

Special Provisions for: Burke BRF 0269(13)

1. LABOR SUPPLY. Available workers for this Contract may be obtained from Manager, Employment & Training, St. Johnsbury, 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 **July 3, 2015**.
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 **XXX**, 2014. 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. STANDARD SPECIFICATIONS. The provisions of the 2011 STANDARD SPECIFICATIONS FOR CONSTRUCTION, as modified herein, shall apply to this Contract.
7. 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 **May 6, 2014**
Bulletin 3.5 Attachment C: Standard State Provisions for Contracts and Grants
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
Stream Alteration Consultation #HD-7-0378 (e-mail) dated January 7, 2014
Army Corps of Engineers Permit #NAE-2014-0388 dated March 17, 2014
Certification for Federal-Aid Contracts
Contractor's EEO Certification Form
Debarment & Non-Collusion Affidavit

8. NOTICE TO BIDDERS - CONTRACT INSURANCE REQUIREMENTS. The Contractor is hereby notified that in the event of a discrepancy between the stated insurance requirements of Bulletin 3.5 Attachment C: Standard State Provisions for Contracts and Grants and those of Subsection 103.04 of the Standard Specifications for Construction, the requirements of Subsection 103.04 of the Standard Specifications for Construction shall govern.
9. 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, including confirmation that Contractors, subcontractors, and independent contractors have the appropriate workers' compensation coverage for all workers at the jobsite, 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, and shall be available to the public.
10. NOTICE TO BIDDERS - RE-DESIGNATION OF VTRANS OFFICIALS. The Contractor is hereby notified of the following re-designation of VTrans officials as referenced in the Contract Documents:

Where in the Contract Documents it reads:	It shall be read as and shall mean:
Director of Program Development	Chief Engineer
Assistant Director of Program Development	Deputy Chief Engineer
Roadway, Traffic, and Safety Engineer; Roadway Program Manager; Highway Safety & Design Engineer; Structures Engineer; Structures Program Manager	Director of Project Delivery Bureau
Chief of Local Transportation Facilities	Director of Municipal Assistance Bureau
Construction Engineer; Materials and Research Engineer	Director of Construction and Materials Bureau
Director of Operations	Director of Maintenance and Operations Bureau

11. NOTICE TO BIDDERS - INCENTIVE/DISINCENTIVE (I/D). The Agency's intent is to have the bridge closure period (BCP) 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. The allowable BCP is from 7:00 a.m. on Tuesday May 26, 2015 until 7:00 p.m. on Monday June 15, 2015, herein defined as the I/D period. During the BCP, the Contractor will be allowed to work 24 hours per day, 7 days per week, including holiday periods.

Night work will be allowed during the BCP. See Special Provision Nos. 12 NOTICE TO BIDDERS - REQUIREMENTS FOR NIGHTTIME WORK and 13 NOTICE TO BIDDERS - NIGHTTIME WORK RESTRICTIONS for additional information and requirements.

The I/D period as established above for this Contract is absolutely fixed 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.

There shall be a pre-closure coordination meeting held on site with all subcontractors, the Contractor's superintendent, the Engineer, the Project Manager, the Town of Burke, the Vermont State Police, and local law enforcement 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.

- (b) Identified Work. All work required to open the new bridge to two-way traffic including:

- (1) Bridge units placed and joints cured;
- (2) Torch applied membrane installed;
- (3) Base course of pavement placed on approaches; and
- (4) Centerline of the approaches marked with line striping targets.

Following the end of the BCP, the Contractor shall maintain a minimum of one-lane, two-way traffic during working hours and shall maintain two-lane, two-way traffic during non-working hours. Wherever one-lane, two-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) Pay Schedule. The Contractor will receive a lump sum

compensation of thirty-four thousand dollars (\$34,000) for completing the Identified Work on or before the end of the allowable BCP.

In addition, the Contractor will be compensated at a rate of seven hundred thirty dollars (\$730) per hour that the Identified Work is completed before the end of the I/D period (allowable BCP), up to a maximum total payment as specified herein. Only full hours where the bridge is opened before the end of the allowable BCP will count toward this extra incentive payment.

The maximum amount payable under the incentive clause shall be sixty-four thousand dollars (\$64,000) (including the lump sum payment).

For each hour after the I/D period (allowable BCP) that the Identified Work remains uncompleted, the Contractor will be assessed a disincentive at a rate of seven hundred thirty dollars (\$730) per hour. The full hourly disincentive amount will be assessed for each hour, or portion thereof, that traffic is not allowed on the bridge following the end of the allowable BCP. There shall be no maximum on the disincentive amount.

This assessed disincentive 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 - REQUIREMENTS FOR NIGHTTIME WORK. The Contractor is hereby notified that night work will be allowed within the bridge closure period. 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 900.645 Special Provision (Traffic Control, All-Inclusive).

13. 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.

14. NOTICE TO BIDDERS - BUILDING INSPECTION. For the protection of the Contractor and all property owners, before beginning any construction activities, the Contractor shall video inspect potentially affected properties inside and out. Buildings within 100 feet of the project limits that may be affected by any construction operations shall be included. The Contractor's insurer shall notify the Engineer when the video is complete and shall be available upon request by the Agency.

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 shall be delivered to the Engineer by the Contractor. The video shall remain the property of the contractor's insurer for one year after the project completion date.

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

All costs involved in performing this work will be considered incidental to all Contract items.

15. NOTICE TO BIDDERS. All temporary construction signs shall meet the following requirements:

- A. Where sign installations are not protected by guardrail or other approved traffic barriers, all sign stands and post installations shall meet National Cooperative Highway Research Program (NCHRP) Report 350 or the AASHTO Manual for Assessing Safety Hardware (MASH). The appropriate resource shall be determined as described in the MASH publication. No sign posts shall extend over the top of the sign installed on said post(s). When anchors are installed, stub shall not be greater than 100 mm (4 inches) above existing ground.
 - B. As a minimum, roll up sign material shall have ASTM D 4956 Type VI fluorescent orange retroreflective sheeting.
 - C. All post-mounted signs and solid substrate portable signs shall have ASTM D 4956 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 D 4956 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.
16. NOTICE TO BIDDERS. All retroreflective sheeting on permanent signs (signs to remain after the project is completed) shall be at a minimum ASTM D 4956 Type III sheeting, unless otherwise shown on the Plans.
17. UTILITIES. ---To be developed---
18. 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 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.

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.

19. SPECIAL CONSTRUCTION REQUIREMENTS.

- A. Unless otherwise permitted in writing by the Engineer, and except as otherwise allowed under Special Provision No. 11(a), the Contractor shall not work during the holiday periods for Memorial Day and July Fourth. 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, and except as otherwise allowed under Special Provision No. 11(a), 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. The Contractor shall maintain a safe access to all drives and intersecting side roads at all times during the construction of this project.
- C. 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 900.645 Special Provision (Traffic Control, All-Inclusive).

- D. 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 and Markings (SHSM) Book. Information for obtaining these publications may be found at: <http://mutcd.fhwa.dot.gov/index.htm>.

- E. The Town of Burke has special events may require close communication and coordination between the Contractor and the municipality to reduce conflicts. The municipality will advise the Engineer and Contractor of the specifics of each event and the Engineer will direct the Contractor as to what actions, if any, may be necessary on the Contractor's part to minimize impacts to the event. The event schedule is as follows:

Event	Date(s)
Burke Academy Graduation	May 30, 2015
Kingdom Trails	June 19-21, 2015

Special events that may conflict with Contractor operations are not limited to those listed above.

ASPHALT PRICE ADJUSTMENT

20. 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.
21. SUPPLEMENTAL SPECIFICATION - ASPHALT PRICE ADJUSTMENT, dated April 6, 2010, GENERAL REQUIREMENTS AND CONDITIONS, part (b) text, is hereby modified by being deleted in its entirety and replaced with text "NOT USED".

The index price for asphalt cement is \$xxx.00 per ton.

