

**COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION
SEPARATE-COVER CONTRACT DOCUMENTS**

**SPECIAL PROVISION COPIED NOTES, SPECIAL PROVISIONS,
AND SUPPLEMENTAL SPECIFICATIONS FOR**

PLANT MIX SCHEDULES — STATEWIDE

2016 PAVING SEASON

ORDER NO.: See Bid Proposal and Contract
CONTRACT ID. NO.: See Bid Proposal and Contract
ROUTE NUMBER: VARIOUS
FHWA NUMBER: See Bid Proposal and Contract
PROJECT NUMBER: See Bid Proposal and Contract
COUNTY: ALL
DISTRICT: ALL



DESCRIPTION: PLANT MIX SCHEDULES (VOLUME 2 OF 2)
LOCATION: STATEWIDE
DATE BID SUBMITTED: See Bid Proposal and Contract

VOLUME 2 OF 2
STANDARD PROVISIONS:
2016 PLANT MIX SCHEDULES

Please see Volume 1 (the “Bid Proposal and Contract”) for forms, Schedule of Items, Plant Mix Schedules, special provision copied notes (SPCNs), special provisions (SPs), supplemental specifications (SSs), sketches, drawings, general notes and other written information specific to the project that this document assembly (Volume 2) accompanies.

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VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
VOLUME 1 AND 2 CONTRACTS

December 10, 2015

GENERAL PROJECT REQUIREMENTS, SUPPLEMENTAL SPECIFICATIONS (SSs), SPECIAL PROVISIONS (SPs) AND SPECIAL PROVISION COPIED NOTES (SPCNs)

This project shall be constructed in accordance with: the plans; the *Virginia Department of Transportation Road and Bridge Specifications*, dated 2007; the *Virginia Department of Transportation Road and Bridge Standards*, dated 2008; the 2011 edition of the *Virginia Work Area Protection Manual with Revision Number 1* incorporated, dated April 1, 2015; the 2009 edition of the *MUTCD with Revision Numbers 1 and 2* incorporated, dated May 2012; and the 2011 edition of the *Virginia Supplement to the MUTCD with Revision Number 1* dated September 30, 2013; and the Supplemental Specifications, Special Provisions and Special Provision Copied Notes in this contract. The status in the Contract of each of these documents will be in accordance with Section 105.12 of the Specifications.

Special Provision Copied Notes in this contract are designated with "(SPCN)" after the date.

The information enclosed in parenthesis "(" at the left of each Special Provision Copied Note in this contract is file reference information for Department use only. The information in the upper left corner above the title of each Supplemental Specification and Special Provision in this contract is file reference information for Department use only.

The Department has identified the system of measurement to be used on this particular project as imperial. Any imperial unit of measure in this contract with an accompanying expression in a metric unit will be referred to hereinafter as a "dual unit" measurement. Such a "dual unit" measurement is typically expressed first in the imperial unit followed immediately to the right by the metric unit in parenthesis "(" or brackets "[]" where parenthesis is used in the sentence to convey other information. Where a "dual unit" of measure appears in this project, only the imperial unit will apply. The accompanying metric unit shown is not to be considered interchangeable and mathematically convertible to the imperial unit and shall not be used as an alternate or conflicting measurement.

VOLUME 1 AND 2 CONTRACT DOCUMENTS STATUS

This contract consists of two "Volumes" of Supplemental Specifications (SSs), Special Provisions (SPs) and Special Provision Copied Notes (SPCNs). Volume 1 is the contract document assembly titled "Bid Proposal and Contract". Volume 2 is the contract document assembly titled "Separate-Cover Contract Documents". The SSs, SPs and SPCNs contained in Volume 1 and the accompanying Volume 2 are binding parts of the Contract. Each SS, SP, and SPCN in Volume 1 and Volume 2 shall carry the same status in the Contract as that stated in Section 105.12 of the Specifications.

VOLUME 1 AMENDMENTS TO VOLUME 2

The Supplemental Specifications (SSs), and Special Provisions (SPs) in Volume 2 may be amended by a SPCN(s) in Volume 1 specifically written to amend Volume 2. Such Volume 1 SPCN(s) that amend provisions of Volume 2 may do so by any of the following:

- Specifying the Volume 2 text or drawing or portion of a drawing in a SS or SP that is deleted, appended, or replaced and specifying the provision(s) in Volume 1 that appends or replaces it.

