

20160406 - April's Specification Committee Meeting

Specification Committee Meeting Agenda

Wednesday, April 6th @ 9:00am

Building 5, Room 122

Approved Permanent Specification changes from last Committee meeting (2/3/16)

- 663 - Pavement Markings Section updated with a complete re-write
- 715.40 - Pavement Marking Material Update to the subsection
- 716.1.1.3 - Softshale Updates to the way test is administered
- 410 - Percent Within Limits (PWL) New addition to the spec book
- 109.11 - Square yard paving adjustments New subsection - for PWL SY paving



Approved Project Specific Provisions from last Committee meeting (2/3/16)

- SP 601 - Fiber Reinforced Polymer (FRP) Wrap
- SP 627 - Cable Stay Repair
- SP 627 - Cable Stay Repair, Tape

Items removed from Committee Agenda

- SP627 - ASAP Bridge
- SP102 - Grant Funding

Provisions to be discussed:

Anticipated Start Time	Provision	Title	Description	Approval
9:00	406	SP 406 High Friction Surface Treatment	<p>Discussed in January, February, & March; 4th time to Committee. Update to previously approved SP. Project Specific provision for high friction surface treatment.</p> <p>Price adjustment for aggregate is being kept in the provision.</p> <p>Updated per comments at the last meeting; application method.</p>	
9:05	607	SP 607 - Aesthetic Guardrail	<p>Discussed in January & February (skipped over in March); 3rd time to Committee. Project Specific provision for aesthetic treatment options to galvanized guardrail.</p> <p>No updates to the provision.</p> <p>The pay item for this needs further investigation; it is included herein simply for information/comment. The SP tabled until this is resolved.</p>	
9:05	627	SP 627 - High	Discussed in January, February, & March; 4th time to	

		Load Bearings	<p>Committee. Project Specific provision for high load multi-rotational bearings - Disc bearing assemblies.</p> <p>Updated per comments at the last meeting</p> <p>Approval expected in April.</p>
9:10	688	688 - Painting Metal Structures	<p>Discussed in January & February (skipped over in March); 3rd time to Committee.</p> <p>Permanent Specification change. Section updated, with complete re-write.</p> <p>MCS&T Coating Section held meeting outside of Committee with Industry to discuss.</p> <p>Provision has been updated, removing the Contractor's qualifications</p>
9:15	711	711.41 - Type II	<p>Discussed in January, February, & March, 4th time to Committee.</p> <p>Permanent Specification change. Subsection updated. Change start date for installation of type II paint markings are not subject to warranty requirements from 10/1 to 11/1</p> <p>No updates to the provision.</p> <p>Approval expected in April.</p>
9:20	415	415 - Milling of Asphalt Surfaces	<p>Discussed in February & March, 3rd time to Committee.</p> <p>Permanent Specification change. Re-write of entire section.</p> <p>Provision updated per comments from the March meeting.</p> <p>Approval expected in April.</p>
9:25	627	SP 627 - Strip Seal Expansion Joint	<p>2nd time to Committee; discussed at March meeting. Update to previously approved SP. Project Specific provision for Strip Seal Expansion Joint Assembly.</p> <p>Update removes elastomeric concrete from SP. Provision updated per comments at the March meeting.</p> <p>Approval expected in April.</p>
9:30	105	SP 105.6.1 - Division owned utilities	<p>2nd time to Committee; discussed at March meeting. Project Specific provision for locating Department owned utilities on projects. The provision is currently be added in <u>all</u> proposals.</p> <p>Updated provision, as discussed at the March meeting.</p>

			Approval expected in April.	
9:35	105	105.3 - Conformity with Plans and Specs	<p>2nd time to Committee; discussed at March meeting. Permanent Specification change. To Clarify administration cost are for <u>each</u> adjusted price.</p> <p>Provision updated per comments at the March meeting.</p>	
9:40	Various	Aggregate related	<p>2nd time to Committee; discussed at March meeting. Permanent Specification changes to aggregate related items in the Material Subsection.</p> <p>Redline copies included, showing current & proposed specifications.</p> <p>Specification Section's:</p> <ol style="list-style-type: none"> 1. 207 - Excavation and Embankment 2. 212 - Structure, Rock, and Wet Excavation 3. 218 - Slope and Foundation Protection 4. 307 - Crushed Aggregate Base Course 5. 604 - Pipe Culverts 6. 609 - Sidewalks 7. 626 - Retaining Wall Systems 8. 703 - Coarse Aggregates 9. 716 - Embankment and Subgrade Material 	
10:30	650	SP 650 - Grass Cutting	<p>2nd time to Committee; discussed at March meeting. Project Specific provision for the mowing of Rest Area grounds while under construction.</p> <p>No updates to the provision.</p> <p>Approval expected in April.</p>	
10:35	685	685 - Bridge Cleaning	<p>2nd time to Committee; discussed at March meeting. Permanent Specification change. New addition to the Spec book.</p> <p>MCS&T Coating Section held meeting outside of Committee with Industry to discuss.</p> <p>Provision updated per comments at the March meeting.</p>	
10:40	Various	ID/IQ - Paving	<p>2nd time to Committee; discussed at March meeting. Project Specific provision for the Indefinite Delivery / Indefinite Quantity (ID/IQ) contract.</p> <p>Project Specific Provision's:</p> <ol style="list-style-type: none"> 1. 105.10 – ID/IQ Contract 2. 190.3 – Compensation for Altered Quantities 3. 204.5 – Mobilization <p>No updates to the provision.</p>	
10:55	Various	SP's for	1st time to Committee. Update to previously approved	

		Districtwide striping Contract	<p>SP's.</p> <p>Revised Project Specific Provision's (SP's):</p> <ol style="list-style-type: none"> 1. 108 - Completion Dates 2. 663 - Pavement Markings 3. 711 - Paints, Oils, and Inks <p>Updated formatting & dates. The SP's are included in currently advertised striping contracts.</p> <p>Approval expected in April.</p>
11:00	Various	SP's for Recall Striping Contract	<p>1st time to Committee. Update to previously approved SP's.</p> <p>Revised Project Specific Provision's (SP's):</p> <ol style="list-style-type: none"> 1. 663 - Pavement Markings 2. 711 - Paints, Oils, and Inks <p>Similar to Striping Contract SP's. Updated formatting & dates. The SP's are included in currently advertised striping contracts.</p> <p>Approval expected in April.</p>
11:05	494	SP 494 - CIR	<p>1st time to Committee. Update to previously approved SP's. Project Specific provision for Cold In-Place Recycled Asphalt Pavement.</p> <p>Redline copy included, showing the changes/updates to the provision.</p>
11:10	521	SP 521 - Full Depth Reclamation	<p>1st time to Committee. Update to previously approved SP's. Project Specific provision for Full Depth Reclamation.</p> <p>Redline copy included, showing the changes/updates to the provision.</p>
11:15	663	SP Pavement Markings	<p>1st time to Committee. Project Specific provision for the transition to 6" pavement marking width.</p> <p>The language shown in the SP is directly from the 663 spec, approved at last meeting. The SP's are included in currently advertised striping contracts; will be included in projects using 6" pavement markings.</p> <p>Approval expected in April.</p>
11:20	110	110.2 - Minimum Wage Determination	<p>1st time to Committee. Permanent Specification change to address the prevailing wage law in WV.</p> <p>Redline copy included, showing the proposed specification change.</p>
11:25	110	110.4 - Provisions for WV State Funds	<p>1st time to Committee. Permanent Specification change to help administer force account payments on state funded projects (per prevailing wage law change</p>

		Contracts	in WV). Redline copy included, showing the proposed specification change.
11:30	425	SP 425 - Asphalt Emulsion Slurry	1st time to Committee. Project Specific provision for the Asphalt Emulsion Slurry.
11:35	426	SP 426 - Asphalt Mineral Bond	1st time to Committee. Project Specific provision for the Asphalt Mineral Bond.
11:40	601	SP 601 - Mass Concrete	1st time to Committee. Project Specific provision for Mass Concrete. This item may be added to the Wellsburg Bridge
11:50	639	Construction Surveying	1st time to Committee. Permanent Specification change for "As Built survey" to locate DOH-owned utilities (i.e. - electrical service lines, conduit, signals, lights, etc) within existing R/W on future construction projects. Redline copy included, showing the proposed specification change. <i>NOTE - This spec is still 'in development' ... it's included herein to present the concept to you & so that you're aware that this is in the works.</i>

Next Meeting

Wednesday, May 4, 2016 at 9AM

Building 5, Room 122: *(If Available. If not available a change in venue will be attached on the door)*

2016 Supplemental

The 2016 Supplemental is currently located online at this location:

<http://www.transportation.wv.gov/highways/contractadmin/specifications/Pages/default.aspx>

2016 Specifications Committee

The Specification Committee meets the first Wednesday of each month.

The remaining 2016 Committee dates are as follows:

May 4th, June 1st, July 6th, August 3rd, September 7th, October 5th, November 2nd, and December 7th
Calendar subject to change, updates will be given, as needed.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
SPECIAL PROVISION

DRAFT

FOR

STATE PROJECT NUMBER: _____

FEDERAL PROJECT NUMBER: _____

FOR

SECTION 406

HIGH FRICTION SURFACE TREATMENT

406.1-DESCRIPTION:

This work shall consist of the construction of a high friction surface treatment (HFST) material, composed of binder material and aggregate, upon an existing surface, in accordance with these Specifications and in reasonably close conformity with the lines, grades, thicknesses, and cross sections shown on the Plans or established by the Engineer.

The contractor shall notify the Engineer a minimum of two weeks prior to starting any high friction surface treatment operation.

406.2-MATERIALS:

The binder shall be a multi-component modified exothermic polymer resin binder treatment. The binder shall cure exothermically and hold the aggregate firmly in position and meet the following requirements:

TABLE 406.2a-MULTI-COMPONENT MODIFIED BINDER RESIN SYSTEM

Property	Test Method*	Specification Limits
Viscosity	ASTM D2556	7 – 30 P
Durometer Hardness	ASTM D2240	60 - 80
Cure Rate (Dry through time)	D1640	3 hours max.
Adhesive Strength	ASTM C1583	250 PSI min. (100% substrate failure)
Compressive Strength		1000 psi (@ 3 hours 5000 psi @ 7 days
Elongation at break point	ASTM D-638	30% min.
Gel Time	ASTM C-881	10 minutes min.
Water Absorption	ASTM D-570	1 % max.
Mixing Ratio	Per Manufacturer's Recommendations	

TABLE 406.2a-MULTI-COMPONENT MODIFIED BINDER RESIN SYSTEM

*Additional testing notes for laboratory: Prepare all samples per manufacturer’s recommendation.	
•	Viscosity – prepare one pint sample and mix for 2 to 3 minutes before testing. Use X1.1 for spindle selection and test at a temperature of 73 ± 2°F.
•	Gel Time – Prepare a 60 g sample per manufacturer’s recommendation. Perform testing at a temperature of 73 ± 2°F.
•	Cure Rate – Prepare specimens of 50-55 wet mil thickness.
•	Cure the following test specimens for 7 days at 73 ± 2°F, and test immediately without delay.
•	Durometer Hardness – Use the type 1 precision type D method.
•	Compressive Strength – Prepare specimen according to Method “B”, 2” x 2” cube, using 2.75 parts of sand to one part mix polymer resin by volume. Sand must conform to ASTM C778, 20-30 sand.
•	Ultimate Tensile Strength Prepare Type 1 specimens in accordance to ASTM D638.
•	Elongation at break point – Prepare Type 1 specimens in accordance to ASTM D638.

The aggregate shall be bauxite material that is clean, dry and free from foreign matter and meets the following requirements:

TABLE 406.2b-AGGREGATE

Property	Test Method*	Specification Limits
SFC – Side Force Coefficient	ASTM E670-94 0	.70 minimum
SRV/SRT – Skid Resistance Value Test	ASTM E-274	65.0 mm min (70 mm)
AAV-Aggregate Abrasion Value	AASHTO T96	20.0 max.
Aggregate Gradation	AASHTO T27	95.0–100.0% Passing No. 6 0.0-5.0 % Passing No. 16
Aluminum Oxide Content	ASTM C-25	87% min
* As an option, and with approval of the Engineer, the current edition of a corresponding AASHTO test may also be used in lieu of any ASTM test.		

406.2.1-Quality Control Testing: Quality control is the responsibility of the Contractor as specified in 106.1.

The contractor shall design a quality control plan in accordance with applicable section of MP307.00.50, excluding attachment 1, detailing the methods by which the quality control program will be conducted. Samples shall be obtained at a minimum frequency of one sample per day of aggregate placement.

406.3-ACCEPTANCE TESTING:

Acceptance sampling and testing of aggregates is the responsibility of the Division, except for furnishing the necessary materials. Quality control sampling and testing performed by the Contractor may be used by the Division for Acceptance.

406.3.1-Skid Testing: Skid testing will be conducted within 90 days of complete installation, by the Division or an independent testing firm at the discretion of the

Division; a skid value less than 69 will be deemed unacceptable and will require reinstallation of the complete surface system at no cost to the Department.

The installed system will also be tested for skid resistance 12-14 months after initial test; a value less than 64 will be deemed unacceptable and will require reinstallation of the complete surface system at no cost to the Department. The Contractor shall obtain a 2 year Warranty Bond in the amount of original Contract Bid amount for this item (item number 406001-001) at final inspection.

406.3.2-Acceptance for the Grading of Aggregate: Acceptance for gradation shall be on the basis of test results on consecutive random samples from a lot. A lot shall be considered the quantity of material represented by an average test value, not to exceed five sublots. Generally at the beginning of the project, the average shall be started on the second sample in accordance with MP 300.00.51. A subplot is the quantity of material represented by a single gradation test. In the case where only one sample is taken, this subplot shall be considered the lot. The material shall be sampled and tested in accordance with the applicable specification. The gradation test results shall be plotted on a control chart in accordance with MP 300.00.51. When the average, or when the most recent three consecutive individual test values fall outside the guidelines for this aggregate the lot of material represented will be considered nonconforming to the extent that the last of its sublots is nonconforming. When this occurs, the last subplot shall have its price adjusted in accordance with Table 406.12.1. In the case where the average is nonconforming and the last subplot contained is conforming, then there would be no price adjustment. In no event, however, shall a subplot of material have its price adjusted more than once, and the first adjustment, which is determined, shall apply.

406.3.2.1-Degree of Nonconformance: When a subplot of material is to have its price adjusted, the percentage point difference between the nonconforming test value and the specification limit shall be determined for each sieve size determined to be nonconforming and this value shall be multiplied by its appropriate multiplication factor as set forth in Table 406.3.2.1 to determine the degree of nonconformance on that sieve.

TABLE 406.3.2.1

Nonconforming Sieve Size	Multiplication Factor
No. 6 (3.35mm)	1.5
No. 16 (1.18mm)	2.0

The total measure of nonconformance of an individual subplot is the sum of all nonconformances on the various sieve sizes of that subplot. When the total degree of nonconformance has been established and it is 12.0 or less, the material will be paid for at an adjusted contract price as specified in Table 406.11.1. When the degree of nonconformance is greater than 12.0, the nonconforming subplot shall be resolved on an individual basis, requiring a special investigation by the Engineer to determine the appropriate course of action to be followed.

CONSTRUCTION METHODS

406.4-WEATHER RESTRICTIONS:

The polymer binder material shall not be placed on a wet surface, when the ambient air or surface temperature is either *below 50 degrees Fahrenheit or ambient temperature above 110 degrees Fahrenheit, or when the anticipated weather conditions or pavement surface temperature would prevent proper application of the surface treatment as determined by the Engineer in consultation with the manufacturer's representative.

*Applications below 50 degrees Fahrenheit will be considered acceptable if the manufacturer can demonstrate a cure rate (dry through time) of <3 hours at current field conditions.

Do not place the HFST with visible moisture on the prepared surface at the time of placing. Test for moisture in the pavement by taping an 18"x18" plastic sheet to the pavement per ASTM D4263. Perform the plastic sheet test only when surface temperatures and ambient conditions are within the established parameters for application of the overlay system. In the event of rain, the pavement must be allowed to air dry prior to performing the plastic sheet test. A 2 hour minimum test duration is allowed in lieu of the 16 hours specified in ASTM D4263.

406.5-PLACING:

The Contractor shall ensure that a manufacturer's representative is on site to provide technical assistance during the startup operations and as necessary during the surface preparation, material placement and during any necessary remedial work.

The contractor shall cover and protect all existing pavement markings and utilities that are left in place prior to placement. All inadequately sealed joints and cracks greater than 1/4" shall be cleaned and filled with a crack sealant approved by the polymer resin manufacturer.

For applications on new asphalt pavements, install the polymer binder and high friction aggregate topping a minimum of 30 days after placement of the new pavement.

Surfaces shall be clean, dry, and free of all dust, oil, debris and any other material that might interfere with the bond between the polymer resin binder material and existing surfaces. Adequate cleaning of all surfaces will be determined by the manufacturer's representative. Utilities, drainage structures, curbs and any other structure within or adjacent to the treatment location shall be protected from the application of the surface treatment materials. Cover and protect all existing pavement markings that are adjacent to the application as directed by the Engineer. Pavement markings that conflict with the surface application shall be removed by grinding and the surface shall be swept clean prior to the polymer binder application.

Clean concrete pavement surfaces by shot blasting and vacuum sweeping. Shot blast all surfaces to remove all curing compounds, loosely bonded mortar, surface carbonation, and deleterious material. Ensure that the prepared surface complies with the International Concrete Repair Institute (ICRI) standard for surface roughness CSP 5. After shot blasting, vacuum sweep or air wash, with a minimum of 180cfm of clean and dry compressed air, all surfaces to remove all dust, debris, and deleterious material. Maintain air lance perpendicular to the surface and the tip of the air lance within 12 inches of the surface.

Utilities, drainage structures, curbs, and any other structures within or adjacent to the treatment location must be protected against the application of the HFST materials.

When magnesium phosphate concrete is placed prior to the HFST bridge deck overlay, the magnesium phosphate concrete must be placed at least 72 hours prior to placing the polymer resin binder.

When modified high alumina based concrete is placed prior to the HFST bridge deck overlay, the polymer resin binder must not be placed on the concrete until at least 30 minutes

after final set of the modified high alumina based concrete.

Expansion joints and deck drains must be adequately isolated prior to applying HSFT.

All debris, excess aggregate, material containers, and other waste shall be disposed of off the Right-of-Way according to Section 207 by the Contractor at no direct cost to the Department.

Any roadway features disturbed by the work of the Contractor's operations shall be restored in kind by the Contractor and approved by the Engineer at no cost to the Department.

406.5.1 - Mixing and Application:

The HFST must conform to the following:

1. Surface preparation work, surface temperature, placement of the HFST must be in conformance with the binder supplier's specifications, these special provisions and as approved by the Engineer.
2. The spread rate range for polymer resin binder shall be 3-3.5 sq yd./gal.
3. The spread rate range of retained aggregate shall be 13-20 lb/sq yd.
4. HSFT must be allowed to cure for the minimum duration as recommended by the supplier's specifications and during that time the application area must be closed to all traffic including Contractor's equipment.

Mechanical Application:

The applicator vehicle must be capable of placing the resin binder and high friction aggregate, at the spread rates limits defined above, in a single pass. It shall provide adequate capacity of aggregate and resin binder capable of placing 1500 feet of HFST.

The polymer binder shall be blended and mixed in the ratio per the manufacturer's specification (+/- 2% by volume); the polymer binder shall be continuously applied once blended.

The automatic aggregate spreader shall be capable of applying up to a continuous 12 foot width application. The high friction aggregate shall begin within 20 seconds (+/- 1 sec) of the base polymer binder application onto the pavement section. Complete coverage of aggregate shall be completed within 60 seconds of the resin binder contacting the pavement. No exposed wet spots of the polymer binder shall be visible once the aggregate is installed.

The operations shall proceed in such a manner that will not allow the mixed material to separate, cure, dry, be exposed or otherwise harden in such a way as to impair retention and bonding of the high friction surfacing aggregate, walking, standing or any form of contact or contamination with the wet uncured resin will result in that section of resin being removed and replaced at the contractor's expense.

Hand Application:

Hand application acceptable only for areas deemed to be low volume and less than 300 feet in length. The resin binder and aggregate shall be placed at the application limits defined above.

The resin binder shall be mixed in accordance to the manufacturer's recommendations and uniformly spread over the surface. The high friction aggregates shall be completed within 60 seconds of the resin binder contacting the pavement. No exposed wet spots of the polymer binder shall be visible once the aggregate is installed.

406.6-CLEANING AND SWEEPING & RECOVERED AGGREGATE:

Excess and loose aggregate must be removed from the traveled way and shoulders by street sweeping. Application of HFST requires a second street sweeping 24-48 hours after application. All cost for street sweeping shall be included in HFST pay item.

The excess aggregate may be recovered and reused. The excess aggregate shall be recovered by a mechanical sweeper and shall be clean, dry and uncontaminated. Aggregate shall not be recovered from areas that were not previously cleaned.

The recovered aggregate may be used at a rate no higher than 1 part recovered aggregate to 2 parts virgin aggregate. The recovered aggregate and virgin aggregate shall be a homogenous blend and is subject to sampling and testing for gradation.

406.7-ENVIRONMENTAL REGULATIONS

All regulations of the State of West Virginia shall be met involving the storage, application and disposal of all materials on the project.

406.8-JOINTS:

The longitudinal construction joints between adjacent lanes shall be kept clean of material foreign to the type of surface being treated. The joints shall be constructed without overlaps or gaps between the materials.

The transverse joint at the end of successive sections or lanes shall be covered with paper to prevent overlapping of the binder material. Following its use, the paper shall be removed and disposed of satisfactorily.

406.9-PROTECTION OF PAVEMENT AND TRAFFIC CONTROL:

The Contractor shall be responsible for the protection of the surface against damage by their equipment and personnel. Traffic shall not be permitted on any part of the work under construction until the treatment has cured sufficiently to prevent raveling or pickup under traffic. The applicable provisions of 636 shall apply for regulating traffic.

406.10-METHOD OF MEASUREMENT:

No materials shall be removed from the Project for any purpose until the operation has been completed and the quantities of materials incorporated into the operations have been determined, except when authorized by the Engineer.

The Quantity of "High Friction Surface Treatment", when specified to be paid by the square yard, shall be measured by the total area the surface treatment is applied measured in place and accepted.

When items for maintaining traffic are included in the Contract, they will be measured and paid as provided in Section 636.

406.11-BASIS OF PAYMENT:

The quantities, determined as provided above, will be paid for at the contract unit prices bid for the items listed below, which prices and payments shall be full compensation for furnishing all the materials and doing all the work described above in a workmanlike and acceptable manner, including all labor, tools, equipment, supplies, and incidentals necessary to complete the work.

The Quantity of "High Friction Surface Treatment" when specified to be paid by the square yard shall include the cleaning and sweeping, binder material, aggregate and all labor and equipment required to perform the operation

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406.11.1- Price Adjustment: Aggregates not conforming with the requirements of gradation as described in TABLE 406.2b-AGGREGATE will be paid for at the adjusted contract price based on the degree of nonconformance as specified in Table 406.11.1.

TABLE 406.11.1

Adjustment of Contract Price for Gradation Not Within Specifications	
Degree of Nonconformance	Percent of Contract Price To Be Reduced
1.1 to 3.0	2
3.1 to 5.0	4
5.1 to 8.0	7
8.1 to 12.0	11
Greater than 12	*
* The Division will make a special evaluation of the material and determine the appropriate action.	

406.12-PAY ITEMS:

ITEM	DESCRIPTION	UNIT
406001-*	High Friction Surface Treatment	Square Yard (Square meter)

* Sequence number

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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SPECIAL PROVISION

FOR

STATE PROJECT NUMBER: _____

FEDERAL PROJECT NUMBER: _____

FOR

SECTION 607

GUARDRAIL

AESTHETIC TREATMENT TO GALVANIZED SURFACES

607.1-DESCRIPTION:

ADD THE FOLLOWING SUBSECTION TO THE SECTION:

607.1.1-Galvanized Surface Staining: This work consists of preparing, staining, and finishing all visible galvanized surfaces and appurtenances to achieve a rustic brown color with a matte finish.

607.1.2-Painted Galvanized Surface: This work shall consist of preparing and painting, as required by the paint manufacturer’s requirements, galvanized surfaces with a rustic brown color surface as required by the manufacturer’s requirements

607.1.3-Powder Coated Galvanized Surface: This work shall consist of preparing and powder coating galvanized surfaces a rustic brown color.

607.2-MATERIALS:

ADD THE FOLLOWING SUBSECTIONS TO THE SECTION:

607.2.1-Galvanized Surface Staining: The stain must consist of a clear soluble solution of natural oxidizers and soft buffered organic acids that accelerates the oxidization process without compromising the protective qualities of the galvanized surfacing. No pigment

based colorants should be added to achieve the desired color. The stain must react with the target surface over a period of 7 - 21 days to produce a rustic brown color with a matte finish. The stain must be resistant to fading in the sun.

607.2.1.1-Submittals:

A. Submit the following items:

1. A copy of the manufacturer's product Material Safety Data Sheet together with instructions for application of stain 5 days before application.
2. Proposed methods to control overspray, spillage and protection of adjacent surfaces for approval by the State Representative. No staining will be allowed prior to approval.
3. Independent lab tests showing that the stain material is environmentally safe.

607.2.1.2-Quality Control and Assurance:

A. Sample Section

1. Apply stain to a minimum 12 inch sample section of metal. Notify the Engineer not less than 7 days before staining the sample section. Prepare and stain the sample section with the same materials, tools, equipment and methods to be used in staining final surfaces. The applied stain must be allowed to cure for a minimum of 14 days before the Engineer inspection. In the event more than one sample section is required by the Engineer, each additional sample section will be paid for as change order work.
2. Use the Engineer approved sample as the standard of comparison in determining acceptability of staining.

607.2.2-Painted Galvanized Surface: The paint and application shall be in accordance with Subsection 688.3.4.3. All operations including cleaning, priming and painting shall be shop applied as required by the paint manufacturer. Only minor touch-up will be permitted in the field.

607.2.3-Powder Coated Galvanized Surface: The products provided shall be commercially powder coated materials and shall meet the requirements of Section 690.

ADD THE FOLLOWING SUBSECTION TO THE SECTION:

607.3.4-Galvanized Surface Staining Construction:

607.3.4.1-Preparation: Target surfaces to be stained must be free of excessive oils, dirt and other contaminants. All surfaces must be dry before application of stain.

607.3.4.2-Application:

- a. After areas to be stained have been prepared and the sample approved, apply stain to all existing galvanized surfaces and appurtenances required to be stained. Apply stain according to the manufacturer's instructions to achieve a color consistent with the approved sample. Minimize overspray. Spray application should not be performed under windy or rainy conditions
- b. Stain must be applied uniformly. Irregularities must be corrected according to the stain manufacturer's recommendations.
- c. Stained surfaces must be kept dry for a period of 5 days following the application of stain.
- d. Final approval of product samples shall be made by the Owner and/or Construction Manager.
- e. No work shall proceed until written approval is received.

607.3.4.3-Approved Products:

**METALS
STAINS FOR GALVANIZED STEEL PRODUCTS**

Products	Manufacturer's Address
Natina Steel	Natina Products, LLC PO Box 4563 Palm Desert, CA 92261 (877) 762-8462 www.Natinaproducts.com
Or Approved Equal As approved by the Engineer	

607.6-METHOD OF MEASUREMENT:

ADD THE FOLLOWING SUBSECTION TO THE SECTION:

The aesthetic treatment applied to guardrail will be measured in linear foot (meter) of guardrail as described above. The aesthetic treatment applied to end terminals will be measured separately and will be the actual number of end terminals or attenuators with applied treatment measured per each.

607.7-BASIS OF PAYMENT:

ADD THE FOLLOWING BELOW THE FIRST PARAGRAPH:

The quantities of Aesthetic Treatment to Galvanized Surface shall be measured as provided above and paid for by the items listed below, which payments shall constitute full compensation for all materials, labor and incidentals necessary to complete the work of the aesthetic treatment as required.

607.8-PAY ITEMS:

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ADD THE FOLLOWING TO THE TABLE:

ITEM NUMBER	DESCRIPTION	UNIT
607XXX-000	Aesthetic Treatment To Galvanized Surfaces	LF
607XXX-001	Aesthetic Treatment To Galvanized Surfaces	EA

{The above Item numbers could be left open as shown above or developed to with “Alternates” so that the selected system is known for historical base information.}

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SPECIAL PROVISION

FOR

STATE PROJECT NUMBER: _____

FEDERAL PROJECT NUMBER: _____

FOR

SECTION 627

**HIGH LOAD MULTI-ROTATIONAL
BEARINGS – DISC BEARING ASSEMBLIES**

627.1-GENERAL:

This work shall consist of fabricating, testing, furnishing, and installing High Load Multi-Rotational Bearings that are shear inhibited disc type structural bearing devices of the type shown on the plans at the location shown on the plans and in accordance with these Special Provisions. The structural bearings shall adequately provide for movements such as thermal expansion and contraction, rotation, camber changes, and creep-shrinkage of structural members where applicable. The Contractor shall provide the specific manufacturer and model number of the device he intends to furnish and install within 60 days of award of Contract.

627.2-DEFINITION:

627.2.1-Shear Inhibited Disc Structural Bearing:

The load bearing and rotational disc shall be composed of polyether urethane material. This disc shall be contained between upper and lower steel bearing plates and equipped with an internal shear restriction mechanism.

For expansion bearings, the upper steel bearing plate shall have a PTFE sheet recessed and bonded into the top half of the plate to accommodate the horizontal movement of the structure. The PTFE surface of the upper steel bearing plate shall support an upper steel plate fitted with a continuously welded, highly polished stainless steel face. For unidirectional expansion bearings, the upper steel plate shall be fitted with guide bars or a keyway system to restrict the lateral movement of the structure. The guide bars and their opposing guided surfaces shall be faced with opposing strips of PTFE/stainless steel. The guide bars and shear restriction mechanism shall be designed to withstand a minimum force of 10% of the total vertical load. Higher horizontal forces shall be noted in the contract plans. Guiding off of the fixed base or any extension of it will not be permitted.

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All materials shall be as specified in the contract documents or as recommended by the manufacturer of the bearing device. Shear inhibited disc structural bearing shall be referred to throughout this specification as the bearing device.