In addition to materials produced under Contract pay item(s) as allowed in GENERAL REQUIREMENTS AND CONDITIONS, part (a) of the Supplemental Specification, asphalt cement produced under Contract item 900.680 Special Provision (Bituminous Concrete Pavement, Small Quantity) will be included for adjustment.

If an emulsified asphaltic liquid is used in the Contract work under any Contract item subject to the Asphalt Price Adjustment provisions and that liquid is not included in the table under subpart (5) of PRICE ADJUSTMENT PROCEDURES of the Supplemental Specification, the ACEA as defined in subpart (5) for that liquid will be that as determined by averaging Contractor certified test results for the project.

SECTION 108 - PROSECUTION AND PROGRESS

22. 108.11 DETERMINATION OF EXTENSION OF CONTRACT TIME FOR COMPLETION, part (b) Determination of Contract Completion Date Extension, is hereby modified by adding new subpart (11) as follows:
- (11) The days from April 15th to December 1st, inclusive, on which the weather or condition of the ground caused suspension of the work.
23. 108.12 FAILURE TO COMPLETE WORK ON TIME, part (c) Liquidated Damages; General; Days Charged, is hereby modified by deleting the DAILY CHARGE FOR LIQUIDATED DAMAGES FOR EACH WORKING DAY OF DELAY table in its entirety and replacing it with a new table as follows:

DAILY CHARGE FOR LIQUIDATED DAMAGES
FOR EACH WORKING DAY OF DELAY

Original Contract Amount		
From More Than (\$)	To And Including (\$)	Daily Charge Per Day of Delay (\$)
0	500,000	1,200.00
500,000	1,000,000	1,300.00
1,000,000	1,500,000	1,400.00
1,500,000	3,000,000	1,800.00
3,000,000	5,000,000	2,300.00
5,000,000	10,000,000	3,500.00
10,000,000	20,000,000	5,900.00
20,000,000+	-----	10,700.00

SECTION 490 - SUPERPAVE BITUMINOUS CONCRETE PAVEMENT

24. 490.03 COMPOSITION OF MIXTURE, part (b) Design Criteria, TABLE 490.03B - DESIGN CRITERIA is hereby modified by deleting the fourth row (for "Dust Proportion") in its entirety and replacing it with the following:

Dust Proportion (Filler/Asphalt Ratio)	0.60 - 1.20 (Wet Sieve) (Dry Sieve for Production - Types IS and IIS: 0.50 - 1.20 Types IIIS, IVS, and VS: 0.50 - 1.00)
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25. 490.03 COMPOSITION OF MIXTURE, part (b) Design Criteria, TABLE 490.03B - DESIGN CRITERIA is hereby further modified by deleting the sixth row (for "Voids in Mineral Aggregate") in its entirety and replacing it with the following:

Voids in Mineral Aggregate (VMA)%	12.5 min.	13.5 min.	14.5 min.	15.5 min.	16.5 min.	17.5 min.
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26. 490.03 COMPOSITION OF MIXTURE, part (b) Design Criteria, TABLE 490.03B - DESIGN CRITERIA is hereby still further modified by deleting the ninth row (for "Voids Filled With Asphalt") in its entirety.

27. 490.03 COMPOSITION OF MIXTURE, part (b) Design Criteria, TABLE 490.03B - DESIGN CRITERIA is hereby still further modified by deleting footnotes (3), (4), and (5) in their entirety.

28. 490.03 COMPOSITION OF MIXTURE, part (b) Design Criteria, is hereby modified by deleting the heading "Voids Filled With Asphalt (VFA)" and the equation "VFA = 100 x ((VMA - V_a)/VMA)" in the second paragraph.

29. 490.03 COMPOSITION OF MIXTURE, part (c) Mix Design, is hereby modified by deleting the phrase ", and a single percentage for VFA" in the first sentence of the third paragraph.

30. 490.03 COMPOSITION OF MIXTURE, part (d) Control of Mixtures, TABLE 490.03C - PRODUCTION TESTING TOLERANCES is hereby modified by deleting the seventh (last) row (for "VFA") in its entirety.

31. 490.03 COMPOSITION OF MIXTURE, part (d) Control of Mixtures, TABLE 490.03C - PRODUCTION TESTING TOLERANCES is hereby further modified by deleting footnote 2 in its entirety.

SECTION 501 - HPC STRUCTURAL CONCRETE

32. 501.02 MATERIALS, is hereby modified by adding the following:

Where a shrinkage admixture will be used in placing concrete as allowed by the Contract Documents, the following requirements shall be met:

A shrinkage compensating admixture shall be added during the initial concrete mixing phase or as recommended by the chemical manufacturer product representative. The shrinkage compensating admixture shall be one of the products listed below. The final dosage rate will be determined by the product representative and the concrete producer. The dosage rate volume is computed into the final water/cementitious ratio.

Manufacturer: Sika Construction Product Division
Product name: - Sika Control 40
Tel.: 1-800-933-7452
Website: <http://www.sikaconstruction.com/tds-cpd-SikaControl40-us.pdf>

Manufacturer: The Euclid Chemical Company
Product name: Eucon SRA
Tel.: 1-800-321-7628
Website: <http://www.euclidchemical.com/fileshare/ProductFiles/techdata/euconsra.pdf>

Manufacturer: BASF (Master Builders)
Product name: Tetraguard AS20
Tel.: 1-800-628-9900
Website: http://www.basf-admixtures.com/NR/rdonlyres/84C7EC12-F527-44FD-A8B9-3A007609FF76/0/TETRAGUARD_AS20_DS307.pdf

Manufacturer: Grace Construction Products
Product name: Eclipse Plus
Tel.: 1-877-423-6491
Website: http://www.na.graceconstruction.com/concrete/download/EC-13B_2.pdf

SECTION 507 - REINFORCING STEEL

33. GENERAL SPECIAL PROVISIONS FOR ALL PROJECTS dated May 6, 2014 SECTION 507 - REINFORCING STEEL, Provision No. 58, is hereby modified by being deleted in its entirety and being replaced as follows:

507.04 PROTECTION OF MATERIAL, is hereby still further modified by adding the following paragraph:

Ends of Level II reinforcing steel where the mild steel is exposed shall be repaired in the following manner:

- (a) Cut ends of dual-coated reinforcing steel shall be coated with a two-part epoxy patching material as specified by the coating manufacturer. The materials and procedures shall be approved by the Engineer prior to the repairs being performed.
- (b) Cut ends of stainless clad reinforcing steel shall be epoxied and capped in accordance with the manufacturer's recommendations with either stainless steel caps or plastic caps. Caps shall be sealed to prevent the intrusion of moisture.

SECTION 652 - EROSION PREVENTION & SEDIMENT CONTROL PLAN

34. SECTION 652 - EROSION PREVENTION & SEDIMENT CONTROL PLAN, is hereby made a new Section of the Specifications as follows:

35. 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.

36. 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.

37. 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."

38. 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.

39. 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.

40. 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.

41. 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.

42. 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.

43. 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	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

44. In addition to materials produced under Contract pay item(s) included in Table 1 Pay Item Fuel Usage Factors and Quantity Thresholds as allowed under this Section, fuel usage under Contract item 900.680 Special Provision (Bituminous Concrete Pavement, Small Quantity) will be included for adjustment, utilizing the Fuel Usage Factors for item 490.30 in Table 1.
45. SECTION 690 - FUEL PRICE ADJUSTMENT, is hereby made a new Section of the Specifications as follows:
46. 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.

In such cases that estimated quantities are used to determine estimated fuel price adjustments throughout the duration of the

Contract, reconciliation of those estimated adjustments will be made upon the determination of actual final quantities and final adjustments to the total final quantity made by prorating those estimated adjustments over the applicable fuel price adjustment periods previously paid. Reconciliation of any fuel price adjustment will only be performed in those instances where the actual final quantity differs by more than five percent from the total estimated quantity. Payments owed to either the Contractor or VTrans will not be subject to any applicable interest claims.