- Specifying an entire Volume 2 SS(s) or SP(s) is deleted or replaced and specifying the SS(s), SP(s), or SPCN(s) in Volume 1 that replaces it.

Such Volume 1 amendments to Volume 2 or any other SSs, SPs and SPCNs in Volume 1 shall carry the same status in the Contract as that stated in Section 105.12 of the Specifications.

VOLUME 2 SPECIFICATIONS SPECIFIC TO PLANT MIX SCHEDULES

Certain Supplemental Specifications (SSs), SPs and SPCNs, which as standard practice, appear in contracts as published on the Departments website at <http://www.virginia.gov/business/const/spec-default.asp> have been modified to specifically and more concisely address Plant Mix Schedule requirements statewide. Such Supplemental Specifications (SSs), Special Provisions (SPs) and Special Provision Copied Notes (SPCNs) are listed with modifications identified as follows:

- SS for **SUPPLEMENTAL DIVISION I—GENERAL PROVISIONS** was redesignated as a SP and retitled **DIVISION I—GENERAL PROVISIONS (PLANT MIX SCHEDULES)** and modified as follows:
 - Text from SPCN for **SECTION 102.05—PREPARATION OF BID** dated 10-21-08 was added.
 - Text from SPCN for **SECTION 102.05—PREPARATION OF BID (Bonus)** dated 12-9-15 was added.
 - Text from SPCN for **SECTION 103.01—CONSIDERATION OF BIDS** dated 10-8-13 was added.
 - Text from SPCN for **SECTION 103—AWARD AND EXECUTION OF CONTRACTS (E-Verify)** dated 8-14-14 was added.
 - Text from SPCN for **SECTION 104.01—INTENT OF CONTRACT** dated 10-21-08 was added.
 - Text from SPCN for **SECTION 105.14—MAINTENANCE DURING CONSTRUCTION (PERSONNEL REQUIREMENTS FOR WORK ZONE TRAFFIC CONTROL)** dated 11-24-15a was added.
 - Text from SP for **SECTION 105.06 SUBCONTRACTING (FEDERAL FUNDED PROJECTS)** dated 8-19-15a was added.
 - Text from SP for **SECTION 107.15 (DBE Program)** dated 12-10-10 was added.
 - Existing text for paragraph revising **Section 107.21—Size and Weight Limitations** was replaced with text from SPCN for **SECTION 107.21—SIZE AND WEIGHT LIMITATIONS** dated 10-21-08.
 - Text from SPCN for **SECTION 108.01—PROSECUTION OF WORK** dated 8-17-10 was added.
 - Text for **SECTION 108.02—LIMITATION OF OPERATIONS** regarding **Environmentally Sensitive Areas (ESA)** was added.
 - Text from SPCNs for **108.02—LIMITATION OF OPERATIONS** dated 9-7-12 and 10-7-15 was added.

EXCEPTIONS SPECIFIC TO A DISTRICT, RESIDENCY OR COUNTY

The Contractor's attention is directed to the Volume 1 contract document assembly, which contains Special Provisions (SPs) and Special Provision Copied Notes (SPCNs) with requirements written for and shall apply only to the specific district, residency, or county stated therein. The Contractor shall take note of and be governed by such requirements therein.

The Contractor's attention is also directed to this Volume 2 contract document assembly containing certain Supplemental Specifications (SSs), and Special Provisions (SPs) for Asphalt Plant Mix Schedule contract requirements structured to address statewide requirements with exceptions or additions written specifically for a district, residency, or county within. The Contractor shall take note of and be governed by such requirements therein. Such are found in the following:

- SP for **VOLATILE ORGANIC COMPOUND (VOC) EMISSIONS CONTROL AREAS**

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
PROJECT COMMUNICATION AND DECISION MAKING

January 3, 2005c
Reissued July 2008

I. DESCRIPTION

The intent of this provision is to establish procedures, processes and guidelines for making decisions and managing communications regarding work under contract on construction and maintenance projects. The information contained herein is not meant to be all inclusive but to serve as a minimal general framework for promoting efficient and effective communication and decision making at both the project and, if needed, executive administrative level. It is also not meant to override the decision-making processes or timeframes of specific contract requirements.

II. DEFINITIONS

For the purposes of this provision the following terms will apply and be defined as follows:

Submittals – Documents required by the contract that the Contractor must submit for the Department's review, acceptance or approval. These may include shop drawings, working drawings, material test reports, material certifications, project progress schedules, and schedule updates. The Contractor shall produce submittals as early as practicable when required by the contract so as not to delay review and determination of action.