627.3-QUALIFICATIONS:

The supplier shall show previous history in the design and fabrication of disc bearings. Documentation showing a minimum of five years' experience and ten bridge installations shall be provided to the Engineer.

627.4-CONTRACT DRAWINGS:

The contract drawings shall indicate the following design parameters for proper sizing and detailing of structural bearings:

1. Maximum and minimum vertical load.
2. Horizontal load if it is over the minimum 10% of the total vertical load and the direction
3. Total movement for expansion bearings and the direction.
4. Amount of rotation anticipated.
5. Allowable pressure on concrete substructure.
6. Anchorage details.
7. Uplift data, if required.
8. Temporary holding clips, if required.
9. Removable bearing details, if required.
10. Self-aligning rotation in plan details, if required.
11. Jacking port details.
12. Flexible guide details, if required.
13. Type of bearing, i.e. fixed, guided, non-guided.
14. Seismic details.

627.5-MATERIALS:

All materials shall be new and unused with no reclaimed material incorporated in the finished bearing.

The Contractor shall furnish a manufacturer's certification that the materials proposed for use on the project have been pre-tested and will meet the requirements as set forth in the manufacturer's current literature.

The material shall not be installed in the field prior to the Engineer's approval

627.5.1-Polyether Urethane Rotational Element: The rotational element used in the construction of the shear inhibited disc type bearings shall be molded from a polyether urethane compound. The physical properties of the polyether urethane shall conform to the following requirements:

<u>PHYSICAL PROPERTY</u>	<u>ASTM TEST METHOD</u>	<u>REQUIREMENT</u>
Hardness, Type D Durometer	D-2240	60 min 64 max
Tensile stress, psi	D-412	
@ 100% Elongation		2100 min
@ 200% Elongation		3700 min
Tensile strength, psi	D-412	5500 min
Ultimate Elongation, %	D-412	253 min
Compression Set, 22h @ 158 °F, %		40 max

627.5.2-Steel: All steel used in the construction of the bearings (except stainless), shall conform to AASHTO M 270 unless otherwise specified in the contract plans. All steel surfaces exposed to the atmosphere (except stainless and area in contact with the polyether urethane rotational element) shall be hot dipped galvanized in accordance with AASHTO M 111 or zinc metalized in accordance with Standard Specification Section 689, Metalizing Steel, except payment for metalizing shall be incidental to the cost of the each bearing .

627.5.3-Stainless Steel: Stainless steel for expansion bearings shall conform to ASTM A240 Type 304, and shall be continuously welded to upper steel plate. The face of the stainless steel in contact with PFTE shall have a No. 8 bright mirror finish (less than 5 micro inches root mean square). The minimum thickness of the stainless steel shall be 16 gauge. Bonding or mechanically fastening of stainless to upper steel plate will not be allowed.

627.5.4-Polytetrafluoroethylene (PTFE): PTFE shall be manufactured from pure virgin (not reprocessed) unfilled PTFE resin. The PTFE sheet shall be bonded and recessed into the upper steel bearing plate. The PTFE sheet shall have a minimum thickness of 3/16 of an inch when the maximum dimension of the PTFE is less than or equal to 24 inches or ¼ of an inch when the maximum dimension of the PTFE is greater than 24 inches and be recessed one-half of its thickness into its steel substrate. The PTFE sheet shall be acid-etched on the bonded side and polished on the side facing the stainless steel to insure a low coefficient of friction.

The PTFE strips for guide bars shall be 15% glass filled and a minimum of 1/16 inch thick and shall be bonded and mechanically fastened into the steel edges. The fasteners shall be recessed so as not to interfere with sliding during movement. The PTFE shall be resistant to all acids, alkalis and petroleum products, stable at temperature from -350 OF to +500 OF, non-flammable, and non-absorbing of water. The PTFE shall be bonded to grit blasted steel using an adhesive approved by the manufacturer. The unfilled PTFE shall conform to the following requirements:

<u>PHYSICAL PROPERTY</u>	<u>ASTM TEST METHOD</u>	<u>REQUIREMENT</u>
Ultimate Tensile Strength, psi	D-638	2800 min
Ultimate Elongation, %	D-638	200 min
Specific Gravity	D-292	2.13

627.6-FABRICATION REQUIREMENTS:

The finish of the mold used to produce the rotational element shall conform to good machine shop practice. Each bearing shall have a project identification number and lot number marked on a side that will be visible after erection.

Gross bearing dimensions shall have a tolerance of -0, +1/8 inch. Overall thickness tolerance shall be -0, +1/8 inch. All bearing surfaces of steel plates shall be finished flat within 0.0625 inch.

627.7-TESTING:

The bearing devices to be tested shall be selected by the design authority at random. The bearing device will be visually examined both during and after the test. Any visual effects shall be cause for rejection.

627.7.1-Coefficient of Friction: Sliding coefficient of friction tests will be performed by the manufacturer of one expansion bearing device from each lot. A lot will be the quantity as defined by the designed authority with a maximum of 25 bearings per lot. The coefficient of friction will be measured at the bearing design capacity on the 5th, 15th, and 100th cycle at a speed on one inch/minute. A total of 100 cycles shall be run. The sliding coefficient of friction shall be calculated as the horizontal load required to maintain continuous sliding at a given speed divided by the bearings design capacity vertical load. The vertical load shall have been applied continuously for a minimum of one-hour prior to testing.

The measured sliding coefficient of friction shall not exceed 0.03.

627.7.2-Rotation: Rotation tests will be performed by the manufacturer on one bearing device from each lot. The polyether urethane element shall be capable of maintaining its initial uniform contact with the steel bearing plates through a rotation of 0.02 radians under a compressive load equal to 150% of the design capacity of the bearing device.

Any observed separation between the edge of the rotational elements and the bearing plates shall be cause for rejection.

627.8-CONSTRUCTION REQUIREMENTS:

The Contractor shall submit shop drawings in a timely fashion after the award of contract. At the discretion of the Engineer, the manufacturer may be required to furnish facilities for inspection of the completed device or a representative sample in his plant. The inspectors shall be allowed free access to the necessary parts of the manufacturer’s plant. The manufacturer shall provide a technical representative to be present at times while the bearing device is being installed. The Contractor shall notify the bearing device manufacture of the scheduled installation a minimum of two weeks prior to the installation date.

The bearing device manufacturer’s instructions for the proper installation of the bearing shall be entered in the shop drawings. Shop drawings, which lack manufacturer’s installation instructions, may be returned without approval.

The bearing device shall be installed strict accordance with the manufacturer’s instructions, this specification and the advice of their official representative.

The manufacturer shall ship each bearing fully assembled. The bearing devices are not to be disassembled prior to installation without the approval of the design authority and manufacturer.

627.9-BASIS OF PAYMENT:

The accepted quantity of bridge bearing device will be paid for at the contract unit per bearing.

627.10-PAY ITEMS:

ITEM	DESCRIPTION	UNIT
627006-001	Guided Bearing Disc	Each
627006-002	Non-Guided Bearing Disc	Each
627006-003	Fixed Bearing, Disc	Each

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
FOR
SECTION 688
PAINTING METAL STRUCTURES

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DELETE THE TITLE OF THE SECTION AND CONTENTS AND REPLACE WITH THE FOLLOWING:

SECTION 688
FIELD PAINTING OF METAL STRUCTURES

688.1-DESCRIPTION:

The field painting (coating) of metal structures shall follow the provided requirements set forth in this specification unless otherwise noted in the Contract. This specification shall apply to surface preparation, coating application, contractor responsibilities, environmental and worker protection, and waste handling/disposal.

688.2-GENERAL:

688.2.1-Bridge Pre-Cleaning and Washing: All structures shall be pre-cleaned and washed in accordance with Section 685 of the Standard Specifications.

688.2.2-Surface Preparation:

688.2.2.1-Non-Blasting: When non-blast cleaning is specified in the contract documents, any one or any combination of the methods below shall be used. The surface and the surface profile after cleaning shall meet the requirements of the methods below. The amount of material, rust scale, and pack rust removed after non-blast cleaning, will meet the requirements of the SSPC methods listed:

1. Hand Tool Cleaning SSPC-SP 2
2. Power Tool Cleaning SSPC-SP 3
3. Commercial Grade Power Tool Cleaning SSPC-SP 15

688.2.2.2-Blasting: The abrasives used for all blasting shall meet the guidelines set forth in SSPC AB1 for mineral and slag abrasives, and AB3 for ferrous metallic abrasives. Any additive mixed with the abrasive shall be approved by the Division prior

to use. The abrasives used shall produce a height of profile between 2.0 and 3.0 mils (50 µm and 75 µm).

In addition, the container or bag of abrasive shall include the name of the abrasive, the name of the manufacturer, and the size of the abrasive. If any additive has been included with the abrasive, the name and the percentage of the additive shall be on the container or bag.

The compressed air used for nozzle blasting shall be free of water and oil. The cleanliness of each compressed air system shall be verified at least once per shift using the blotter test in accordance with ASTM D4285, "Standard Test Method for Indicating Oil or Water in Compressed Air".

688.2.2.2.1-Commercial: Shall meet the requirements of SSPC-SP 6 prior to painting. The appearance of the steel surface after blast cleaning shall correspond to the applicable and current SP 6 pictorial standards of SSPC Vis 1.

688.2.2.2.2-Brush-Off Blast: Shall meet the requirements of SSPC-SP 7 prior to painting. The appearance of the steel surface after brush-off blast cleaning shall correspond to the applicable and current SP 7 pictorial standards of SSPC Vis 1.

688.2.2.2.3-Near White: Shall meet the requirements of SSPC-SP 10 prior to painting. The appearance of the steel surface after blast cleaning shall correspond to the applicable and current SP 10 pictorial standards of SSPC Vis 1.

688.2.2.3-Water Jetting: Shall meet the requirements of SSPC-SP 12, section 2.1.6 "Ultrahigh-Pressure Water Jetting" (UHP WJ), visual standard condition WJ-1, prior to painting.

688.2.2.4-Post-Surface Preparation: Surface prep operations shall be performed in such a manner that no damage is done to partially or entirely completed portions of the work. After surface prep, any areas that are repaired by welding shall be prepped again. Areas repaired by grinding or other means shall have the anchor pattern restored. Visible deposits of oil, grease, or other contaminants shall be removed according to SSPC-SP 1 "Solvent Cleaning" prior to painting. Dust, loose residues, and the removal of abrasives from pockets and corners shall be removed from prepared surfaces by brushing, blowing off with clean, dry air, vacuum cleaning. The prepped surface shall be checked for cleanliness by wiping a clean, dark cloth across the surface. If residue is present, the surface shall be cleaned again and rechecked. All blast cleaned surfaces shall be painted prior to any rust bloom or flash rust occurring or within 24 hours, whichever comes first.

688.2.3-Paint Application Requirements:

688.2.3.1-Weather Conditions: Painting shall not be done when the ambient temperature is below 40° F (5° C) or above 100° F (38° C), or the relative humidity above 90 percent. The temperature of the steel must be at least 5° F (3° C) above the dew point. Painting shall not be performed when the surface to be coated is sufficiently hot to cause blistering of the film or too rapid solvent release. Painting will only be permitted between the dates of April 15th through October 15th. There will be no painting permitted to occur in a heated containment.

688.2.3.2-Paint Storage: Paint and thinners shall be stored in a temperature-controlled environment between 40° F (5° C) and 100° F (38° C). At no time will paint be used beyond the manufacturer's shelf life.

688.2.3.3-Paint Application: The blast cleaned surface shall be painted within 24 hours. In the event rust bloom or flash rusting occurs, the affected members shall be re-cleaned by blasting. The paint shall be applied by spray methods, except those areas inaccessible to spray application may be brushed or rolled. Brushes or rollers, when used, shall have sufficient body and length of bristle or roller nap to spread a uniform coat. Small touch-up areas may be brushed or rolled, if approved by the Engineer. Use of an agitated pot shall be mandatory in spray application of zinc-rich primer. The agitator or stirring rod shall reach within 1 inch (25 mm), of the bottom of the pot and shall be in motion at all times during paint application. Coatings shall be mixed in strict accordance with the coating manufacturer's written instructions. Under certain conditions, it may be necessary to thin or adjust the solvent balance of the paint. The type and amount of solvent to be used shall be that listed on the coating manufacturer's product data sheet for that material. Upon thinning, the dry film thickness requirement shall still be met by appropriately increasing the wet film thickness.

Application requirements and drying times between coats shall be in accordance with the manufacturer's recommendations. Exposed steel surfaces of expansion dams shall be painted as specified for structural steel.

Spray guns must be equipped with the recommended size tip for the paint product being applied and shall be held perpendicular (90 degrees) to, and at, the proper distance from the receiving surface. Complete protection shall be provided by the contractor against paint spatter, spillage, overspray, wind-blown paint, or similar releases.

Appropriate containment shall be placed around the work area to protect public and private property. This shall include pedestrian, marine, railroad, or vehicular traffic on any portion of the bridge, and any highway appurtenances that are found upon, beneath, or adjacent to the structure. Staging must be adequate to provide access to all areas being painted. Violation of these requirements causing excessive paint waste will be justification for the WVDOT Engineer to order the Contractor to cease all work on the project until corrective action has been taken. The Contractor shall be responsible for cleaning and/or replacing any property damaged by the Contractor's operations at no cost to the Department. The method of cleaning and/or replacement shall be submitted to the Engineer in advance for approval.

688.2.3.3.1-Paint Systems:

- 3 COAT:** Primer, Intermediate, Top Coat
- 2 COAT:** Primer, Top Coat
- 1 COAT:** Epoxy Mastic only

688.2.3.3.2-Painting over Galvanized Surfaces: Painting Galvanized surfaces shall be in accordance to the paint manufacturer's recommendations.

688.2.3.3.3-Damage to Galvanized Surfaces: The Contractor is to exercise care while cleaning and painting around expansion joints and galvanized surfaces. Any damage to the expansion joints or galvanized surfaces found by the Engineer, as a result

of the cleaning and painting operation shall be repaired and/or replaced, to the satisfaction of the Engineer, at the Contractor's expense.

688.2.4-Inspection Requirements:

688.2.4.1-Inspection of Applied Paint: If in the opinion of the Engineer the coating has flaws other than deficiencies in the prescribed dry film thickness, the material shall be repaired or shall be removed and replaced. Defects in the film, including but not limited to runs, sags, mud-cracking, lifting, overspray, dry spray, pinholes, and holidays shall be corrected until a continuous uniform film has been applied. Excessive film thickness shall be reduced and insufficient film thickness shall be increased. If the thickness of the finish coat is reduced, a thin coat of the finish shall be reapplied to seal the surface and to blend the area into the surrounding coating. Depending on the defect, total removal and replacement of the effected coating may be required. No unsightly runs or sags shall be visible. All "mud-cracking" and/or "dry overspray" in the paint film shall be removed. Excessive bubbles or pinholes shall not be visible in the coat after examination under 8X magnification. Calibration of the thickness gage and dry film thickness measurements shall be in accordance with MP 708.40.00.

688.2.4.2-Access for Inspection: The Contractor shall furnish suitable safe access and shall provide a time mutually agreed to for inspecting the structural steel prior to and after each coating. The Division's inspector shall approve all repairs. When providing suitable safe access, rubber rollers or other protective devices shall be used. Metal rollers or clamps and other types of fastenings that will mar or damage freshly coated surfaces shall not be used. No temporary attachments, supports for access, or forms, shall damage the coating system. In particular, on the fascias where bracing is used, sufficient size support pads must be provided. Any damage that occurs from such devices shall be repaired to the satisfaction of the Engineer.

688.2.4.3-Repair Procedures for Field Paint Deficiencies: All field repairs to the coating shall be made in strict accordance with the coating manufacturer's recommendations, except where the requirements listed in this specification are more stringent. Any products used during repairs to the coating deficiencies shall be from the same manufacturer as the coating being repaired. All welds from which the coating of paint has been damaged or is otherwise defective shall be cleaned and repaired. Surfaces that will be inaccessible for coating after erection shall be repaired and/or recoated prior to erection. The Engineer is to review and accept a repair plan before deficient areas are repaired. The requirements specified herein for provisions for inspection, mixing, thinning, temperature and humidity, and application shall govern the coating of the repaired areas. In order to avoid abrupt changes in paint thickness, the area adjacent to repair areas shall transition from zero paint thickness to full system thickness within not less than 3 inches (75 mm) of the repair area by means of sanding the transition area. The requirements for the dry film thickness of the repair coats are the same as those specified for the paint system.

688.2.5-Submittals: Submittals shall be forwarded through the Prime Contractor and be accepted by the Engineer prior to commencement of the subject work. This is the responsibility of both the Fabricator and the Field Contractor.

688.2.5.1-Quality Control Plan for Painting: Minimum requirements and document form are set forth in MP 688.02.20.

688.2.5.2-Containment/Disposal Control Plan for Existing Steel Structures: Minimum requirements shall be set forth in MP 688.03.20.

688.3-COMplete PAINTING OF EXISTING STRUCTURES:

688.3.1-General: The field coats (total system) of paint shall meet the requirements of Section 711. The applicable sections of 711, the dry film thickness and the color shall be as specified in the contract documents. Each coat shall be a contrasting color to the one previously applied.

688.3.2-Surface Preparation: All structural steel shall undergo a near-white blast cleaning in accordance with SSPPC SP 10. All structural steel is to include 100% of the girders, stringers, diaphragms, floor beams, upper and lower chord members, drains, bearing devices, etc. In general, all accessible steel surfaces not galvanized, aluminum, or weathering steel shall be blast cleaned. All laminar and stratified rust that has formed on the existing steel surfaces shall be removed. Pack rust formed along the perimeter of mating surfaces of connected plates or shapes shall be removed to the extent feasible without mechanically detaching the mating surface. The Contractor is to exercise care while cleaning and painting around expansion joints, weathering steel, and galvanized surfaces. Any damage to these surfaces found by the Engineer as a result of the cleaning and painting operation shall be repaired and/or replaced, to the satisfaction of the Engineer, at the Contractor's expense.

688.3.3-Paint Application Requirements: Painting shall be in accordance with Section 688.2.3.

688.3.4-Painting Sequence: Shall be in accordance with the following:

FULL PRIME COAT:

The structure shall receive one coat of a primer meeting the requirements of Section 711 of the Standard Specifications. The full prime coat shall be applied before the stripe prime coat. The primer used for the full prime coat and the stripe prime coat shall be of the same type and shall be from the same manufacturer. Dry film thickness requirements shall be as specified by the manufacturer's recommendations, or as specified in the contract documents.

STRIPE PRIME COAT:

All edges, outside corners, seams, bolt heads and nuts, all rivet heads, edges of flanges and plates, welds, sharp edges, in general all edges, shall receive one stripe coat, by brush or roller application, of the same primer as the Full Prime Coat. Striping shall extend a minimum of one inch (2cm) from the edge. The prime coat shall at a minimum, be set-to-touch before the stripe coat is applied. No dry film thickness is specified for this coat. This coat shall be tinted as allowed by the manufacturer to be in contrast to the full prime coat and intermediate coat. The tinting agent shall be the paint manufacturer's approved tinting agent.

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INTERMEDIATE COAT:

The structure shall receive one uniform coat of a paint meeting the requirements of Section 711 of the Standard Specifications. The color shall be in contrast to the prime and top coats. If tinting is required, the tinting agent shall be the paint manufacturer's approved tinting agent. The intermediate coat shall not be applied until the primer and stripe coat have fully cured according to the manufacturer's recommendations. Dry film thickness requirements shall be as specified by the manufacturer's recommendations, or as specified in the contract documents.

CAULKING:

Caulking shall be applied before the application of the topcoat. This includes all seams between diaphragm connections to stiffeners and splices; and seams between any connection that is riveted or bolted. Any welded connections that are not fully sealed by the weld shall be caulked with a paste type caulk. The caulk shall be pressed into the seams between the adjoining surfaces, by wetted finger or specialty tool, to insure bond and provide a smooth uniform surface. Bottom seams shall not be caulked on vertical surfaces.

Caulking in a 3-coat system shall be applied after the intermediate coat has cured. Caulking on a 2-coat system shall be applied after prime coat has cured. The top coat shall not be applied until the caulking has fully cured in accordance with the manufacturer's recommendations.

The caulking material shall be compatible with the paint system being applied and shall be by written recommendation of the paint manufacturer. The caulking material shall be tested for compatibility with the paint system at the same time that the paint is tested for intercoat compatibility. Caulking operations shall be performed only when weather conditions are within the parameters as specified in section 688.2.3.1.

TOP COAT:

The structure shall receive one uniform coat of paint as designated in the plans meeting the requirements of Section 711 of the Standard Specifications. The color shall be as designated in the plans and shall be in accordance with current Federal Standard 595. Dry film thickness requirements shall be as specified by the manufacturer's recommendations, or as specified in the contract documents.

688.3.5-Vegetation: Vegetation may need to be trimmed or removed in order to accomplish the cleaning or painting of the structure. If allowed by the Contract Documents, the Contractor may waste vegetation within the Right-of-Way. Otherwise, any such vegetation cut, shall be removed from the site by the contractor. No direct payment will be made for this work, but shall be included in the contract price for the item in connections with which it is used.

688.3.6-Utilities: Any damage to existing utilities or Department-owned utilities (electrical service lines, conduit, lighting, etc) shall be repaired and/or replaced, to the satisfaction of the utility owner, at the Contractors expense.

688.3.7-Paint Designation Label:

688.3.7.1-Description: The bridge paint designation label shall consist of painting on the fascia web of the exterior girder with the following information; the paint system, contractor, and the month-year the project was completed. This paint designation label will only be utilized during the complete removal and painting of existing or new structures. The acronyms and details for the paint designation label will be assigned to the Contractor by the Materials Control, Soils and Testing Division when the Quality Control Plan for Painting is approved.

688.3.7.1-Location: The paint designation label will be located at abutment number one on the fascia web of the exterior girder with a southern or eastern orientation, and paint color shall be a semi-gloss black paint compatible with the topcoat material.

688.3.7.2-General: All work performed regarding the paint designation label shall be considered incidental to the painting of the structure.

688.4-ZONE PAINTING OF EXISTING STRUCTURES:

688.4.1-General: The field coats (total system) of paint shall meet the requirements of Section 711. The applicable sections of 711, the dry film thickness shall be in accordance with the manufacturer's recommendations and the color shall be as specified in the contract documents. Each coat shall be a contrasting color to the one previously applied. The contract documents shall specify the areas to be prepared and painted.

688.4.2-Surface Preparation: The surface shall be prepared as specified in the contract documents. Specific instructions will be given on the amount of surface required to be cleaned in accordance with the specific standards identified in 688.2.2. All laminar and stratified rust that has formed on the existing steel surfaces shall be removed. Pack rust formed along the perimeter of mating surfaces of connected plates or shapes shall be removed to the extent feasible without mechanically detaching the mating surface. Any rust remaining after cleaning shall be tight and intact when examined using a dull putty knife. The tools used to remove these corrosion products shall be identified in the submittals and accepted by the Engineer. If the surface preparation or removal of rust results in nicks or gouges, the work shall be suspended, and the damaged areas repaired to the satisfaction of the Engineer, at the Contractor's expense. The Contractor is to exercise care while cleaning and painting around expansion joints and galvanized surfaces. Any damage to the expansion joints or galvanized surfaces found by the Engineer, as a result of the cleaning and painting operation shall be repaired and/or replaced, to the satisfaction of the Engineer, at the Contractor's expense.

688.4.3-Paint Application Requirements: Painting shall be in accordance with Section 688.2.3.

688.4.4-Painting Sequence:

SPOT PRIME COAT:

Areas designated on the contract documents shall receive one coat of a primer meeting the requirements of Section 711 of the Standard Specifications. The spot prime coat shall be applied before the stripe prime coat. The primer used for the spot

prime coat and the stripe prime coat shall be of the same type and shall be from the same manufacturer.

STRIPE PRIME COAT:

All edges, outside corners, seams, bolt heads and nuts, all rivet heads, edges of flanges and plates, welds, sharp edges, in general all edges, shall receive one stripe coat, by brush or roller application, of the same primer as the Spot Prime Coat. Striping shall extend a minimum of one inch (2cm) from the edge. The prime coat shall at a minimum, be set-to-touch before the stripe coat is applied. No dry film thickness is specified for this coat. This coat shall be tinted as allowed by the manufacturer to be in contrast to the full prime coat and intermediate coat. The tinting agent shall be the paint manufacturer's approved tinting agent.

INTERMEDIATE COAT:

The structure shall receive one uniform coat of a paint meeting the requirements of Section 711 of the Standard Specifications. The color shall be in contrast to the prime and top coats. If tinting is required, the tinting agent shall be the paint manufacturer's approved tinting agent. The intermediate coat shall not be applied until the primer and stripe coat have fully cured according to the manufacturer's recommendations. Dry film thickness requirements shall be as specified by the manufacturer's recommendations, or as specified in the contract documents.

CAULKING:

Caulking shall be applied before the application of the topcoat. This includes all seams between diaphragm connections to stiffeners and splices; and seams between any connection that is riveted or bolted. Any welded connections that are not fully sealed by the weld shall be caulked with a paste type caulk. The caulk shall be pressed into the seams between the adjoining surfaces, by wetted finger or specialty tool, to insure bond and provide a smooth uniform surface. Bottom seams shall not be caulked on vertical surfaces.

Caulking in a 3-coat system shall be applied after the intermediate coat has cured. Caulking on a 2-coat system shall be applied after prime coat has cured. The top coat shall not be applied until the caulking has fully cured in accordance with the manufacturer's recommendations.

The caulking material shall be compatible with the paint system being applied and shall be by written recommendation of the paint manufacturer. The caulking material shall be tested for compatibility with the paint system at the same time that the paint is tested for intercoat compatibility. Caulking operations shall be performed only when weather conditions are within the parameters as specified in section 688.2.3.1.

TOP COAT:

The structure shall receive one uniform coat of paint as designated in the plans meeting the requirements of Section 711 of the Standard Specifications. The color shall be as designated in the plans and shall be in accordance with current Federal Standard 595. Dry film thickness requirements shall be as specified by the manufacturer's recommendations, or as specified in the contract documents.

688.4.5-Vegetation: - Vegetation may need to be trimmed or removed in order to accomplish the cleaning or painting of the structure. If allowed by the Contract Documents, the Contractor may waste vegetation within the Right-of-Way. Otherwise, any such vegetation cut, shall be removed from the site by the contractor. No direct payment will be made for this work, but shall be included in the contract price for the item in connections with which it is used.

688.4.6-Utilities: Any damage to existing utilities or Department-owned utilities (electrical service lines, conduit, lighting, etc) shall be repaired and/or replaced, to the satisfaction of the utility owner, at the Contractors expense.

688.5 -FIELD PAINTING OF SHOP PRIME-COATED STEEL:

688.5.1-General: Field painting of new shop prime coated structures: Shall include, unless otherwise specified in the contract, the preparation of the primed surface for painting, the procurement of all materials to meet the necessary specifications and the application of the coatings. In addition, the Contractor shall protect pedestrian, vehicular, and other traffic on or underneath the structure from splattering, splashing, or dripping paint. Railings, curbs and all other superstructure and substructure shall be protected against spatters, splashes, and the like.

688.5.2-Shear Studs: When shear studs are applied in the field, repair to the Prime Coat shall be completed to the satisfaction of the Engineer and prior to any and adjoining concrete work.

688.5.3 -Materials: The field coats (Intermediate and/or Top Coats) of paint shall meet the requirements of 711.22.3 and 711.22.4. Dry film thickness requirements shall be as specified by the manufacturer's recommendations, or as specified in the contract documents. Each coat shall be a contrasting color to the previous coat. In addition, the field intercoat adhesion shall be at least 3A when tested in accordance with MP 711.00.20.

688.5.4-Surface Preparation: Prior to field coats, surface contamination such as rust, dirt, mud, oil, concrete, loose zinc, salts, or other foreign matter shall be removed. The shop primed structural steel shall be pressure washed, with a soluble salt remover from the division's approved product list, at 2000 – 3000 psi (13800 – 20700 kpa). Touch up of the primer shall be in accordance with section 688.2.3.3.

688.5.5-Paint Application Requirements: Painting shall be in accordance with Section 688.2.3.

688.5.6-Paint Sequence: Painting shall be in accordance with Section 688.5.4, with the exception of the Full Prime Coat and Stripe Coat. Paint containment shall be a minimum of Class 3P as specified in the current edition of SSPC Guide 6.

688.6-ENVIRONMENTAL, WORKER PROTECTION, AND WASTE HANDLING:

688.6.1-General: Environmental protection shall be used when cleaning, painting, welding or cutting an existing bridge. The containment class, emission assessment methods and levels as defined by the current revision of SSPC Guide 6 shall be as stated in the

contract documents. A containment/disposal control plan shall be submitted by the prime contractor to the Division according to the requirements as set forth in MP 688.03.20 - Guide for Developing the Contractor's Containment/Disposal Control Plan for Spent Material Prior to Painting Existing Steel Structures. The specific pollution control system which is proposed for the complete capture, containment, collection, and disposal of the "spent material" generated by the work shall be included in the plan. This work shall be performed in compliance with West Virginia Division of Environmental Protection (WVDEP), United States Environmental Protection Agency (EPA) Occupational Safety & Health Administration (OSHA), United States Coast Guard (USCG), SSPC Guide 6 and Guide 7, and other agencies' rules, regulations, standards and guidelines in effect at the time the work is bid.

688.6.2-Permits for Disposal of "Spent Material": The Contractor shall obtain all documents and/or permits that are required for the handling and disposal of the "spent material" collected during the course of the work. All material shall be disposed of at an approved site(s) by a licensed and permitted waste transporter. "Spent material", regardless of the presence of hazardous metals, shall be stored in roll-offs or sealed 55-gallon drums. In no case shall the material be stored directly on the ground or on tarps on the ground. The containers shall be marked and labeled in accordance with all applicable and current Federal and State regulations. The "spent material" shall not be disposed of until authorized by the Engineer and in no case shall "spent material" be allowed to accumulate longer than 90 days prior to transport.

