two (2) weeks of the scheduled placement date of the first approach slab. The training shall be held during normal working hours.
64. CONSTRUCTION REQUIREMENTS. The Contractor shall make the necessary arrangements with The Fort Miller Co., Inc. to have a technical representative on the project to supervise the initial placement of the Super-Slab™ system. The technical representative may be required to be on-site for the complete installation if requested by the Engineer.
65. METHOD OF MEASUREMENT. The quantity of Special Provision (Precast Approach Slab, Super-Slab) to be measured for payment will be the number of each completed approach slab installed in the complete and accepted work.

66. BASIS OF PAYMENT. The accepted quantity of Special Provision (Precast Approach Slab, Super-Slab) will be paid for at the Contract unit price for each. Payment will be full compensation for detailing, fabricating, repairing, transporting, handling, and installing the materials specified, for providing training and implementing the installation procedures, and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
900.620 Special Provision (Precast Approach Slab, Super-Slab)(Bridge 8)	Each
900.620 Special Provision (Precast Approach Slab, Super-Slab)(Bridge 9)	Each

BRIDGE RAILING, GALVANIZED STEEL TUBING/CONCRETE COMBINATION

67. DESCRIPTION. This work shall consist of furnishing and erecting cast-in-place concrete bridge railing with galvanized steel tube rail in accordance with the Plans and as directed by the Engineer.

The work under this Section shall be performed in accordance with these provisions, the Plans, and Sections 501 and 525 of the Standard Specifications.

68. MATERIALS. Materials shall meet the following requirements:

- (a) Concrete. Concrete shall meet the requirements of SELF-CONSOLIDATING CONCRETE of Section 900.

Coarse aggregate for concrete shall meet the requirements of Subsection 704.02, Table 704.02A.

- (b) Reinforcing Steel. Reinforcing steel shall meet the requirements of Section 507 for Epoxy Coated Reinforcing Steel.

- (c) Steel Tubing. Steel tubing shall meet the requirements of Subsection 732.03.

- (d) Connection Plate. Connection plate for anchoring approach railing terminal connector shall meet the requirements of Subsection 714.02.

69. FABRICATION. Fabrication tolerances for all cast-in-place concrete barrier, regardless of the method of construction, shall conform to the following finished tolerances:

Bar Reinforcement Cover	-0, + $\frac{1}{2}$ inch
Width (Top)	-0, + $\frac{1}{4}$ inch
Width (Bottom)	-0, + $\frac{1}{2}$ inch
Surface Straightness (Deviation from theoretical centerline)	$\frac{1}{2}$ inch in 20 feet
Vertical Alignment (Deviation from a line parallel to the theoretical grade line)	$\frac{1}{2}$ inch in 20 feet

70. CONSTRUCTION REQUIREMENTS. The barrier shape detailed on the Plans shall not be altered. Slip forming of barrier is not allowed.

71. FORMS. Forms shall conform to the railing design shown on the Plans and the forming requirements of Section 501. Forms shall be constructed to allow for checking and correcting the railing alignment and grade after the concrete has been placed and prior to initial set. The forms shall be reinforced in such a manner that finishing of the railing tops will not disturb the final adjusted alignment.
72. CONCRETE FINISHING. Concrete bridge railing shall have a dressed finish. In addition, the following work shall be performed:
- (a) Repairs/Patching. Areas that contain minor defects shall be repaired. Minor defects are defined as holes, honeycombing, or spalls which are 6 inches or less in diameter and do not penetrate deeper than 1 inch into the concrete. Surface voids, or "bugholes", that are less than 1/4 inch in diameter and less than 1/8 inch deep need not be repaired. Repairs shall be made using an overhead and vertical concrete repair material satisfactory to the Engineer. The repair material shall be cured as specified by the manufacturer. Repairs shall be approved by the Engineer.
 - (b) Cracking. Cracks less than 0.01 inch in width shall be sealed by a method approved by the Engineer. Cracks in excess of 0.01 inch may be cause for rejection. At the Engineer's discretion, cracks shall be repaired or the bridge railing replaced at the Contractor's expense.
73. CURING CONCRETE. Curing compound shall not be used in curing railing concrete.