Confirmation of verbal instructions (COVI) - Contractor requested written confirmation of agreements and instructions developed in negotiations with the Department concerning the Work under contract. Agreements must be able to be quantified using existing contract procedures and will, in the vast majority of cases, not impact contract time and cost. When time and/or cost are impacted, they must be clearly spelled out in the COVI.

Requests for information (RFI) – Requests generated by either the Contractor or the Department that the other party supplies information to better understand or clarify a certain aspect of the Work.

Requests for owner action (ROA) – Requests when the Contractor asks that the Department take certain action(s) the Contractor feels is required for proper completion of a portion of the Work or project completion.

Contract change requests (CCR) - Request where the Contractor asks the Department to make an equitable adjustment to the contract because of excusable and/or compensable events, instructions that have or have not been given or other work requiring time and/or cost beyond that specified or envisioned within the original contract.

Requests for contractor action (RCA) – Request generated by the Department where the Department asks the Contractor to take certain action that is in the best interests of the project and/or is required for proper completion of a portion of the Work or for project completion.

Contract change directives (CCD) – Directive by the Department which instructs the Contractor to perform work beyond that specified or envisioned in the original contract and which may specify instructions, time, and cost(s) to make an equitable adjustment to the original contract.

Responsible Person – The individual in the normal or escalated resolution process, for either the Contractor or the Department, having the direct authority, responsibility and accountability to formulate and respond to each category of information request.

III. PROCESS FOR DECISION MAKING

Project teams composed on responsible individuals directly involved in the administration, prosecution, and inspection of the Work from the Contractor and the Department shall define and agree upon the field decision-making process during the pre-construction conference. This information relative to the process should be written down and distributed to all parties of the process once it is established. Where there are responsibility, authority or personnel changes associated with this process such changes shall be distributed to all affected parties as quickly as practicable after they are effective so as not to delay or impede this process.

The process for making field decisions with respect to the Work detailed in the contract basically requires the following steps:

1. The Contractor and the Engineer agree on the decision-making process, the identity, authority and accountability of the individuals involved and on the cycle times for response for each category of decision.
2. The party requiring the information generates the appropriate request documents, and calls for a decision from the individual who is accountable for the particular facet of the Work under consideration within the agreed period.
3. The responding party has an internal decision-making process that supports the individual who is accountable and provides the information required within the agreed period for each category of request.
4. The party receiving the decision has an internal process for accepting the decision or referring it for further action within an agreed period of time.

The process also requires that clear and well-understood mechanisms be in place to log and track requests, document the age and status of outstanding requests and actions to be taken on requests that have not been answered within the agreed period.

Both the Department and the Contractor shall agree on the following:

- The documentation and perhaps format to be developed for each category of information requested,
- The name (as opposed to organizational position) of all individuals with the responsibility, authority and accountability to formulate and respond to each category of information requested. The District Administrator (DA) or Chief Executive Officer (CEO) of the Contractor may delegate the responsibility and authority for formulating and responding to requests, however, the accountability for meeting the established response time(s) remains with the District Administrator and CEO.
- The cycle times for each stage in the decision-making process,
- The performance measures to be used to manage the process,
- The action to be taken if cycle times are not achieved and information is not provided in a timely manner.

The following general guideline and timeframe matrix will apply to the various requests for action. Again, please note these guidelines are general in scope and may not apply to specific contract timeframes for response identified within the requirements of the Contract documents. In such cases, specific contract requirements for information shall apply.