688.6.2.1-"Spent Material": This shall include material generated by surface preparation operations and shall be sampled and tested in accordance with the current revision of SSPC Guide 7 and all applicable methods of EPA SW-846. The Contractor shall, at the Contractor's expense, select a laboratory that will sample and analyze the "spent materials". The laboratory must be certified by the WVDEP, EPA or by another state's DEP-equivalent. Certification will be provided to the Engineer prior to the beginning of work. The "spent material" will be transported and disposed of in accordance with all applicable and current Federal and State regulations. The waste transporter for both hazardous and non-hazardous waste will be listed on the Contractor's Containment/Disposal Control Plan.

688.6.3-Additional requirements for all classes of containment: Contractor will provide ground covers beneath the containment area and all equipment where spills are possible to capture inadvertent spills or leaks of debris. Extend the covers a minimum of 5 feet beyond the area to be covered. Debris shall be removed from the covers at least once per shift, or as directed by the Engineer. If the ground beneath the structure serves as the base of the containment, install and maintain air and dust impenetrable materials such as solid plywood panels or flexible materials such as tarpaulins. Provide explosion-proof lighting inside containment for all paint application. Maintain a minimum of 10 foot-candles for surface preparation and painting, and a minimum of 30 foot-candles for inspection. Water booms shall be used to contain inadvertent releases of debris unless prohibited by navigation lanes. In these cases, a boat with a skimmer shall be available to collect fugitive materials. Remove all project-related debris from the surface of the water or from the stream sediment at the end of each working day at a minimum unless directed otherwise by the Engineer.

688.6.4-Temporary Waste Storage: The Division (WVDOH) will obtain a provisional (temporary) EPA waste generator number for the project prior to the beginning of the work. The location of the temporary waste storage site at the project shall be noted in the Contractor's Containment/Disposal Control Plan. This location must be approved by the Division prior to beginning work.

688.6.5-Worker Protection: The Contractor shall provide protection for their Workers as per the requirements of 29 CFR 1926.62 and any other applicable requirements set forth by OSHA. The Contractor shall have a Certified Industrial Hygienist (CIH) develop, review and approve their written compliance plan. The CIH shall be certified by the American Board of Industrial Hygiene. The CIH, or a technician working under the direction of the CIH, shall be present during the first three days of work and at least twice a month thereafter. The CIH shall certify in writing during the first week of work and at the end of the work that the worker protection plan fully complied with all regulations and that the plans were fully implanted. Daily inspections of the work area shall be made by the project "competent person". The Contractor shall have identified the "competent person" by name in both the CIH's written compliance plan and the Contractor's Containment/Disposal Control Plan. The compliance plan shall also include the "competent person's" qualifications and the frequency of inspections to be taken. The CIH requirements will not apply to those zone painting projects where only SP 2 and SP 3 surface preparation is being done.

688.6.6-Division Employee Worker Protection: The Contractor shall provide respiratory protection and protective clothing and other necessary equipment for up to 2 Division employees at each site.

688.7-METHOD OF MEASUREMENT:

The unit of measurement for "Clean and Paint Existing Steel Bridges", "Containment and Disposal of Spent Material", "Field Painting of Shop Primed Steel" shall be lump sum. The unit of measurement for "Zone Cleaning and Painting Steel Bridges" shall be square foot.

688.8-BASIS OF PAYMENT:

Basis of Payment for "Clean and Paint Existing Steel Bridges", "Containment and Disposal of Spent Material", "Field Painting of Shop Primed Steel" shall be lump sum price bid. "Zone Cleaning and Painting Steel Bridge" shall be square foot price bid. The cost for the items listed below, which price and payment shall be full compensation for furnishing all the materials and doing all the work herein prescribed in workmanlike and acceptable manner, including all labor, tools, equipment, supplies and incidentals necessary to complete the work.

688.9-PAY ITEMS:

ITEM	DESCRIPTION	UNIT
688001-*	Clean and Paint Existing Steel Bridge	Lump Sum
688003-*	Containment and Disposal of Spent Material	Lump Sum
688005-*	Zone Cleaning and Painting Steel Bridge	Sq. Ft.
688007-*	Field Painting of Shop Primed Steel	Lump Sum

* Sequence Number

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SPECIAL PROVISION

FOR

SECTION 711

PAINTS, COATINGS, OILS, AND INKS

711.41-WHITE OR YELLOW FAST-DRY TRAFFIC PAINT (TYPE II):

711.41.1-General:

DELETE THE 6TH PARAGRAPH AND REPLACE WITH THE FOLLOWING:

An appropriate pavement marking material shall be used such that the ambient air temperature at the time of application is within the recommended ambient air application temperatures specified by the material manufacturer. Section 663 specifies that the Contractor shall be required to apply an appropriate Type II material at temperatures as low as thirty-five (35) degrees Fahrenheit (1.7 degrees Celsius).

DELETE THE LAST PARAGRAPH AND REPLACE WITH THE FOLLOWING:

The warranty and performance criteria of this specification shall apply to Type II markings placed on or after April 15th and prior to November 1st. Markings placed prior to April 15th, and on or after November 1st shall be required to meet the specified warranty performance requirements at the time of application only.

711.41.2-Color and Retroreflectivity Requirements:

REPLACE THE FIRST PARAGRAPH IN THE “RETROREFLECTIVITY” SECTION WITH THE FOLLOWING:

Markings installed on or after April 15th and prior to November 1st shall maintain a minimum retroreflectivity value of 200 mcd/m²/lx for white pavement markings and 150 mcd/m²/lx for yellow pavement markings through October 31st.

REPLACE THE FIRST SENTENCE OF THE SECOND PARAGRAPH IN THE “RETROREFLECTIVITY” SECTION WITH THE FOLLOWING:

February 17, 2016

Readings shall be taken with a LTL-X, or Traffic Engineering Division approved equal, 30 meter geometry retroreflectometer.

711.41.3-Sampling and Testing Procedures for Performance Samples:

DELETE THE LAST TWO PARAGRAPHS.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SUPPLEMENTAL SPECIFICATION

FOR

SECTION 415

REMOVING EXISTING PAVEMENT SURFACES

DELETE THE TITLE OF THE SECTION AND ITS CONTENTS AND REPLACE WITH THE FOLLOWING:

SECTION 415

MILLING OF ASPHALT PAVEMENT SURFACES

415.1-DESCRIPTION:

This item shall govern for the milling of existing and/or new asphalt pavement at locations shown on the plans or as directed by the engineer in accordance with the requirements herein and MP 401.07.24. The work shall provide a skid resistant surface that meets smoothness requirements and provides a constant cross slope, or be used as surface preparation prior to placement of a final surface course.

415.1.1-Standard Milling: Item 415005-* shall be used as the default milling of asphalt pavements. It should be used when the Division plans to remove existing asphalt pavement in preparation for an asphalt overlay or other process. This method of removal is most common and possesses a minor level of profile and slope control, or as otherwise shown in the plans.

415.1.2-Fine Milling: Item 415006-* shall be used when the Division intends to overlay the milled surface with a thin lift asphalt course, or as otherwise shown in the plans. This removal method shall be considered a detailed surface preparation, therefore requiring a high level of profile and slope control, or as otherwise shown in the plans.

415.1.2-Micromilling: Item 415007-* shall be used for in an effort to recover skid resistance on existing pavement or smoothness correction, bump and/or grade corrections on existing or newly paved surfaces where called for in the plans. This removal method shall be considered specialized and is not intended to be used when standard overlays are to be used.

415.2-CONSTRUCTION:

415.2.1- General: The plans will designate the area of pavement surfaces to be milled. Milling of roadway shoulders will not be required unless indicated on the plans or required to provide drainage.

415.2.2- Equipment: The equipment for removing the existing pavement shall be a power operated planing machine or grinder. The equipment shall be capable of accurately establishing profile grades along each edge of the machine within plus or minus 1/4 inch (6 mm) by referencing from the existing pavement and able to maintain accurate depth of cut and cross-slope.

The machine shall have a control system providing for uniformly varying the depth of cut while the machine is in motion to prevent cutting of or damage to drainage works, manholes or other appurtenances within the paved area.

At the end of each working day, all equipment shall be removed to a location where it does not present a hazard to traffic, the pavement shall be cleaned by sweeping or flushing.

415.2.3-Milling Residue: The Contractor shall establish a positive and immediate means for removal of milling residue. The machine shall have adequate loading equipment to remove solid residue from the surface and discharge them into a truck or as directed. Residue shall not be permitted to flow across lanes used by the traveling public or into gutters or drainage facilities.

415.2.4-Millings: The removed pavement material shall become the property of the Contractor.

Excess waste material resulting from the operation shall be removed and disposed of in a manner approved by the Engineer.

415.2.5-Milled Surface Opened to Traffic: If the ground area is opened to traffic the following shall apply;

- 1) Any transverse vertical face shall be sloped so as not to present a hazard to traffic;
- 2) Any longitudinal vertical face shall not exceed 2 inches (50 mm);
- 3) The pavement surface shall be cleaned by sweeping or flushing.

415.2.6-Cross Slope: Milling will be accomplished in a manner that eliminates crack or joint faults while providing positive lateral drainage by maintaining a constant cross-slope between grinding extremities in each lane. Auxiliary or ramp lane grinding shall transition as required from the mainline edge to provide positive drainage and an acceptable riding surface.

The operation shall result in pavement that conforms to the typical cross-section and the requirements specified for the final surface finish. However, it is the intention of this specification that the faulting at joints and cracks be eliminated and the overall riding characteristics be restored within the limits specified. To accomplish the smoothness required, milling may not be required on 100 percent of the pavement surface. If directed by the Engineer, any spalling or dislodged unsound pavement due to milling shall be corrected by the Contractor via section 109.4.

415.2.7-Surface Finish: The milling process shall produce a smooth riding pavement surface that is true to the established line, grade and cross section with the milled area consisting of a longitudinal corduroy-type texture. The milling operation shall be capable of efficiently and accurately establishing profile grades along each edge of the machine within the tolerance listed below:

415005-* - Standard Milling	1/4 inch (6 mm)
415006-* - Fine Milling	1/8 inch (3 mm)
415007-* - Micromilling	1/8 inch (3mm)

Transverse joints and cracks shall be made flush with adjacent surfaces. Transverse joints and cracks shall be visually inspected to ensure that adjacent surfaces are in the same plane. Alignment of adjacent sides of the joints or cracks shall be within 1/8 inch (3 mm) of each other to be considered flush.

The transverse slope of the pavement shall be uniform to a degree that no depressions of misalignment of slope greater 1/4 inch (6 mm) in 12 ft. (3.65 m) are present when tested with a straightedge placed perpendicular to the centerline. Straightedge requirements do not apply outside of the milled area. The peaks of the ridges shall be approximately 1/8 inch (3 mm) higher than the grooves.

The finished, milled pavement surface shall be evaluated using MP 401.07.24 except that the volume of glass beads to be used for each test shall be 200 ml (12in³), and only one such test shall be required at each individual test location. The measured diameter for each test shall be equal to or greater than the values shown below:

415005-* - Standard Milling	NA
415006-* – Fine Milling	9” Dia.
415007-* – Micromilling	12” Dia.

Testing shall be performed as soon as practical behind the milling operation in order to not allow gaps to occur between sections being milled and sections being evaluated. Three tests shall be performed within the first 3,000 square yards of milling, and then at a minimum frequency of one test for every 7,500 square yards of milled surface thereafter. If the minimum diameter is not maintained, cease operations until necessary adjustments to the equipment and/or the process are made to meet this requirement. Do not resume milling operations until the Engineer is satisfied with the corrective actions.

Upon resuming operations after any adjustments are made, the first 3,000 square yards shall be evaluated as stated above. Additionally, if the equipment is replaced for any reason, or if mobilization back to the project site occurs at a later date for any reason, the first 3,000 square yards shall be evaluated as stated above.

The Engineer may reduce the testing frequency provided that a uniform texture is consistently maintained meeting the requirements shown above.

415.3-METHOD OF MEASUREMENT:

Pavement milling will be measured by the square yard (square meter) of pavement milled and accepted. The quantity of pavement milling will be determined by multiplying the width specified on the plans by the total length of the finished pavement surface.

415.4-BASIS OF PAYMENT:

The contract price per square yard (square meter) for Standard, Fine Milling, or Micromilling shall be full compensation for furnishing all labor, materials, tool, equipment and incidentals and for doing all work involved in milling the existing pavement, removing residue, cleaning the pavement, and testing per MP 401.07.24 in accordance with these specifications and as shown on the plans.

415.5-PAY ITEMS:

ITEM	DESCRIPTION	UNIT
415005-*	Standard Milling	Square Yard (Square Meter)
415006-*	Fine milling	Square Yard (Square Meter)
415007-*	Micromilling	Square Yard (Square Meter)

March 22, 2016

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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SPECIAL PROVISION

FOR

STATE PROJECT NUMBER: _____

FEDERAL PROJECT NUMBER: _____

FOR

SECTION 627

STRIP SEAL EXPANSION JOINT ASSEMBLY

627.1 – DESCRIPTION:

The work shall consist of removing the existing expansion joint assembly, and/or of furnishing and placing Modified Class K Concrete and a new strip seal assembly at the locations indicated on the plans. The construction shall be in accordance with this Specification and in reasonably close conformity with the Plans or as established by the Engineer.

627.2 – MATERIALS:

627.2.1 - STRIP SEAL GLAND:

The strip seals shall not be any part of the load bearing riding surface and shall be recessed below the normal riding surface throughout the normal limits of joint movement. They shall have a shape, which promotes self-removal of foreign material during normal joint operation. Special conditions such as doglegs, tees, and crosses shall be shop fabricated in a mold under heat and pressure.

The strip seals glands shall meet the material requirements of Section 708.2 of the Specifications.

627.2.2 - STEEL PRODUCTS:

All steel components of the strip seal assembly shall meet AASHTO Designation M270 and the requirements of Section 615 of the Specifications unless otherwise noted herein or in the plans. One half inch minimum diameter steel anchors shall be attached to the steel retainers for positive anchorage within the Modified Class K Concrete. The retainers shall maintain a

minimum cross sectional thickness of 3/8" and shall be manufactured from extruded or hot rolled steel.

The steel retainers shall have a shape suitable to mechanically lock the sealing element in place to form a watertight seal throughout the normal movement cycle. The steel retainers shall allow the sealing element to be replaced from the bridge deck surface without removal of the retainers.

All steel surfaces that come in contact with the strip seal gland shall be blast cleaned in accordance with Structural Steel Painting Council Specification SP6.

The adhesive lubricant used to install the strip seal gland into the locking steel retainer shall be a one-part moisture curing polyurethane compound, meeting the requirements of ASTM D-4070.

627.2.3 - STRUCTURAL CONCRETE:

Bridge Deck applications shall be Modified Class K Concrete. The Modified Class K Concrete shall be in accordance with the specifications for Class K Concrete in Section 601 of the Specifications except that the coarse aggregate shall be AASHTO Size No. 8 crushed stone or crushed gravel conforming to Section 703 of the Specifications.

627.2.4 - REINFORCING STEEL:

Reinforcing steel bars when used in Bridge Deck applications shall be epoxy coated and shall be in accordance with Section 602 of the Specifications.

627.3 - SHOP DRAWINGS:

The Contractor shall field verify all plan dimensions to insure accuracy of expansion joint fabrication prior to submission of shop drawings.

The Contractor shall design and develop the sequencing of all work as required by the plans and prepare shop drawings of sufficient detail to fabricate all structural steel components necessary for completion of the contract. Sequencing details and shop drawings shall be submitted to the Engineer for review and approval prior to fabrication.

627.4 - PREPARATION OF JOINT:

When applicable, the Contractor shall remove the existing expansion joint assembly to the limits shown in the plans. The opening left by the removal of the joint shall meet the dimensional requirements shown in the plans. If additional concrete is needed to extend the deck to obtain the required joint opening, this work and material shall be included in this item.

The Contractor to the satisfaction of the Engineer shall inspect the portion of the existing expansion joint assembly to remain in place as shown in the plans. If, in the opinion of the Engineer, the remaining steel assembly has been separated from the anchor studs or the anchor studs are no longer bonded to sound concrete, the Contractor shall cut the deck, remove those portions of the existing steel and studs, and fill the void with Modified Class K Concrete. These repairs, if required, shall be included in this item unless otherwise shown in the plans.

Care shall be taken to not damage the reinforcing bars or their bond to the existing concrete. Any bars missing or damaged beyond repair, in the opinion of the Engineer, shall be replaced with

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new epoxy coated bars of comparable size. These bars shall be coupled to sound rebars once the damaged portions have been removed. These repairs, if required, shall be done in accordance with Sections 104.3 and 109.4 of the Specifications unless otherwise shown in the plans.

The Contractor shall protect from damage all materials, which are to remain in place. Materials damaged due to the Contractor's operations, as determined by the Engineer, shall be repaired or replaced at no additional cost to the Department and to the satisfaction of the Engineer.

627.5 – INSTALLATION:

The steel retainers must be placed and aligned to the correct "grades" and elevations. The temporary support method used to achieve this alignment is subject to the Engineer's approval.

Remove all loose and unsound concrete from the surface within the joint area. Blast clean the joint area, steel retainer and anchorage in accordance with the Structural Steel Painting Council Specification SP10 immediately prior to placement of the Modified Class K Concrete. The joint area must be clean and dry at the time of the Modified Class K Concrete pour.

The strip seal gland shall be installed in one piece at each location and shall extend to an elevation of at least 6" higher than the curb elevation at the parapet or safety curb areas, or as shown in the plans. The Contractor shall be aware that the strip seal gland installation will be severely restricted at joint openings of less than 1.5". Field splicing of the strip seal gland is not permitted.

After installation is completed, the manufacturer's representative shall certify to the Engineer, in writing, that the strip seal assembly was installed in accordance with the Manufacturer's requirements.

627.6 - WATERTIGHT INTEGRITY TEST:

When designated in the Plans, the following shall apply:

When at least five days have passed after the joint system has been fully installed, the Contractor shall test the entire (full-length) joint system for watertight integrity. He shall employ a method satisfactory to the Engineer. The entire joint system shall be covered with water, either ponded or flowing, for a minimum duration of 15 minutes. The concrete surfaces under the joint shall be inspected, during this 15 minute period and also for a minimum of 45 minutes after the supply of water has stopped, for any evidence of dripping water or moisture. Water tightness shall be interpreted to be no free dripping water on any surface on the underside of the joint. Patches of moisture shall not be cause for non-acceptance.

Should the joint system exhibit evidence of water leakage at any place whatsoever, the Contractor shall locate the place(s) of leakage and he shall take any and all measures necessary to stop the leakage. The Engineer will approve measures deemed necessary by the Contractor.

In the event that measures to eliminate leakage have to be taken, a subsequent water integrity test shall be performed subject to the same conditions as the original test.

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627.7 - ACCEPTANCE CRITERIA:

Unless approved by the Engineer, the Contractor’s work will be deemed unacceptable if any of the following criteria are not met:

- a. The Contractor fails to store, handle, mix, or install the materials according to the Manufacturer's recommendations and as specified herein.
- b. Degradation of material properties under field conditions is detected. The Contractor shall replace any material showing degradation.
- c. If applicable, the joint fails the "watertight integrity test". If failure occurs, repairs shall be conducted in accordance with the test requirements.
- d. If the strip seal gland needs to be resealed for whatever reason, the Contractor will do it.
- e. If the finished joint system contains shrinkage cracks sufficient to cause debonding, or if the system became damaged during construction or by traffic prior to final acceptance, the joint system shall be removed and replaced by the Contractor.
- f. All work done as a result of the acceptance criteria shall be done at no additional cost to the Department.

627.8 - METHOD OF MEASUREMENT:

Strip seal assembly will be measured in place along the centerline of the joint in linear feet.

627.9 - BASIS OF PAYMENT:

The removal of existing concrete and the old expansion device, to the limits shown in the plans, and the placement of specified materials to rebuild the expansion device shall be included in the payment for the items below. The quantities, determined above, will be paid for at the contract unit price bid for the items below, which price and payment shall be full compensation for furnishing all materials and doing all the work herein prescribed, including all the Manufacturer's cost, labor, tools, equipment, supplies and incidentals necessary to complete the work.

627.10 - PAY ITEM:

Item Number	Description	Unit
627016-*	REMOVE AND REBUILD EXPANSION JOINT, STRIP SEAL	LF (Meter)
627025-*	STRIP SEAL EXPANSION JOINT SYSTEM BEHIND APPROACH SLAB	LF (Meter)

* - Sequence number

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SPECIAL PROVISION

FOR

SECTION 105

CONTROL OF WORK

105.6-COOPERATION WITH UTILITIES:

ADD THE FOLLOWING SUBSECTION TO THE PROPOSAL:

105.6.1-Division Owned Utilities: It will be the Contractor's responsibility to locate and identify WVDOH owned utilities within the project limits where those utilities would be interrupted or damaged by performing work. WVDOH owned utilities are typically limited to electrical wiring used to power various devices and systems such as, but not limited to, roadway lighting, sign lighting, traffic signals (including lead-in cables to advance high speed induction loops), dynamic message signs (DMS), closed circuit television (CCTV), roadway weather information system (RWIS), weigh in motion (WIM) and advance warning flashers. This work shall be incidental to the project.

Department owned utilities or components that are cut, damaged, or destroyed by any work performed as part of the project shall be replaced by the Contractor at no additional cost to the Department.

Lighting, traffic signal, overhead sign plans, etc. if available, may be obtained by contacting Traffic Engineering Division at 304-558-3063.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SUPPLEMENTAL SPECIFICATION

FOR

SECTION 105

CONTROL OF WORK

105.3-CONFORMITY WITH PLANS AND SPECIFICATIONS:

DELETE THE SECTION AND REPLACE WITH THE FOLLOWING.

105.3-CONFORMITY WITH PLANS AND SPECIFICATIONS:

All work performed and all materials furnished shall be in reasonably close conformity with the lines, grades, cross sections, dimensions and material requirements, including tolerances, shown on the Plans or indicated in the Specifications.

Should the Engineer determine the materials, or the finished product do not conform to the Specifications or the Plans, the Engineer will then make a determination if the work will be accepted and remain in place in accordance with 106.3.1 and 106.7. In this event, the Engineer will document the basis of acceptance by contract modification which will provide for an adjusted payment. All nonconforming material or construction judged to be inadequate for the use intended shall be either reworked or removed and replaced at no expense to the Division.

~~Each supplemental agreement containing an adjusted price will also have added the sum of Two Hundred Dollars to each adjusted price, for the Divisions administration costs, to be deducted from monies due the Contractor.~~

The adjusted payment fall into one of two categories:

- a. Within Specification Limits. For price reductions that fall within the Price Adjustment Limits of the contract specifications, there is no administrative charge for processing this type of price reduction.
- b. Outside Specification Limits. A special evaluation of the non-conformance must be made if the non-conforming material is outside of the contract specifications. Price reductions that fall outside the Price Adjustment Limits require further effort by the Department because the amount of the price reduction is not covered in contract specifications. Thus, an additional two hundred dollar, for the Division's administrative cost, must be added to each individual adjusted payment.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SUPPLEMENTAL SPECIFICATION

FOR

SECTION 207

EXCAVATION AND EMBANKMENT

207.2-MATERIALS:

DELETE THE CONTENTS OF THE SECTION AND REPLACE WITH THE FOLLOWING:

Materials shall meet the requirements specified in 715.11 and 716.

207.2.1-Quality Control Testing: Quality control of the ~~embankment and subgrade material~~ select material for backfill is the responsibility of the Contractor as specified in 106.1. ~~The Contractor's personnel shall include at least one qualified technician who shall be responsible for all field sampling and testing necessary to determine the magnitude of the various properties of the embankment and the subgrade governed by the Specifications and shall maintain these properties within the limits of this Specification.~~

The Contractor shall maintain equipment and qualified personnel to perform all sampling and testing necessary to determine the magnitude of the various properties of the material governed by the Specifications and shall maintain these properties within the limits of the Specifications.

The Contractor shall notify the Engineer prior to construction of the test ~~strip data~~ for all compaction testing on the forms as set forth in MP 700.00.24. ~~Further, the Contractor shall record the data of all compaction testing on the forms as set forth in MP 700.00.24~~ and maintain records of the equipment used to compact the material in accordance with 716.3.2.3. Completed test data forms shall be provided to the Engineer at or immediately after the time of testing.

The Contractor shall ~~design submit~~ a quality control plan detailing the methods, ~~including sampling and testing,~~ by which the quality control program will be conducted. ~~The This~~ plan, prepared in accordance with the guidelines set forth in the appropriate portions of MP 307.00.50 and MP 717.04.21, shall be submitted to the Engineer at the pre-construction conference. The work shall not begin until the plan is reviewed for conformance with the contract documents.

207.2.4-Sampling and Testing: Frequency of sampling and testing shall be in accordance with the contractor's quality control plan. The minimum sampling and testing frequencies for gradation shall be as indicated in Attachment 1 of MP 307.00.50. The material shall be sampled in accordance with MP 700.00.06. The minimum sampling and testing frequency for compaction will be in accordance with MP 717.04.21.

207.2.5-Acceptance Plan:

207.2.5.1-Compaction: Compaction of embankment and subgrade shall meet the requirements set forth in 207 and 716.

207.2.5.2-Gradation: Acceptance for gradation shall be on the basis of test results on consecutive random samples from a lot. A lot shall be considered the quantity of material represented by an average test value, not to exceed five sublots. Generally at the beginning of the project, the average shall be started on the second sample in accordance with MP 300.00.51. A subplot is the quantity of material represented by a single gradation test. In the case where only one sample is taken, this subplot shall be considered the lot. When the average, or when the most recent three consecutive individual test values fall outside the limits specified in 716.1 and 716.1.1.2, the lot of material represented will be considered nonconforming to the extent that the last of its sublots is nonconforming. When this occurs, the last subplot shall have its price adjusted in accordance with Table 207.16.1. In the case where the average is nonconforming and the last subplot contained is conforming, then there would be no price adjustment. In no event, however, shall a subplot of material have its price adjusted more than once, and the first adjustment, which is determined, shall apply.

207.2.5.3-Degree of Nonconformance: When a subplot of material is to have its price adjusted, the percentage point difference between the nonconforming test value and the specification limit shall be determined for each sieve size determined to be nonconforming, and this value shall be multiplied by its appropriate multiplication factor as set forth in Table 207.2.4.2 to determine the degree of nonconformance of that sieve.

<u>TABLE 207.2.5.3</u>	
<u>Nonconforming Sieve Size</u>	<u>Multiplication Factor</u>
<u>3 in. (75 mm)</u>	<u>1.0</u>
<u>No. 200 (75 µm)</u>	<u>1.0</u>

The total measure of nonconformance of an individual subplot is the sum of all nonconformance of an individual sieve sizes of that subplot.

When the total degree of nonconformance has been established and it is 12.0 or less, the material will be paid for at an adjusted contract price as specified in Table 207.16.1.

When the degree of nonconformance is greater than 12.0, the nonconforming subplot shall be resolved on an individual basis, requiring a special investigation by the Engineer to determine the appropriate course of action to be followed. Pending resolution of the matter, additional lifts of select material for backfill shall not be placed over the nonconforming material

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207.17-BASIS OF PAYMENT:

ADD THE FOLLOWING TO THE SECTION:

207.17.1-Price Adjustment: Subgrade material not conforming with the gradation requirements as described in 207.2.5.2 will be paid for at the adjusted contract price base on the degree of nonconformance as specified in Table 207.17.1

TABLE 207.17.1

<u>ADJUSTMENT OF CONTRACT PRICE FOR GRADATION NOT WITHIN SPECIFICATIONS</u>	
<u>Degree of Nonconformance</u>	<u>Percent of Contract Price to be Reduced</u>
<u>1.0 to 3.0</u>	<u>2</u>
<u>3.1 to 5.0</u>	<u>4</u>
<u>5.1 to 8.0</u>	<u>7</u>
<u>8.1 to 12.0</u>	<u>11</u>
<u>Greater than 12</u>	<u>*</u>

* The Division will make a special evaluation of the material and determine the appropriate action.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SUPPLEMENTAL SPECIFICATION

FOR

SECTION 212

STRUCTURE, ROCK, AND WET EXCAVATION

212.2-MATERIALS:

DELETE THE CONTENTS OF THE SECTION AND REPLACE WITH THE FOLLOWING:

Select material for backfilling shall be crushed stone, gravel, slag, or any combination thereof meeting the requirements of 703. The grading shall be such that 100 percent of the material passes the 2 inch (50 mm) sieve and 0 to 5 percent passes the No. 16 (1.18 mm) sieve. Any of the standard coarse aggregate sizes from AASHTO No 4 through AASHTO No. 8, as shown in Table 703.4, would comply with the above gradation requirement.

Controlled low strength material shall meet the requirements of 219.

Quality Control of select material for backfilling is the responsibility of the Contractor as specified in 106.1.

~~The material shall be tested according to applicable methods specified in 716. The sampling frequency for gradation is specified in MP 717.04.21.~~

~~In the event any material does not conform to the specified gradation requirements the contractor's written certification shall reflect said nonconformance with quantities thereof. The contractor's gradation data shall be evaluated in accordance with applicable sections of Section 307 except that Table 704.6.2 shall not apply. Gradation limits shall be in accordance with Table 703.4.~~

Engineering fabric shall be fabric for subsurface drainage or separation meeting 715.11.

212.2.1-Quality Control Testing: Quality control of the select material for backfill is the responsibility of the Contractor as specified in 106.1.

The Contractor shall maintain equipment and qualified personnel to perform all sampling and testing necessary to determine the magnitude of the various properties of the material governed by the Specifications and shall maintain these properties within the limits of the Specifications.

The Contractor shall design a quality control plan detailing the methods by which the quality control program will be conducted. This plan, prepared in accordance with the guidelines set forth in the appropriate portions of MP 307.00.50 and MP 717.04.21, shall be

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submitted to the Engineer at the preconstruction conference. The work shall not begin until the plan is reviewed for conformance with the contract documents.

212.2.2-Acceptance Testing: Quality control sampling and testing performed by the Contractor shall be used by the Division for acceptance

212.2.3-Sampling and Testing: Frequency of sampling and testing shall be in accordance with the Contractor’s quality control plan. The minimum sampling and testing frequencies for gradation shall be as indicated in Attachment 1 of MP 307.00.50. The material shall be sampled in accordance with MP 700.00.06. The minimum sampling and testing frequency for compaction will be in accordance with MP 700.00.24.

212.2.4-Acceptance Procedure: Material conforming to the specification requirements will be accepted at full contract price. Material failing to comply with the quality requirements of Table 704.6.2B shall not be incorporated into the work.