47. 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 \$x.xx per gallon. The index price (retail) for diesel fuel is \$x.xx 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)
 FUFDF = Fuel Usage Factor, Diesel Fuel (gallon/unit)
 FUFPG = Fuel Usage Factor, Gasoline (gallon/unit)

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

$$PA = FUF D \times \text{Pay Item Quantity} \times (PPD - IPD)$$

For PPD/IPD > 0.95 and < 1.05 and PPG/IPG <= 0.95 or >= 1.05:

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

For PPD/IPD and PPG/IPG <= 0.95 or >= 1.05:

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

(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

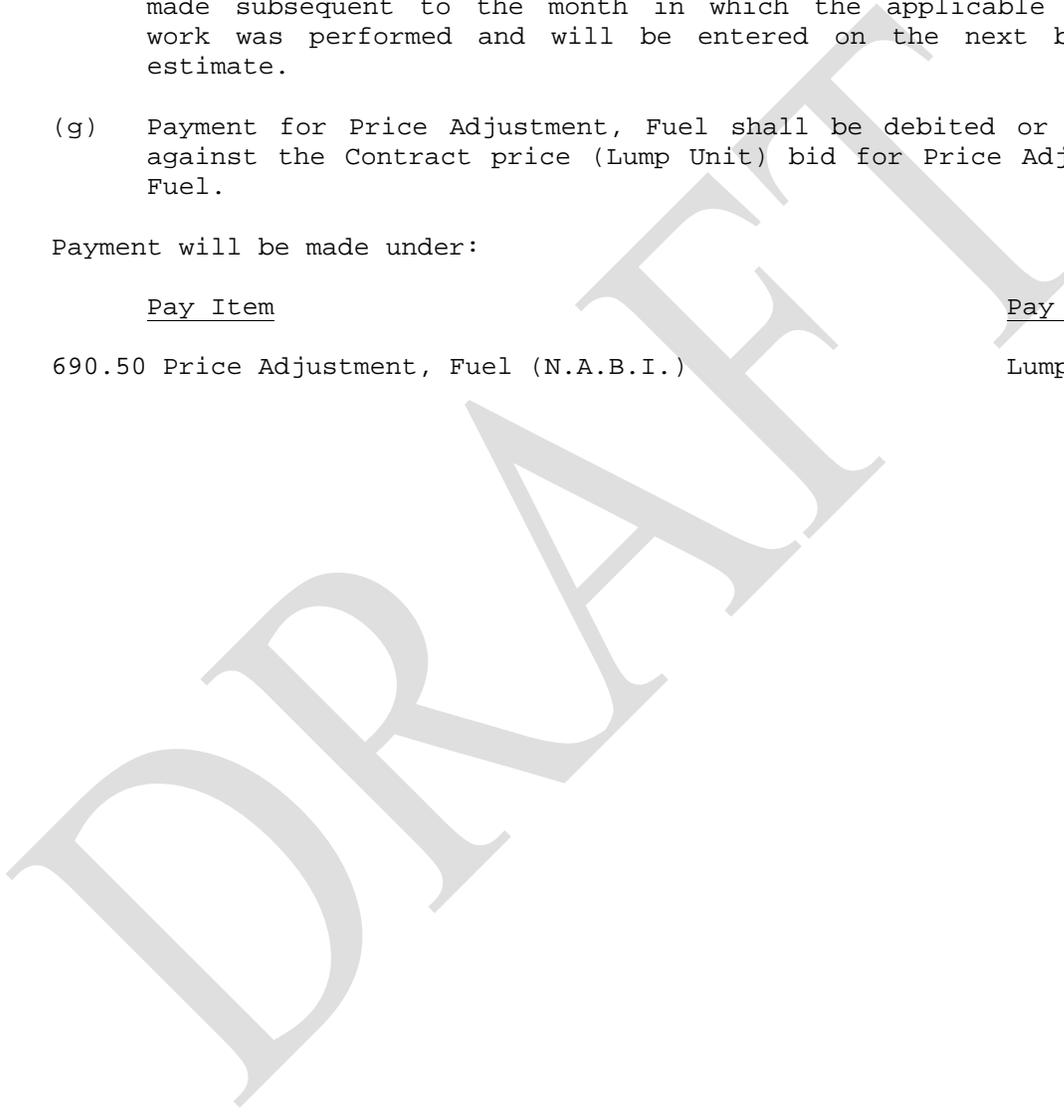


Table 1
Pay Item Fuel Usage Factors and Quantity Thresholds

Work Category	Pay Item No.	Usage Factor Units		Diesel Fuel (FUF D)		Gasoline (FUF G)		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

HIGH PERFORMANCE CONCRETE, RAPID SET

48. DESCRIPTION. This work shall consist of designing, furnishing, and placing a high early strength, 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.

49. MATERIALS. Materials shall meet the requirements of Subsection 501.02 and the following:

High Early Strength Portland Cement.....701.04

50. MIX DESIGN SUBMISSION CRITERIA. Concrete shall meet the following requirements:

(a) The mix shall be classified as conventional or self-consolidating concrete (SCC) mix. If the intended slump is greater than 9 inches then it shall be classified as SCC mix.

(b) Compressive Strength.

28 day compressive strength - 5000 psi

In addition to this requirement, the Contractor shall be aware that a minimum compressive strength of 4000 psi, as determined by field cured test cylinders, shall be achieved prior to allowing traffic on the structure.

(c) Permeability. 56 Day Permeability - 2500 coulombs (The permeability may be tested prior to 56 days but results must still be 2500 coulombs or less). Test shall be performed in accordance with subsection 510.04 b(6)(f).

(d) Slump/Spread. The mix shall not exhibit segregation at the slump /spread being used.

(1) For SCC mix the visual stability index (VSI) shall be equal to or less than 1.

(e) Alkali-Silica Reactivity (ASR). Test shall be performed in accordance with Subsections 510.04 b(6)(g) and 510.04 b(7).

(f) The mix shall contain shrinkage-compensating admixture such that there will be no separation of concrete from adjacent precast units. The Contractor shall include results for the unrestrained shrinkage test method, ASTM C 157. The maximum shrinkage allowed shall be 0.04%.

(g) A proprietary concrete mix design meeting the same performance requirements may also be considered for use.

51. SUBMITTALS. A minimum of fourteen (14) calendar days prior to placement (or prior to the pre-placement meeting, if one is required), the Contractor shall submit the mix design for approval. The mix design shall be submitted to the Agency's Materials and Research Laboratory, attention Structural Concrete Engineer. Concrete under this provision shall not be placed until the mix design has been approved.

(a) Trial Batch. A maximum of seven (7) days prior to the first placement, the Contractor shall produce and place a 2 cubic yard trial batch at a location agreed upon by the Contractor and the Engineer. The purpose of this trial batch is to show that the mix is capable of producing the wet test results within the specified ranges. The Engineer shall be given a minimum of seven (7) days notice prior to the trial batch pour. The trial batch shall be poured in the presence of the Engineer and the Structural Concrete Engineer. The trial batch shall be produced, and poured, in the same manner and time frames that will occur during construction. The Contractor shall provide qualified personnel to test slump, air content, and unit weight of the trial batch.

(b) Mix Acceptance Criteria. The placed concrete will be tested for all mix design criteria as listed above with the exception of permeability, shrinkage, and ASR. If the mix falls outside of any of the above listed ranges for the tested criteria, it shall be subject to rejection.

52. CURING CONCRETE. The method of wet curing used shall meet the requirements of Subsection 501.17. Concrete shall be wet cured as follows:

Flange connection - 3 days
Abutment closure pour - 24 hours
Pile cavities - 24 hours

53. LOADING OF CONCRETE. After the concrete has been placed and the finishing operations concluded, it shall not be walked on or disturbed in any manner, including the removal of forms, for a minimum period of 12 hours.

The concrete shall obtain a strength of 4000 psi prior to any vehicular loading.

A portable compression testing machine shall be provided by the Contractor and available on-site for cylinder testing. All testing and equipment shall conform to ASTM C 39 and performed by a qualified individual. This compression machine must be calibrated in accordance with the provisions of Section 5, ASTM C 39.

54. METHOD OF MEASUREMENT. The quantity of Special Provision (High Performance Concrete, Rapid Set) 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 (1 1/2 inches) or less in depth, or any pipe less than 200 mm (8 inches) in diameter.