PROCESS GUIDELINES FOR REQUESTS GENERATED BY THE CONTRACTOR

Process	Situation	Normal resolution process		Escalated process		Final resolution
		By	Within (calendar days)	By	Within	
Submittal	Where the Contractor requests the Department's review, acceptance or approval of shop drawings, materials data, test reports, project progress schedules, or other submittals required by standard Specifications or other contract language.	Department's Designated Project Manager	<ul style="list-style-type: none"> Acknowledge: 3 days¹ Accept or Return: 14 days Final Determination\Approve: 30 days or as outlined in contract documents. 	DA or their designee*	7 days	Submit ROA or CCR
Confirmation of Verbal Instruction (COVI)	Resolving routine field issues, within the framework of the Contract, in negotiation with Owner field personnel.	Department's Appropriate field personnel	<ul style="list-style-type: none"> Confirmation: 1 day² 	Submit RFI, ROA or CCR	7 days	(See process for RFI, ROA, or CCR)
Request for Information (RFI)	Requests the Department to supply information to better understand or clarify a certain aspect of the work.	Department's Designated Project Manager	<ul style="list-style-type: none"> Action: 14 days (or appropriate Action Plan) 	DA or their designee*	7 days	Submit ROA or CCR
Request for Owner Action (ROA)	Requests that the Department take certain action the Contractor feels is required for proper completion of a portion of the Work or project completion.	Department's Designated Project Manager	<ul style="list-style-type: none"> Acknowledge: 3 days¹ Action: 14 days (or appropriate Action Plan) 	DA or their designee*	7 days	Submit CCR
Contract Change Request (CCR)	Requests the Department to make an equitable adjustment to the contract because of excusable and/or compensable events, instructions that have or have not been given or other work requiring time and/or cost beyond that specified or envisioned within the original contract.	Department's Designated Project Manager	<ul style="list-style-type: none"> Acknowledge: 3 days¹ Action: 30 days (45 days if federal oversight project) 	DA or their designee*	7 days	Established dispute resolution and claims process

¹ Process initiated on the last business day of a week shall be acknowledged before 5 pm on the next VDOT business day.

² The absence of a written confirmation from the Owner to a Contractor's written request for confirmation of a verbal instruction shall constitute confirmation of the verbal instruction.

PROCESS GUIDELINES FOR REQUESTS GENERATED BY THE OWNER

Process	Situation	Normal resolution process		Escalated process		Final resolution
		By	Within (calendar days)	By	Within	
1. RFI	Requests the Contractor to supply information to better understand or clarify a certain aspect of the work. (RFI)	Contractor's Project Superintendent	<ul style="list-style-type: none"> Action: 14 days (or appropriate written Action Plan) 	Contractor's Project Manager	7 days	Submit RCA or CCD
2. RCA	Requesting the Contractor take certain action(s) that is in the best interests of the project and/or is required for proper completion of a portion of the work or for project completion. (RCA)	Contractor's Project Superintendent	<ul style="list-style-type: none"> Response or Action to safety and environmental issues: 1 day Otherwise acknowledge: 3 days¹ Action: 14 days (or appropriate Action Plan) 	Contractor's Project Manager	7 days	Submit CCD
3. CCD	Instructs the Contractor to perform work beyond that specified or envisioned in the original contract and undertakes action(s) to make an equitable adjustment to the contract. (CCD)	Contractor's Project Superintendent	<ul style="list-style-type: none"> Acknowledge: 3 days¹ Action: 30 days 	CEO or their designee**	7 days	Established dispute resolution and termination process

¹ Process initiated on the last business day of a week shall be acknowledged before 5 p m on next project business day.

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
INFORMAL PARTNERING

January 14, 2008c

I. DECLARATION AND DESCRIPTION

The Virginia Department of Transportation (VDOT) is firmly committed to the formation of a partnering relationship with the Contractor, all subcontractors, suppliers, FHWA representatives; where appropriate, other federal agencies, local government officials, utilities representatives, law enforcement and public safety officials, consultants, and other stakeholders to effectively and efficiently manage and complete each construction or maintenance contract to the mutual and individual benefits and goals of all parties. Partnering is an approach to fulfilling this commitment where all parties to the contract, as well as individuals and entities associated with or otherwise affected by the contract, willingly agree to dedicate themselves by working together as a team to fulfill and complete the construction or maintenance contract in cost effective ways while preserving the highest standards of safety and quality called for by the contract documents combined with the goals of on time/on budget completion. The approach must still allow for the fact that the members of the team share many common interests yet have differing authorities, interests, and objectives that must be accommodated for the project to be viewed as successful by all parties. It is recognized by VDOT that partnering is a relationship in which:

- Trust and open communications are encouraged and expected by all participants
- All parties move quickly to address and resolve issues at the lowest possible level by approaching problems from the perspectives and needs of all involved
- All parties have identified common goals and at the same time respect each other's individual goals and values
- Partners create an atmosphere conducive to cooperation and teamwork in finding better solutions to potential problems and issues at hand

II. INFORMAL PARTNERING STRUCTURE

It is the business intent of the Department that informal partnering will be required on this project, whereby the spirit and principles of partnering are practiced from onsite field personnel to executive level owners and employees. The VDOT Field Guide to Partnering available on the VDOT website <http://www.virginiadot.org/business/resources/partnerfinalallowres.pdf> will be the standard reference guide utilized to structure and guide partnering efforts. This guide will be systematically evaluated to incorporate better practices as our partnering efforts evolve. Of particular note is the need for effective and responsive communication between parties to the partnering relationship as emphasized by the Special Provision for Project Communication and Decision Making now included as standard provision in all contracts advertised by the Construction Division of VDOT.