The Contractor and all other project personnel shall take particular care when performing any construction or other operations during the railing curing period in order that the bridge deck is not struck, shaken, or vibrated. After the curing period is completed, all parties shall take care to avoid damaging the railing during the remainder of project construction.

74. METHOD OF MEASUREMENT. The quantity of Special Provision (Bridge Railing, Galvanized Steel Tubing/Concrete Combination) to be measured for payment will be the number of meters (linear feet) of railing constructed in the complete and accepted work. Measurement will be made along the face of the railing between the pay limits specified.
75. BASIS OF PAYMENT. The accepted quantity of Special Provision (Bridge Railing, Texas) will be paid for at the Contract unit price per meter (linear foot). Payment shall be full compensation for detailing, furnishing, handling, and placing the materials specified and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work, including the furnishing of all forms, reinforcing steel, joint filler, admixtures, trial batches, connection plates for approach railing terminal connectors, and satisfactory completion of any necessary repairs, surface finishing, and curing.

Water Repellent, Silane used within the pay limits of Bridge Railing, Galvanized Steel Tubing/Concrete Combination will be paid for separately under Contract item 514.10.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
900.640 Special Provision (Bridge Railing, Galvanized Steel Tubing/Concrete Combination)	Linear Foot

BRIDGE RAILING, TEXAS

76. DESCRIPTION. This work shall consist of furnishing and erecting cast-in-place concrete bridge railing (Texas railing) in accordance with the Plans and as directed by the Engineer.

The work under this Section shall be performed in accordance with these provisions, the Plans, and Sections 501 and 525 of the Standard Specifications, with the exception that the provisions of Subsection 525.03 do not apply.

77. MATERIALS. Materials shall meet the following requirements:

- (a) Concrete. Concrete shall meet the requirements of SELF-CONSOLIDATING CONCRETE of Section 900.

Coarse aggregate for concrete shall meet the requirements of Subsection 704.02, Table 704.02A.

- (b) Reinforcing Steel. Reinforcing steel shall meet the requirements of Section 507 for Epoxy Coated Reinforcing Steel.

- (d) Connection Plate. Connection plate for anchoring approach railing terminal connector shall meet the requirements of Subsection 714.02.

78. FORMS. Forms shall conform to the railing design shown on the Plans and the forming requirements of Section 501. Forms shall be constructed to allow for checking and correcting the railing alignment and grade after the concrete has been placed and prior to initial set. The forms shall be reinforced in such a manner that finishing of the railing tops will not disturb the final adjusted alignment.

79. CONCRETE FINISHING. Concrete bridge railing shall have a dressed finish. In addition, the following work shall be performed:

- (a) Repairs/Patching. Areas that contain minor defects shall be repaired. Minor defects are defined as holes, honeycombing, or spalls which are 6 inches or less in diameter and do not penetrate deeper than 1 inch into the concrete. Surface voids, or "bugholes", that are less than 1/4 inch in diameter and less than 1/8 inch deep need not be repaired. Repairs shall be made using an overhead and vertical concrete repair material satisfactory to the Engineer. The repair material shall be cured as specified by the manufacturer. Repairs shall be approved by the Engineer.

- (b) Cracking. Cracks less than 0.01 inch in width shall be sealed by a method approved by the Engineer. Cracks in excess of 0.01 inch may be cause for rejection. At the Engineer's discretion, cracks shall be repaired or the bridge railing replaced at the Contractor's expense.

80. CURING CONCRETE. Curing compound shall not be used in curing railing concrete.

The Contractor and all other project personnel shall take particular care when performing any construction or other operations during the railing curing period in order that the bridge deck is not struck, shaken, or vibrated. After the curing period is completed, all parties shall take care to avoid damaging the railing during the remainder of project construction.

81. METHOD OF MEASUREMENT. The quantity of Special Provision (Bridge Railing, Texas) to be measured for payment will be the number of meters (linear feet) of railing constructed in the complete and accepted work. Measurement will be made along the face of the railing between the pay limits specified.

82. BASIS OF PAYMENT. The accepted quantity of Special Provision (Bridge Railing, Texas) will be paid for at the Contract unit price per meter (linear foot). Payment shall be full compensation for detailing, furnishing, handling, and placing the materials specified and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work, including the furnishing of all forms, reinforcing steel, joint filler, admixtures, trial batches, connection plates for approach railing terminal connectors, and satisfactory completion of any necessary repairs, surface finishing, and curing.