Acceptance of the material for compaction and for gradation shall be in accordance with 212.2.4.

212.2.4-Acceptance Plan:

212.2.4.1-Compaction: Compaction of random material and select backfill material shall meet 212.10.

212.2.4.2-Gradation: Acceptance for gradation shall be on the basis of test results on consecutive random samples from a lot. A lot shall be considered the quantity of material represented by an average test value, not to exceed five sublots. Generally at the beginning of the project, the average shall be started on the second sample in accordance with MP 300.00.51. A subplot is the quantity of material represented by a single gradation test. In the case where only one sample is taken, this subplot shall be considered the lot. When the average, or when the most recent three consecutive individual test values fall outside the limits specified in 212.2, the lot of material represented will be considered nonconforming to the extent that the last of its sublots is nonconforming. When this occurs, the last subplot shall have its price adjusted in accordance with Table 212.12.1. In the case where the average is nonconforming and the last subplot contained is conforming, then there would be no price adjustment. In no event, however, shall a subplot of material have its price adjusted more than once, and the first adjustment, which is determined, shall apply.

212.2.4.2-Degree of Nonconformance: When a subplot of material is to have its price adjusted, the percentage point difference between the nonconforming test value and the specification limit shall be determined for each sieve size determined to be nonconforming, and this value shall be multiplied by its appropriate multiplication factor as set forth in Table 212.2.4.2 to determine the degree of nonconformance of that sieve.

TABLE 212.2.4.2

<u>Nonconforming Sieve Size</u>	<u>Multiplication Factor</u>
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<u>2 in. (50 mm)</u>	<u>1.0</u>
<u>No. 16</u>	<u>1.0</u>

The total measure of nonconformance of an individual subplot is the sum of all nonconformance of an individual sieve sizes of that subplot.

When the total degree of nonconformance has been established and it is 12.0 or less, the material will be paid for at an adjusted contract price as specified in Table 212.12.1.

When the degree of nonconformance is greater than 12.0, the nonconforming subplot shall be resolved on an individual basis, requiring a special investigation by the Engineer to determine the appropriate course of action to be followed. Pending resolution of the matter, additional lifts of select material for backfill shall not be placed over the nonconforming material.

212.12-BASIS OF PAYMENT:

ADD THE FOLLOWING TO THE SECTION:

212.12.1-Price Adjustment: Select material for backfill not conforming with the gradation requirements as described in 212.2.4.2 will be paid for at the adjusted contract price base on the degree of nonconformance as specified in Table 212.12.1.

TABLE 212.12.1

<u>ADJUSTMENT OF CONTRACT PRICE FOR GRADATION NOT WITHIN SPECIFICATIONS</u>	
<u>Degree of Nonconformance</u>	<u>Percent of Contract Price to be Reduced</u>
<u>1.0 to 3.0</u>	<u>2</u>
<u>3.1 to 5.0</u>	<u>4</u>
<u>5.1 to 8.0</u>	<u>7</u>
<u>8.1 to 12.0</u>	<u>11</u>
<u>Greater than 12</u>	<u>*</u>

* The Division will make a special evaluation of the material and determine the appropriate action.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SUPPLEMENTAL SPECIFICATION

FOR

SECTION 218

SLOPE AND FOUNDATION PROTECTION

218.2-MATERIALS:

DELETE THE CONTENTS OF THE SECTION AND REPLACE WITH THE FOLLOWING:

Materials shall meet the requirements specified in the following Sub-sections of Division 700:

MATERIALS	SUBSECTION
Cement for Grout	701.1 or 701.3
Sand for Grout	702.1.1 through 702.1.5 and 702.6, or 702.2
Stone for Riprap	704.2
Stone for Gabions	704.3
Gabions	715.23
Reinforcement	709.3, 709.4
Shot Rock	704.8
Engineering Fabric for Erosion Control	715.11

The stone for crushed rock slope protection shall meet the requirements of 704.6, Class 7, except 704.6.3. Acceptance for Gradation of Class 7 aggregate shall be by visual inspection. will be on the basis of the producers written certification the material meets the requirements. The certification for Class 7 material shall include a description of the crushing operation indicating the screens used.—An alternate to this gradation shall be AASHTO size No. 1. Certified test data from the producer showing the AASHTO No. 1 material meets the gradation requirements of 703.4, when tested from samples obtained at a minimum frequency of one sample per half day of stockpiling, and does not exceed a weighted loss of 30 percent when subjected to five cycles of the Sodium Sulfate Soundness Test, ASTM C 88, will be acceptable.

Stone for foundation protection shall conform to the requirements of riprap stone, except for size and shape.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

STANDARD SPECIFICATION

FOR

SECTION 307

CRUSHED AGGREGATE BASE COURSE

307.1-DESCRIPTION:

DELETE THE CONTENTS OF THE SECTION AND REPLACE WITH THE FOLLOWING:

This work shall consist of furnishing, spreading, and compacting one or more courses of crushed aggregate on a prepared surface in accordance with these Specifications 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 will be accepted in accordance with these Specifications and the applicable requirements of 105, 106, and 109.~~

307.2-MATERIALS:

DELETE THE CONTENTS OF THE SECTION AND REPLACE WITH THE FOLLOWING:

The crushed aggregate base course shall be composed of materials meeting the requirements of 704.6 for the class shown on the Plans except that 704.6.3 shall not apply.

~~Class 3 material shall be used on all surface courses except that Class 10 material shall be used on all stone shoulders.~~

307.2.1-Quality Control Testing: Quality control of the crushed aggregate base course is the responsibility of the Contractor as specified in 106.1.

The Contractor shall maintain equipment and qualified personnel to perform all sampling and testing necessary to determine the magnitude of the various properties of the material governed by the Specifications and shall maintain these properties within the limits of the Specifications.

The Contractor shall design a quality control plan detailing the methods by which the quality control program will be conducted. This plan, prepared in accordance with the guidelines set forth in the appropriate portions of MP 307.00.50 and MP 717.04.21, shall be

submitted to the Engineer at the preconstruction conference. The work shall not begin until the plan is reviewed for conformance with the contract documents.

307.2.2-Acceptance Testing: Acceptance sampling and testing of crushed aggregate base course is the responsibility of the Division, except for furnishing the necessary materials. Quality control sampling and testing performed by the Contractor may be used by the Division for acceptance.

307.2.3-Sampling and Testing: Frequency of sampling and testing shall be in accordance with the Contractor's quality control plan. The minimum frequencies shall be as indicated in applicable portions of MP 307.00.50. Crushed aggregate shall be sampled in accordance with MP 700.00.06, Aggregate Sampling Procedures.

~~When sampling shoulder material for resurfacing projects that has a depth of less than 3 inches (75 mm) gradation samples may be taken from the stockpile prior to placement.~~

307.2.4-Acceptance Procedure: Material conforming to the specification requirements will be accepted at full contract price. Material failing to comply with the quality requirements of Table 704.6.2B shall not be incorporated into the work.

Acceptance of crushed aggregate base course for compaction and for gradation shall be in accordance with appropriate portions of 307.2.4.1.

307.2.4.1-Acceptance Plan:

307.2.4.1.1-For Compaction: Acceptance for compaction shall be on a lot by lot basis. A lot shall consist of a single layer of not more than 2,000 linear ft. (600 meters) per width being placed. A lot shall be divided into five approximately equal sized sublots. One nuclear moisture and density measurement in accordance with applicable portions of 717 shall be made at a random location within each of the five sublots. The random locations shall be determined in accordance with MP 712.21.26. If the result of five density tests on a lot indicates that at least 80 percent of the material, in accordance with 106.3.1 (West Virginia AP-A), has been compacted to the specified target percentage of dry density, the lot will be accepted. If less than 80 percent has been compacted to the specified target percentage of dry density, no additional material shall be placed on that layer until it has been reworked to meet the specified requirements. Reworking and retesting shall be at the expense of the Contractor. When the Division performs the testing in the evaluation of reworked lots, the testing will be at the expense of the Contractor at the unit cost specified in 109.2.2.

Compaction of shoulder aggregate on resurfacing projects adjacent to asphalt or concrete pavement shall be based on visual inspection to assure that the surface of the shoulder has been compacted to the level of the finished pavement surface.

Compaction of Class 7 aggregate shall be based on visual inspection to assure that the aggregate particles are arranged in a stable manner.

307.2.4.1.2-For Gradation: Acceptance for gradation shall be on the basis of test results on consecutive random samples from a lot. A lot shall be considered the quantity of material represented by an average test value, not to exceed five sublots. Generally at the beginning of the project, the average shall be started on the second sample in

accordance with MP 300.00.51. A subplot is the quantity of material represented by a single gradation test. In the case where only one sample is taken, this subplot shall be considered the lot. The material shall be sampled and tested in accordance with 307.2.3. The gradation test results shall be plotted on a control chart in accordance with MP 300.00.51. When the average, or when the most recent three consecutive individual test values fall outside the limits of Table 704.6.2A the lot of material represented will be considered nonconforming to the extent that the last of its sublots is nonconforming. When this occurs, the last subplot shall have its price adjusted in accordance with Table 307.9.1. In the case where the average is nonconforming and the last subplot contained is conforming, then there would be no price adjustment. In no event, ~~however,~~ shall a subplot of material have its price adjusted more than once, ~~and the first adjustment, which is determined,~~ shall apply.

Acceptance ~~for~~ Gradation of Class 7 aggregate shall be by visual inspection. on the basis of the Contractor's written certification that the material meets the gradation requirements. Certification shall include a description of the crushing operation indicating the screens used.

307.2.4.2-Degree of Nonconformance: When a subplot of material is to have its price adjusted, the percentage point difference between the nonconforming test value and the specification limit shall be determined for each sieve size determined to be nonconforming, and this value shall be multiplied by its appropriate multiplication factor as set forth in Table 307.2.4.2 to determine the degree of nonconformance on that sieve.

TABLE 307.2.4.2

NONCONFORMING SIEVE SIZE	MULTIPLICATION FACTOR
2 in. (50 mm)	1.0
1 ½ in. (37.5 mm)	1.0
¾ in. (19 mm)	1.0
No. 4 (4.75 mm)	1.0
No. 40 (425 µm)	1.5
No. 100 (150 µm)	2.0
No. 200 (75 µm)	2.5

The total measure of nonconformance of an individual subplot is the sum of all nonconformances on the various sieve sizes of that subplot.

When the total degree of nonconformance has been established and it is 12.0 or less, the material will be paid for at an adjusted contract price as specified in Table 307.9.1.

When the degree of nonconformance is greater than 12.0, the nonconforming subplot shall be resolved on an individual basis, requiring a special investigation by the Engineer to determine the appropriate course of action to be followed. Pending resolution of the matter, additional lifts of base or pavement shall not be placed over the nonconforming material.

307.2.5 – Recycled Asphalt Pavement (RAP): Recycled Asphalt Pavement (RAP) may be substituted for Class 10 Shoulder Stone material on roadways where edge line pavement

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markings exist or are installed. Materials testing will be waived, however the Top Size gradation shall not exceed 1 ½ inches (37 mm) or the maximum shoulder placement thickness as defined on the Plans (whichever is less). Approval shall be by visual inspection by the Engineer.

Payment for RAP shoulder material substitution shall be at the same unit bid price for Shoulder Stone Material in the Contract documents.

CONSTRUCTION METHODS

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SUPPLEMENTAL SPECIFICATION

FOR

SECTION 604

PIPE CULVERTS

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604.2-MATERIALS:

ADD THE FOLLOWING TO THE TABLE:

MATERIAL	SUBSECTION
Crushed Aggregate Backfill	704.6 Class 1 or Class 2

604.2.1-QUALITY CONTROL TESTING:

DELETE THE SUBSECTION AND REPLACE WITH THE FOLLOWING:

604.2.1-Quality Control Testing: Quality control of the granular material and crushed aggregate backfill is the responsibility of the Contractor as specified in 106.1.

~~In the event any material does not conform to the specified gradation requirements the contractor's written certification shall reflect said nonconformance with quantities thereof. The contractor's gradation data for crushed aggregate backfill will be evaluated for specification compliance in accordance with applicable portions of section 307 of these specifications. The contractor's gradation data for granular materials shall be evaluated in accordance with 716.1.1.2. Each sample will be considered to represent a lot for the purposes of evaluation in accordance with the referenced sections. The certification is to include the results of testing from samples obtained at a minimum frequency of one sample per day of aggregate production, stockpiling or one sample per placement day, sampling from the working face of an existing stockpile.~~

A revised unit price for calculation purposes in 307.9.1 will be established based on the unit bid cost minus the cost of the pipe.

The Contractor shall maintain equipment and qualified personnel to perform all sampling and testing necessary to determine the magnitude of the various properties of the material governed by the Specifications and shall maintain these properties within the limits of the Specifications.

The Contractor shall design a quality control plan detailing the methods by which the quality control program will be conducted. This plan, prepared in accordance with the

guidelines set forth in the appropriate portions of MP 307.00.50 and MP 717.04.21, shall be submitted to the Engineer at the preconstruction conference. The work shall not begin until the plan is reviewed for conformance with the contract documents.

604.2.2-Acceptance Testing: Quality control sampling and testing performed by the Contractor shall be used by the Division for Acceptance.

604.2.3-Sampling and Testing: Frequency of sampling and testing shall be in accordance with the contractor’s quality control plan. The minimum sampling and testing frequencies for gradation shall be as indicated in Attachment 1 of MP 307.00.50. The material shall be sampled in accordance with MP 700.00.06. The minimum sampling and testing frequency for compaction will be in accordance with MP 717.04.21.

604.2.4-Acceptance Plan:

604.2.4.1-Compaction: Compaction of backfill material shall meet 604.8.

604.2.4.2-Gradation: Acceptance for gradation shall be on the basis of test results on consecutive random samples from a lot. A lot shall be considered the quantity of material represented by an average test value, not to exceed five sublots. Generally at the beginning of the project, the average shall be started on the second sample in accordance with MP 300.00.51. A subplot is the quantity of material represented by a single gradation test. In the case where only one sample is taken, this subplot shall be considered the lot. When the average, or when the most recent three consecutive individual test values fall outside the limits specified in Table 704.6.2A, the lot of material represented will be considered nonconforming to the extent that the last of its sublots is nonconforming. When this occurs, the last subplot shall have its price adjusted in accordance with Table 604.13.1. In the case where the average is nonconforming and the last subplot contained is conforming, then there would be no price adjustment. In no event, however, shall a subplot of material have its price adjusted more than once, and the first adjustment, which is determined, shall apply.

604.2.4.3-Degree of Nonconformance: When a subplot of material is to have its price adjusted, the percentage point difference between the nonconforming test value and the specification limit shall be determined for each sieve size determined to be nonconforming, and this value shall be multiplied by its appropriate multiplication factor as set forth in Table 604.2.4.3

<u>TABLE 604.2.4.3</u>	
<u>Nonconforming Sieve Size</u>	<u>Multiplication Factor</u>
<u>1 ½ in. (37.5 mm)</u>	<u>1.0</u>
<u>¾ in. (19 mm)</u>	<u>1.0</u>
<u>No. 4 (4.75 mm)</u>	<u>1.0</u>
<u>No. 40 (425 µm)</u>	<u>1.0</u>
<u>No. 200 (75µm)</u>	<u>1.0</u>

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The total measure of nonconformance of an individual subplot is the sum of all nonconformance of an individual sieve sizes of that subplot.

When the total degree of nonconformance has been established and it is 12.0 or less, the material will be for at an adjusted contract price as specified in Table 604.13.1.

When the degree of nonconformance is greater than 12.0, the nonconforming subplot shall be resolved on an individual basis, requiring a special investigation by the Engineer to determine the appropriate course of action to be followed.

604.13-BASIS OF PAYMENT:

ADD THE FOLLOWING SUBSECTION:

604.13.1-Price Adjustment: Crushed aggregate backfill not conforming with the gradation requirements as described in 604.2.4.2 will be paid for at the adjusted contract price base on the degree of nonconformance as specified in Table 604.13.1.

TABLE 604.13.1	
Adjustment of Contract Price for Gradation not Within Specifications	
Degree of Nonconformance	Percent of Contract Price to be Reduced
1.0 to 3.0	2
3.1 to 5.0	4
5.1 to 8.0	7
8.1 to 12.0	11
Greater than 12	*

*The Division will make a special evaluation of the material and determine the appropriate action.

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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SUPPLEMENTAL SPECIFICATION

FOR

SECTION 609

SIDEWALKS

609.2-MATERIALS:

DELETE THE CONTENTS AND REPLACE WITH THE FOLLOWING:

Materials shall meet the requirements specified in the following subsections of Division 700:

MATERIAL	SUBSECTION
Expansion Joint Filler (Preformed)	708.1, 708.2
Joint Sealing Material	708.3
Sand	702.2
Asphalt Plastic Cement	708.9
<u>Bed Course Material</u>	<u>704.6 – Class 1 or Class 2</u>

Concrete shall meet the requirements of 601, Class B, or 501.

609.2.1-Detectable Warning Surfaces: Detectable warning panels shall have a detectable warning surface meeting ADAAG requirements. The panel dimensions shall not deviate more than 1/16 in (3 mm). The panel colors shall be as shown in the plans or as approved by the engineer. The color shall contrast to the adjacent sidewalk, sidewalk flares and pavement. The panels shall have a minimum skid resistance of .60 wet when tested with ASTM C 1028.

There shall be two types of warnings surfaces: Panels for fresh concrete surfaces while the concrete is still plastic, and products for cured concrete surfaces. ~~Products and application methods must be approved and on the WVDOH Approved Products List. All materials to be used shall be covered by a 3 year warranty under normal conditions.~~

A wet or plastic set-in-place system shall be ~~performed~~ installed at the time of the placement of the sidewalk, while the concrete is still plastic. ~~Mould~~ Mold-in-place concrete domes, brick pavers, or iron or steel warning systems shall not be used. Additionally, No bricks, iron, or set-in-place concrete domes or paint will be accepted.

Products and application methods must be approved and on the WVDOH Approved

Products List. The material approval for detectable warning panels will be based on results from WVDOH field evaluation tests. Detectable warning systems may also be accepted or rejected based on actual performance on WVDOH projects. All materials to be used shall be covered by a 3 year warranty under normal conditions.

~~609.2.2-Bed Course Material:~~ Bed course material shall consist of approved gravel, crushed stone, or crushed slag meeting the gradation requirements in 704.6.2 for Class 1 or Class 2, unless otherwise specified on the Plans.

~~Quality control testing of aggregate bed course material is the responsibility of the Contractor as specified in 106.1.~~

~~Acceptance for gradation will be on the basis of the Contractor's written certification that all such materials have been sampled and tested according to applicable procedures and represent the true nature of the material. In the event any material does not conform to the specified gradation requirements the contractor's written certification shall reflect said nonconformance with quantities thereof. The contractor's gradation data will be evaluated for specific compliance in accordance with applicable portions of section 307 of these specifications. The certification is to include the results of testing from samples obtained at a minimum frequency of one sample per day of aggregate production or stockpiling or one sample per placement day, sampling from the working face of any existing stockpile.~~

~~Concrete shall be Class B conforming to the requirements of 601.~~

609.2.2-Quality Control Testing: Quality control of bed course material is the responsibility of the Contractor as specified in 106.1.

The Contractor shall maintain equipment and qualified personnel to perform all sampling and testing necessary to determine the magnitude of the various properties of the material governed by the Specifications and shall maintain these properties within the limits of the Specifications.

The Contractor shall design a quality control plan detailing the methods by which the quality control program will be conducted. This plan, prepared in accordance with the guidelines set forth in the appropriate portions of MP 307.00.50, shall be submitted to the Engineer at the preconstruction conference. The work shall not begin until the plan is reviewed for conformance with the contract documents.

~~609.2.3-Approved Products Listing:~~ Material approvals for detectable warning panels will be based on results from a WVDOH field evaluation tests. Detectable warning systems may also be accepted or rejected based on actual performance on WVDOH projects. No bricks, iron, or set in place concrete domes or paint will be accepted. A list of approved materials, and code numbers may be obtained by contacting:

**Materials Control, Soils, & Testing Division
190 Dry Branch Road
Charleston, West Virginia 25306**

609.2.3-Acceptance Testing: Quality control sampling and testing performed by the Contractor shall be used by the Division for Acceptance.

609.2.4-Sampling and Testing: Frequency of sampling and testing shall be in accordance with the contractor’s quality control plan. The minimum sampling and testing frequencies for gradation shall be as indicated in Attachment 1 of MP 307.00.50. The material shall be sampled in accordance with MP 700.00.06.

609.2.5-Acceptance Plan:

609.2.5.1-Gradation: Acceptance for gradation shall be on the basis of test results on consecutive random samples from a lot. A lot shall be considered the quantity of material represented by an average test value, not to exceed five sublots. Generally at the beginning of the project, the average shall be started on the second sample in accordance with MP 300.00.51. A subplot is the quantity of material represented by a single gradation test. In the case where only one sample is taken, this subplot shall be considered the lot. When the average, or when the most recent three consecutive individual test values fall outside the limits specified in Table 704.6.2A, the lot of material represented will be considered nonconforming to the extent that the last of its sublots is nonconforming. When this occurs, the last subplot shall have its price adjusted in accordance with Table 609.2.4.2. In the case where the average is nonconforming and the last subplot contained is conforming, then there would be no price adjustment. In no event, however, shall a subplot of material have its price adjusted more than once, and the first adjustment, which is determined, shall apply.

609.2.5.2-Degree of Nonconformance: When a subplot of material is to have its price adjusted, the percentage point difference between the nonconforming test value and the specification limit shall be determined for each sieve size determined to be nonconforming, and this value shall be multiplied by its appropriate multiplication factor as set forth in Table 609.2.5.2.

Table 609.2.5.2

<u>Nonconforming Sieve Size</u>	<u>Multiplication Factor</u>
<u>1½ in. (37.5 mm)</u>	<u>1.0</u>
<u>¾ in. (19 mm)</u>	<u>1.0</u>
<u>No. 4 (4.75 mm)</u>	<u>1.0</u>
<u>No. 40 (425 µm)</u>	<u>1.0</u>
<u>No. 200 (75µm)</u>	<u>1.0</u>

The total measure of nonconformance of an individual subplot is the sum of all nonconformances on the various sieve sizes of that subplot.

When the total degree of nonconformance has been established and it is 12.0 or less, the material will be paid for at an adjusted contract price as specified in Table 609.10.1.

When the degree of nonconformance is greater than 12.0, the nonconforming subplot shall be resolved on an individual basis, requiring a special investigation by the Engineer to determine the appropriate course of action to be followed. Pending resolution of the matter, additional lifts of base or pavement shall not be placed over the nonconforming material.

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609.10-BASIS OF PAYMENT:

ADD THE FOLLOWING SUBSECTION TO THE SECTION:

609.10.1-Price Adjustment: Bed course material not conforming to the gradation requirements as described in 609.2.5.1 will be paid for at the adjusted contract price based on the degree of nonconformance as specified in Table 609.10.1.

Table 609.10.1
Adjustment Of Contract Price For Gradation Not
Within Specifications

<u>Degree of Nonconformance</u>	<u>Percent of Contract Price to be Reduced</u>
<u>1.0 to 3.0</u>	<u>2</u>
<u>3.1 to 5.0</u>	<u>4</u>
<u>5.1 to 8.0</u>	<u>7</u>
<u>8.1 to 12.0</u>	<u>11</u>
<u>Greater than 12</u>	<u>*</u>

* The Division will make a special evaluation of the material and determine the appropriate action.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SUPPLEMENTAL SPECIFICATION

FOR

SECTION 626

RETAINING WALL SYSTEMS

626.2-GENERAL:

DELETE THE FIRST PARAGRAPH AND REPLACE WITH THE FOLLOWING:

Unless specified otherwise in the contract documents the wall may be, at the Contractor's option, any one of the wall systems on the approved ~~vendor-source~~ list corresponding to the applicable ~~Pay Item; this list is posted on the MCS&T web page under the heading Approved Source/Product Listing. The approved Vendor Lists are available through the Materials Section of the Contract Administration Section.~~

626.5-MATERIALS:

626.5.3-Select Granular Backfill:

626.5.3.2-Quality Control Testing:

DELETE THE SUBSECTION AND REPLACE WITH THE FOLLOWING:

626.5.3.2-Quality Control Testing: Quality control of the select granular backfill material for backfill is the responsibility of the Contractor as specified in 106.1.

~~—The Contractor shall maintain equipment and qualified personnel to perform all sampling and testing necessary to determine the magnitude of the various properties of the material governed by the Specifications and shall maintain these properties within the limits of the Specifications.~~

~~—The Contractor shall design a Quality Control Plan detailing the methods by which the Quality Control Program will be conducted. The plan prepared in accordance with the guidelines set forth in the appropriate portions of MP 307.00.50 and MP 717.04.21, shall be submitted to the Engineer at the preconstruction conference. The work shall not begin until the plan is reviewed for conformance with the contract documents.~~

626.5.3.3-Sampling and Testing

DELETE THE SUBSECTION AND REPLACE WITH THE FOLLOWING:

626.5.3.3-Sampling and Testing: Frequency of sampling and testing shall be in accordance with the Contractor's Quality Control Plan. The minimum sampling and testing frequencies for gradation and plastic limits shall be ~~one per day of placement, as~~

February 19, 2016 March 23, 2016

indicated in Attachment 1 of MP 307.00.50. The material shall be sampled in accordance with MP 700.00.06. The minimum sampling and testing frequency for compaction will be in accordance with MP 717.04.21. ~~One plastic limits test will be performed on the first day of placement and one every six days of placement thereafter.~~ Material failing gradation requirements during placement shall be evaluated immediately and may be subject to retesting to verify the angle of internal friction at the expense of the contractor.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SUPPLEMENTAL SPECIFICATION

FOR

SECTION 703

COARSE AGGREGATE

703.1-CRUSHED STONE:

INSERT THE FOLLOWING SUBSECTION

703.1.5-LIMESTONE ANTI-SKID AGGREGATES

~~703.1.5.1 LIMESTONE-Limestone: When evaluated for anti-skid material shall be representative of the individual bench from which the stockpile is produced. Once the stockpile is produced, every 10,000 tons the producer shall contact the district for sampling. Limestone for anti-skid material shall meet the applicable requirements for coarse aggregate in the Standard Specifications with the addition of MP 703.00.29 Skid Aggregate as Determined by Insoluble Residue in Carbonate Aggregates. The requirement of a minimum of 10% +200 (75µm) silica.~~

703.1.5.1 LIMESTONE: When produced for anti-skid, limestone shall be sampled from the stockpile by the Division. The stockpile shall meet the requirements for Section 703.1, with the addition of MP 703.00.29. Limestone shall contain a minimum of 10% quartz retained on the #200 (75µm) sieve.

~~703.1.5.2-DOLOMITE LIMESTONE-Dolomitic Limestone, (Dolomite): When evaluated for anti-skid material shall be representative of the individual bench of from which the stockpile is produced. Once the stockpile is produced, every 10,000 tons the producer shall contact the district for sampling. Dolomitic Limestone, (Dolomite) for anti-skid material shall meet the applicable requirements for coarse aggregate in the Standard Specifications with the addition that ASTM C1271 and ASTM C1301 shall be performed in order to determine the elemental magnesium content. Dolomite shall contain a minimum of 10% elemental magnesium.~~

703.1.5.2-DOLOMITE LIMESTONE: When produced for anti-skid, shall be sampled from the stockpile by the Division. The stockpile shall meet the requirements for Section 703.1, with the addition of ASTM C1271 and ASTM C1301. Dolomite shall contain a minimum of 10% elemental magnesium.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SUPPLEMENTAL SPECIFICATION

FOR

SECTION 716

EMBANKMENT AND SUBGRADE MATERIAL

716.1.1.2-Granular Material:

DELETE THE CONTENTS OF THE SUBSECTION AND REPLACE WITH THE FOLLOWING:

716.1.1.2-Granular Material: Granular material shall be considered as natural or synthetic mineral aggregate, such as broken or crushed rock, gravel, sand, or slag. Shale or fly ash shall not be considered granular material. ~~Granular material shall have not more than 25 percent by weight of grains or particles passing the No. 200 (75 µm) sieve and the plasticity index shall not be more than 6.~~ Granular material shall have not more than 25 percent by weight of grains or particles passing the No. 200 (75 µm) sieve (determined by AASHTO T-27) and the plasticity index shall not be more than 6 (determined by AASHTO T-90). ~~The contractor's gradation data shall be evaluated in accordance with applicable sections of Section 307 except that Table 704.6.2 shall not apply. Gradation limits shall be in accordance with Table 703.4.~~

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SPECIAL PROVISION

FOR

STATE PROJECT NUMBER: _____

FEDERAL PROJECT NUMBER: _____

SECTION 650

MOWING

ADD THE FOLLOWING SECTION:

650.1 – MOWING:

Mowing is an important aspect of roadside management; proper mowing creates a safe and appealing roadside for the motorist.

The personnel and equipment typically used to maintain the facilities landscaping will be reassigned during the construction project. The Contractor will be responsible for the mowing and maintaining of the grass on this project. The areas and limits of mowing have been previously established and are distinguishable at the facility, or as directed by the Engineer.

650.1.1 – Frequency of Mowing: The Contractor shall mow grass to a height of 3 inches (minimum) to 4 inches (maximum), when vegetation reaches a maximum height of 8 inches.

650.1.2 – Weather Conditions: The grass shall not be cut when weather conditions are such that it is not reasonable to expect the entire job will be completed within two consecutive days. No cutting shall be done when the ground is soft and ruts will be left by the mowing equipment.

650.1.3 – Equipment: The Contractor shall use only properly equipped tractors and mowing equipment. The cutting blades on all mowers must be sharp and in proper operating condition to prevent damage to the turf.

650.2 – PAY ITEM:

No direct payment will be made for this work, but shall be included under 672002-001, Construct Building, Rest Area.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SUPPLEMENTAL SPECIFICATION

FOR

SECTION 685

BRIDGE CLEANING

ADD THE FOLLOWING:

685.1 DESCRIPTION:

The cleaning work shall consist of three phases of cleaning. Phase-One will be a dry, pre-wash cleaning, followed by two-phase water cleaning. All dry, pre-wash cleaning shall be performed prior to any water cleaning, and water cleaning shall be performed prior to surface preparation and painting operations. Phase one shall consist of cleaning specified areas by dry methods. Phase-Two shall consist of plain water cleaning of the specified areas. Phase-Three shall consist of a cleaning solution wash of the specified areas. With approval of the Engineer, the Contractor may break this work up into sections or bays.