Informal partnering need not require the services of a professional facilitator and may be conducted by the actual partnering participants themselves. Informal partnering, and more specifically the Partnering Charter, will not change the legal relationship of the parties to the Contract nor relieve either party from any of the terms of the Contract.

III. PROCEDURES

The following are general procedures for informal partnering and are not to be considered as inclusive or representative of procedural requirements for all projects. Participants shall consult

the VDOT Field Guide for Partnering for assistance in developing specific guidelines to those efforts required for their individual projects.

At least 5 days prior to or in connection with the preconstruction conference the Contractor shall attend a conference with the Engineer at which time he and the Engineer shall discuss the extent of the informal partnering efforts required for the project, how these have been accommodated in the Contractor's bid and the identity of expectations and stakeholders associated with the project. Informal partnering efforts require the Department and the Contractor to mutually choose a single person from among their collective staffs, or a trained facilitator to be responsible for leading all parties through the VDOT Field Guide to Partnering and any subsequent partnering efforts.

Partnering Meetings During Project Construction

In informal partnering efforts the Contractor shall provide a location for regularly scheduled partnering meetings during the construction period. Such meetings will be scheduled as deemed necessary by either party. The Contractor and VDOT will require the attendance of their key decision makers, including subcontractors and suppliers. Both the Contractor and VDOT shall also encourage the attendance of affected utilities, concerned businesses, local government and civic leaders or officials, residents, and consultants, which may vary at different times during the life of the Contract. The Department and the Contractor are to agree upon partnering invitees in advance of each meeting. Follow-up partnering workshops may be held throughout the duration of the project as deemed necessary by the Contractor and the Engineer.

IV. MEASUREMENT AND PAYMENT

Informal Partnering, because the extent to which certain partnering activities are pursued is at the Contractor's option, and may vary according to project complexity, work history between the parties, project duration, the Contractor's own unique methods, means, and schedule to execute and complete the work, etc.; will not be paid for as a separate bid item but the all costs associated with informal partnering efforts for the duration of the work shall be considered inclusive and incidental to the cost of other appropriate items.

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
PUBLIC NOTIFICATION OF PARKING RESTRICTIONS

August 18, 2015a

The Contractor shall be responsible for notifying the public of parking restrictions due to the resurfacing operations scheduled in this contract by distributing door-hangers and erecting “No Parking” signs throughout the subdivision streets affected as follows:

- A template for printing door-hangers will be provided to the Contractor by the Department. The Contractor shall make all necessary arrangements to furnish and distribute the printed door-hangers to homes no more than thirty (30) days prior to commencement of work and no less than three (3) days in the affected areas.
- A template for furnishing “No Parking” signs will be provided to the Contractor by the Department. The Contractor shall make all necessary arrangements for furnishing and placing the “No Parking” signs, including posts, for affected homes no more than three (3) working days prior to commencement of work. “No Parking” Signs shall be placed a minimum of 36” off the ground and shall clearly be visible to the public. The Contractor shall install the sign posts using posts of their choosing so long as the “No Parking” Sign is securely mounted and does not result in warping of the sign. The Contractor shall notify the appropriate police department after signs are installed and prior to commencement of work. If the commencement of work date follows a holiday or weekend, the three (3) working day prior notification requirement shall be in addition to the weekend or holiday. The period of operations, as designated on the “No Parking” signs, shall not exceed fourteen (14) consecutive calendar days.

The Contractor shall visually inspect the construction site each day after the placement of “No Parking” signs to ensure they are still in place. Any damaged or missing signs shall be promptly replaced at the Contractors expense.

All “No Parking” signs shall be removed and disposed of by the Contractor upon completion of the work.

The cost of furnishing and distributing door-hangers, furnishing, installing, maintaining, and removing “No Parking” signs and posts shall be borne by the Contractor at no cost to the Department. Door Hangers and No Parking Signs shall be produced in color and laminated prior to distribution.

Template examples can be found on the following three (3) pages.