55. BASIS OF PAYMENT. The accepted quantity of Special Provision (High Performance Concrete, Rapid Set) 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, Rapid Set).

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, Rapid Set).

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, Rapid Set).

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
900.608 Special Provision (High Performance Concrete, Rapid Set)(FPQ)	Cubic Yard

56. 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.

57. MATERIALS. Materials shall meet the following requirements:

- (a) Concrete. Concrete shall meet the requirements of Section 525.
- (b) Reinforcing Steel. Reinforcing steel shall meet the requirements of Section 507 for Level II Reinforcing Steel.
- (d) Connection Plate. Connection plate for anchoring approach railing terminal connector shall meet the requirements of Subsection 714.02.

58. 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.

59. 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.

60. 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.

61. 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.

62. 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

PRE-EXCAVATION OF INTEGRAL ABUTMENT PILES

63. DESCRIPTION. This work shall consist of loosening or removing the foundation materials that may be encountered in designated areas to permit the placing of piles.
64. MATERIALS. Materials shall meet the requirements of the following Subsections:
- (a) Sand. Sand shall meet the requirements of Subsection 703.03.
65. CONSTRUCTION REQUIREMENTS. The pre-excavation of integral abutment piles shall consist of augering, pre-boring, or some other means of excavation to produce an excavation to the depth and diameter specified in the Contract Documents. The excavation shall be maintained to allow for backfilling with sand in accordance with the Contract Documents. Temporary casing is considered an acceptable option.

Following installation of the piles, and in accordance with the Plans, the entire pre-excavation shall be filled with sand. Casing used to facilitate installation of the pile and backfill material shall not be left in place.

66. METHOD OF MEASUREMENT. The quantity of Special Provision (Pre-excavation of Integral Abutment Piles) to be measured for payment will be the total number of meters (linear feet) of excavation to the depth specified in the Contract Documents or as ordered by the Engineer, measured to the nearest meter (linear foot) from the top of the ground at the time of excavation to the bottom of the excavation.
67. BASIS OF PAYMENT. The accepted quantities of Special Provision (Pre-excavation of Integral Abutment Piles) will be paid for at the Contract unit price per meter (linear foot). Payment will be full compensation

for all excavation including any required rock removal as well as furnishing, transporting, storing, and installing the materials specified, including the sand.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
900.640 Special Provision (Pre-excavation of Integral Abutment Piles)	Linear Foot

PRESTRESSED CONCRETE NEXT D BEAMS

68. 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.

69. 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.

70. 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.

71. 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

CONSTRUCTION VIBRATION AND CRACK MONITORING

72. DESCRIPTION. This work shall consist of conducting pre-construction building surveys, developing appropriate vibration trigger levels, and

installing vibration and crack monitoring devices to record conditions prior to and during construction activities at the project site.

73. GENERAL. Vibration producing activities such as blasting, pile driving, vibratory compaction, pavement breaking, or operation of heavy construction equipment required for the construction of this project have the potential for creating damage to surrounding infrastructure and buildings. The Contractor is advised that structures are located in very close proximity to the proposed work and that construction activities shall be conducted so as to preclude damage to these structures. The Contractor is responsible for all damage caused by the Contractor's activities.

Structures immediately to the east of the project work area have been identified as historical and will require extra care to avoid damage.

74. MATERIALS. The Contractor shall provide InstanTel Blastmate III, or equivalent amplitude/frequency vibration monitors (www.instanTel.com). These instruments shall be capable of measuring, recording, and producing a hard copy of the frequency and peak particle velocity in three mutually perpendicular axes (Instruments that record "Vector sum" only measurements are not acceptable). These instruments shall be capable of measuring Linear Scale (dB-L) sound levels.

The Contractor shall provide crack monitoring equipment from the following, or an approved equal:

Tell-Tale Crack monitors
RST Instruments Ltd.
Tel.: (800)665-5599
www.rstinstruments.com

Crack monitoring Equipment
Geotest Instrument Corp.
Tel.: (866)430-7645
www.crackgauge.com

Avongard Crack Monitor
Avongard Products U.S.A.
Tel.: (800)244-7241
www.avongard.com

75. MONITORING CRITERIA.

(a) The Contractor shall provide the services of an independent qualified Engineering Consultant to perform pre-construction surveys of nearby buildings, develop site specific vibration

limits that are protective of nearby structures, especially historical structures, and monitor the vibrations along active work zones and any crack monitoring identified as necessary during pre-construction building inspections or created by current construction activities. The Engineering Consultant shall have at minimum a two year associate's college degree in science or engineering and at least 10 years of experience in seismic monitoring. The Engineering Consultant shall interpret the seismograph records to ensure that the seismograph data will be effectively utilized in the control of the construction activities with respect to the existing structures. The Engineering Consultant used shall be subject to the approval of the Engineer. The Engineering Consultant shall supervise the placement and operation of the seismographs.

The Contractor and Engineering Consultant shall be mindful of the historic nature of the Bed & Breakfast structure located within 15 feet of Abutment 2 of the proposed bridge and shall set appropriate vibration limits in the Vibration Monitoring Plan so that the Contractor does not damage existing above and/or below ground features of this structure during construction.

- (b) The Contractor shall provide a description of proposed construction methods, including amplitude descriptions of each vibration producing activity, and a vibration monitoring plan for each activity, including the format for reporting the vibration readings. A minimum of two construction vibration monitoring devices shall be placed within or along the construction zone. These devices shall be placed at locations nearest buildings or structures closest to active construction to optimize evaluation and assessment of potential damage to surrounding features. Additional devices may be required as directed by the Engineer.
- (c) In order to establish background conditions, vibration monitoring equipment should be set to record data for at least one full week prior to construction activities. A full report of this information will be provided to the Engineer prior to any construction activities beginning. If the Contractor's construction means and methods create ground vibrations that result in damage to surrounding buildings or structures, the Engineer will direct that all activities related to those causing the vibration be stopped. The Engineer may also, at any time, halt construction activities if vibration levels exceed those developed by the Engineering Consultant or if there are signs of damage to surrounding buildings and structures. In the event of work being stopped as a result of ground vibrations, the Contractor shall submit to the Engineer a report giving the construction parameter data and include the proposed corrective action for future construction events. In order to proceed with any further vibration producing activities, written permission must be obtained from the Engineer.
- (d) Vibration monitoring equipment shall be capable of continuously recording the peak particle velocity and providing a permanent record of the entire vibration event. Copies of all vibration records and associated construction activity (blasting, pile driving, pavement breaking, compaction, etc.) data shall be provided to the Engineer in a format approved by the Engineer.

- (e) The Engineering Consultant shall measure the magnitude of each vibration event with at least two vibration instruments, generally located adjacent to the closest or most critical structures. The vibration monitors shall be amplitude and frequency sensitive and shall be operated during vibration producing activities that produce measurable ground vibrations. In the event that the Contractor chooses to have concurrent vibration producing activities at more than one location adjacent to buildings, the Contractor shall notify the Engineer prior to the commencement of such activities. The Engineer may require additional vibration monitoring instruments at each location depending on site parameters. No vibration producing activities may be started until the appropriate instrumentation is provided by the Contractor and approved by the Engineer.
- (f) All vibration instruments shall be powered with rechargeable batteries, and the Contractor shall supply extension geophone and microphone cables so that the instruments can be placed within structures if outside temperatures drop below 32°F.
- (g) All vibration instruments shall be supplied with current calibration documents and shall be recalibrated on approximately a six-month use interval. All geophones shall be securely coupled to the ground.
- (h) The Contractor shall be responsible for instrument maintenance. If the Contractor does not maintain a sufficient number of instruments to monitor the buildings/structures adjacent to the vibration producing activity, the Engineer may direct that all vibration activities cease until a sufficient number are working. The Contractor's consultant will be responsible for placing the instruments at measuring locations designated in the monitoring plan, and reading and recording the pertinent vibration levels during pile driving and other construction activities designated by the engineer.
- (i) Crack displacement monitoring gages will be installed as appropriate across any significant existing cracks in buildings or structures identified and deemed necessary by the Contractor and Engineer during the Pre-Construction Building Inspections and agreed to by the Property Owner. Readings from the crack monitoring devices should be taken at the time of installation (at least one week prior to construction activities), again, just prior to construction start-up and at intervals during construction established by the Engineering Consultant. The consultant shall take and record readings of all instrumentation during the performance of the work and a report shall be provided to the Engineer within 24 hours of completing the readings.
- (j) The Contractor shall also be required to install additional crack monitoring devices as necessary and directed by the Engineer as a result of cracks that are identified or develop during construction.