Water Repellent, Silane used within the pay limits of Bridge Railing, Texas will be paid for separately under Contract item 514.10.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
900.640 Special Provision (Bridge Railing, Texas)	Linear Foot

PRESTRESSED CONCRETE NEXT D BEAMS

83. DESCRIPTION. This work shall consist of manufacturing, transporting, and erecting precast prestressed concrete members.

The work under this Section shall be performed in accordance with these provisions, the Plans, and Section 510 of the Standard Specifications.

84. DESIGN AND DRAWINGS. All design details shall be in accordance with the AASHTO *LRFD Bridge Design Specifications*, the AASHTO *LRFD Bridge Construction Specifications*, and PCI Northeast's NEXT D Standards dated January, 2010.

85. METHOD OF MEASUREMENT. The quantity of Special Provision (Prestressed Concrete Next D Beams) to be measured for payment will be the number of meters (linear feet) of the specified type used in the complete and accepted work.

86. BASIS OF PAYMENT. The accepted quantity of Special Provision (Prestressed Concrete Next D Beams) will be paid for at the Contract unit price per meter (linear foot) for the type specified. Payment will be full compensation for detailing, fabricating, repairing, quality control testing, transporting, handling, and installing the materials specified, including the concrete, reinforcement, prestressing steel, transverse ties, enclosures for prestressing steel, anchorages, mortar, anchor rods, any other material contained within or attached to the members, for furnishing and implementing the erection plan, and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

Any grouting work for other than shear keys, such as fairing out unevenness between adjacent units and filling leveling screw holes, transverse anchor recesses, and dowel holes, is considered incidental to the work for Special Provision (Prestressed Concrete Next D Beams).

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
900.640 Special Provision (Prestressed Concrete Next D Beams) (NEXT 28 D)	Linear Foot

INCENTIVE/DISINCENTIVE (I/D)

87. INCENTIVE/DISINCENTIVE (I/D), is hereby made a new Section of the Specifications as follows:

The payment of monies for performance under the Incentive/Disincentive (I/D) specifications contained in these Special Provisions shall be as follows:

1. For the incentive payment as described in part (c) of Special Provision No. 11, the Contractor will be paid in the next bi-weekly estimate in which the Contractor has satisfactorily met the requirements of I/D.
2. For the disincentive penalties as described in part (c) of Special Provision No. 11, the Engineer will deduct the amount due the Agency from the monies due the Contractor on the next bi-weekly estimate.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
900.650 Special Provision (Incentive/Disincentive) (Bridge 8) (N.A.B.I.)	Lump Unit
900.650 Special Provision (Incentive/Disincentive) (Bridge 9) (N.A.B.I.)	Lump Unit

RETAINING WALL

88. DESCRIPTION. This work shall consist of designing, detailing, fabricating, furnishing, and erecting a retaining wall at the location(s) specified and in conformance with the lines and grades shown on the Plans or as directed by the Engineer.

89. DESIGN REQUIREMENTS. The design shall be performed in accordance with the AASHTO *LRFD Bridge Design Specifications* and the design criteria specified in the Plans.

Acceptable earth retaining systems are those included in the "VAOT Earth Retaining System Selection Chart", available on the Agency's website at the following address:

[http://www.aot.state.vt.us/matres/Documents/ACROBAT.pdf/VAOT%20APPROVED%20Retaining%20Walls%202-2010 Final.pdf](http://www.aot.state.vt.us/matres/Documents/ACROBAT.pdf/VAOT%20APPROVED%20Retaining%20Walls%202-2010%20Final.pdf)

Prefabricated earth retaining systems shall employ concrete facing.

All wall components shall have a minimum design life of 75 years.