685.1.1-Phase One: This phase will consist of cleaning by dry methods all loose dirt and debris from the abutment seats, pier caps, diaphragms, flanges, bridge deck, curbs, parapets, and expansion joints prior to any washing operations. Collection may include the use of brooms, brushes, shovels, wheelbarrows, buckets, vacuums, or other suitable means.

685.1.2-Phase Two: This phase will consist of washing completely with low pressure plain water, the entire bridge deck, curbs, parapets, sidewalks and expansion joints. All drains shall be thoroughly flushed and shall be free flowing. All debris and trash shall be removed from the drains. At the nozzle end, the washing equipment shall have a minimum pressure of 3000 PSI and a maximum pressure of 4500 PSI.

685.1.3-Phase Three: This phase will consist of washing all structural steel and selected concrete areas, and any other areas as noted in the plans, with a mixture of low pressure water and a solution of a commercial brand of soluble salt remover. All structural steel members, railings, drain pipes; bearings and other miscellaneous steel items that have previously been painted shall be washed. Selected concrete areas are to include concrete abutment seats and pier caps. The contractor is to place special emphasis on the top surface of all flanges, connection plates, bearings, and excessively rusty or pitted areas. Any areas of the structure that exhibit mineral deposits of black iron oxide called "black rust" after

abrasive blasting shall be considered contaminated with chlorides and will need an additional washing with the soluble salt remover solution and another abrasive blasting.

685.2-METHODS:

This pressure washing shall be accomplished with a low pressure washer at a minimum pressure of 3000 PSI and a maximum pressure of 4500 PSI, at the nozzle end with the nozzle 4” to 8” from the surface. The low pressure water medium will serve two purposes: (1) As a vehicle or carrier for the Soluble Salt Remover; and, (2) Remove all surface abnormalities such as rust scale, peeling paint, or blistered paint that would prevent the soluble salt remover from coming into contact with the salt contamination. Typically, low pressure water washing is not capable of removing intact coating material. The nozzle type shall be a rotary nozzle. The contractor shall follow the Manufacturer’s recommendations or specifications for method and rate of application of the Soluble Salt Remover.

685.3-TESTING OF STRUCTURAL STEEL:

The maximum level of chloride contamination shall be 5 micrograms/cm². Testing method shall be in accordance with The Society for Protective Coatings (SSPC) Technology Guide 15 Section 5.2.5, Latex Sleeve Methodology. In the first 150 sq ft of cleaning the contractor is to determine by sufficient testing of the most deteriorated areas (after rust has been removed), the rate of application, nozzle pressure, nozzle distance from surface, and dilution ratio of mixture to achieve the desired level of cleanliness. Thereafter, the contractor is to perform test in areas designated by the Engineer to insure that the entire structure has attained the specified level of cleanliness. The Engineer is to verify the degree of cleanliness. The Engineer’s decision shall be final.

685.3.-The Soluble Salt Remover: The soluble salt remover shall be chosen from West Virginia Division of Highways Approved Source List. The Soluble Salt Remover shall meet or exceed the following specifications:

- Material shall contain zero VOC’s.
- Material shall have a minimum shelf life of 24 months.
- Material shall be suitable for hand washing spot areas, and for application by pressure washing at any pressure.
- Material shall be biodegradable.
- Material shall leave no chemical residue or surface film.
- Material shall have PH 3.3 ±0.5

685.4-GENERAL CONTRACOR RESPONSIBILITY:

The Contractor’s washing sequence and plans shall not allow the possibility of recontamination of the steel structure before blast cleaning and/or painting operations are completed. No cleaning shall be performed when temperatures are such that freezing could occur or that it is anticipated that temperatures could drop to freezing while the structure is wet. Equipment, methods and materials shall meet the approval of the Engineer. Water shall be from an approved source of drinking water.

All wash water shall be filtered with a 200 openings per square inch or finer mesh material to catch particles of paint and debris. When washing over the railroad, roadways, navigational waterway, parking lots etc., all wash water shall be channeled outside the travel way by

impermeable tarpaulins so as not to allow wash water to fall on vehicles or within railroad right of way.

Wash water does not need to be contained after filtering and channeling outside the travel way. During all cleaning operations the contractor shall protect the public (vehicular, railroad, marine, pedestrian, residence etc.) from fugitive materials by the use of tarpaulins or other suitable means.

Paint chips, as well as dirt and debris containing paint chips, shall be treated and disposed of as hazardous waste unless Toxicity Characteristic Leaching Procedure (TCLP) analysis for the eight Resource Conservation and Recovery Act (RCRA) metals confirm material is non-hazardous. Non-hazardous waste material shall be disposed of in accordance with local state and federal regulations. A copy of the land fill disposal receipt shall be given to the Engineer.

Dirt and debris from Phase Two as well as dirt & debris from the bridge deck, curbs and expansion joints in Phase One shall be handled and stored separately, and shall be redistributed by the contractor along the roadway shoulder as directed by the Engineer.

685.5-BASIS OF PAYMENT:

Payment for the above described work, including all material, equipment, labor and any other incidental work necessary to complete this item, will be considered completely covered by the contract unit price for the item below.

685.6-PAY ITEM:

ITEM	DESCRIPTION	UNIT
685001-001	BRIDGE CLEANING	LS

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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SPECIAL PROVISION

**FOR THE
ID/IQ CONTRACT**

STATE PROJECT NUMBER: S38X-OC/PAV-00.00

FEDERAL PROJECT NUMBER: DRAFT-0000(000)

SECTION 105

CONTROL OF WORK

105.10 – INDEFINITE DELIVERY / INDEFINITE QUANTITY CONTRACT

ADD THE FOLLOWING SUBSECTION TO THE SECTION:

The Contractor is advised that this Contract will award an On-Call, Contractor-Fixed-Pricing, Indefinite Delivery / Indefinite Quantity (ID/IQ) style of contracting. The contract will include a number of prescribed ‘tasks’, which will be associated a fixed bid. This selection of ‘tasks’ and associated bid within the final bid document shall be utilized as a ‘catalog’ by the West Virginia Department of Highway (WVDOH) in assigning individual ‘Work Orders’ to the Contractor on an on-call basis.

105.10.1 – Call-out Procedure

During the life of the Contract, sites may be added to the project by the Engineer by issuing a work order to the Contractor. The call-out procedures for these locations include, but are not limited to, the following:

1. The Engineer shall provide, as a minimum, a work order containing the following information to the Contractor.
 - a. Location Map
 - b. Description of Work
 - c. Quantity Estimate
 - i. Applicable Quantity Tables for base failure repairs, curb ramps, etc.

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- ii. When curb ramps are specified, the Engineer shall provide the contractor the type of curb ramp at each location.
 - d. Statement for: Right-of-Way, Utility, Bridge, and Letter of Registration
 - e. Maintenance of Traffic
 - f. Applicable Paving Typical Sections
 - i. With cross slope information
 - ii. Include proper dimensions
 - iii. Indicate a “heavy” or “medium” mix.
 - g. All applicable Typical Details
2. Within 5 calendar days after receipt of work order, the Contractor shall advise the Engineer whether adequate information has been submitted and provide a projected schedule for work.
 - a. The Division will respond to such additional information within 5 calendar days of receipt from the Contractor.
 3. No additional work orders containing asphalt items shall be issued after October 31st.

105.10.2 – Completion Dates

105.10.2.1 - Completion Dates: Completion date for work orders issued prior to June 1st shall be June 30th. Work orders issued on or after June 1st and prior to August 1st shall have a completion date of August 31st. Work orders issued on or after August 1st shall have a completion date of December 31st. Failure to meet the established completion date shall be subject to Sections 108.6.2 and 108.7.1 of the WVDOH Standard Specifications.

Work Order is Issued	Completion Date
Prior to June 1 st	June 30 th
June 1 st – July 31 st	August 31 st
On or after August 1 st	December 31 st

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SPECIAL PROVISION

**FOR THE
ID/IQ CONTRACT**

STATE PROJECT NUMBER: S38X-OC/PAV-00.00

FEDERAL PROJECT NUMBER: DRAFT-000(000)

SECTION 109

MEASUREMENT AND PAYMENT

109.3 – COMPENSATION FOR ALTERED QUANTITIES:

DELETE PARAGRAPH ONE AND REPLACE WITH THE FOLLOWING:

The Contractor is advised that the Division can add or delete quantities to this contract. The unit bid prices included in the Contract will be used to pay for this work. Quantity changes or deletions shall not be cause for an increase or decrease in any contract unit bid prices. The Contractor shall provide all labor, equipment, and materials required to perform the work identified in the agreement.

If during the prosecution of the work, additional items not included in the contract, are found to be necessary as determined by the Engineer, payment for such additional items will be made under the provisions of 104.3. Section 104.11 (b) does not apply to the contract.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SPECIAL PROVISION

**FOR THE
ID/IQ CONTRACT**

STATE PROJECT NUMBER: S38X-OC/PAV-00.00

FEDERAL PROJECT NUMBER: DRAFT-0000(000)

SECTION 204

MOBILIZATION

204.5 – BASIS OF PAYMENT

INSERT THE FOLLOWING SUBSECTION:

204.5.1: Call-Out Paving Mobilization:

The following item(s) will be used for ID/IQ paving mobilizations.

201.5.1.2 - Item 204002-000 Mobilization Per Mile – The Contractor will be paid for Bid Item 204002-000 “Mobilization Per Mile” each time the work order contains items with units of TN. The quantity for this item shall be calculated using the formula $A \times B$. Where A is the sum of the quantities of all items on the work order with a unit of TN, and B is the distance, in miles, from the center of the job site to the Contractor’s asphalt plant producing the material specified on the work order.

204.5.1.3 - Item 204003-000 Mobilization Per Job Order – The Contractor will be paid one unit of the Bid Item - 204003-000 "Mobilization, Per Job Order" for each time the Contractor is called-out.

201.5.1.4 – Item 204003-000 Mobilization Per Job Order (Milling) – The Contractor will be paid one unit of Bid Item – 204003-000 “Mobilization, Per Job Order (Milling)” only when the quantity of Item 415005-001 equals or exceeds 500 SY on any work order.

201.5.1.5 – Item 204003-000 Mobilization Per Job Order (Rumble) – The Contractor will be paid one unit of Bid Item – 204003-000 “Mobilization, Per Job Order (Rumble)” only when Items 664002-001 or 664003-001 are included in a work order.

201.5.1.6 – Item 204003-000 Mobilization Per Job Order (Striping)

The Contractor will be paid one unit of Bid Item – 204003-000 “Mobilization, Per Job Order (Striping)” only when pavement striping items are included in a work order.

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204.6 – PAY ITEMS:

ADD THE FOLLOWING TO THE TABLE:

ITEM	DESCRIPTION	UNIT
204002-000	Mobilization, Per Mile	MI
204003-000	Mobilization, Per Job Order	EA
204003-000	Mobilization, Per Job Order (Milling)	EA
204003-000	Mobilization, Per Job Order (Rumble)	EA
204003-000	Mobilization, Per Job Order (Striping)	EA

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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SPECIAL PROVISION

**FOR THE
DISTRICT WIDE STRIPING CONTRACT**

STATE PROJECT NUMBER: _____

FEDERAL PROJECT NUMBER: _____

SECTION 108

PROSECUTION AND PROGRESS

108.7-COMPLETION DATES:

108.7.1 – Failure To Complete On Time And Liquidated Damages:

DELETE PARAGRAPH TWO AND REPLACE THE FOLLOWING:

All work shall be completed by September 1st (of Contract Year). Unless specified elsewhere in the Contract, the Contractor shall be assessed liquidated damages as described in, Schedule B of Section 663.5.11 per calendar day for each day after September 1st that work is not completed. There are _____ total working days available in this contract. There shall be no time extension given for weather. There shall be no stoppage of the penalty due to winter shut-down.

TABLE 108.7.1 SCHEDULE OF LIQUIDATED DAMAGES

ORIGINAL CONTRACT AMOUNT		DAILY CHARGE
From More Than	To And Including	Per Calendar Day
\$ 0	\$ 25,000	\$ 40
\$ 25,000	\$ 100,000	\$ 70
\$ 100,000	\$ 500,000	\$ 150
\$ 500,000	\$ 1,000,000	\$ 310
\$ 1,000,000	\$ 2,000,000	\$ 570
\$ 2,000,000	\$ 5,000,000	\$ 910
\$ 5,000,000	\$ 10,000,000	\$ 1410
\$ 10,000,000	-----	\$ 3280

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SPECIAL PROVISION

**FOR THE
DISTRICT WIDE STRIPING CONTRACT**

STATE PROJECT NUMBER: _____

FEDERAL PROJECT NUMBER: _____

SECTION 663

PAVEMENT MARKINGS

663.4-PAVEMENT PREPARATION – PREMARKING, CODING:

ADD THE FOLLOWING TO THE SECTION:

The Department will be responsible for coding and spotting where old markings cannot be determined or if the Department desires to make changes in existing markings. The Department must be given notification of twelve (12) days prior to commencement of work in area.

663.5.1-General

ADD THE FOLLOWING TO THE SUBSECTION:

The pavement marking material shall be mixed uniformly throughout and shall have a homogeneous dispersement of color and beads when applied to the pavement.

Pavement marking lines shall be straight or of uniform curvature and shall conform with the tangents, curves, and transitions as specified in the pavement marking standards and/or as directed by the Engineer.

The finished lines shall have well-defined edges and be free of horizontal fluctuations. The lateral deviation shall not exceed 1.5 inch from the proposed location alignment as specified in the Standards and /or directed by the Engineer. When striping interchanges, material will be applied for the full length of all ramps, including all wraps around all islands and curbs, gore areas, etc.

The Contractor shall be responsible for removing all pavement marking materials spilled upon the roadway surface or adjoining area. The Contractor shall use methods acceptable to the Engineer for removing the spilled material in accordance with section 636.7 Eradication of Pavement Markings.

Any pavement marking which is crossed by a vehicle and tracked shall be replaced and any subsequent marking made by the vehicle shall be removed in accordance with section 636.7 by methods acceptable to the Engineer and at no additional cost to the Department.

Prior to commencement of work, and only if required by the binder manufacturer, all existing edge, lane or center lines will be fully eradicated in accordance with Section 636.7 - Eradication of Pavement Markings. When eradicating lane or center lines, the Contractor shall replace the lines within twenty-four hours from the start of eradication. The eradication shall be incidental to Pay Items of the Contract.

The Contractor shall be responsible for cleaning and/or replacing any Raised Pavement Markers (RPMs) that are painted. The Contractor, when painting center lines, shall either offset or retard pavement marking lines to avoid painting the RPM reflectors.

DELETE THE SUBSECTION AND REPLACE WITH THE FOLLOWING:

663.5.2.1–Approved Equipment and Personnel: The following provisions shall apply to the application of permanent traffic zone paint only:

The Contractor (prior to commencement of the project) shall submit to the Engineer a detailed list of all equipment and the resumes of all personnel within the confines of the project. The Contractor shall also provide certification from the binder manufacturer that the Contractor is qualified to apply the manufacturer's material in conformance with these specifications. Drivers and operators with less than one year of experience shall not be used on this project.

The Contractor's striping shall be equipped with electrical foot counters.

The counters shall individually tabulate the amount of footage applied by each striping gun whether solid or dashed. The counters shall be six digit types with a reset feature. The Contractor shall determine the accuracy of the foot counters and establish an adjustment factor as required to determine the pay item quantities. The foot counters shall be periodically checked to assure accurate measurements. No paint shall be applied without the accurate operation of the foot counters. The Contractor shall provide the Engineer with a certified document on these calibrations.

The Contractor shall use an accurate dashing mechanism, capable of being adjusted to retrace existing lane or center line markings. The contractor shall also utilize a GPS device to locate the beginning and finishing point of each line being striped and shall be located on the striping truck and used in coordination with the daily centerline reports.

Glass beads applied to the surface of the completed marking material shall be applied by an automatic bead dispenser attached to the pavement marking equipment in such a manner that the beads are dispensed uniformly and almost instantly upon the marking as the marking is being applied to the road surface. The bead dispenser shall be equipped with an automatic cut-off control, synchronized with the cut-off of the pavement marking equipment.

The Contractor is responsible for quality control, and to that end, shall employ a Project Control Coordinator (PCC) at the Contractor's expense. The PCC shall be designated and in attendance at the Pre-Construction Conference. This PCC shall be a member of the District Pavement Marking Crew, and shall be on this crew throughout the project. Failure to have the PCC in attendance at the pre-construction meeting shall delay the start of the project and result in a daily liquidated damages in accordance with section 108.7 and Table 108.7.1 of the West Virginia Division of Highways Standards Specifications.. The PCC shall be responsible for all communication between the District Pavement Marking Crew and District Personnel. Communications shall be provided to the District, and shall be employed between the PCC and the District in the form of cellular phone technology, two-way radio, or other form of communication during working hours (communications shall be at the Contractor's expense and shall be integral to the contract cost).

The PCC shall be required to fill out all Daily Centerline Report(s) and provide these completed forms to the Engineer. The Contractor shall provide the District all collective daily centerline reports on a weekly basis. The Contractor's weekly centerline reports shall be delivered to the Engineer the first work day of the following week. The contractor shall use the GPS device to place a beginning and end point of each line on the daily centerline report along with a mile post if available and landmark description. Failure to deliver centerline reports to the Engineer shall invoke daily liquidated damages as described in Section 108.7 and Table 108.7.1 of the West Virginia Division of Highway's Standard Specifications for each calendar day that the Contractor fails in delivering these centerline reports. The Engineer will randomly check the accuracy of these reports. If a discrepancy of more than 2% is found, the Contractor will be required to have an independent consultant, approved by the Division, to verify all pay items on this contract. The cost of the consultant will be the responsibility of the Contractor.

ADD 663.5.10, 663.5.11, AND 663.5.12 TO THE SUBSECTION:

663.5.10–Pavement Marking/Projects: The contractor shall be responsible for recall or supplementary pavement markings for the District roadways. The quantities listed within this contract are estimated for the Contractors’ use only. Once the contractor begins a particular route or segment area, he shall continue this pavement marking until the scheduled routes(s) are completed.

663.5.11–Resurfacing Projects and Priority Painting: At the Pre-Construction Conference the Contractor will be provided with county maps showing roadways to be painted. The contractor shall paint the centerline and lane line on all routes by July 1st (of Contract Year). The centerline and or lane line shall be designated as priority painting. The Contractor shall be assessed liquidated damages for failure to meet this Priority Pavement Marking Date (PPMD) as shown in Schedule “A” per day, for each calendar day, that any of the routes are not marked with center line or lane line. The Contractor may begin painting on or after May 15th (of Contract Year).

The Engineer may add or eliminate any route to or from the schedule, if, because of low traffic volumes or other reasons, if the Engineer determines the route does or does not require pavement markings.

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Schedule A - Priority Pavement Marking Date (PPMD) =

$$\frac{(\text{Contract Bid Price}/\text{Total Days In Contract}) * \text{Delinquent Days}}{(\text{Total Days within Priority Period}/ \% \text{ of Priority Markings Completed})}$$

EXAMPLE:

GIVEN:

*Contract inception date May 15,
 Total days in contract = 108
 Required Priority completion date July 1,
 Contractor's Priority completion date July 15,
 Percentage Priority route uncompleted as of completion date = 90%
 District Priority routes requested = 50%
 Contract bid price \$500,000
 Delinquent period = July 1st until July 15th
 (Calendar days which exceed the July 1st deadline which include permitted weather days. Delinquent days not to exceed 108 calendar days.)*

$$\begin{aligned} \frac{\$500,000/108) * 14 \text{ days}}{(70/0.9)} &= \$833.42 \text{ per day/per delinquent period} \\ &= \$833.42 * 14 \text{ days} \\ &= \$11667.83 \text{ Total liquidated damages} \end{aligned}$$

Once the Contractor begins, he shall continue the pavement marking contract until all of the scheduled routes are completed. All pavement markings on all scheduled routes shall be completed by September 1st (of Contract Year). There shall be no excuses for failure to meet the deadline. The contractor shall be assessed liquidated damages as described in Schedule "B" for each calendar day that the Contractor exceeds the contract completion date. The Contractor may be called back after this date to do additional painting, however, no call-backs shall be issued after November 1st (of Contact Year).

Schedule B - Project Completion Liquidated Damages PCLD) =

$$\frac{\text{Bid Price} * \text{Estimated Roadway Marking Uncompleted} (\%)}{\text{Total Number of Days in Contract}}$$

EXAMPLE:

GIVEN:

*Contract inception date May 15th
 Completion date September 1st
 Percentage of roadway marking uncompleted 20%
 Total bid price \$500,000
 Actual completion date September 16th
 Delinquent period = Sept. 1st until Sept. 16th,
 (Calendar days which exceed the August 1st deadline)*

$$\begin{aligned} \frac{(\$500,000*0.20)}{108} &= \$925.93 \text{ per day/ per delinquent period} \\ &= \$925.93 * 15 \text{ days} \\ &= \$13,888.88 \text{ Total liquidated damages} \end{aligned}$$

663.5.12–Replacement (Call-Back) Pavement markings: During the Pre-Construction Conference, the Engineer shall provide the Contractor with a tentative list of resurfacing projects for the Calendar Year. The Contractor is advised that this is not a schedule, and for more detailed information and updates concerning any resurfacing, the Contractor shall periodically contact the District Resurfacing Coordinator. However, the Contractor will not be allowed to perform any additional pavement markings not allowed for in the contract during the priority phase of this contract May 15th to July 1st (of Contact Year).

After the Contractor has completed the priority phase of this contract as defined in Section 663.5.10, the Engineer shall have the option to utilize the District Pavement Marking Contract 'OR' the District Recall Pavement Marking Contract to perform additional pavement markings not designated in the Contract. This call-back shall be at the Engineer's discretion and the appointed Contractor shall be required to begin pavement markings for additional routes or for completed roadway projects upon notification within ten (10) working days.

A Priority Call-Back may be required to begin within 24 hours after initial notification of the work order but shall not be any later than three (3) working days after the notification. The Contractor will be required to place full compliance pavement markings, meaning the center line, lane line and edge line within the ten (10) working days, or three (3) working days for the priority call-back. A Priority Call-Back will be paid as Item 204003-000 Mobilization Per Job Order as defined in Section 204.5.1.2.

If the Contractor does not begin pavement marking within the time frames / notifications specified above, they shall be assessed liquidated damages as described in Section 108.7 and Table 108.7.1 of the West Virginia Division of Highway's Standard Specifications for each Calendar Day after the respective notifications time constraints placed on the Contractor until painting begins.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SPECIAL PROVISION

**FOR THE
DISTRICT WIDE STRIPING CONTRACT**

STATE PROJECT NUMBER: _____

FEDERAL PROJECT NUMBER: _____

SECTION 711

PAINTS, COATINGS, OILS AND INKS

711.41.1–General:

DELETE PARAGRAPH TWO OF THE SECTION AND REPLACE WITH THE FOLLOWING:

The Contractor shall employ only one paint scheme unless otherwise directed by the Director of The WVDOH Traffic Engineering Division in writing. The paint scheme shall consist of one particular binder, bead type(s), application rate and associated tolerances as specified by the Manufacturer. However the Contractor may utilize any paint scheme on call backs associated with the failed pavement markings. The paint scheme shall be submitted to the Engineer at the Pre-Construction Conference and a letter of certification from the Manufacturer and Contractor stating the materials to be used meet the materials specifications set forth in the Contract. All paint lead free and glass beads or ceramic elements shall not contain more than 200 ppm (total) arsenic, or more than 200 ppm (total) lead, when tested according to EPA Methods 3052 and 6010C. Other x-ray fluorescence spectrometry analysis methods may be used to screen samples of glass beads for arsenic and lead content if suitably calibrated." Each batch of beads supplied on the job shall be accompanied by a certification from an independent lab that it meets these standards.

DELETE THE LAST PARAGRAPH AND REPLACE WITH THE FOLLOWING:

The Contractor shall not place any pavement markings prior to May 15th. The Contract inception date shall be May 15, _____ and a completion date of September 1, _____ for calculating liquidated damages as per section 108.7.1.

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711.41.2–Color and Retroreflectivity Requirements:

DELETE THE “RETROREFLECTIVITY” SUBSECTION AND REPLACE WITH THE FOLLOWING

RETROREFLECTIVITY: The pavement marking system installed shall at all times during the life of this Contract maintain a minimum reflectance value of 200 MCD/M2/LX for white pavement markings and 150 MCD/M2/LX for yellow pavement markings.

Readings will be taken with a LTL-2000 retroreflectometer or equal 30 meter device approved by the Traffic Engineering Division or approved equal. The Contractor will also be required to take and record a minimum of five (5) readings per day, per color, per pavement marking crew. These readings shall be recorded on the daily report and should be taken throughout the day. The contractor shall provide the printout tape from the LTL readings with the daily Centerline reports. The tapes should have the date, color and route on the LTL Log ID. Payment will not be made unless the LTL tapes are attached with the daily centerline reports.

Retroreflectivity values shall at all times be maintained throughout the warranty period. Loss due to pavement failure, unless caused by the marking material, will not be considered as a material failure and will not be included in the loss calculations and/or retroreflectivity readings.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SPECIAL PROVISION

**FOR THE
RECALL STRIPING CONTRACT**

STATE PROJECT NUMBER: _____

FEDERAL PROJECT NUMBER: _____

SECTION 663

PAVEMENT MARKINGS

663.4-PAVEMENT PREPARATION – PREMARKING, CODING:

ADD THE FOLLOWING TO THE SECTION:

The Department will be responsible for coding and spotting where old markings cannot be determined or if the Department desires to make changes in existing markings. The Department must be given notification of twelve (12) days prior to commencement of work in area.

The pavement marking materials furnished and installed under this criteria shall show no signs of failure greater than five (5) percent loss due to blistering, excessive cracking, bleeding, staining, discoloration, smearing or spreading under heat, deterioration due to contact with oil or gasoline, chipping spalling, poor adhesion to the pavement, damage from traffic and normal wear.

663.5.1-General:

ADD THE FOLLOWING TO THE SUBSECTION:

The pavement marking material shall be mixed uniformly throughout and shall have a homogeneous dispersment of color and beads when applied to the pavement.

Pavement marking lines shall be straight or of uniform curvature and shall conform with the tangents, curves, and transitions as specified in the pavement marking standards and/or as directed by the Engineer.

The finished lines shall have well-defined edges and be free of horizontal fluctuations. The lateral deviation shall not exceed 1.5 inch from the proposed location alignment as specified in the Standards and /or directed by the Engineer. When striping interchanges, material will be applied for the full length of all ramps, including all wraps around all islands and curbs, gore areas, etc.

The Contractor shall be responsible for removing all pavement marking materials spilled upon the roadway surface or adjoining area. The Contractor shall use methods acceptable to the Engineer for removing the spilled material in accordance with section 636.7 Eradication of Pavement Markings.

Any pavement marking which is crossed by a vehicle and tracked shall be replaced and any subsequent marking made by the vehicle shall be removed in accordance with section 636.7 by methods acceptable to the Engineer and at no additional cost to the Department.

Prior to commencement of work, and only if required by the binder manufacturer, all existing edge, lane or center lines will be fully eradicated in accordance with Section 636.7 - Eradication of Pavement Markings. When eradicating lane or center lines, the Contractor shall replace the lines within twenty-four hours from the start of eradication. The eradication shall be incidental to the Pay Items of the Contract.

The Contractor shall be responsible for cleaning and/or replacing any Raised Pavement Markers (RPMs) that are painted. The Contractor, when painting center lines, shall either offset or retard pavement marking lines to avoid painting the RPM reflectors.

INSERT THE FOLLOWING SUBSECTION INTO THE SECTION:

663.5.2.1-Approved Equipment and Personnel: The following provisions shall apply to the application of permanent traffic zone paint only:

The Contractor (prior to commencement of the project) shall submit to the Engineer a detailed list of all equipment and the resumes of all personnel within the confines of the project. The Contractor shall also provide certification from the binder manufacturer that the Contractor is qualified to apply the manufacturer's material in conformance with these specifications. Drivers and operators with less than one year of experience shall not be used on this project.

The Contractor's striper shall be equipped with electrical foot counters.

The counters shall individually tabulate the amount of footage applied by each striping gun whether solid or dashed. The counters shall be six digit types with a reset feature. The Contractor shall determine the accuracy of the foot counters and establish an adjustment factor as required to determine the pay item quantities. The foot counters shall be periodically checked to assure accurate measurements. No paint shall be applied without the accurate operation of the foot counters. The Contractor shall provide the Engineer with a certified document on these calibrations.

The Contractor shall use an accurate dashing mechanism, capable of being adjusted to retrace existing lane or center line markings.

Glass beads applied to the surface of the completed marking material shall be applied by an automatic bead dispenser attached to the pavement marking equipment in such a manner that the beads are dispensed uniformly and almost instantly upon the marking as the marking is being applied to the road surface. The bead dispenser shall be equipped with an automatic cut-off control, synchronized with the cut-off of the pavement marking equipment.

The Contractor is responsible for quality control, and to that end, shall employ a Project Control Coordinator (PCC) at the Contractor's expense. The PCC shall be responsible for all communication between the District Pavement Marking Crew and District Personnel.

The PCC shall be required to fill out all Daily Centerline Report(s) and provide these completed forms to the Engineer. The Contractor shall provide the District all collective daily centerline reports on a weekly basis. The Contractor's weekly centerline reports shall be delivered to the Engineer the first work day of the following week. Failure to deliver centerline reports to the Engineer shall invoke daily liquidated damages as described in Section 108.7 and Table 108.7.1 of the West Virginia Division of Highway's Standard Specifications for each calendar day that the Contractor fails in delivering these centerline reports.

ADD THE FOLLOWING SUBSECTION:

663.5.10-Pavement Marking/Projects: The contractor shall be responsible for recall or supplementary pavement markings for the District roadways. The quantities listed within this contract are estimated for the Contractors' use only. Once the contractor begins a particular route or segment area, he shall continue this pavement marking until the scheduled routes(s) are completed.

The Contractor shall begin pavement markings at designated route(s) within three (3) calendar days after receiving notification. The contractor will be required to place all markings within ten (10) calendar days. The engineer will continually coordinate this project with the District personnel responsible for roadway projects.