To obtain “color” template copies for production visit the following link:

<http://www.virginiadot.org/business/resources/const/PublicNotificationOfParkingRestrictionsTemplates.pdf>



Door Hanger (Front)

Asphalt

Within the next 30 days, you will see construction crews and equipment preparing to treat and improve the roads in your neighborhood. This work is **dependent on weather** and may occur later than this timeframe due to contractor schedules.

WHAT YOU NEED TO KNOW

Crews will be paving your streets with asphalt. This application will improve the ride for motorists, and enhance the condition of your street.

WHAT TO EXPECT

Residents will see construction workers and equipment in your neighborhood.

Stay alert for temporary lane closures.

HOW TO PREPARE

When work begins, please avoid parking your vehicles on the street. Construction crews will place “No Parking” signs on the affected streets a minimum of 3 business days before work begins, notifying residents of the specific days parking will be prohibited. Please remove other obstructions from the road, such as basketball hoops or garbage cans.

RESOURCES

For more information about this process, please visit www.virginiadot.org/asphalt.

To contact us, call VDOT’s Customer Service Center at 1-800-FOR-ROAD (800-367-7623) or email customerservice@VDOT.Virginia.Gov.

Scan this QR code using a smartphone to view VDOT information on asphalt.



Door Hanger (Back)

NO PARKING

STREET PAVING

DATES: _____ --- _____



FOR INFORMATION CALL: **1-800-FOR-ROAD**

CARS TOWED

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
VOLATILE ORGANIC COMPOUND (VOC) EMISSIONS CONTROL AREAS

December 18, 2013

VOC Emission Control Area - The Contractor is advised that this project may be located in a volatile organic compound (VOC) emissions control area identified in the State Air Control Board Regulations (9 VAC 5-20-206) and in Table 1 below. Therefore, the following limitations may apply:

- Open burning is prohibited during the months of May, June, July, August, and September in VOC Emissions Control areas
- Cutback asphalt is prohibited April through October except when use or application as a penetrating prime coat or tack is necessary in VOC Emissions Control areas

Table 1. Virginia Department of Environmental Quality Volatile Organic Compound (VOC) Emissions Control Areas*

VOC Emissions Control Area	VDOT District	Jurisdiction
Northern Virginia	NOVA	Alexandria City Arlington County Fairfax County Fairfax City Falls Church City Loudoun County Manassas City Manassas Park City Prince William County
Northern Virginia	Fredericksburg	Stafford County
Fredericksburg	Fredericksburg	Spotsylvania County Fredericksburg City
Hampton Roads	Fredericksburg	Gloucester County
Hampton Roads	Hampton Roads	Chesapeake City Hampton City Isle of Wight County James City County Newport News City Norfolk City Poquoson City Portsmouth City Suffolk City Virginia Beach City Williamsburg City York County

Richmond	Richmond	Charles City County Chesterfield County Colonial Heights City Hanover County Henrico County Hopewell City Petersburg City Prince George County Richmond City
Western Virginia	Staunton	Frederick County Winchester City
Western Virginia	Salem	Roanoke County Botetourt County Roanoke City Salem City

* Regulations for the Control and Abatement of Air Pollution (9 VAC 5-20-206)

See the Virginia Code 9 VAC 5-45, Article 7 (Emission Standards for Asphalt Paving Operations) and 9 VAC 5-130 (Regulation for Open Burning) for further clarification. In addition to the above requirements, the Contractor's attention is directed to the requirements of Section 107.16 of the Specifications, because other air pollution requirements may also apply.

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SCHEDULE OF OPERATIONS FOR CATEGORY M PROJECTS

May 12, 2008

Section 103.06(e) Progress Schedule of the Specifications is deleted and replaced by this provision.

Section 108.03 Progress Schedule of the Specifications is deleted and replaced by this provision.

General Requirements – The Contractor shall plan and schedule the work and shall submit his overall work plan in the form of a written Schedule of Operations as described herein, for the Engineer’s review and acceptance. The accepted Schedule of Operations will be used by the Engineer for planning and coordination of the Department activities, resources, and expenditures.

When preparing the Schedule of Operations, the Contractor shall consider all known constraints and restrictions such as holidays, seasonal, weather, traffic, utility, railroad, right-of-way, environmental, permits, or other known or specified limitations to the work.

At the Pre-Construction Conference the Contractor shall be prepared to discuss his planned or contemplated operations relative to the contract requirements and this special provision.

Delays resulting from the Contractor’s failure to provide the Schedule of Operations will not be considered just cause for extension of the contract time limit or for additional compensation.