90. MATERIALS. Materials shall meet the following requirements:

- (a) Precast Concrete. Precast Concrete shall meet the requirements of Section 540.
- (b) Cast-in-Place Concrete. Cast-in-place concrete shall meet the requirements of Section 501 for Concrete, High Performance Class B, unless otherwise specified in the Contract Documents.
- (c) Reinforcing Steel. Reinforcing Steel shall meet the requirements of Section 507.
- (d) Backfill. Backfill shall meet the following requirements:
- (1) Gradation Limits. Select granular backfill material used in walls shall be reasonably free from organic and otherwise deleterious materials, and shall conform to the following gradation limits as determined in accordance with AASHTO T 27:

<u>SIEVE SIZE</u>	<u>PERCENT PASSING</u>
101.6 mm (4 inch)	100
75 mm (3 inch)	75 - 100
0.425 mm (40)	0-60
75 µm (200)	0 - 12

- (2) Plasticity Index. The Plasticity Index (P.I.), as determined in accordance with AASHTO T 90, shall not exceed six.
- (3) Soundness. The material shall be substantially free of shale or other soft particles with poor durability characteristics. The material shall have a sodium sulfate soundness loss of less than 8 percent after five (5) cycles, as determined in accordance with AASHTO T104.

Select granular backfill shall have a minimum uniformity coefficient, Cu, of 2.

In addition to these requirements, backfill for walls using metallic soil reinforcing shall meet the following:

<u>PROPERTY</u>	<u>REQUIREMENT</u>	<u>TEST METHOD</u>
Resistivity at 100% saturation	Minimum 3000 ohm-cm	AASHTO T 288
pH	Acceptable Range 5 - 10	AASHTO T 289
Sulfates	Maximum 200 ppm	AASHTO T 290
Chlorides	Maximum 100 ppm	AASHTO T 291
Organic Content	< 1%	AASHTO T 267

Backfill not conforming to this specification shall not be used unless approved in writing by the Engineer and wall supplier.

Backfill material shall be compacted in accordance with the manufacturer's recommendations and Contract specifications.

- (e) Geotextile. Geotextile shall be a non-woven fabric meeting the requirements of Section 649 for Geotextile for Roadbed Separator, unless otherwise specified by the wall supplier.
- (f) Soil Reinforcing and Attachment Devices for MSE wall systems. All reinforcing and attachment devices shall be carefully inspected to ensure they are true size and free from defects that may impair their strength and durability.
 - (1) Reinforcing Mesh Elements. Reinforcing mesh elements shall be shop fabricated from cold drawn steel rod conforming to the minimum requirements of AASHTO M 32M/M 32 and shall be welded at the junctions between longitudinal and transverse wires in accordance with AASHTO M 55M/M 55. Galvanization shall be applied after mesh fabrication and shall conform to the minimum requirements of AASHTO M 111M/M 111. The galvanizing thickness shall be determined and specified based on the design life requirements of the structure.
 - (2) Loop Embeds. Loop embeds shall be fabricated from cold drawn steel rod conforming to AASHTO M 32M/M 32. Loop embeds shall be welded in accordance with AASHTO M 55M/M 55. Loop embeds shall be galvanized in accordance with AASHTO M 232M/M 232.
 - (3) Reinforcing Strips. Reinforcing strips shall be hot rolled from bars to the required shape and dimensions. Their physical and mechanical properties shall conform to AASHTO M 223 or equal. Galvanization shall conform to the minimum requirements of AASHTO M 111M/M 111. The galvanizing thickness shall be determined and specified based on the design life requirements of the structure.
 - (4) Tie Strips. The tie strips shall be shop fabricated of hot rolled steel conforming to the minimum requirements of ASTM A 570, Grade 50 or equivalent. Galvanization shall conform to AASHTO M 111M/M 111 or AASHTO M 232M/M 232. The minimum coating thickness shall be 0.610 kg/m².

- (5) Fasteners. Fasteners shall consist of galvanized hexagonal cap screw bolts and nuts conforming to the requirements of AASHTO M 164 or equivalent. Fasteners shall be galvanized in accordance with AASHTO M 232M/M 232.
- (6) Joint Material. Joint material shall meet the requirements of Subsection(s) 707.06, 707.07, 707.08, or 707.09, unless otherwise specified in the Contract Documents or as part of an approved retaining wall system.
- (7) Bearing Pads. Bearing pads shall be preformed EDPM rubber pads conforming to ASTM D 2000 M2AA 807, having durometer hardness equal to 80±5.
- (8) Joint Cover. Horizontal and vertical joints between panels shall be covered by a geotextile. The geotextile may be either a non-woven needle punched polyester geotextile or a woven monofilament polypropylene geotextile meeting the requirements of Section 720 for Geotextile Under Stone Fill. The wall supplier shall approve adhesive used to hold the geotextile filter fiber material to the rear of the facing panels prior to backfill placement.