76. Pre-Construction Condition Survey. The Contractor shall conduct a pre-construction condition survey of any buildings, structures, or

utilities within a 150 foot radius of the construction operations creating vibrations. The survey method used shall be acceptable to the Contractor's insurance company, the Agency, and local authorities. The Contractor shall be responsible for any damage resulting from construction activities. The pre-construction condition survey records shall be made available to the Engineer for review. Occupants of local buildings shall be notified by the Contractor prior to the commencement of activities which may generate excessive vibrations.

77. SUBMITTALS. The Contractor shall submit their proposed construction vibration monitoring plan for the structural health of nearby buildings and structures to the Engineer for review and approval a minimum of 14 days prior to the start of construction. The submittals shall include the following:

- (a) The qualifications of the Engineering Consultant. Include a list of three projects (with references) in the past five years where the Consultant has successfully developed vibration criteria and monitored construction activities on projects similar to the scope of the current project.
- (b) A description of the monitoring equipment and current calibration documentation.
- (c) Plan view showing number and locations of seismographs and crack gages being monitored.
- (d) Proposed vibration limits for the particular construction activities under consideration.
- (e) A list of structures, utilities and all other facilities which in the judgment of the Engineering Consultant require a pre and post construction condition survey. Particular attention shall be given to historic structures, structures in poor condition, structures supported by vibration sensitive materials which could cause settlement or loss of support, and structures which contain sensitive equipment or processes.
- (f) Procedures to be implemented if it is determined that the proposed construction activity cannot be reasonably implemented without exceeding vibration limits that are necessary to protect adjacent facilities.

78. PUBLIC RELATIONS. The Contractor is required to contact residents and owners or operators of the buildings along within 150 feet of active construction work zones. This contact will be made prior to the beginning of any vibration producing activity. The Contractor shall furnish to the Engineer a list of those contacted.

The Contractor shall maintain a log of all vibration related complaints, contacts, and actions, and shall furnish copy(ies) to the Engineer upon request.

79. METHOD OF MEASUREMENT. The quantity of Special Provision (Construction Vibration and Crack Monitoring) to be measured for payment will be on a lump sum basis in the complete and accepted work.

80. BASIS OF PAYMENT. The accepted quantity of Special Provision (Construction Vibration and Crack Monitoring) will be paid for at the Contract lump sum price. Payment will be full compensation for developing safe vibration limits, installing the monitors, recording

the vibrations and crack movement, making all necessary submittals, 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>
900.645 Special Provision (Construction Vibration and Crack Monitoring)	Lump Sum

CONTRACTOR-FABRICATED PRECAST CONCRETE STRUCTURE

81. DESCRIPTION. This work shall consist of manufacturing, transporting, handling, and erecting precast concrete structure components fabricated by the Contractor at a location other than a Precast Concrete Institute (PCI) or National Precast Concrete Association (NPCA) certified precast concrete facility.
82. MATERIALS. Materials shall meet the requirements of Subsections 501.02, 507.02, and 540.02.
- (a) Concrete. Concrete shall meet the requirements of Subsection 540.05, with the exception that the requirements of part (a) do not apply. In lieu of a mix meeting the requirements of Subsection 540.05, the Contractor may provide a mix meeting the requirements of Section 501 for Concrete, High Performance Class A or Concrete, High Performance Class B, provided that the design strength as shown in the Plans as well as that required for lifting and handling is met.
83. GENERAL FABRICATION REQUIREMENTS. Unless noted otherwise herein, Contractor-fabricated Precast Concrete (CFPC) produced and paid under this Special Provision shall meet the requirements of Sections 501, 507, and 540.
84. SUBMITTALS. As soon as practical after award of the Contract, all required information shall be prepared and submitted.

A complete copy of the structural design calculations for the CFPC shall be submitted as Construction Drawings in accordance with Section 105. The design calculations shall substantiate that the proposed precast concrete satisfies the design parameters of the Contract. The applicable design code will be the latest edition of the AASHTO LRFD Bridge Design Specifications unless indicated otherwise in the Contract Documents.

Fabrication Drawings for the precast concrete shall be submitted in accordance with Section 105, with an additional copy to the Composite Materials Engineer. In addition to the requirements for Fabrication Drawings in Section 105, the following shall be included:

- (a) Dimensions and tolerances of the precast concrete to be fabricated.
- (b) The concrete mix design, including but not limited to the following:
- (1) Batch weights specifying dry or saturated surface dry.
 - (2) Material names and sources.

- (3) Aggregate properties and date tested.
- (4) Chemical and physical properties of cementitious material.
- (5) Admixture names and sources.
- (6) Lab data that shall include, but not be limited to:
 - a. Slump.
 - b. Air Content.
 - c. Temperature.
 - d. Ratio of Water/Cementitious Material.
 - e. Cylinder breaks for 3, 7, and 28 days cured in the same manner as the piece to be fabricated.
 - f. 56-day Rapid Chloride Ion Permeability - AASHTO T 277 test data. The results shall be the average from testing 3 specimens, but the individual specimen results shall also be included. Testing shall be performed by an independent laboratory accredited by AMRL in this test method.
 - g. Alkali-Silica Reactivity (ASR) - AASHTO T 303 data from testing of both the fine and coarse aggregates. Testing shall be performed by an independent laboratory accredited by AMRL in this test method.
- (7) Alkali-Silica Reactivity (ASR). If potentially reactive aggregates are to be used in a mix design, then proposed mitigation method(s) and test results must be provided. The AASHTO T 303 test must be run again with the proposed mitigation method(s) and using the proposed job cementitious material proportioning. The proposed mitigation method(s) shall reduce expansion to below 0.10%.

If a mix design, including the testing results, has been submitted and approved within a 12 month period, it may be used in lieu of submitting an additional mix design. However, if any change in the material sources, properties, or proportions has occurred, then a new mix design with lab test data will be required regardless of previous approval.

The requirements for testing in Subsections 540.04(b)(6)f, 540.04(b)(6)g, and 540.04(b)(7) **above** shall be waived if the submitted mix design has a minimum proportion of the cementitious material content of that allowed for use in High Performance Concrete in Section 501.

The mix design shall be approved by the Composite Materials Engineer prior to fabrication.

- (c) The sources and properties of the materials proposed for use.

- (d) The placement of reinforcing steel, welded wire fabric, mechanical bar connectors, and inserts.
- (e) The type of surface finish and how the finish will be obtained. Include details of potential repair procedures.
- (f) The curing method, detailing sequence, and duration.
- (g) The minimum required concrete strength for design strength and form removal.
- (h) The design of the lifting attachments.
- (i) Transportation, handling, and storage details.
- (j) The installation procedures, including a detailed grouting procedure.
- (k) A Quality Control Plan that identifies a Quality Control Manager and provides previous experience for work of this nature. A Description of Quality Control Processes addressing but not limited to:
 - (1) Concrete production including batching, delivery, and placement.
 - (2) Formwork.
 - (3) Reinforcing.
 - (4) Concrete finishing.
 - (5) Concrete cure.
 - (6) Shipping/Installation procedures.

85. INSPECTION. Materials furnished and the work performed herein shall be inspected by the Agency. The Agency will test all concrete incorporated into the work in accordance with Section 501. The inspector shall have the authority to reject any material or work that does not meet the requirements of the Specifications. Advance notification of at least two (2) weeks shall be provided by the Contractor to the Agency's Engineer and the Composite Materials Engineer concerning the proposed intention to commence work. A minimum of five (5) working days notification shall be provided by the Contractor to the Agency's Engineer and the Composite Materials Engineer to confirm the fabrication start date.