The contractor will be paid one unit of Mobilization Per Job Order (per recall (Item 204003-000)).

If in addition to the job order within a designated District, that job order requires work in a county other than, or in addition to, that in which the District headquarters is located, the contractor shall be entitled to payment for the number of miles from the District Headquarters to the county headquarters under Item 204002-00. If the job order requires work in additional counties, the contractor shall be entitled to payment at the end of the first work day in each county for the number of miles to that county from the District headquarters. The contractor is entitled to payment for mileage to each county only once under any given job order except in the event the engineer directs work to be done in another county before completion of work in a certain county. Mileage will be based on mileages shown on the mileage map in the contractor's proposal regardless of the actual location of work within the county. If the contractor does not begin pavement marking within the notified specified time, he shall be assessed a penalty of \$1000 for each calendar day after the respective notification time constraints placed on the contractor until painting begins.

663.7-BASIS OF PAYMENT:

663.7.1-General:

DELETE THE SUBSECTION AND REPLACE WITH THE FOLLOWING:

663.7.1-General: The quantity of pavement marking lines to be paid shall be the actual number of linear miles of pavement markings which have been satisfactorily placed.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SPECIAL PROVISION

**FOR THE
RECALL STRIPING CONTRACT**

STATE PROJECT NUMBER: _____

FEDERAL PROJECT NUMBER: _____

SECTION 711

PAINTS, COATINGS, OILS AND INKS

711.41.1 – General:

DELETE THE LAST PARAGRAPH OF THE SUBSECTION AND REPLACE WITH THE FOLLOWING:

The Contractor shall employ only one paint scheme per contract unless otherwise directed by the Director of The WVDOH Traffic Engineering Division in writing. The paint scheme shall consist of one particular binder, bead type(s), application rate and associated tolerances as specified by the Manufacturer. However the Contractor may utilize any paint scheme on call backs associated with the failed pavement markings. The paint scheme shall be submitted to the Engineer at the Pre-Construction Conference and a letter of certification from the Manufacturer and Contractor stating the materials to be used meet the materials specifications set forth in the Contract.

The warranty and performance criteria of this specification shall apply to Type II marking placed on or after April 15th and prior to November 1st. Markings placed between November 1st and April 15th shall meet the minimum reflectivity at the time of installation only; at the discretion of the project Engineer, visual inspection can be made for reflectivity acceptance. Visual inspection should be done at night. Failure based on visual inspection will be painted at no additional cost. Loss to pavement failure, unless caused by the marking material, will not be considered as a material failure and will not be included in the loss calculations and/or retroreflectivity readings.

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711.41.2 – Color and Retroreflectivity Requirements:

DELTE THE “RETROREFLECTIVITY” SUBSECTION AND REPLACE WITH THE FOLLOWING:

RETROREFLECTIVITY: Initial inspection of the pavement marking system installed shall be subjectively evaluated visually or measured objectively by an approved 30-meter device (LTLX) at the discretion of the engineer. Minimum reflectance value of 200 MCD/M2/LX for white pavement markings and 150 MCD/M2/LX for yellow pavement markings shall be maintained throughout the life of this project, unless otherwise noted or indicated in these specifications. Hand held retroreflectivity readings shall be given a five (5) percent deviation with regard to the retroreflectivity measurement. Anything below this shall be deemed a failure and repainted at no additional cost.

711.41.3- Sampling and Testing Procedures for Performance Samples:

DELETE THE LAST TWO PARAGRPAHS OF THE SUBSECTION AND REPLACE WITH THE FOLLOWING:

During the life of the project, and within project limits, if any markings greater than 500 feet are found to be deficient for any reason, the Contractor shall be given notification stating the locations and the type of deficiency. Failed markings shall be defined and evaluated by an approved 30-meter device. The contractor shall completely replace all deficient markings, as directed by the engineer, within,(10) calendar days of written notification.

If the contractor does not complete the replacement of all deficient pavement markings by the end of the ten (10) calendar day placement period; or the contractor does not comply with the commencement or start date of the Recall Job Order, the contractor shall be subject to liquidated damages as described within Section 108.7 of the West Virginia Division of Highway’s Standard Specifications until replacement is completed or placement of the pavement markings has commenced. The start date of the entire work order will be within three (3) days after notification unless notified otherwise directed by the engineer. All work on the order shall be completed within ten (10) days of the start of the order. These liquidated damages shall be based on the total bid of the pavement marking contract. These liquidated damages shall not stop during the winter shutdown period and shall be in combination with any other liquidated damages incurred.

Failed pavement markings placed after November 1st, shall not be subject to liquidated damages, but will be replaced at the earliest opportunity barring weather limitations. No direct payment shall be made for replacement of any deficient marking during the warranty period as such work shall be considered as by incidental to the work as paid for by the various pavement marking items in the contract.

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WEST VIRGINIA

DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

FOR

STATE PROJECT NUMBER: _____

FEDERAL PROJECT NUMBER: _____

SECTION 494

COLD IN-PLACE RECYCLED ASPHALT PAVEMENT

494.1-DESCRIPTION:

This work shall consist of the processing and treatment with bituminous and/or chemical additives of existing asphalt pavement without heating to produce a restored pavement layer. Cold recycling consists of milling an existing asphalt pavement to a specified depth (3.0” minimum, 6” maximum), mixing an additive or additives with Reclaimed Asphalt Pavement (RAP) (when specified), spreading, and compacting the recycled mixture to a specified depth and/or cross slope. This is followed by a placement of a new asphalt base and/or surface course.

494.2-MATERIALS:

The cold recycled mixture shall consist of a homogeneous blend of reclaimed aggregate and/or reclaimed asphalt pavement, a recycling agent, and additives. The Contractor shall be responsible for determining what recycling agent and additives are necessary to produce an acceptable mix.

494.2.1-Reclaimed Material: Reclaimed Asphalt Pavement (RAP) shall either be removed from the existing pavement by a milling process or imported from an external location. In either case the material shall be generally clean, free of contamination of dirt, base material, concrete, or deleterious materials such as silt and clay. It shall be sized in a manner that results in 100% of the material passing through the 1.50” (37.5 mm) sieve.

Furthermore, any rubberized crack fillers, pavement markers, traffic detector loop wires, thermoplastic materials, fabrics, or any other such materials that are incorporated into the RAP as it is removed from the roadway shall be removed during the recycling process.

494.2.2-Recycling Agents: Recycling agents, such as ~~CSS Hasphalt~~ emulsions, shall be from an approved source, or sampled and tested prior to the mix design evaluation process for approval by the Engineer. Additionally, recycling agents delivered to the project may be sampled in the presence of the Engineer. The contractor shall place a representative sample in a clean plastic container, note the date of sample, material sampled, sampler, load number,

and gallons verified. The sample shall be provided to the Engineer for testing. Although estimated quantities have been considered for bidding purposes, the actual emulsion type and applicable usage rate shall be determined by the mix design.

494.2.3-Additives: Hydrated lime and/or Portland cement may be used as a catalyst at a small usage rate to increase the cohesion, to aid in curing, provide early strength gain and/or to address undesirable properties such as aggregate moisture susceptibility. However, if utilized, these materials should not be used in conjunction with anionic emulsions such as HF150.

Corrective aggregate may also be used in order to supplement the RAP utilized and help meet the performance requirements of the mix design.

Water may also be ~~be~~ added to the RAP at the milling head and/or in the mixing chamber to achieve uniform mixing and to lubricate the mix to facilitate compaction. Water added to the recycled asphalt concrete shall be clean and free from deleterious concentrations of acids, alkalis, salts, sugar and other organic, chemical or deleterious substances. The water shall not cause an adverse effect on either the recycling agent or the recycled pavement mixture. If the water is of questionable quality, it shall be tested in accordance with AASHTO T26 or according to local standards and procedures.

Any such additives used to help the mixing operation shall be from an approved source, or sampled and tested prior to the mix design evaluation process for approval by the Engineer prior to incorporation into the mix. At a minimum, the following requirements are also noted:

- (1.) **Portland Cement** – ASTM C 150, Type I or II in dry or slurry form.
- (2.) **Lime** – ASTM C 977
- (3.) **Corrective Aggregate** – Section 401.2

494.3 PRECONSTRUCTION SAMPLING AND MIX DESIGN:

The Division may perform preliminary sampling and testing of the existing pavement and provide the results of this evaluation in the project documents prior to bidding. The results of this evaluation would be for preliminary information only and not considered complete to develop full mix designs from. However, upon award of the contract, the Division will release any sample specimens obtained that may still be suitable to assist with the development of a mix design provided those samples are still available and/or intact.

Prior to construction operations, a mix design(s) shall be submitted by the Contractor for approval by the Division. The mix design shall be submitted at least two weeks before the CIR operations are to commence on the project. The mix design shall be performed with representative materials to be encountered during construction of the CIR mix. When the in-place materials indicate significant variability, additional mix designs shall be performed to establish representative mixes for the entire job.

Representative samples of the in-place ~~HMA asphalt pavement~~ shall be obtained directly from the project site by sampling in accordance with published methods from the Asphalt Recycling and Reclaiming Association (ARRA) or other reputable agencies, and delivered to a licensed Geotechnical or Materials Engineer and/or AASHTO approved laboratory experienced in cold recycled pavements where the ~~HMA existing material~~ shall be crushed and mixed with the recycling agent, water and any additives, if necessary. The mixture(s) shall then be executed and become the baseline measure for the rate of recycling agent application, water and other additives blended with the RAP to construct the recycled pavement mixture. The mix design(s)

shall indicate the allowable tolerance for the bituminous binder, additive, and corrective aggregate so as to not jeopardize the performance of the mix but allow the contractor to adjust the mix so that it may be placed successfully.

The mix design should be performed in an AASHTO certified laboratory. Minimum requirements for the mix design are shown in Table 494.3.

Test Method	Criteria	Property
Specified Compactive Effort SuperPave Gyrotory Compactor or Marshall Compaction Hammer	1.16° internal angle, 600 kPa stress, 30 gyrations or 75 blows each side	Density Indicator
Millings Gradation Test AASHTO T 27	Per Section III herein	Existing Gradation for Mix Design Analysis
Marshall Stability Test VTM-58 ^{note-1} (40° C)	2500 lbs. minimum	Stability Indicator
Retained Stability AASHTO T 245 ^{note-2}	70% minimum	Resistance to Moisture
Indirect Tensile Test (25°C)	45 psi minimum	Stability Indicator
Thermal Cracking AASHTO T 322 ^{note-3}	Meet FHWA LTPPBind Design Temperatures at CIR depth	Thermal Cracking
Raveling Stability ASTM D 7196 ^{note-4}	Maximum 2%	Resistance to Raveling

note-1 Sample compacted at room temperature and cured at 60° C to constant weight (maximum 48 hours).

note-2 Sample vacuum saturated to 55-75%, 25° C water bath for 23 hours and 40° C water bath for additional hour.

note-3

1. Specification temperature shall be chosen using current FHWA LTPPBind software, using the weather station closest to the project. The required temperature shall be the coldest temperature at the top of the recycled layer, using 98% reliability.
2. Samples shall be compacted to 150 mm diameter and at least 115 mm height, compacted to within 1% of design air voids at the design stabilizing agent content. Compacted samples shall be cured at 60° C no less than 48 hours. Before testing, sample mass shall be checked every two (2) hours until change in mass between successive checks does not exceed 0.05%. After curing, two (2) specimens shall be sawcut from each compacted sample to 50 mm in height. Perform bulk density testing after sawcutting.
3. Two (2) specimens are required at each of the three (3) testing temperatures.
4. Select two (2) testing temperatures that bracket the specification temperature above. For example, if the specification temperature is -25° C, then two (2) of the selected testing temperatures shall be -20° C and -30° C. A temperature of -10° C or -40° C shall be used as the third testing temperature.
5. The tensile strength test shall be performed on each specimen directly after the tensile creep test (at the same temperature as the creep test).
6. The critical cracking temperature is defined as the temperature at the intersection of the thermal stress curve (derived from the creep data) and the tensile strength line (the line connecting the average tensile strengths at the three testing temperatures).
7. To meet this specification, the critical cracking temperature predicted by the Indirect Tensile Test must be less than or equal to the pavement temperature given for the project climate area and pavement depth by LTPPBind.

note-4 4-hour cure at 10° C, 50% humidity

494.4 CONSTRUCTION

494.4.1-Equipment: The equipment for this operation shall produce the completed bituminous concrete pavement in-place as follows:

494.4.1.1-Mixing and Proportioning: A single processing unit capable of planning, sizing, and mixing all materials in-place and which is capable of placing the recycled bituminous material in a single pass. If applicable, a multi-unit train capable of planning, sizing, and mixing all materials in-place shall be utilized. Up-cutting machines shall not be permitted unless secondary crushing is conducted in-place prior to mixing and the introduction of the bituminous material. The cutting mandrel of the ~~rotomill~~mill shall be a minimum of 10.5' and shall not exceed 12.5'.

494.4.1.2-RotomillMilling Small or Narrow Locations: Recycling along curb, guardrail, gutter line, and around utilities shall be accomplished by the use of a small ~~rotomill~~milling machine. The small ~~rotomill~~milling machine shall ~~rotomill~~mill to a minimum depth of 4" longitudinally along all curbs and gutters, and around all manholes, inlets, and any other structure not accessible or practical to be ~~rotomill~~milled by either a single processing unit or a multi-unit train. The ~~rotomill~~milled product produced by the small ~~rotomill~~mill machine will be the same as the large ~~rotomill~~mill machine and of equal gradation to produce a uniform recycled bituminous pavement. The ~~rotomill~~milled material shall be removed and replaced with new recycled bituminous base course material or binder. Inlets/catch basins shall be covered during the ~~rotomill~~milling and recycling operation to prevent ~~rotomill~~milled material from entering the catch basin area where it could contaminate and/or block the storm water system.

Recycling adjacent to an existing asphalt shoulder shall be ~~rotomill~~milled to a depth of 4". The recycled base course material shall be compacted to the same elevation with the existing asphalt shoulders, leaving, no depressions or higher areas.

494.4.1.3-Paver: The processed recycled mixture shall be spread using a self-propelled unattached paver having electronic grade and cross slope control for the screeds. The equipment shall conform to Section 401.9.9. Additionally, the equipment shall be of sufficient size and power to spread the recycled material in one continuous pass, without segregation, to the lines and grades established by the Division and according to plans. A hopper insert shall be used to help prevent build-up of the mixture on the wings of the paver hopper. Unattached pavers shall be track driven and have a minimum power of 170 Hp. Heating of the screed will not be permitted. When an unattached paver is utilized then separate asphalt paver loading equipment will be necessary. The asphalt paver loading equipment shall be capable of picking up substantially all of the recycled pavement material and depositing it in the paver.

494.4.1.4-Rollers: At least one pneumatic tire roller (minimum 22.5 tons) operated at a maximum of 4 mph and one double drum vibratory steel-wheeled roller (minimum 10 tons), operated in a vibratory mode, shall be utilized at all times in the rolling operation. For projects specifying a 5 inch or greater compacted lift of mixture, an additional vibratory steel-wheeled roller shall be used.

494.4.2-Weather Limitations: Cold recycling operations shall be performed with asphalt emulsion when the atmospheric temperature in the shade is 55°F and rising and it is not foggy. Recycling operations shall not be performed when rain is occurring or night temperatures are forecast to fall below freezing.

494.4.3-General: Mixing of all reclaimed materials, aggregates, and emulsified asphalt shall be conducted in-place. The RAP, recycling agent, and additives shall be combined in the quantities required by the specifications or as directed by the Engineer. The mixing operation shall result in the RAP being completely and uniformly coated with recycling agent and additives, if used.

The mix in-place operation shall spread the required quantity of reclaimed material and aggregate, if required, on the prepared area in a uniform loose layer to obtain the specified compacted depth. Adjust the travel speed of the mixer to obtain a thorough and uniform mixture in a single pass.

Ensure that positive displacement pumps accurately meter the planned amount of bituminous material and the ~~rotomill~~ rotomill machine mixes it thoroughly with the RAP materials. The pump shall be mechanically or electronically interlocked with the ground speed of the machine. The bituminous metering system and water metering system shall be capable of continuous monitoring (gallons per minute) flow, and totalizing the quantity of bituminous material applied into the mixing chamber. The travel speed in feet of the ~~rotomill~~ rotomill shall be visible on the computer readout screen.

494.4.3.1-Field Gradation Check: The contractor shall obtain samples daily prior to the addition of emulsified asphalt and Portland cement, for the purposes of performing a field gradation. Gradations shall be performed on the moist millings using the No.4 sieve. The resulting gradation shall be compared to the bulk mix design gradations established prior to construction to determine if there may be any need to adjust the quantity of additives. In any case, if the field gradation differs from bulk gradations established during development of the JMF by more than 8 % the Engineer shall be immediately notified before production continues.

Sampling shall be done by a WV DOH certified aggregate technician or the Contractor's Engineer. Sampling procedures shall generally be in accordance with AASHTO T168 and ASTM D979. At a minimum, samples should be taken at the start of production each day. The samples shall be collected near the middle of the pass and should be taken so as to remove material from the full depth of the treated layer. A minimum of 20 pounds of untreated, pulverized moist millings shall be evaluated for each gradation.

The contractor should pulverize enough material to expose a minimum of 10 feet of length to obtain a sample from, but in no cases should more than 100 feet of roadway be pulverized without additives. If it has been determined that conditions warrant and a gradation is to be checked during the middle of daily production, the contractor will stop placing Portland on the road, turn off the emulsified asphalt and mark the location while continuing to pulverize the ~~hot-mix~~ existing asphalt pavement until there is sufficient length of untreated material exposed for sampling. Unless otherwise directed by the Engineer, after the Contractor collects the gradation sample, efforts will need to be taken to ensure that any additives be introduced into the material, the machine will be backed up to the location where the emulsified asphalt was turned off then re-pulverize this material with the required amount of additives.

494.4.4-Compaction: The Contractor shall maintain the equipment and personnel, including a WVDOH Certified Compaction Technician, necessary to ensure that the compacted mixture meets the requirements discussed herein. The Contractor shall design a workable Quality Control Plan detailing the personnel, equipment, and the type and frequency of testing necessary to measure and control the compaction of the mixture. The plan shall be prepared in accordance with the applicable sections MP 717.04.21, and modified as per the requirements of this special provision. This plan shall be submitted to the Engineer for approval prior to the commencement of construction operations.

After the cold recycled mixture has been spread, allowed to cure as necessary, and any surface irregularities corrected, the mat shall be uniformly compacted without displacement and cracking. During the first day of production, a control strip or trial section should be conducted to prove to the Division that the construction meets the requirements and to establish a target density for control of compaction. The control strip shall be constructed via MP 700.00.24 with the following exceptions:

1. Section 8.3 References to 100 ft. shall become 1000 ft.
2. Section 8.4 5 subsections shall become 10 subsections
3. Section 8.7 Begin with two passes instead of 12 passes
4. Section 8.16 “sites 3, 4, and 5.” shall become “sites 3 through 10.”
5. Section 8.17 “5 density readings” shall become “10 density readings”

If any additional Control Strips are necessary due to changing existing materials, the new Control Strip will revert back to 5 tests for an average Maximum Density in Sections 8.4, 8.16, and 8.17 within MP 700.00.24 and as discussed below.

The target density established during execution of the control strip should be based on the provisions discussed within MP 700.00.24 for determination of maximum density and also based on the number of passes which will provide a maximum density without unduly cracking the recycled layer.

The trial section shall be used for the contractor to also prove that the construction meets the requirements including:

- A. Demonstrating that the equipment, materials, and processes proposed can produce a recycled pavement material layer that conforms to the requirements;
- B. Determine the optimal rates for recycling agent, water and any additives recommended for the reclaimed asphalt pavement; and
- C. Determine the sequence and manner of rolling necessary to obtain the density requirements.

After the trial section, CIR operations will continue unless the contractor’s equipment and process fail to meet the requirements for successful completion of CIR operations. Recycling operations shall not continue beyond the first day unless a control strip has been approved by the owner agency. Control strips that do not meet requirements shall be reworked, recompact, or removed and replaced at the Contractor's expense. Upon acceptance of the control strip by the Division, the contractor shall use the same equipment, materials, and construction methods for the remainder of recycling operations, unless adjustments made by the contractor are approved by the Division. If adjustments are made, the contractor shall produce a new trial section.

The contractor shall then perform compaction testing using nuclear moisture-density gauges during production to ensure that compaction is between 97 and 102 percent of the target established in the control strip. Compaction testing should be performed at least once every 1,000 square yards of compacted recycled pavement or 10 tests per day, whichever results in the most tests. The Division may also provide compaction testing in order to help monitor the process and facilitate the work, but these tests will not serve as acceptance tests.

When two successive density tests indicate compaction is over 102 percent, a new test section and rolling pattern should be established as it is likely that differing materials or conditions have been encountered.

494.4.5-Surface Tolerance: The surface shall be tested with a 10' straightedge at locations selected by the Engineer. The variation of the surface from the testing edge of the straightedge between any two contacts, longitudinal or transverse with the surface, shall not exceed 3/8". Irregularities exceeding the specified tolerance shall be corrected by and at the expense of the Contractor.

494.4.6-Depth Check: The Division will perform depth check by means of MIT-SCAN-T2. MIT-SCAN-T2 is a device that uses pulse induction technology to non-destructively measure the thickness of pavement layers during construction without the requirement for coring. Reflector plates will be placed by Division personnel between the miller and the paver during construction at a rate of 2 per 2,500 SY. After compaction of the CIR layer and prior to overlay, Division personnel will measure thickness. The contractor shall provide one drilled core for each 1000² or less of completed recycled bituminous pavement in order to determine the depth. This work shall be accomplished in the presence of the Engineer. The Contractor shall remove and replace any section deficient by 1/2" or greater from the specified depth at no expense to the ~~Department~~Division. Should the Contractor dispute the accuracy of the Division's scan, the Contractor will be allowed to drill cores located at scan locations to measure thickness at no expense to the Division.

~~If such deviations are apparent, additional cores may be evaluated to further define the deficient areas within the roadway.~~

494.4.7-Protection and Curing: After compaction has been achieved, and prior to opening the cold in-place recycled pavement layer to traffic, a fog seal shall be applied to the recycled pavement surface. The fog seal shall be composed of either CSS-1h or SS-1h emulsified asphalt diluted 50 percent by volume with water or an engineered emulsion, if utilized as a fog seal, the recycling agent may be diluted up to 60 percent by volume with water. The fog seal shall be applied at a rate of 0.05 to 0.15 gal/yd², (0.2 to 0.7 L/m²). When a sand blotter is required for protection, it shall be applied to the surface at approximately 2 to 3 lb. / 2 yd., (1 to 5 kg/m²). Sand shall be free from clay or organic material. The application rates of the fog seal and sand blotter shall be determined by the Contractor and shall be such that a stable and safe roadway surface can be maintained until the surface is overlaid.

Prior to placing the wearing course or secondary compaction, if required, the CIR shall cure for a minimum of 3 days. The moisture content shall be less than 3.0 percent. If the moisture content does not fall below the maximum limit of 3.0 percent after 10 days and if the roadway has been free of rain for a minimum of 2 days, the contractor shall be permitted to place the wearing course or perform the secondary compaction, if required.

494.4.8-Surface Course: The final surfacing shall be as defined by the project Typical Section. Compaction testing of the surface course shall be performed by Lot-by-Lot method described in section 401 of the standard specifications.

494.5-METHOD OF MEASUREMENT:

The quantity of cold recycled bituminous pavement will be measured as the number of square yards per inch of depth shown on the Plans, completed and accepted. The depth will be verified and corrected based on thickness measurements.

~~of the cores.~~

494.6-BASIS OF PAYMENT:

The quantity of cold in-place recycled asphalt pavement will be paid for at the Contract unit price per square yard per inch of depth. Price and payment will constitute full compensation for preparing the sub grade, supplying, mixing, placing and compacting the cold recycled bituminous pavement material, removing any excess material from the site and properly disposing of it, and any other incidental items associated with this item.

The quantities of emulsified asphalt recycling additive and Portland cement or hydrated lime (if required) will be paid for at the Contract unit price per ton. Price and payment will constitute full compensation for furnishing, mixing and applying the emulsified asphalt or Portland cement, and for all labor, equipment, tools and incidentals required to complete the work. Emulsified asphalt will be paid for under its respective item.

The quantity of any corrective aggregate required will be paid for at the Contract unit price per ton.

If it is determined that other additives such as hydrated lime are required, they will be paid at the Contract unit price per ton.

494.7-PAY ITEMS:

ITEM	DESCRIPTION	UNIT
494010-*	Cold In-Place Recycling	Square Yard (Meter)
494011-*	Asphalt Recycling Agent	Tons (Megagrams)
494012-*	Corrective Aggregate	Tons (Megagrams)
494013-*	Portland Cement	Tons (Megagrams)
494014-*	Hydrated Lime	Tons (Megagrams)

*Sequence Number

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SPECIAL PROVISION

FOR

STATE PROJECT NUMBER: _____

FEDERAL PROJECT NUMBER: _____

FOR

SECTION 521

FULL DEPTH RECLAMATION ~~WITH CEMENT~~

521.1-DESCRIPTION:

This work consists of pulverizing and mixing a combination of virgin aggregate (if/where specified), Reclaimed Asphalt Pavement, Reclaimed Aggregate Material, and Subgrade Material to the length, width, and depth specified in the contract documents. Once pulverized, add the Chemical Stabilizing additives as per the ~~project-job mix design formula, and~~ mix the materials together, grade, and compact in place to create a chemically stabilized base course. ~~This work also consists of shaping, finishing, fine grading, and compaction of the reclaimed base material.~~

521.2-MATERIAL:

521.2.1-Reclaimed Material: 95% of the pulverized surface material is required to pass through a 2 inch (50 mm) sieve and 55% passing the 3/8 inch (9.5mm) sieve. Incorporate all reclaimed material into the stabilized base.

521.2.1.1-Reclaimed Aggregate Material (RAM): In-situ aggregate material which is incorporated in the stabilization.

521.2.1.2-Reclaimed Asphalt Pavement (RAP): Processed paving material containing asphalt cement and aggregates.

521.2.2-Stabilizing Agents: The amount of stabilizing agents to be used shall be determined by the Contractor by mean of a mixture design process and the establishment of an approved Job Mix Formula (JMF) for each specific project.

521.2.2.1-Cement: Section 701.1, 3% to 810% by weight as called for in the ~~contract documents and determined during pre-construction sampling and testing~~

~~activities by the contractor to establish a project mix design~~JMF. A change in cement content may be directed by the Engineer during construction based on changes in field condition.

521.2.2.2 – Emulsified Asphalt: Approved emulsion from an approved source meeting the requirements of Section 703. When specifically designed emulsions are to be used the contractor shall provide the Division with a sample of the material prior to construction accompanied with a data sheet of the manufactures testing. Continued samples will be taken and tested through the project to verify the material.

521.2.2.3-Foamed Asphalt: Liquid asphalts used as foamed asphalt stabilizer shall be PG graded and on the current West Virginia approved source list.

521.2.2.4-Other Stabilizing Agents: The use of fly ash, hydrated lime, or other agents will be permitted so long as they agent conforms to the established West Virginia standard specification or are otherwise pre-approved by the Engineer.

521.2.3-Aggregate: Section 703: Sizes 8, 10, 57, and 67. Add the gradation and quantity to the mix as required by the ~~project mix design~~JMF. Processed and graded RAP from other sources is permitted so long as the JMF mix design has included this RAP.

521.2.4-Mix Design: Contract duties include ~~removal of~~obtaining samples of RAP, RAM, and subgrade soils ~~(if needed)~~ to the specified depth and perform appropriate testing to establish a project mix design and JMF. The mix design shall be submitted to the ~~District Construction Engineer and the State Materials Engineer, Pavement Engineer or other representative~~Division for approval at least two weeks before the planned start of work.

The Division may provide some preliminary testing including non-destructive data such as Ground Penetrating Radar, Falling Weight Deflectometer measurements, and a preliminary subsurface investigation with associated laboratory analysis. However, the agency is not required to do so in this specification and if such information is provided, it is only ~~being provided~~ for informational purposes to help facilitate the required investigation by the contractor and in no way should be viewed as the final values for mix design or otherwise.

521.2.4.1-Mixture: Samples must be obtained inclusive of the depth to be recycled. Sampled materials must be properly processed and prepared to closely simulate field conditions. A qualified Geotechnical Representative will analyze the samples and provide the following information as part of the mix design to the ~~owner representatives~~Division as described in 521.2.4.

1. Location and type of all samples obtained.
2. Thickness and description of existing pavement and aggregate layers to be reclaimed.
3. Moisture Contents of layers AASHTO T 265
4. Gradation of Pavement Layers AASHTO T 30
5. Gradation of Aggregate Base AASHTO T 27 and T 11
6. Moisture-Density Relationship of Reclaimed Materials AASHTO T 99, Method C
7. Moisture-Density Relationship of Combined Materials with additive AASHTO T 134, Method B
8. Full Soils Classification*

*If the depth being reclaimed includes at least 20% underlying subgrade soils, then a full classification shall be performed. This will include AASHTO T 88, *Standard Method of Test for Particle Size Analysis of Soils*, AASHTO T 89, *Standard Test Method for Determining the Liquid Limit of Soils*, and AASHTO T 90, *Standard Method of Test for Determining the Plastic Limit and Plasticity Index of Soils*. Unconfined compressive testing should also be performed and completed in accordance with AASHTO T 208 (ASTM D 2166), *Standard Method of Test for Unconfined Compressive Strength of Cohesive Soil*.

521.2.4.2 – Strength Requirements: Make, cure, and test three unconfined compressive strength specimens of FDR material and Cement-stabilizing agent(s) in accordance with ASTM D 1633, Method A. The specimens should be molded at a density of at least 98% of the maximum density established using AASHTO T134, Method B, *Standard Method of Test for Moisture-Density Relations of Soil-Cement Mixtures*. Once fabricated, each specimen shall be wrapped in plastic wrap then sealed in an airtight, moisture-proof bag and cured for a period of 7 days. The final mix design will be based on a targeted percentage of ement-stabilizing agent(s) which provides an average unconfined compressive strength of the three specimens between 200 psi and 500 psi at 7 days.