Schedule of Operations – The Contractor shall submit to the Engineer three (3) copies of the written Schedule of Operations at least seven (7) calendar days prior to beginning work. The Schedule of Operations shall represent the Contractor’s overall work plan to accomplish the entire scope of work in accordance with the requirements of the Contract. The Schedule of Operations shall include all work including, as applicable, the work to be performed by sub-contractors, the Department, or others. The Schedule of Operations submittal shall consist of a written Narrative to:

- (a) Describe the Contractor’s proposed general sequence to accomplish the work;
- (b) Indicate the general schedule of work to be completed each month in terms of the major operations, routes, or segments of work as delineated in the contract documents or in the absence of such delineations, as agreed to by the Contractor and the Engineer. A bar-chart schedule may be substituted at the Contractor’s option.

Two Week Look-ahead (TWLA) Schedule of Operations – At least seven (7) calendar days prior to beginning work, the Contractor shall submit to the Engineer, an initial written TWLA Schedule of Operations for any work planned for the first two weeks. Every week thereafter, on a day agreed to by the Contractor and the Engineer, the Contractor shall submit to the Engineer, a written TWLA Schedule of Operations for the following two-week period. The TWLA schedule shall provide a detailed list of operations to indicate the type of operation, location(s) of the work, proposed working days and hours, and the start and finish dates for any work planned, started, in progress, or scheduled for completion during the two-week period. The TWLA Schedule of Operations shall also indicate any critical stage(s) of work requiring VDOT oversight or inspection. The Contractor shall submit three (3) copies of the TWLA Schedule of Operations to the Engineer in any legible format.

The Contractor may revise his TWLA Schedule of Operations at his discretion. However, the Contractor shall notify the Engineer at least forty-eight (48) working hours in advance of any changes in the Contractor’s planned operations or critical stage work requiring Department oversight or inspection. In the

event of extenuating circumstances deemed by the Engineer to be beyond the Contractor's control, the Engineer may grant verbal concurrence of changes in the Contractor's planned operations with less advance notice, as the need arises.

Revised Schedule of Operations – The Contractor may revise his overall plan of operations at any time, however, the Contractor shall submit a Revised Schedule of Operations to reflect any changes in his overall sequence of operations or general schedule. The Contractor may be required, as determined by the Engineer to submit a Revised Schedule of Operations. Circumstances that may prompt the Engineer's decision to request a Revised Schedule of Operations may include deviations from the overall sequence of operations or if the actual progress of work varies by one month or more from the currently accepted Schedule of Operations.

When required by the Engineer, the Revised Schedule of Operations shall be submitted within seven (7) calendar days of receipt of the Engineer's written request. The Revised Schedule of Operations shall be submitted in the form of the Schedule of Operations as defined herein, to reflect the changes in the Contractor's overall work plan. The accepted Revised Schedule of Operations will replace any previously accepted Schedule of Operations for the remainder of the work.

Review and Acceptance – The Engineer will review the Initial or subsequent Revised Schedule of Operations submittals for acceptance within seven (7) calendar days of receipt of the Contractor's complete submittal. Review and acceptance by the Engineer will be based on conformance with the requirements of this provision and the Contract.

Review and acceptance by the Engineer will not constitute a waiver of any contract requirements and will in no way assign responsibilities of the work plan, scheduling assumptions, and validity of the work plan or schedule to the Department. Failure of the Contractor to include in the Schedule of Operations any element of work required by the Contract for timely completion of the Contract shall not excuse the Contractor from his contractual obligations.

Measurement and Payment – Category M Schedule of Operations including the Initial and any subsequent Revised Schedule of Operations requested by the Engineer or originated by the Contractor, will not be measured or paid for separately. All associated costs to prepare, update, revise, and/or furnish the Schedule of Operations for Category M projects in accordance with the requirements herein shall be considered incidental to the work.