Prior to placing any precast concrete elements produced under these Specifications, all materials shall have all applicable certifications approved in accordance with Subsection 700.02.

86. FABRICATION.

- (a) Pre-Production Meeting. Unless the Engineer deems, in writing, that a pre-production meeting is unnecessary, then a pre-production meeting shall be held a minimum of seven (7) calendar days prior to beginning concrete placement. The pre-production meeting shall be attended by, as a minimum but not limited to,

the Crew Supervisor, Contractor Project Manager, Concrete Producer, Resident Engineer, Project Manager, and Composite Materials Engineer.

- (b) Placing Concrete. Concrete placement shall be in accordance with Subsection 501.10 and as specified herein. Concrete shall not be deposited in the forms until the appropriate Agency representative has approved placement of the reinforcement, conduits, and anchorages.
- (c) Repairs/Patching. CFPC structure components that contain minor defects caused by manufacture or handling may be repaired at the manufacturing site. Minor defects are defined as holes, honeycombing, or spalls which are 150 mm (6 inches) or less in diameter and that do not penetrate deeper than 25 mm (1 inch) into the concrete. Surface voids or "bugholes" that are less than 16 mm (5/8 inch) in diameter and less than 6 mm (1/4 inch) deep need not be repaired. Repairs shall be made using a material from the Agency's Approved Products List for overhead and vertical concrete repair. The repair material shall be cured as specified by the manufacturer. Repairs shall be approved by the Engineer.
- (d) Cracking. Cracks less than 0.25 mm (0.01 inch) in width shall be sealed by a method approved by the Engineer. Cracks in excess of 0.25 mm (0.01 inch) may be cause for rejection. At the Engineer's discretion, cracked CFPC structure components shall be repaired or replaced at the Contractor's expense.
- (e) Dimensional Tolerances. All tolerances shall be in accordance with the latest editions of both PCI MNL 116 *Manual for Quality Control for Plants and Production of Precast and Prestressed Concrete Products* and PCI MNL 135 *Tolerance Manual for Precast and Prestressed Concrete Construction*, or with the National Precast Concrete Association (NPCA) *Quality Control Manual for Precast Concrete*, unless otherwise noted in the Contract Documents or as approved by the Engineer.
- (f) Marking. The date of manufacture, the production lot number, and the piece mark shall be clearly marked on each individual piece of precast concrete. The mark shall be in a location that will not be visible in the finished product.
87. HANDLING, STORAGE, AND SHIPPING. Each CFPC structure shall be handled, stored, and shipped in such a manner as to minimize chipping, cracks, fractures, discoloration, and excessive bending stresses. A unit damaged by handling, storage, or shipping shall be replaced at the Contractor's expense.
- A CFPC structure shall not be installed until the respective unit has been inspected. This inspection shall verify that the pieces are free from defects, and that all specification requirements, including but not limited to those for compressive strength and tolerance requirements, have been achieved. In addition, a CFPC structure will not be considered for shipment until the completion of the cure period and the required strength has been attained as demonstrated by field-cured cylinder breaks.
88. INSTALLATION METHODS, EQUIPMENT, AND ERECTION. Cranes, lifting devices, and other equipment for CFPC structure erection shall be of adequate design and capacity to safely erect, align, and secure all

members and components in their final positions without damage. The Contractor is solely responsible for the methods and equipment employed for the erection of the CFPC structure components.

Construction Drawings for CFPC structure component erection shall be submitted in accordance with Section 105. The erection plan shall include the necessary computations to indicate the magnitude of stress in the units during erection and to demonstrate that all of the erection equipment has adequate capacity for the work to be performed, and provisions for all stages of construction, including temporary stoppages.

Post tensioning shall comply with Subsection 540.12.

Submittal of the erection plan is for the Agency's documentation only and shall in no way be construed as approval of the proposed method of erection. The Contractor shall follow the erection plan as submitted.

89. GROUT.

- (a) Unless otherwise noted grout shall be used to fill shear keys, leveling screw voids, transverse tie anchor recesses, dowel holes, and for fairing joints as detailed in the Contract Documents or as ordered by the Engineer.

Grout shall be Mortar, Type IV. Acceptable grout materials shall be those included on the Approved Products List on file with the Agency's Materials and Research Section. Additional aggregates shall not be added to the material during field mixing.

The Contractor, with written permission from the Engineer, has the option to use ready-mixed mortar for the grouting process. The Contractor shall prepare and submit for approval the mix design for the grout. The maximum quantity that may be delivered in a single load is one cubic meter (1.25 cubic yards), which shall be delivered and placed within the time limits specified by the manufacturer.

For testing, 6 neat 50 mm (2 inch) cubes shall be molded and cured in accordance with AASHTO T 106 (ASTM C 109). The average compressive strength of 3 cubes shall be a minimum of 7 MPa (1000 psi) at 3 days and a minimum of 35 MPa (5000 psi) at 28 days.

- (b) The surface to be grouted shall be thoroughly cleaned, wetted, and free of all standing water. The grout shall be mixed using a mechanical mixer according to the manufacturer's recommendations and shall be readily pourable so that it completely fills the shape of the shear keys or holes, depending on the product being installed. The placement of grout shall be continuous so as to produce a monolithic key absent of any voids or cold joints.
- (c) All exposed grout shall be cured for a period of not less than three days by the wetted burlap method in accordance with Section 501. Curing shall commence as soon as practical after grout placement.

90. METHOD OF MEASUREMENT. The quantity of Special Provision (Contractor-Fabricated Precast Concrete Structure) of the type and size specified to be measured for payment shall be on a lump sum basis. The lump sum shall include all of the CFPC structure components in the complete and accepted work for each location specified in the Contract.
91. BASIS OF PAYMENT. The accepted quantity of Special Provision (Contractor-Fabricated Precast Concrete Structure) of the type and size specified will be paid for at the Contract lump sum price. Payment shall be full compensation for designing, detailing, fabricating, repairing, transporting, handling, and erecting the materials specified, for furnishing and implementing the erection plan, and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

Any grouting work, such as fairing out unevenness between adjacent precast concrete structure components and filling leveling screw holes, shear keys, transverse anchor recesses, and dowel holes, is considered incidental to the work for Special Provision (Contractor-Fabricated Precast Concrete Structure).

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
900.645 Special Provision (Contractor-Fabricated Precast Concrete Structure)(Abutment #1)	Lump Sum
900.645 Special Provision (Contractor-Fabricated Precast Concrete Structure)(Abutment #2)	Lump Sum
900.645 Special Provision (Contractor-Fabricated Precast Concrete Structure)(Approach Slab #1)	Lump Sum
900.645 Special Provision (Contractor-Fabricated Precast Concrete Structure)(Approach Slab #2)	Lump Sum

TRAFFIC CONTROL

92. DESCRIPTION. This work shall consist of establishing and maintaining traffic control measures to protect the traveling public and construction operations as 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 641 of the Standard Specifications.

93. SUBMITTALS. The Contractor shall submit to the Engineer for approval a site-specific traffic control plan in accordance with Subsection 105.03. The traffic control plan shall conform to the requirements of the MUTCD and all applicable Agency Standard Drawings. Where conflicts exist, the MUTCD will govern. Each phase of construction shall be included in the submitted traffic control plan. The Contractor shall allow the Agency 14 calendar days to review and respond to the proposed traffic control plan.
94. TRAFFIC CONTROL DEVICES. Temporary traffic barrier shall meet the requirements of Section 621. Traffic control devices shall meet the requirements of Section 641.
95. METHOD OF MEASUREMENT. The quantity of Special Provision (Traffic

Control, All-Inclusive) to be measured for payment will be on a lump sum basis for providing traffic control in the complete and accepted work.

The quantities for Uniformed Traffic Officers and Flaggers will be measured separately in accordance with Section 630.

96. BASIS OF PAYMENT. The accepted quantity of Special Provision Traffic Control, All-Inclusive) will be paid for at the Contract lump sum price.