Mix designs resulting in an average strength up to 600 psi may be used in some cases as needed. However, note that any mix design resulting in strengths at the high end of the range discussed above or any resulting in strengths above that range and up to 600 psi should be carefully evaluated for use. A system of pre-cracking is likely necessary to be used during early strength gain in field applications in order to prevent very high strengths that could result in excessive block-cracking of the prepared reclaimed section.

521.3-CONSTRUCTION:

521.3.1-Equipment: Use equipment that will produce the completed chemical stabilized base as follows:

521.3.1.1: Use equipment capable of automatically metering liquids with a variation of not more than $\pm 2\%$ by mass (weight) of liquids. Calibrate before use.

521.3.1.2: Maintain all equipment in a satisfactory operating condition as specified in Section 108.5.

521.3.1.3-Reclaimer: Use a self-propelled, traveling rotary reclaimer or equivalent machine capable of cutting through existing roadway material to depths of up to 16 inches (406 mm) with one pass. The equipment will be capable of pulverizing “in-place” the existing pavement, base and subgrade at a minimum width of **6 feet (1.83 meters)**, and mixing any added materials to the specified depth. The cutting drum must have the ability to operate at various speeds (rpm), independent of the machines forward speed, in order to control oversized material and gradation.

Use a machine equipped with a computerized integral liquid proportioning system capable of regulating and monitoring the water application rate relative to depth of cut, width of cut, and speed. ~~Have the water pump on the machine connected by a hose to the supply tanker/distributor, and mechanically or electronically interlocked with the forward movement/ground speed of the machine.~~ Have a Mmounted the spray bar to allow the

water or other stabilizing agents to be injected directly into the cutting drum/mixing chamber. Provide equipment capable of mixing water, dry additives, wet additives, and the pulverized pavement materials into a homogenous mixture. Keep the cutting drum fully maintained and in good condition at all time throughout the project.

521.3.1.4-Placement Equipment: Motor Grader or other methods approved by the Engineer.

521.3.1.5-Compaction Equipment: Use sufficient equipment to obtain 98% of the required density based on the mix design.

521.3.2 – Weather Limitations: Do not place paving mixtures from November-October 1 to March 31 unless allowed in writing by the Engineer. Do not place mixtures when surfaces are wet or frozen or when the air or surface temperature is 40° F (4° C) or below. Do not place mixtures when overnight temperatures are expected to fall below 32 degrees or if temperatures are anticipated within 7 days of the end of placement.

521.3.3-General: Full Depth Reclamation (FDR) consists of a series of steps that include pulverization and mixing of the existing roadway surface between 5 – 16 inches (125 and 406 mm) in depth with the aggregate base.

521.3.4-Pulverization/Shaping: Before the application of any stabilizing additives pulverize the roadway materials to the depth specified by the project mix design. Shape to within 1¼ inch (32mm) of irregularity to the lines, grades and/or cross-slope of the proposed roadway and compacted until no further densification is achieved. Protect all manholes, valve covers, or other buried structures from damage prior to pulverizing. Water will be added to the pulverized material to adjust the moisture content to at least Optimum Moisture Content (OMC), but no more than 3% over OMC. Addition of this water can be done through the machines liquid additive system and/or through top watering. After acceptance by the Engineer the additive spreading and mixing will be done as described below.

521.3.4.1-Additive Application:

521.3.4.1.1-Cement: Upon completion of the pulverization pass the stabilizing additives previously outlined will be applied at the rate established by the contract documents. The additive will be accurately and uniformly spread on the pulverized pavement by using an adjustable rate auger/vane type dry additive distributor. The contractor will provide a 1 square yard (0.84 square meter) canvas swatch and scale to check the application rate of the spreader. Dry additives will be spread in a manner to minimize dusting. The dry additive will not be applied when the wind conditions, in the opinion of the Engineer, are such that blowing additives become objectionable to traffic or adjacent property owners. Manual and/or gravity (tail gate) spreading of the additives is unacceptable.

521.3.4.1.2-Cement Slurry: If slurries are to be used, the distributor and tanker trucks will be equipped with a recirculating pump and/or agitation system to prevent settling of the materials before application.

521.3.4.1.3-Asphalt Emulsion: Injection into the pulverized mix shall be conducted by use of a spray bar in the mixing chamber of the pulverizing equipment.

521.3.4.1.4-Foamed Asphalt: Both foaming and injection of PG graded asphalt shall be done in process of mixing with the pulverizing equipment and in accordance with the JMF.

521.3.5-Stabilization/Mixing: Once the cement-stabilizing agent is applied thoroughly mix the cement-agent and pulverized pavement together at the design specified treatment depth while simultaneously injecting any additional water needed (if any) through the machines computerized integral liquid proportioning system to create a homogenous mixture. The moisture content before compaction cannot be more than 3% over OMC.

521.3.6-Compaction: Shape, grade and compact to the lines, grades, and depth shown on the plans and cross sections after the material has been processed. Commence rolling at the low side of the course. Leave 3 to 6 inches (80 to 150 mm) from any unsupported edge(s) unrolled initially to prevent distortion. Compaction should be completed as soon as possible after the application of the cement-stabilizing agents and water.

Determine the in-place density requirements by the construction of at least one control strip. A control strip shall be constructed to determine the Maximum Density via MP 700.00.24 with the following exceptions:

1. Section 8.3 References to 100 ft. shall become 300 ft.
2. Section 8.4 5 subsections shall become 10 subsections
3. Section 8.7 12 roller passes will be less, start with two passes
4. Section 8.10 Backscatter shall be used in lieu of Direct Transmission
5. Section 8.16 "sites 3, 4, and 5." shall become "sites 3 through 10."
6. Section 8.17 "5 density readings" shall become "10 density readings"

If any additional Control Strips are necessary due to changing existing materials, the new Control Strip will revert back to 5 tests for an average Maximum Density in Sections 8.4, 8.16, and 8.17 within MP 700.00.24 and as discussed below.

Compact the chemically stabilized base to a target density of at least 98% of the average in-place density of the control strip. Determine the in-place density for each 3000 square yard (2500 square meter) area. If the density of an area is less than the minimum density, but the base course is uniform in texture, stable and otherwise acceptable, try additional compaction. If additional compaction does not achieve the minimum density, complete an additional control strip in order to verify that proper density is being obtained. Take a minimum of five tests at random locations to determine the average in-place density of the control strip. The new minimum density is 98% of the average in-place density.

If it is determined that the contractor is achieving the minimum density with minimum compactive effort, the Engineer may require a new control strip to verify or establish a new minimum density.

If the completed chemically stabilized base is unacceptable for any reason do not continue construction until the cause of any deficiencies is determined and corrected.

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521.3.7-Finishing: Complete all portions of the chemical stabilized base during daylight hours, unless otherwise allowed.

521.3.8-Protection: Protect any finished portion of the chemical stabilized base upon which any construction equipment is required to travel, and accesses to private property to prevent marring, distortion or damage of any kind. Immediately and satisfactorily correct any such damage.

521.3.9-Surface Tolerance: When directed by the Engineer, test the completed chemical stabilized base for smoothness and accuracy of grade, both transversely and longitudinally using suitable templates and straightedges. Satisfactorily correct any 3000 square yard (2500 square meter) area where the average surface irregularity exceeds 3/4 inch (19 mm) under a template or straightedge, based on a minimum of at least three measurements.

521.3.10-Curing: Protect the surface from drying until surface treatment of pavement surface is placed. This shall be accomplished by application of a bituminous or other approved membrane as soon as possible, but no later than 24 hours after completing finishing operations. The surface shall be kept continuously moist prior to application of the curing membrane. Bituminous membrane shall consist of an asphalt emulsion fog seal applied uniformly across the surface at a rate of 0.10 to 0.20 gal/yd² (0.4 to 0.8 L/m²). Any excess material should be covered with sand.

521.3.11-Surface Course: The final surfacing shall be as defined by the project **Typical Section documents**.

521.4-METHOD OF MEASUREMENT:

The quantity of Full Depth Reclamation to be paid for will be the number of square yards (square meters) complete in place and accepted. The width for measurement will be the width of the pavement shown on the surface of the typical section of the Plans and additional widening where called for or as otherwise directed by the Engineer. The length will be measured on the surface along the centerline of the roadway.

All Cement, **Asphalt** and Aggregate materials required for Full Depth Reclamation will be paid for under their respective items as shown in Section 521.6 – Pay Items. Weigh tickets will be used to establish the pay quantity for final payment.

521.5-BASIS OF PAYMENT:

The quantities, determined as provided above, will be paid for at the contract unit price bid for the item listed below, which prices and payments shall be full compensation for furnishing all the materials and performing all the work prescribed in a workmanlike and acceptable manner, including all incidentals necessary to complete the work.

521.6-PAY ITEMS:

ITEM	DESCRIPTION	UNIT
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521010-*	Full Depth Reclamation	SY (METER)
521011-*	Cement	Ton (Megagram)
521012-*	Aggregate	Ton (Megagram)
521013-*	Asphalt Stabilizing Agent	Gallon (Litter)

*Sequence Number

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
SPECIAL PROVISION
FOR
SECTION 663
PAVEMENT MARKINGS

DRAFT

663.3-TYPES OF PAVEMENT MARKINGS:

REPLACE SUBSECTIONS 663.3.1 AND 663.3.2 WITH THE FOLLOWING:

663.3.1-Edge Lines: Edge lines shall be continuous or dashed, white or yellow beaded stripes, six (6) inches (100 mm) or eight (8) inches (150 mm) in width, as specified on the Plans or otherwise in the pavement marking standards. Color to be specified on the Plans. Center of stripe shall be located six (6) inches (150 mm) from the edge of the pavement or as otherwise specified on the Plans.

Dashed edge lines shall be applied in lengths of two (2) feet (0.6 m), separated by gaps of six (6) feet (1.8 m), or as otherwise specified on the Plans.

663.3.2-Lane Lines and Centerline: Lane lines and centerlines shall be lines between contiguous lanes of pavement. They shall be continuous, broken, or dashed, white or yellow beaded stripes six (6) inches (150mm) or eight (8) inches (200mm) in width, as specified on the Plans or otherwise in the pavement marking standards.

Lane lines and broken centerline lines shall be applied in lengths of ten (10) ft. (3m), separated by gaps of thirty (30) ft. (9m). Dashed lane lines shall be applied in lengths of two (2) ft. (0.6m) separated by gaps of thirteen (13) ft. (4m), or lengths of three (3) ft. (0.9m) separated by gaps of nine (9) ft. (2.7m), as specified on the Plans or otherwise in the pavement marking standards.

When applied to bituminous surfaces, the center of single stripes shall be centered about the dividing line between the contiguous lanes. When applied to Portland cement concrete pavement, the near edge of single stripes shall be offset to the left and four (4) inches (100 mm) from the longitudinal joint. Double yellow centerlines shall be centered about the dividing line between the contiguous lanes, with the gap between the stripes being equal to the width of the stripes.

663.5-APPLICATION:

REPLACE SUBSECTION 663.5.2 WITH THE FOLLOWING:

663.5.2-Temporary and Permanent White or Yellow Traffic Zone Paint: Pavement marking lines shall be straight or of uniform curvature and shall conform to the tangents, curves, and transitions as specified in the Plans, the pavement marking standards, and/or as directed by the Engineer.

The finished lines shall have well-defined edges and be free of horizontal fluctuations. The lateral deviation shall not exceed 0.5 inch (13 mm) from the proposed location alignment as specified herein, on the Plans, in the pavement marking standards, and/or as directed by the Engineer.

When striping interchanges and intersections, material shall be applied for the full length of all ramps and the entire perimeter surrounding islands and gore areas. When striping at-grade intersections, yellow edge lines shall be placed completely around and shall be connected at the median ends.

The Contractor shall be responsible for removing all pavement marking materials spilled upon the roadway surface or adjoining area. The Contractor shall use methods acceptable to the Engineer for removing the spilled material.

Any pavement marking which is crossed by a vehicle and tracked shall be replaced and any subsequent marking made by the vehicle shall be removed by methods acceptable to the Engineer and at no additional cost to the Department.

Unless otherwise specified, the Contractor shall be responsible for coding and spotting per the Plans or otherwise the pavement marking standards. The Contractor's coding and spotting shall be reviewed and approved by the Engineer prior to application.

The Contractor will be responsible for cleaning any Raised Pavement Marker (RPM) lenses that are painted during this Contract. If the RPMs are not able to be cleaned, the Contractor shall replace the effected RPM lenses.

Permanent Traffic Paint shall be Type II, White or Yellow Fast- Dry Traffic Paint as described in Materials sections 711.41, unless otherwise specified in the Contract Plans. In regards to ambient air temperature, the Contractor shall utilize an appropriate pavement marking material such that the ambient air temperature at the time of application is within the recommended ambient air application temperatures specified by the material manufacturer. This requirement shall apply to both temporary and permanent traffic zone paint. The Contractor shall not be granted any time extensions to the requirements for the application of temporary or permanent markings, based on ambient air temperature, when the ambient air temperature is thirty-five (35) degrees Fahrenheit (1.7 degrees Celsius) or above. The Contractor shall not be paid any additional monies in order to provide materials suitable for cold weather application. Whenever temporary or permanent traffic zone paint is applied at an ambient air temperature below fifty (50) degrees Fahrenheit (10 degrees Celsius), the Contractor shall provide, upon request by the WVDOH, a certification letter from the marking material manufacturer. This certification letter shall reference the project number, shall identify the marking material supplied for the project, and shall state the minimum acceptable ambient air temperature for application of the material.

Temporary traffic paint shall be applied at the same width as will be used for the permanent markings.

ADD THE FOLLOWING SUBSECTION:

663.5.2.2-Contractor's Warranty: The Contractor shall warranty the performance of temporary traffic zone paint for a period of thirty (30) Calendar Days after application, and shall warranty the performance of Type II permanent traffic zone paint through October 31st. If the Type II markings are placed on or after November 1st, the markings shall only be required to meet the initial performance requirements specified in the Materials Section. The required performance level of the markings are described in Section 711.41.

During the warranty periods, if any markings greater than 1000 feet (305 m) are found to be deficient for any reason, the Contractor will be given notification stating the locations and the type of deficiency. These notifications will be given at any time within the specified warranty periods for the markings. The Contractor shall completely replace the deficient markings, as directed by the Engineer, within twenty (20) calendar days of the written notification. Retroreflectivity and color may be checked after re-application of the pavement marking to ensure that segment meets the minimum values specified in Section 711.41.

If the Contractor does not complete the replacement of all of the deficient pavement markings by the end of the twenty (20) calendar day replacement period, and the Contract has not been finalized, the Contractor shall be subject to liquidated damages as described within Section 108.7 until replacement is completed. These liquidated damages shall not stop during the winter shut-down period. No direct payment shall be made for the replacement of any deficient pavement marking during the warranty period as such work shall be considered as incidental to the work as paid for by the various pavement marking items in the Contract.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SUPPLEMENTAL SPECIFICATION

FOR

SECTION 110

MISCELLANEOUS PROVISIONS

110.2 – MINIMUM WAGE DETERMINATIONS:

DELETE THE ENTIRE CONTENTS AND REPLACE WITH THE FOLLOWING:

110.2 – BLANK:

~~—The West Virginia Prevailing Wage Rates for the construction of public improvements and Prevailing Wage Labor Classifications in effect at the time of the bid opening will become a part of the contract documents by reference. The West Virginia Prevailing Wage Rates do not apply to contracts whose cost at the time of Award is equal to Five Hundred Thousand Dollars (\$500,000) or less.~~

~~—The West Virginia Prevailing Wage Rates may be found by accessing the West Virginia Secretary of State’s Prevailing Wage Rates website at the following link:
<http://www.sos.wv.gov/administrative-law/wagerates/Pages/default.aspx>~~

~~—A printed version can be obtained from the Secretary of State’s Office or from the West Virginia Division of Highways, Contract Administration Division.~~

~~—If the Proposal contains U.S. Department of Labor Wage Rates and West Virginia Prevailing Wage Rates apply, the minimum wage paid shall be the higher rate for each labor classification.~~

~~If the Proposal contains U.S. Department of Labor Wage Rates and West Virginia Prevailing Wage Rates do not apply, the minimum wage paid shall be the U.S. Department of Labor Wage Rates.~~

~~The Prevailing Wage Classification Work descriptions may be found posted on Contract Administration’s Prevailing Wage rates website at the following link:
<http://www.transportation.wv.gov/highways/contractadmin/prevailing-Wage-rates/Pages/PrevailingWageWorkerClassifications.aspx>.~~

~~—A printed version can be obtained from the West Virginia Division of Highways, Contract Administration Division.~~

**REQUIRED CONTRACT PROVISIONS
FEDERAL-AID CONSTRUCTION CONTRACTS**

- I. General
- II. Nondiscrimination
- III. Nonsegregated Facilities
- IV. Davis-Bacon and Related Act Provisions
- V. Contract Work Hours and Safety Standards Act Provisions
- VI. Subletting or Assigning the Contract
- VII. Safety: Accident Prevention
- VIII. False Statements Concerning Highway Projects
- IX. Implementation of Clean Air Act and Federal Water Pollution Control Act
- X. Compliance with Governmentwide Suspension and Debarment Requirements
- XI. Certification Regarding Use of Contract Funds for Lobbying

3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.

4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors.

ATTACHMENTS

A. Employment and Materials Preference for Appalachian Development Highway System or Appalachian Local Access Road Contracts (included in Appalachian contracts only)

II. NONDISCRIMINATION

The provisions of this section related to 23 CFR Part 230 are applicable to all Federal-aid construction contracts and to all related construction subcontracts of \$10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under Title 23 (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services).

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR 60, 29 CFR 1625-1627, Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding \$10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services). The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR 60, and 29 CFR 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), and Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

Contracting agencies may reference Form FHWA-1273 in bid proposal or request for proposal documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract).

The following provision is adopted from 23 CFR 230, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.

1. Equal Employment Opportunity: Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630, 29 CFR 1625-1627, 41 CFR 60 and 49 CFR 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under

this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract.

b. The contractor will accept as its operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."

2. EEO Officer: The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.

3. Dissemination of Policy: All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. Recruitment: When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.

c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.

5. Personnel Actions: Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.

6. Training and Promotion:

a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are

applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.

7. Unions: If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. Actions by the contractor, either directly or through a contractor's association acting as agent, will include the procedures set forth below:

a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.

b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.

8. Reasonable Accommodation for Applicants / Employees with Disabilities: The contractor must be familiar

with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established there under. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.

9. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment: The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.

a. The contractor shall notify all potential subcontractors and suppliers and lessors of their EEO obligations under this contract.

b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

10. Assurance Required by 49 CFR 26.13(b):

a. The requirements of 49 CFR Part 26 and the State DOT's U.S. DOT-approved DBE program are incorporated by reference.

b. The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the contracting agency deems appropriate.

11. Records and Reports: The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number and work hours of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women;

b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on [Form FHWA-1391](#). The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor

will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of \$10,000 or more.

The contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location, under the contractor's control, where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

IV. DAVIS-BACON AND RELATED ACT PROVISIONS

This section is applicable to all Federal-aid construction projects exceeding \$2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size). The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. Contracting agencies may elect to apply these requirements to other projects.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 "Contract provisions and related matters" with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

1. Minimum wages

a. All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions

of paragraph 1.d. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph 1.b. of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

b. (1) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(ii) The classification is utilized in the area by the construction industry; and

(iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(2) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(3) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. The Wage and Hour Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or

will notify the contracting officer within the 30-day period that additional time is necessary.

(4) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs 1.b.(2) or 1.b.(3) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

c. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

d. If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program. Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

2. Withholding

The contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract, or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the contracting agency may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

3. Payrolls and basic records

a. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-

Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

b.(1) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the contracting agency. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at <http://www.dol.gov/esa/whd/forms/wh347instr.htm> or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the contracting agency for transmission to the State DOT, the FHWA or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the contracting agency..

(2) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(i) That the payroll for the payroll period contains the information required to be provided under §5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under §5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(ii) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(3) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(2) of this section.

(4) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

c. The contractor or subcontractor shall make the records required under paragraph 3.a. of this section available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the FHWA may, after written notice to the contractor, the contracting agency or the State DOT, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and trainees

a. Apprentices (programs of the USDOL).

Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice.

The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly

rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

b. Trainees (programs of the USDOL).

Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration.

The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration.

Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

d. Apprentices and Trainees (programs of the U.S. DOT).

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

6. Subcontracts. The contractor or subcontractor shall insert Form FHWA-1273 in any subcontracts and also require the subcontractors to include Form FHWA-1273 in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

7. Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

9. Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of eligibility.

a. By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

c. The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

The following clauses apply to any Federal-aid construction contract in an amount in excess of \$100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

1. Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

2. Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (1.) of this section, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1.) of this section, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1.) of this section.

3. Withholding for unpaid wages and liquidated damages. The FHWA or the contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2.) of this section.

4. Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (1.) through (4.) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1.) through (4.) of this section.

VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System.

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).

a. The term "perform work with its own organization" refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions:

(1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;

(2) the prime contractor remains responsible for the quality of the work of the leased employees;

(3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and

(4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract.

2. The contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is

evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

5. The 30% self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements.

VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C.3704).

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

By submission of this bid/proposal or the execution of this contract, or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any person who is or will be utilized in the performance of this contract is not prohibited from receiving an award due to a violation of Section 508 of the Clean Water Act or Section 306 of the Clean Air Act.

2. That the contractor agrees to include or cause to be included the requirements of paragraph (1) of this Section X in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements.

X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost \$25,000 or more – as defined in 2 CFR Parts 180 and 1200.

1. Instructions for Certification – First Tier Participants:

a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this

covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default.

d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.

g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (<https://www.epls.gov/>), which is compiled by the General Services Administration.

i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

* * * * *

2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:

a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:

(1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency;

(2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification; and

(4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

2. Instructions for Certification - Lower Tier Participants:

(Applicable to all subcontracts, purchase orders and other lower tier transactions requiring prior FHWA approval or estimated to cost \$25,000 or more - 2 CFR Parts 180 and 1200)

a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which

this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (<https://www.epls.gov/>), which is compiled by the General Services Administration.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the

department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

* * * * *

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency.

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

* * * * *

XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed \$100,000 (49 CFR 20).

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier subcontracts, which exceed \$100,000 and that all such recipients shall certify and disclose accordingly.

**ATTACHMENT A - EMPLOYMENT AND MATERIALS
PREFERENCE FOR APPALACHIAN DEVELOPMENT
HIGHWAY SYSTEM OR APPALACHIAN LOCAL ACCESS
ROAD CONTRACTS**

This provision is applicable to all Federal-aid projects funded under the Appalachian Regional Development Act of 1965.

1. During the performance of this contract, the contractor undertaking to do work which is, or reasonably may be, done as on-site work, shall give preference to qualified persons who regularly reside in the labor area as designated by the DOL wherein the contract work is situated, or the subregion, or the Appalachian counties of the State wherein the contract work is situated, except:

a. To the extent that qualified persons regularly residing in the area are not available.

b. For the reasonable needs of the contractor to employ supervisory or specially experienced personnel necessary to assure an efficient execution of the contract work.

c. For the obligation of the contractor to offer employment to present or former employees as the result of a lawful collective bargaining contract, provided that the number of nonresident persons employed under this subparagraph (1c) shall not exceed 20 percent of the total number of employees employed by the contractor on the contract work, except as provided in subparagraph (4) below.

2. The contractor shall place a job order with the State Employment Service indicating (a) the classifications of the laborers, mechanics and other employees required to perform the contract work, (b) the number of employees required in each classification, (c) the date on which the participant estimates such employees will be required, and (d) any other pertinent information required by the State Employment Service to complete the job order form. The job order may be placed with the State Employment Service in writing or by telephone. If during the course of the contract work, the information submitted by the contractor in the original job order is substantially modified, the participant shall promptly notify the State Employment Service.

3. The contractor shall give full consideration to all qualified job applicants referred to him by the State Employment Service. The contractor is not required to grant employment to any job applicants who, in his opinion, are not qualified to perform the classification of work required.

4. If, within one week following the placing of a job order by the contractor with the State Employment Service, the State Employment Service is unable to refer any qualified job applicants to the contractor, or less than the number requested, the State Employment Service will forward a certificate to the contractor indicating the unavailability of applicants. Such certificate shall be made a part of the contractor's permanent project records. Upon receipt of this certificate, the contractor may employ persons who do not normally reside in the labor area to fill positions covered by the certificate, notwithstanding the provisions of subparagraph (1c) above.

5. The provisions of 23 CFR 633.207(e) allow the contracting agency to provide a contractual preference for the use of mineral resource materials native to the Appalachian region.

6. The contractor shall include the provisions of Sections 1 through 4 of this Attachment A in every subcontract for work which is, or reasonably may be, done as on-site work.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SUPPLEMENTAL SPECIFICATION

FOR

SECTION 110

MISCELLANEOUS PROVISIONS

110.4-PROVISIONS FOR WEST VIRGINIA STATE FUNDS CONTRACTS:

DELETE THE CONTENTS AND REPLACE WITH THE FOLLOWING:

110.4.1-Applications: These contract provisions shall apply to all work performed on the Contract by the Contractor with their own organization and with the assistance of employees under their immediate superintendence and to all work performed on the Contract by piece work, station work, or by subcontract.

110.4.2-Employment Lists, Labor Selection: A local public employment agency will be designated by the State to prepare the employment lists for the project. At, or prior to contract award, the Contractor will be advised of the exact designation and location of the agency selected for this purpose, and the name and location of such agency will be inserted in the Contract.

All qualified unskilled labor shall be employed insofar as possible from lists furnished to the Contractor by the employment agency designated in the Contract. The Contractor may avail themselves of the services of the employment agency for obtaining labor of the intermediate and skilled grade.

In the performance of this Contract, the Contractor shall not discriminate against any worker because of race, creed, color, or national origin.

110.4.3-Payrolls: Submission by the Contractor, or subcontractor, of payrolls, or copies thereof, is not required. Each Contractor, or subcontractor, shall preserve their weekly payroll records for a period of three years from the date of completion of this Contract. The payroll records shall set out accurately and completely the project number, name, classification, hourly wage rate of each employee, hours worked by each employee daily and weekly wages earned by each employee, and deductions made from such weekly

wages, and the actual weekly wages paid to each employee. Such payroll records shall be made available at all times for inspection by authorized representatives of the Division.

The Contractor shall submit payroll records to the Division on projects that include force account work.

~~— **110.4.4 Payment of Predetermined Minimum Wages:** These contract provisions are supplemented elsewhere in the Contract by Special Provisions which set forth the certain predetermined minimum wage rates. The Contractor shall pay not less than these rates.~~

~~— The wages of all labor shall be paid in legal tender of the United States, except that this condition will be considered satisfied if payment is made by negotiable check, on a solvent bank, which may be readily cashed by the employee in the local community for the full amount, without discount or collection charges of any kind. Where checks are used for payment, the Contractor shall make all necessary arrangements for the checks to be cashed and shall give information regarding such arrangements.~~

~~— The minimum wages specified shall be exclusive of any charges for medical examination, medical fees, or insurance, except as specifically required by State Law. No individual employed on the project in other than an administrative position shall be paid less than the minimum rate for unskilled labor.~~

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
SPECIAL PROVISION
FOR

DRAFT

STATE PROJECT NUMBER: _____

FEDERAL PROJECT NUMBER: _____

SECTION 425

ASPHALT EMULSION MINERAL BOND

425.1-DESCRIPTION:

This section covers the materials, equipment, construction and application procedures for placing Asphalt Emulsion Mineral Bond used to treat asphalt pavement shoulders and low volume roadways. The Asphalt Emulsion Mineral Bond shall be the process of applying a mixture of asphalt emulsion, aggregate, water, and additives as needed to the existing asphalt pavement as a preservation treatment. All ingredients are to be properly proportioned, mixed, and spread on the paved surface in accordance with this Specification and as directed by the Engineer.

425.2-MATERIALS:

Furnish the components of the Asphalt Emulsion Mineral Bond to include asphalt emulsion, fine aggregate, water, and additives. Use materials meeting the following:

425.2.1-Asphalt Emulsion: The emulsified asphalt shall contain asphalt, water, emulsifier, and polymer or other additives. It shall be pumpable and suitable for application through a distributor truck.

Emulsified asphalt shall meet the requirements listed in Section 705 of the Standard Specifications. In addition to the emulsion shall meet the requirements of either Table 425.2.1A or Table 425.2.1B.

Table 425.2.1A (CSS-1H)			
Criteria	ASTM/ AASHTO METHOD	Value	Units
Viscosity, Saybolt Furol at 25 C	10	10-90	Seconds
Particle charge	T-59 Section 8	Positive	
Sieve test		0.50 max	%, by weight
Residue		57 min	%, by weight
Penetration (Residue from Distillation), 25 C, 100 g, 5 s,		30-150	

The sieve test may be waived if material applies without clogging nozzles and satisfactory field results are obtained.

The storage stability test may be waived provided the asphalt emulsion storage tank at the mixing site has adequate provisions for circulating the entire contents of the tank, and provided satisfactory field results are obtained.

425.2.2-Aggregate: The composite aggregate / mineral filler blend shall be free of cemented or conglomerated material and shall not have any detrimental material. It is recognized that high mineral filler mixture will require separate tests to be run on the aggregate and the mineral filler components. This will require verification of the stated blend percentages for the mixture.

425.2.2.1-Gradation: When tested in accordance with AASHTO T 27 (ASTM C 136) and AASHTO T 11 (ASTM C 117), the aggregate gradation shall be within one of the following bands.

Sieve Size	Percent Passing
#8 (2.36 mm)	100
#16 (1.19mm)	95-100
#30 (600µm)	85-100
#50 (300µm)	40-70
#100 (150µm)	30-60
#200 (75 µm)	25-65

425.2.3-Water: The water used shall be two parts hydrogen and one part oxygen from a potable source and free from harmful soluble salts.

425.2.4-Additives: Other material added to the mixture proprietary or otherwise shall be supplied by the manufacture of the mixture.

425.3-MIXTURE DESIGN REQUIREMENTS:

425.3.1-Mix Design: Submit to the Engineer, at least five working days before the start of production, a complete mix design prepared and certified by an experienced laboratory. The mix design shall consist of:

1. Signed certificate(s) of analysis covering the specific materials to be used on the project.
2. Specify target application rates for the mixture as well as permissible operating tolerances so that adjustments may be made due to varying field conditions.
3. Test results of the tests required in Section 425.3.2.
4. List of material sources. Material sources must be on approved source lists published by the division. Materials Procedure 700.00.05, Guidelines for Establishing and Maintaining Approved Lists of Materials and Sources, outlines the requirements of these approved lists.