91. SUBMITTALS. Working Drawings shall be submitted to the Structures Engineer in accordance with Section 105. The submittal shall include all detailed design computations and details, dimensions, quantities and cross sections necessary to construct the wall. In addition, the submittal shall include, but not be limited to, all of the following that apply to the particular wall system being constructed:

- (a) Complete design calculations substantiating that the proposed design satisfies the design parameters in the Contract Documents. The wall design calculations shall be signed, stamped, and dated by a Professional Engineer. The Contractor shall not start work on any earth retaining system for which Working Drawings are required until the Engineer has approved such drawings.
- (b) A plan view of the wall showing the limit of the widest module, tiebacks, nails, mesh, or strip and the centerline of any drainage pipe which is behind or passes under or through the wall.
- (c) An elevation view of the wall which shall include the elevation at the top of the wall at all horizontal and vertical break points and at least every 15 m (50 ft) along the face of the wall, all steps in the leveling pads, the designation as to the type of panel, the length of soil reinforcing elements, the distance along the face of the wall to where changes in length of the soil reinforcing elements occur, and an indication of the final ground line and maximum calculated bearing pressures.
- (d) A typical cross section or cross sections showing the elevation relationship between ground conditions and proposed grades.
- (e) All details for foundations and leveling pads, including details for steps in the footings or leveling pads, as well as design maximum and minimum bearing pressures.
- (f) Details of the drainage systems or other facilities required to accommodate the system.

- (g) The details for connection between the wall and the soil reinforcements.
- (h) The details for diverting soil reinforcements around obstructions such as piles, catch basins, and other utilities.
- (i) All reinforcing details, including reinforcing bar bending details.
- (j) Any general notes required for the construction of the wall.
- (k) A listing of the summary of quantities on the elevation sheet for each wall.

Any construction drawings required for elements meeting the requirements of Section 540 shall be submitted and shall meet the requirements of Subsection 540.04.

All design and construction details will be checked by the Agency's Structures and Materials and Research Sections. Approval of the detailed design and plans, and notification to begin the work, will be made by the Structures Section. The Contractor shall allow the Agency 30 calendar days to review and approve the Working Drawings.

Approval of the Contractor's Working Drawings shall not relieve the Contractor of any responsibility under the Contract for the successful completion of the work.

92. PRECAST CONCRETE INSPECTION. Precast concrete inspection will be in accordance with Subsection 540.06.

The Fabricator shall provide a tentative casting schedule to the Engineer and Structural Concrete Engineer for the following casting week a minimum of 3 calendar days prior (a casting week will be Sunday to Saturday). The Fabricator shall maintain a Quality Control file that shall contain at a minimum the piece identification, date and time cast, concrete test results, quantity of concrete used per element, batch quantity printout, cylinder results, and aggregate gradation and moisture.

93. METHOD OF MEASUREMENT. The quantity of Special Provision (Retaining Wall) to be measured for payment will be the number of exposed square meters (square feet) of wall surface area complete and in place in the accepted work. The height of exposed face shall be the difference between the top of the wall and the top of the finish ground along the front face of the retaining wall.

94. BASIS OF PAYMENT. The accepted quantity of Special Provision (Retaining Wall) will be paid for at the Contract unit price per square meter (square foot). Payment will be full compensation for designing, detailing, fabricating, and installing the materials specified, including but not limited to the geotextile fabric, backfill material, concrete, bar reinforcement and welded steel wire fabric, drainage pipe, drainage aggregate, precast concrete facing panels, soil reinforcements, attachment devices, fasteners, bearing blocks, shims, geomembrane, geotextile, and expansion material; any excavation, sheeting, bracing, dewatering, and siltation control; preparing and submitting Working Drawings; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

Any grouting work, such as fairing out unevenness between adjacent concrete pieces and filling leveling screw holes, shear keys, transverse anchor recesses, and dowel holes, is considered incidental to the work for Special Provision (Retaining Wall).

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
900.670 Special Provision (Retaining Wall)	Square Foot