Partial payments will be made as follows:

- (a) The first 15% of the Contract lump sum price will be paid upon approval of the Contractor's traffic control plan.
- (b) The remaining 85% of the Contract lump sum price will be paid on a prorated basis for the estimated duration of the Contract work remaining.

Payment will be full compensation for preparing, implementing, inspecting, maintaining, and removing the applicable traffic control plan and required traffic control devices, including but not limited to temporary traffic barrier and signing; and for furnishing all labor, tools, materials, equipment, and incidentals necessary to complete the work.

Uniformed Traffic Officers and Flaggers will be paid for separately under Contract items 630.10 and 630.15, respectively.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
900.645 Special Provision (Traffic Control, All-Inclusive)	Lump Sum

INCENTIVE/DISINCENTIVE (I/D)

97. 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) (N.A.B.I.)	Lump Unit

HAND-PLACED BITUMINOUS CONCRETE MATERIAL, DRIVES

98. DESCRIPTION. This work shall consist of the placement of one or more courses of bituminous concrete material by hand (non-mechanical) methods on a prepared foundation in conformance with the Plans or as directed by the Engineer.

The work under this Section shall be performed in accordance with these provisions, the Plans and Section 406 or Section 490 of the Standard Specifications, as appropriate.

99. GENERAL. This work will include only that bituminous concrete material placed by hand methods as required at public and/or private drives and permitted drives (such as field drives for agriculture) measured from the outside edge of shoulder to outside limit of drive, within the project limits as identified on the Plans or as directed by the Engineer. Bituminous concrete material placed by mechanical methods at these locations is excluded.

All other bituminous materials placed within the project limits, whether by hand or mechanical methods, shall be paid under the appropriate Contract pay item for bituminous mix or as otherwise specified in the Contract Documents.

100. MATERIALS. Materials shall meet the requirements of the following Subsections:

Subbase, RAP.....	301.02
Aggregate Shoulders, RAP.....	402.02
Performance-Graded Asphalt Binder.....	702.02
Emulsified Asphalt.....	702.04
Crushed Gravel for Subbase.....	704.05
Aggregate for Surface Course and Shoulders.....	704.12

Bituminous concrete material of the type specified in the Contract or as specified by the Engineer shall meet the requirements of Section 406 or Section 490, as applicable. For the purpose of this Section, bituminous concrete material to be used shall be of the type specified in the Contract or, by default, of a matching material to that adjacent material placed by mechanical methods.

101. CONSTRUCTION REQUIREMENTS. The existing surface and/or bed (subbase) upon which the bituminous concrete material is to be placed shall be compacted to the line, grade, and shape shown on the Plans or as directed by the Engineer. All vegetation and soft, yielding, or unsuitable material shall be excavated and replaced with properly compacted material meeting the requirements of Section 301 for Subbase of Crushed Gravel, Fine Graded. Crushed RAP generated from the project may be substituted for Subbase of Crushed Gravel, Fine Graded.

The existing edge of pavement shall be saw cut to provide a vertical edge for placing the hand-placed bituminous concrete material.

Emulsified asphalt shall be applied uniformly and completely to all vertical and horizontal surfaces to be paved. All surfaces shall be free of moisture, dust, and debris prior to applying emulsified asphalt.

If cross slope allows, as determined by the Engineer, existing paved drives shall be cold planed the entire drive width to the depth of the wearing course, not to exceed 50 mm (2 inches). Unless the drive is to be paved that day, all cold planed vertical edges shall have temporary fillets placed the same day cold planning takes place.

All existing paved drives shall have all temporary fillets removed; any existing joints, cracks, and holes cleaned; all vertical and horizontal surfaces to be paved coated with emulsified asphalt; all holes filled with bituminous concrete material compacted to the level of the existing surface; and be thoroughly cleaned and dried prior to any hand-placed bituminous concrete material being placed.

Hand-Placed bituminous concrete material shall be rolled with a 1 metric ton (1 ton) mechanical roller with steel drums, or approved equal, until compacted to the satisfaction of the Engineer.

102. METHOD OF MEASUREMENT. The quantity of Special Provision (Hand-Placed Bituminous Concrete Material, Drives) to be measured for payment will be the number of square meters (square yards) complete in place in the accepted work.

Hand-placed bituminous concrete material placed less than 12.5 mm ($\frac{1}{2}$ inch) thick will not be measured for payment.

When any portion or all of Special Provision (Hand-Placed Bituminous Concrete Material, Drives) is removed from the project under any provisions of the Contract or as directed by the Engineer, no payment will be made for the removal, disposal, or replacement of said material.

103. BASIS OF PAYMENT. The measured quantity of Special Provision (Hand-Placed Bituminous Concrete Material, Drives) will be paid for at the Contract unit price per square meter (square yard). Payment shall be full compensation for furnishing, mixing, hauling, placing, compacting, and finishing the material specified and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

Emulsified asphalt used as specified and backfill material meeting the requirements specified in the Plans will be considered incidental to Special Provision (Hand-Placed Bituminous Concrete Material, Drives).

When not specified for payment under separate Contract item(s), the costs of placing subbase material, cleaning existing paved surfaces, including power equipment, and for filling joints, cracks, and holes will not be paid for directly, but will be considered incidental to Special Provision (Hand-Placed Bituminous Concrete Material, Drives).

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
900.675 Special Provision (Hand-Placed Bituminous Concrete Material, Drives)	Square Yard

BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY

104. DESCRIPTION. This work shall consist of constructing one or more courses of bituminous mixture on a prepared foundation in accordance with these specifications and the specific requirements of the type of surface being placed, and in reasonably close conformity with the lines, grades, thicknesses, and typical cross sections shown on the Plans or established by the Engineer.

The work under this Section shall be performed in accordance with these provisions, the Plans, and the appropriate provisions of Section 406 or Section 490 of the Standard Specifications.

105. MATERIALS. Materials shall meet the requirements of the following Subsections:

- Performance-Graded Asphalt Binder.....702.02
- Emulsified Asphalt, RS-1H or CRS-1H.....702.04
- Aggregate for Marshall Bituminous Concrete Pavement...704.10(a)
- Aggregate for Superpave Bituminous Concrete Pavement..704.10(b)

Aggregate shall meet requirements relating to Section 406 or 490, where so specified.

The grade of PG asphalt binder used to produce bituminous concrete pavement shall be 58-28. Substitutions will be accepted based on availability where the upper end temperature value is greater than 58°C (136°F) and/or the lower end temperature value is less than -28°C (-18°F).

106. DESIGN MIX TYPES. Design mix types may be substituted based on mix availability. Allowable mix type substitutions will be accepted on a one to one thickness relationship, except as listed in Tables A and B below.

TABLE A - ALLOWABLE 40 MM (1½") MIX TYPE IVS SUBSTITUTIONS

Design ESALs (millions)	Design	Allowable Substitution	
	490.30 Superpave Bituminous Concrete Pavement	406.25 Bituminous Concrete Pavement*	406.27 Med. Duty Bituminous Concrete Pavement*
< 0.3	TYPE IVS	TYPE III	TYPE III
0.3 to < 10	TYPE IVS	TYPE III	-

*Per Section 406.

TABLE B - ALLOWABLE 90 MM (3½") MIX TYPE IIS SUBSTITUTIONS

Design ESALs (millions)	Design	Allowable Substitution	
	490.30 Superpave Bituminous Concrete Pavement	406.25 Bituminous Concrete Pavement*	406.27 Med. Duty Bituminous Concrete Pavement*
< 0.3	TYPE IIS	TYPE I	TYPE I
0.3 to < 10	TYPE IIS	TYPE I	-

*Per Section 406

107. COMPOSITION OF MIXTURE.

- (a) Gradation. Gradation shall meet the requirements of Section 406 or 490, as appropriate.
- (b) Design Criteria. Design Criteria shall meet the requirements of Section 406 or 490, as appropriate.
- (c) Mix Design. Standard mix design will be in accordance with Subsection 490.03 with an n value of 65 gyrations. Allowable substitutions based on pre-existing approved mix designs and/or n values for intended Contract suppliers are listed in Table C below. A request for substitutions must be submitted in writing to the Engineer a minimum of 10 working days prior to production. Any substitutions from the standard mix design or mix types as detailed in the Plans shall not result in any increase in cost to the Agency.