Once the design has been approved, no material substitution will be permitted unless approved by the Engineer. A new mix design is required for any change in aggregate or asphalt emulsion source.

425.3.2-Mix Design Guidelines: Mix acceptance will be subject to satisfactory field performance as determined by the engineer.

The mixture shall contain a minimum of 30% mineral aggregate by weight. This shall be determined by AASHTO T-308 Asphalt Content by Ignition Method, this method is modified to account for the high asphalt, fine aggregate mix.

The mixture shall pass the International Slurry Seal Association's Modified TB100 test for Wet-Track Abrasion Loss (3 day) Soak. There shall be a maximum of 80 g/m².

425.4-CONSTRUCTION:

425.4.1-Equipment: Provide safe, environmentally acceptable equipment that can produce a specification product. All equipment, tools, and machines used in the application of asphalt emulsion mineral bond shall be maintained in satisfactory working conditions at all times.

425.4.1.1-Emulsion and Aggregate Mixing Equipment: The mixture shall be mixed thru a central mixing plant. Aggregate, asphalt emulsion, water and additives shall be proportioned by weight (mass) utilizing the mix design approved by the Engineer. Storage and transportation tanks shall be equipped with a full sweep agitator capable of producing a homogeneous mastic surface treatment mix.

Individual weight (mass) controls for proportioning each item to be added to the mix shall be provided. Measurement of volumes is permitted during production with the appropriate specific gravity calculations in unsure that the mixture meets the weight proportions of the mix design. Each material control device shall be calibrated and properly marked. Each device shall be accessible for ready calibration and placed such that the engineer may determine the amount of each material used at the time.

425.4.1.2-Storage Tanks: The storage tank shall have an internal full sweep mixing system. The storage tank shall have sufficient mixing capability to assure proper suspension of fine aggregates in the mix.

425.4.1.3-Distributor: The distributor shall be fully self-contained and shall have a storage tank with full sweep agitation, hydraulic system, operator controls, pumping system, material filters and spray bar capable of applying a full lane width. The equipment shall have sufficient available power to operate the full spray system and the agitation system at the same time.

The distributor shall include computerized application controls, a tachometer, pressure gauges, accurate volume devices, calibrated tank, and a thermometer for measuring temperatures of the emulsified asphalt in the tank. The distributor shall be equipped with a system allowing the measurement and calculation of application rates.

The pumps shall provide operation resulting in high volume and low potential for cavitation. The pumps shall be engineered to allow the system to handle fine aggregate filled materials. The distributor shall have computerized rate controller that automatically adjusts the distributor's pumps to the ground speed.

The applicator spray bar shall be sized with volumetric capacity to dampen any possible pressure ripples by providing even pressure to all spray tips. Attachments such as a spray shield and wind deflector shall be available.

425.4.1.4-Miscellaneous Equipment: Provide hand squeegees, shovels and other equipment as necessary to perform the work. Provide cleaning equipment such as power brooms, air compressors, water flushing equipment, and hand brooms for surface preparation.

425.4.2-Application: Asphalt emulsion mineral bond seals shall be applied in a manner to fill cover the area specified with at a uniform application rate to seal the asphalt pavement.

If, indicated in the Contract documents, the Contractor shall apply a minimum of two applications of mixture, each applied separately to the entire pavement surface.

425.4.2.1-Weather Limitations: Mixture shall not be placed when either the air temperature or the temperature of the surface on which the mixture is to be placed is below 60 F, when it is raining, when there is a chance of temperatures below 32 F (0 C) within 24 hours after placement, or as directed by the engineer.

425.4.2.2-Dilution: Contractor shall not dilute mixture in the field with water or any other additive. Only materials mixed at the manufacturing facility will be allowed. No mixing of designed materials will be allowed in the distribution truck or on the job site.

425.4.2.2-Surface Preparation: The surface shall be thoroughly clean and dry when the mixture is applied. Material cleaned from the surface shall be removed and disposed of as directed by the engineer. Protect drainage structures, monument boxes, water shut-offs, etc., during application of bond coat and mixture.

425.4.2.3-Mixture Application: The application rate will be as shown on the plans or as directed by the engineer. The minimum application shall be 0.10 gal/yd² per pass. Placement of the mix shall be performed in two passes with a minimum coverage of 0.20 gal/yd² for the first pass and 0.16 gal/yd² for the second.

The mixture shall be uniform and homogeneous after applying on the existing surfacing and shall not show separation of the emulsion and aggregate after setting.

Placement of the material may be permitted in multiple passes at the election of the contractor. Contractor shall provide a mat ensuring total coverage and especially free of voids and pit holes. Leave no streaks, holes, bare spots, or cracks through which liquids or foreign matter could penetrate to the underlying pavement.

After application, the roadway shall remain closed until the surface is tack-free and capable of being open to traffic without tracking.

Properly sized nozzles shall be used for the material and application rate specified. Multiple series of nozzles, for spraying the mixture, shall be spaced longitudinally.

425.4.2.6-Clean-up: Remove spatter and mar from curb and gutter, sidewalk, guard rails and guide posts, etc. at the Contractor's expense. Remove surface treatment material from fixtures, manholes, valve covers, etc. Leave no streaks, holes, bare spots, or cracks through which liquids or foreign matter could penetrate to the underlying pavement.

425.4.3-Temporary Pavement Marking: Shall be in accordance with Section 636

425.4.4-Pre-application Meeting: Hold an on-site pre-application meeting with the Engineer before beginning work to review and discuss the following.

1. Detailed work schedule
2. Traffic control plan
3. Calibration of equipment
4. Mix design previously submitted to the Engineer
5. Equipment inspection, including transport units

425.4.5-Test Strip: Test Strip(s) are intended to demonstrate the mixing of materials and placement procedures of each mixing machine to be used on the project. Test strip shall be performed at the beginning of the first day production and on the roadway to be treated. The completed test strip (minimum 500 feet length) shall be reviewed to detect and correct any

variances in surface texture, material ratio(s) and finished surface appearance. Additionally, the test strip may be used to establish the target job application rate.

425.4.6-Traffic Control: Do not allow traffic on the mixture until it has cured sufficiently to prevent pickup by vehicle tires. Protect the new surface from damage at intersections and driveways. Repair all damage to the mixture caused by traffic. All costs associated with this repair work will be borne by the Contractor. Otherwise Traffic Control will be in accordance with Section 636, and the *Manual on Temporary Traffic Control For Streets and Highways, 2006 Edition*, or as directed by the Engineer.

425.4.7-Quality Control: A mixture is to be produced that will meet the JMF and quality control tolerances. Notify the Engineer immediately if the quality control test results exceed any of the tolerances and stop mixture production. Identify the cause of the excess deviation and determine the corrective action necessary to bring the mixture into compliance. Secure the Engineer's approval before resuming work.

For Quality Assurance purposes, samples may be taken at the Project. The frequency of sampling and testing will be established by the Engineer based upon the Department's current acceptance program and local conditions encountered.

425.5-MEASUREMENT AND PAYMENT:

Payment for asphalt emulsion mineral bond includes all materials, equipment, labor for preparing the surface, placing temporary pavement markings, placing the mixture and complying with all requirements including the warranty. The placement includes application a surface course for full width coverage as specified in the contract documents.

The completed work as measured will be paid for at the contract unit price for the Items detailed in Section 425.6.

425.6-PAY ITEMS:

ITEM NUMBER	DESCRIPTION	UNIT
425001-001	Asphalt Emulsion Mineral Bond	Square Yard (SY)

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
SPECIAL PROVISION
FOR

STATE PROJECT NUMBER: _____

FEDERAL PROJECT NUMBER: _____

SECTION 426

ASPHALT EMULSION MINERAL BOND

426.1-DESCRIPTION:

This section covers the materials, equipment, construction and application procedures for placing Asphalt Emulsion Mineral Bond used to treat asphalt pavement shoulders and low volume roadways. The Asphalt Emulsion Mineral Bond shall be the process of applying a mixture of asphalt emulsion, aggregate, water, and additives as needed to the existing asphalt pavement as a preservation treatment. All ingredients are to be properly proportioned, mixed, and spread on the paved surface in accordance with this Specification and as directed by the Engineer.

426.2-MATERIALS:

Furnish the components of the Asphalt Emulsion Mineral Bond to include asphalt emulsion, fine aggregate, water, and additives. Use materials meeting the following:

426.2.1 Asphalt Emulsion-The emulsified asphalt shall contain asphalt, water, emulsifier, and polymer or other additives. It shall be pumpable and suitable for application through a distributor truck.

Emulsified asphalt shall meet the requirements listed in Section 705 of the Standard Specifications. In addition to the emulsion shall meet the requirements of either Table 426.2.1A or Table 426.2.1B.

TABLE 426.2.1A (Non-Ionic)			
Criteria	ASTM/AASHTO METHOD	Value	Units
Particle Charge	T-59 Section 8	Neutral	
Brookfield Viscosity at 77 °F (Spindle 5, 20 rpm)	D2196	11,000 – 20,000	cPs
pH	E70	5.0 – 7.5	pH
Density	T59	8.5 – 9.0	lbs/gal
Solids Content	T59	50.0 - 54.0	%, by weight
Ash Content	T111	4.0 – 6.0	%, by weight

The sieve test may be waived if material applies without clogging nozzles and satisfactory field results are obtained.

The storage stability test may be waived provided the asphalt emulsion storage tank at the mixing site has adequate provisions for circulating the entire contents of the tank, and provided satisfactory field results are obtained.

426.2.2 Aggregate-The composite aggregate / mineral filler blend shall be free of cemented or conglomerated material and shall not have any detrimental material. It is recognized that high mineral filler mixture will require separate tests to be run on the aggregate and the mineral filler components. This will require verification of the stated blend percentages for the mixture.

426.2.2.1 Gradation-When tested in accordance with AASHTO T 27 (ASTM C 136) and AASHTO T 11 (ASTM C 117), the aggregate gradation shall be within one of the following bands.

Sieve Size	Percent Passing
#8 (2.36 mm)	100
#16 (1.19mm)	95-100
#30 (600µm)	85-100
#50 (300µm)	40-70
#100 (150µm)	30-60
#200 (75 µm)	25-65

426.2.3 Water-The water used shall be two parts hydrogen and one part oxygen from a potable source and free from harmful soluble salts.

426.2.4 Additives – Other material added to the mixture proprietary or otherwise shall be supplied by the manufacture of the mixture.

426.3-MIXTURE DESIGN REQUIREMENTS:

426.3.1 Mix Design-Submit to the Engineer, at least five working days before the start of production, a complete mix design prepared and certified by an experienced laboratory. The mix design shall consist of:

1. Signed certificate(s) of analysis covering the specific materials to be used on the project.
2. Specify target application rates for the mixture as well as permissible operating tolerances so that adjustments may be made due to varying field conditions.
3. Test results of the tests required in Section 426.3.2.
4. List of material sources. Material sources must be on approved source lists published by the division. Materials Procedure 700.00.05, Guidelines for Establishing and Maintaining Approved Lists of Materials and Sources, outlines the requirements of these approved lists.

Once the design has been approved, no material substitution will be permitted unless approved by the Engineer. A new mix design is required for any change in aggregate or asphalt emulsion source.

426.3.2 Mix Design Guidelines-Mix acceptance will be subject to satisfactory field performance as determined by the engineer.

The mixture shall contain a minimum of 30% mineral aggregate by weight. This shall be determined by AASHTO T-308 Asphalt Content by Ignition Method, this method is modified to account for the high asphalt, fine aggregate mix.

The mixture shall pass the International Slurry Seal Association's Modified TB100 test for Wet-Track Abrasion Loss (3 day) Soak. There shall be a maximum of 80 g/m².

426.4-CONSTRUCTION:

426.4.1 Equipment-Provide safe, environmentally acceptable equipment that can produce a specification product. All equipment, tools, and machines used in the application of asphalt emulsion mineral bond shall be maintained in satisfactory working conditions at all times.

426.4.1.1 Emulsion and Aggregate Mixing Equipment-The mixture shall be mixed thru a central mixing plant. Aggregate, asphalt emulsion, water and additives shall be proportioned by weight (mass) utilizing the mix design approved by the Engineer. Storage and transportation tanks shall be equipped with a full sweep agitator capable of producing a homogeneous mastic surface treatment mix.

Individual weight (mass) controls for proportioning each item to be added to the mix shall be provided. Measurement of volumes is permitted during production with the appropriate specific gravity calculations in unsure that the mixture meets the weight proportions of the mix design. Each material control device shall be calibrated and properly marked. Each device shall be accessible for ready calibration and placed such that the engineer may determine the amount of each material used at the time.

426.4.1.2 Storage Tanks-The storage tank shall have an internal full sweep mixing system. The storage tank shall have sufficient mixing capability to assure proper suspension of fine aggregates in the mix.

426.4.1.3 Distributor-The distributor shall be fully self-contained and shall have a storage tank with full sweep agitation, hydraulic system, operator controls, pumping system, material filters and spray bar capable of applying a full lane width. The equipment shall have sufficient available power to operate the full spray system and the agitation system at the same time.

The distributor shall include computerized application controls, a tachometer, pressure gauges, accurate volume devices, calibrated tank, and a thermometer for measuring temperatures of the emulsified asphalt in the tank. The distributor shall be equipped with a system allowing the measurement and calculation of application rates.

The pumps shall provide operation resulting in high volume and low potential for cavitation. The pumps shall be engineered to allow the system to handle fine aggregate filled materials. The distributor shall have computerized rate controller that automatically adjusts the distributor's pumps to the ground speed.

The applicator spray bar shall be sized with volumetric capacity to dampen any possible pressure ripples by providing even pressure to all spray tips. Attachments such as a spray shield and wind deflector shall be available.

426.4.1.4 Miscellaneous Equipment-Provide hand squeegees, shovels and other equipment as necessary to perform the work. Provide cleaning equipment such as power

brooms, air compressors, water flushing equipment, and hand brooms for surface preparation.

426.4.2 Application-Asphalt emulsion mineral bond seals shall be applied in a manner to fill cover the area specified with at a uniform application rate to seal the asphalt pavement. If, indicated in the Contract documents, the Contractor shall apply a minimum of two applications of mixture, each applied separately to the entire pavement surface.

426.4.2.1 Weather Limitations-Mixture shall not be placed when either the air temperature or the temperature of the surface on which the mixture is to be placed is below 60 F, when it is raining, when there is a chance of temperatures below 32 F (0 C) within 24 hours after placement, or as directed by the engineer.

426.4.2.2 Dilution-Contractor shall not dilute mixture in the field with water or any other additive. Only materials mixed at the manufacturing facility will be allowed. No mixing of designed materials will be allowed in the distribution truck or on the job site.

426.4.2.2 Surface Preparation-The surface shall be thoroughly clean and dry when the mixture is applied. Material cleaned from the surface shall be removed and disposed of as directed by the engineer. Protect drainage structures, monument boxes, water shut-offs, etc., during application of bond coat and mixture.

426.4.2.3 Mixture Application-The application rate will be as shown on the plans or as directed by the engineer. The minimum application shall be 0.10 gal/yd² per pass. Placement of the mix shall be performed in two passes with a minimum coverage of 0.20 gal/yd² for the first pass and 0.16 gal/yd² for the second.

The mixture shall be uniform and homogeneous after applying on the existing surfacing and shall not show separation of the emulsion and aggregate after setting.

Placement of the material may be permitted in multiple passes at the election of the contractor. Contractor shall provide a mat ensuring total coverage and especially free of voids and pit holes. Leave no streaks, holes, bare spots, or cracks through which liquids or foreign matter could penetrate to the underlying pavement.

After application, the roadway shall remain closed until the surface is tack-free and capable of being open to traffic without tracking.

Properly sized nozzles shall be used for the material and application rate specified. Multiple series of nozzles, for spraying the mixture, shall be spaced longitudinally.

426.4.2.6 Clean-up-Remove spatter and mar from curb and gutter, sidewalk, guard rails and guide posts, etc. at the Contractor's expense. Remove surface treatment material from fixtures, manholes, valve covers, etc. Leave no streaks, holes, bare spots, or cracks through which liquids or foreign matter could penetrate to the underlying pavement.

426.4.3 Temporary Pavement Marking-Shall be in accordance with Section 636

426.4.4 Pre-application Meeting-Hold an on-site pre-application meeting with the Engineer before beginning work to review and discuss the following.

1. Detailed work schedule
2. Traffic control plan
3. Calibration of equipment
4. Mix design previously submitted to the Engineer
5. Equipment inspection, including transport units

426.4.5 Test strip-Test Strip(s) are intended to demonstrate the mixing of materials and placement procedures of each mixing machine to be used on the project. Test strip shall be performed at the beginning of the first day production and on the roadway to be treated. The completed test strip (minimum 500 feet length) shall be reviewed to detect and correct any variances in surface texture, material ratio(s) and finished surface appearance. Additionally, the test strip may be used to establish the target job application rate.

426.4.6-Traffic Control - Do not allow traffic on the mixture until it has cured sufficiently to prevent pickup by vehicle tires. Protect the new surface from damage at intersections and driveways. Repair all damage to the mixture caused by traffic. All costs associated with this repair work will be borne by the Contractor. Otherwise Traffic Control will be in accordance with Section 636, and the *Manual on Temporary Traffic Control For Streets and Highways, 2006 Edition*, or as directed by the Engineer.

426.4.7 Quality Control-A mixture is to be produced that will meet the JMF and quality control tolerances. Notify the Engineer immediately if the quality control test results exceed any of the tolerances and stop mixture production. Identify the cause of the excess deviation and determine the corrective action necessary to bring the mixture into compliance. Secure the Engineer's approval before resuming work.

For Quality Assurance purposes, samples may be taken at the Project. The frequency of sampling and testing will be established by the Engineer based upon the Department's current acceptance program and local conditions encountered.

426.5-MEASUREMENT AND PAYMENT:

Payment for asphalt emulsion mineral bond includes all materials, equipment, labor for preparing the surface, placing temporary pavement markings, placing the mixture and complying with all requirements including the warranty. The placement includes application a surface course for full width coverage as specified in the contract documents.

The completed work as measured will be paid for at the contract unit price for the Items detailed in Section 426.6.

426.6-PAY ITEMS:

ITEM NUMBER	DESCRIPTION	UNIT
426001-001	Asphalt Emulsion Mineral Bond	Square Yard (SY)

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**WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
SPECIAL PROVISION**

FOR

STATE PROJECT NUMBER: X305-2/23-0.00 00

FEDERAL PROJECT NUMBER: ACST-0223(010)

FOR

**SECTION 601
STRUCTURAL CONCRETE**

601.1-DESCRIPTION:

ADD THE FOLLOWING SUBSECTION:

601.1.1-Mass Concrete: Concrete placements whose least dimension exceeds 48.0 inches, excluding Drilled Caissons and tremie seals, shall be considered mass concrete and shall conform to the details shown on the plans and these special provisions.

Compensation for conforming to these requirements will be at no additional cost and shall be included in Pay Items for individual elements identified in the plans.

601.2-MATERIALS:

IN THE TABLE, REMOVE THE FOLLOWING ROW:

MATERIAL	SECTION OR SUBSECTION
* Portland Cement	701.1, 701.3

IN THE TABLE, ADD THE FOLLOWING ROW:

MATERIAL	SECTION OR SUBSECTION
* Portland Cement	701.1, ASTM C150 Type II

**** All coarse aggregate used in mass concrete placements shall be limestone

DELETE THE FOLLOWING SENTENCE:

Unless otherwise permitted by the Engineer, only one source of a pozzolanic additive shall be used in any one structure.

REPLACE WITH THE FOLLOWING SENTENCE:

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Sources of each type of pozzolanic additive shall be approved by the Engineer. Multiple sources of the same type of pozzolanic additive shall not be permitted.

601.3-PROPORTIONING:

ADD THE FOLLOWING TO SUBSECTION 601.3.1:

601.3.1-Mix Design Requirements: For Mass Concrete placements, the Design Mix shall meet the 28-day compressive strength as specified in the plans. If the 28-day compressive strength obtained in the field does not meet the design 28-day compressive strength requirement, acceptance may be based on a 56-day compressive strength test, if approved by the Engineer after considering the stresses resulting from the construction sequence proposed by the Contractor. Acceptance shall be in accordance with Section 601.4.4 of the Standard Specifications and of this Special Provision, and per the approval of the Engineer.

For Mass Concrete placements, pozzolanic additives may be a combination of the following additives at the substitution rate shown in the following table:

Cementitious Materials	Maximum percent of total cementitious materials by mass**
Class F Fly Ash	25
Ground Granulated Blast Furnace Slag	50
Microsilica	10
Total of Fly Ash and Slag	50*
Total of Slag and Microsilica	50*
Total of Fly Ash and Microsilica	35*

A combination exceeding more than two types of pozzolanic additives will not be permitted.

** Total cementitious materials include the summation of portland cement, fly ash, slag, and microsilica.

* Fly Ash shall not constitute more than 25-percent of the total cementitious materials.

601.4-TESTING:

ADD THE FOLLOWING TO SUBSECTION 601.4.4:

601.4.4-Compressive Strength Tests for Acceptance:

Compressive strength acceptance criteria pertaining to mass concrete elements may be based on 56-day compressive strength if approved by the Engineer after considering the stresses resulting from the construction sequence proposed by the Contractor.

601.12-CURING AND PROTECTING CONCRETE:

ADD THE FOLLOWING SUBSECTION:

601.12.4-Mass Concrete:

601.12.4.1-Thermal Control Plan: The Thermal Control Plan shall describe the measures and procedures the Contractor intends to use to satisfy the following Temperature Control Requirements for each mass concrete element:

- i. The Maximum Allowable Temperature Differential shall be limited to 35 degrees F. The temperature differential between the hottest interior locations and exterior portions of the designated mass concrete elements during curing will be maintained to be less than or equal to this Maximum Allowable Temperature Differential, and
- ii. The Maximum Allowable Concrete Temperature shall be limited to 160 degrees F.

A change to the Temperature Control Requirements specified in section i above may be proposed by the Contractor and shall be submitted to the Engineer for approval prior to any pour. This submission will include the new proposed Maximum Allowable Temperature Differential, along with all necessary data providing evidence to satisfactorily demonstrate to the Engineer that the deleterious effects to the concrete can be avoided. The Contractor shall allow seven (7) days for approval.

As a minimum, the Thermal Control Plan shall include the following:

- A. Mix design
- B. Methodology used to determine the heat of hydration
- C. Duration and method of curing.
- D. Methods of controlling maximum concrete temperature and temperature differentials.
- E. An analysis of the anticipated thermal developments in the mass concrete elements for all expected project temperature ranges using the proposed mix design, casting procedures, and materials. It shall show complete details and determine the maximum allowable temperature differentials between the hottest point of the concrete and the exterior faces.
- F. Temperature sensor types and locations including installation details
- G. Temperature Monitoring System including system description, operating plan, recording and reporting plan, and remedial action plan
- H. Field measures to ensure conformance with the maximum concrete temperature and temperature differential requirements.
- I. Field methods of applying immediate corrective action should the temperature differential approach the Maximum Allowable Temperature Differential.

The Contractor shall submit the Thermal Control Plan to the Engineer for approval a minimum of thirty working days prior to concrete placement. Mass concrete placement shall not begin until the Engineer has approved the Thermal Control Plan.

601.12.4.2-Temperature Monitoring System: The temperature monitoring and recording system for mass concrete shall consist of temperature sensors connected to a data acquisition system capable of printing, storing, and downloading data to a computer. Temperature sensors shall be located such that

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the maximum temperature difference within a mass concrete element can be monitored. As a minimum, concrete temperatures shall be monitored at: the calculated hottest location, within 1 in. of the center, an outside vertical edge of the outer face that is furthest from the center of the element, and at the center and an outside edge of the top surface.

Temperature readings shall be automatically recorded on an hourly or more frequent basis. A redundant set of sensors shall be installed near the primary set. Provision shall be made for recording the redundant set, but records of the redundant sensors need not be made if the primary set is operational.

Methods of concrete consolidation shall prevent damage to the temperature monitoring and recording system. Wiring from temperature sensors cast into the concrete shall be protected to prevent movement. Wire runs shall be kept as short as possible. The ends of the temperature sensors shall not come into contact with either a support or concrete form, or reinforcing steel.

When any equipment used in the temperature control and monitoring and recording system fails during the mass concrete construction operation, the Contractor shall take immediate remedial measures to correct the situation as specified in the Thermal Control Plan.

601.12.4.3-Construction: Temperature readings will begin immediately after casting is complete. Temperature readings will continue until the maximum temperature differential (not maximum temperature) is reached and a decreasing temperature differential is confirmed as defined in the Thermal Control Plan and the maximum concrete temperature is within the Maximum Allowable Temperature Differential of the ambient air temperature in the shade. Data shall be printed and submitted to the Engineer daily. A copy shall be submitted to the Materials, Soils and Testing Division for informational purposes.

If monitoring indicates the Temperature Control Requirements have been exceeded, the Contractor shall take immediate corrective action as defined in the Thermal Control Plan.

The Department will consider in-place mass concrete that exceeds the temperature limits or that cracked, as defective and resulting delays as non-excusable. Determine the extent and effect of the damage and submit a proposed repair plan to the Engineer to return the concrete to acceptable quality. The Department will determine if the proposed repair methods are acceptable or if removal is required.

The Contractor will make the necessary revisions to the approved Thermal Control Plan to satisfy the Temperature Control Requirements without resorting to corrective action on any remaining placements. Revisions to the approved plan must be approved by the Engineer prior to implementation. The revised plan will be used on future placements. No extension of time or compensation will be made for any rejected or repaired mass concrete element or revisions of the Thermal Control Plan.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

SPECIAL PROVISION

FOR

SECTION 639

CONSTRUCTION LAYOUT STAKES
CONSTRUCTION SURVEYING

639.1-DESCRIPTION:

~~This work consists of the construction surveying, calculating, and staking, in accordance with these specifications. When this item is included in the Proposal, it shall consist of furnishing, placing, and maintaining construction layout stakes necessary for the proper prosecution of the work under the Contract, all in accordance with these Specifications.~~

639.2-MATERIALS:

Provide the necessary materials to complete the specified surveying services.
Wood stakes as specified.

639.3-CONSTRUCTION METHODS:

639.3.1-Construction Layout Stakes: —The Division will locate and reference the centerline and will establish bench marks along the line of the improvement for the proper layout of the work. The Contractor shall make all calculations involved and shall furnish and place all layout stakes.

The Contractor shall provide field forces and shall set all additional stakes needed, such as offset stakes, reference point stakes, slope stakes, pavement and curb line and grade stakes, stakes for bridges, sewers, roadway drainage, pipe underdrains, paved gutter, fence, culverts or other structures, supplementary bench marks, and any other horizontal or vertical controls necessary to secure a correct layout of the work. The Contractor shall also do all layout work and shall set stakes necessary for carrying out utility changes when such utility changes are an obligation of the Contractor under the Contract. The location of the slope stakes for grading work shall be determined by a calculation method. Stakes for line and grade of pavement and curb shall be set at station intervals of 25 feet (10 meters) maximum distance on curves and at 50 feet (20 meters) maximum distance on tangents. Elevation control hubs with guard stakes shall be set, at a convenient distance outside the construction limits, opposite every 50-ft (20 meters) station and all stations where original cross-sections have been taken. The centerline station, the distance from centerline, and the elevation of the hub shall be recorded on each guard stake. For right-of-way staking, hubs with guard stakes

shall be set on both sides of roadway at all locations where right-of-way changes width; the station number and the distance from the centerline shall be marked on each guard stake.

The Contractor shall be responsible for having the layout staking work conform to the lines, grades, elevations, and dimensions called for on the Plans. The Contractor shall furnish a copy of their survey records for checking by the Engineer and for the Division's permanent file. These records shall be furnished as they are completed during the progress of the work. Any inspection or checking of the Contractor's layout by the Engineer and the acceptance of all or any part of it shall not relieve the Contractor of their responsibility to secure the proper dimensions, grades, and elevations of the several parts of the work.

The Contractor shall exercise care in the preservation of stakes and bench marks and shall have them reset at their expense when any are damaged, lost, displaced or removed. The Contractor shall use competent personnel and suitable equipment for the layout work required and shall provide that it be done under the supervision of, or directed by, a Registered Professional Engineer or Registered Land Surveyor. The Contractor shall not engage the services of any person or persons in the employ of the Division for the performance of any of the work covered by this item.

639.3.2-As-Built Utility Survey: The Contractor shall survey and submit to the Division an "as-built" survey of the Division owned (underground?) utilities which are located within the right-of-way limits of the project, meeting the following minimum survey requirements:

- a. Coordinate system – UTM Zone 17N with a reference to datum of NAD83(2011). Northing, Easting, and geoid height in meters. Elevation reference NAV88.
- b. Accuracy and tolerance – TBD (must be 1' for the x and y and one-tenth foot for the z)
- c. Utility features to be collected – TBD (as specified in Table on website) (with Feature Attribute Table/line styles/weights?)
- d. Other survey related info/details needed – TBD

The survey submittal should be made compatible with the Division's GIS software, such that it can be easily imported and show the proper utility locations; meeting the following minimum requirements:

- a. File format – shapefile (with attributes)
- b. How this should be submitted to us – TBD (possibly via ProjectWise)
- c. Other submission related info/details needed – TBD

The survey records generated shall be the property of the Division and shall be available to the Engineer for inspection or reproduction at all times. All survey records shall be transmitted before final project acceptance.

639.4-METHOD OF MEASUREMENT:

"Construction Layout Stakes" will be measured as a complete unit.

"As-Built Utility Survey" will be measure as a complete unit.

639.5-BASIS OF PAYMENT:

The quantity, determined as provided above, will be paid for at the contract unit price bid for the item below, which price and payment shall be full compensation for furnishing, setting,

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maintaining, and resetting, when necessary, the stakes, and for furnishing all engineering personnel, equipment, materials, and all incidentals.

639.6-PAY ITEMS:

ITEM	DESCRIPTION	UNIT
639001-*	Construction Layout Stake	Lump Sum
<u>639003</u>	<u>As-Built Utility Survey</u>	<u>Lump Sum</u>

* Sequence number