TABLE C - ALLOWABLE SPECIFICATION SUBSTITUTIONS

Design ESALs (millions)	Acceptable Specification Substitution		
	Superpave Bituminous Concrete Pavement (Gyrations)	Bituminous Concrete Pavement* (75 Blow)	Med. Duty Bituminous Concrete Pavement* (50 Blow)
< 0.3	50	✓	✓
0.3 to < 10	65 ¹	✓	-

¹Standard mix design specification.

*Per Section 406

(d) Quality Acceptance.

(1) General. Acceptance sampling and testing will be conducted in accordance with the Agency's Quality Assurance Program as approved by FHWA. Bituminous concrete mixtures designated under these specifications will be sampled a minimum of once per day of production or 500 metric tons (sublot), or other sublot size deemed appropriate, and evaluated by the Agency for each mix type (each mix design) in accordance with the following acceptance guidelines.

(2) Acceptance Guidelines. Temperature of the bituminous mixture shall be tested using the Verified Thermometer test method and PG Asphalt Binder content determined from the batch slip. Gradation shall be tested in accordance with AASHTO T 30. Mixture volumetric properties (air voids and VMA) shall be calculated in accordance with Subsections 406.03(b) or 490.03(b), as appropriate.

(3) Non-Compliant Material.

a. Rejection by Contractor. The Contractor may, prior to sampling, elect to remove any defective material and replace it with new material at no expense to the Agency. Any such new material will be sampled, tested, and evaluated for acceptance.

b. For any non-compliant material outside the production testing tolerances contained in the applicable Table 406.03C or 490.03C, the representative material (sublot) shall be assessed a mixture pay adjustment factor, PF(mix), of (-0.200).

(e) Boxed Samples. If Agency plant inspectors are not available for daily testing and inspection functions, then box samples will be taken by the Engineer at the project site to afford verification of mixture volumetrics /properties. Boxed samples will be processed and results reported to the Engineer within ten working days of being received at the Agency Central Laboratory in Berlin, Vermont. Gradation shall be tested in accordance with AASHTO T 30. Maximum Specific Gravity shall be tested in accordance with AASHTO T 209. Boxed samples will be assessed a mixture pay adjustment factor of 0.000.

108. COMPACTION. Special Provision (Bituminous Concrete Pavement, Small Quantity) will be analyzed for density according to the procedure specified below.

The density of the compacted pavement shall be at least 92.0%, but not more than 97.0%, of the corresponding daily average maximum specific gravity for each mix type (each mix design) of bituminous mix placed during each day, or placed per bridge for any bridge project. For material that falls outside of this range, payment will be made by adjusting the daily production totals in accordance with Table D:

TABLE D - DENSITY PAY FACTORS

AVERAGE DENSITY	DENSITY PAY FACTOR, PF(d)
89.0% - 90.4%	- 0.150
90.5% - 91.9%	- 0.100
92.0% - 93.4%	0.000
93.5% - 95.4%	0.150
95.5% - 97.0%	0.000
97.1% - 98.5%	- 0.100

When the Contract allows for a pay adjustment for mat density and the Agency elects to not take cores of any pavement course, the Density Pay Factor (PF(d)) will be considered equal to 0.000.

Bridges with a length equal to, or greater than, six meters (20 feet) will be cored for analyzing density of the bridge deck pavement. The minimum number of cores (taken from the center of the travel lane) shall be two, or as directed by the Engineer. Bridges with a length less than six meters (20 feet) will not be cored. Bridge decks or approaches will not be cored within three meters (10 feet) of a bridge or construction joint.

Bridge deck core areas shall be repaired with hot bituminous mix to the satisfaction of the Engineer at no additional cost to the Agency.

The cores taken for acceptance testing will be the final cores taken for determination of densities.

When the Contract does not allow for a pay adjustment for mat density the Contractor shall, prior to performing any construction operations, submit to the Engineer for approval the proposed rolling pattern and compaction equipment to be used on the project. Random investigative cores will be taken by Agency personnel on the first day's production of any pavement course, with the exception of the leveling course, to verify effectiveness of the proposed rolling pattern and equipment.

Pending results of the investigative cores, necessary adjustments to the proposed rolling pattern and/or equipment shall be made by the Contractor to achieve densities as directed by the Engineer.

109. METHOD OF MEASUREMENT. The quantity of Special Provision (Bituminous Concrete Pavement, Small Quantity) to be measured for payment will be the number of metric tons (tons) for a lot of mixture (each type) complete in place in the accepted work (Q) as determined from the weigh tickets.

The quantities of all applicable Pay Adjustments calculated for the project will be determined as specified below.

When applicable, and when the mixture pay factor, PF(mix), for a lot of Special Provision (Bituminous Concrete Pavement, Small Quantity) is less than 0.000, the measured quantity of Special Provision (Bituminous Concrete Pavement, Small Quantity) placed will be multiplied by such pay factor to determine a Mixture Pay Adjustment, (PA(mix)), to the accepted tonnage placed (Q) for that lot based on the Contract bid price (B), as follows:

$$PA(mix) = PF(mix) \times Q \times B$$

When applicable, and when the density pay factor, PF(d), for a lot of Special Provision (Bituminous Concrete Pavement, Small Quantity) is less than 0.000, the measured quantity of Special Provision (Bituminous Concrete Pavement, Small Quantity) placed that day, or placed per bridge for any bridge project, will be multiplied by such pay factor to determine a Mat Density Pay Adjustment, (PA(d)), to the accepted tonnage placed (Q) for that lot based on the Contract bid price (B), as follows:

$$PA(d) = PF(d) \times Q \times B$$

110. BASIS OF PAYMENT. The measured quantity of Special Provision (Bituminous Concrete Pavement, Small Quantity) will be paid for at the Contract unit price per metric ton (ton). Payment shall be full compensation for furnishing, mixing, hauling, and placing the material specified and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

Payment for Pay Adjustments shall be debited against the Contract prices (Lump Units) bid for the Pay Adjustment items.

The cost of repairing bridge deck core areas will not be paid for separately, but will be considered incidental to Special Provision (Bituminous Concrete Pavement, Small Quantity).

The costs of furnishing testing facilities and supplies at the plant will be considered included in the Contract unit price of Special Provision (Bituminous Concrete Pavement, Small Quantity).

The costs of obtaining, furnishing, transporting, and providing the straightedges required by Subsection 406.16 or Subsection 490.16, as appropriate, will be paid for under the appropriate Section 631 pay item included in the Contract.

The costs associated with obtaining samples for acceptance testing will be incidental to the cost of Special Provision (Bituminous Concrete Pavement, Small Quantity).

When not specified as items in the Contract, the costs of cleaning and filling joints and cracks, sweeping and cleaning existing paved surfaces, the emulsified asphalt applied to tack these surfaces, and tacking of manholes, curbing, gutters, and other contact surfaces will not be paid for directly, but will be incidental to Special Provision (Bituminous Concrete Pavement, Small Quantity).

Special Provision (Bituminous Concrete Pavement, Small Quantity) mixture approved by the Engineer for use in correcting deficiencies in the base course constructed as part of the Contract will not be paid for as Special Provision (Bituminous Concrete Pavement, Small Quantity), but will be incidental to the Contract item for the specified type of base course.

Special Provision (Bituminous Concrete Pavement, Small Quantity) mixture used to correct deficiencies in an existing pavement or to adjust the grade of a bituminous concrete surface completed under the Contract will be paid for at the Contract unit price for Special Provision (Bituminous Concrete Pavement, Small Quantity).

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
900.650 Special Provision (Mat Density Pay Adjustment, Small Quantity)(N.A.B.I.)	Lump Unit
900.650 Special Provision (Mixture Pay Adjustment)(N.A.B.I.)	Lump Unit
900.680 Special Provision (Bituminous Concrete Pavement, Small Quantity)	Ton