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
USE OF DOMESTIC MATERIAL

July 26, 2013

SECTION 102.05 PREPARATION OF BID of the Specifications is amended to include the following:

In accordance with the provisions of Section 635.410(b) of Title 23 CFR, hereinafter referred to as "Buy America", except as otherwise specified, all iron and steel products (including miscellaneous steel items such as fasteners, nuts, bolts and washers) to be permanently incorporated for use on federal aid projects shall be produced in the United States of America regardless of the percentage they exist in the manufactured product or final form they take. Therefore, "Domestically produced in the United States of America" means all manufacturing processes must occur in the United States of America, to mean, in one of the 50 States, the District of Columbia, Puerto Rico or in the territories and possessions of the United States. Manufacturing processes are defined as any process which alters or modifies the chemical content, physical size or shape or final finish of iron or steel material) such as rolling, extruding, bending, machining, fabrication, grinding, drilling, finishing, or coating whereby a raw material or a reduced iron ore material is changed, altered or transformed into a steel or iron item or product which, because of the process, is different from the original material. For the purposes of satisfying this requirement "coating" is defined as the application of epoxy, galvanizing, painting or any other such process that protects or enhances the value of the material. Materials used in the coating process need not be domestic materials.

For the purposes herein the manufacturing process is considered complete when the resultant product is ready for use as an item in the project (e.g. fencing, posts, girders, pipe, manhole covers, etc.) or is incorporated as a component of a more complex product by means of further manufacturing. Final assembly of a product may occur outside of the United States of America provided no further manufacturing process takes place.

Raw materials such as iron ore, pig iron, processed, pelletized and reduced iron ore, waste products (including scrap, that is, steel or iron no longer useful in its present form from old automobiles, machinery, pipe, railroad rail, or the like and steel trimmings from mills or product manufacturing) and other raw materials used in the production of steel and/or iron products may, however, be imported. Extracting, handling, or crushing the raw materials which are inherent to the transporting the materials for later use in the manufacturing process are exempt from Buy America. The use of foreign source steel or iron billet is not acceptable under the provisions of Buy America. For the purposes of this provision all steel or iron material not meeting the criteria as domestically produced in the United States of America will be considered as "foreign" material. All iron and steel items will be classified hereinafter as "domestic" or "foreign", identified by and subject to the provisions herein.

Domestically produced iron or steel ingots or billets shipped outside the United States of America for any manufacturing process and returned for permanent use in a project would not comply with "Buy America" requirements.

Buy America provisions do not apply to iron or steel products used temporarily in the construction of a project such as temporary sheet piling, temporary bridges, steel scaffolding, falsework or such temporary material or product or material that remains in place for the Contractor's convenience.

Section 635.410(b) of Title 23 CFR permits a minimal amount of steel or iron material to be incorporated in the permanent work on a federal-aid contract. The cost of such materials or products must not exceed one-tenth of one percent of the contract amount or \$2500, whichever is greater. The cost of the foreign iron or steel material is defined as its monetary value delivered to the job site

and supported by invoices or bill of sale to the Contractor. This delivered to site cost must include transportation, assembly, installation and testing.

In the event the total cost of all "foreign" iron and steel product or material does not exceed one-tenth of one percent of the total contract cost or \$2,500, whichever is greater, the use of such material meeting the limitations herein will not be restricted by the domestic requirements herein. However, by signing the bid, the Bidder certifies that such cost does not exceed the limits established herein.

Waivers:

With prior concurrence from Federal Highway Administration (FHWA) headquarters, the Federal Highway Division Administrator may grant a waiver to specific projects provided it can be demonstrated:

1. that the use of domestic steel or iron materials would be inconsistent with the public interest; or
2. materials or products requested for use are not produced in the United States in sufficient or reasonably available quantities and are of satisfactory quality for use in the permanent work.

The waiver request shall be submitted with supportive information to include:

1. Project number\description, project cost, waiver item, item cost, country of origin for the product, reason for the waiver, and
2. Analysis of redesign of the project using alternative or approved equal domestic products

In order to grant such a waiver the request for the waiver must be published in the Federal Register for a period not less than 15 days or greater than 60 days prior to waiving such requirement. An initial 15 day comment period to the waiver will be available to the public by means of the FHWA website: <http://www.fhwa.dot.gov/construction/contracts/waivers.cfm>. Following that initial 15 day period of review and comment the request for waiver will be published by the FHWA in the Federal Register. The effective date of the FHWA finding, either to approve or deny the waiver request, will be 15 days following publication in the Federal Register.

Only the FHWA Administrator may grant nationwide waivers which still are subject to the public rulemaking and review process.

Alternative Bidding Procedures:

An alternative bidding procedure may be employed to justify the use of foreign iron and/or steel. To qualify under this procedure the total project is bid using two alternatives, one based on the use of domestic products and the other, the use of corresponding foreign source steel and/or iron materials.

In accordance with the provisions of Section 103.02 the Contract will be awarded to the lowest responsive and responsible bidder who submits the lowest total bid based on furnishing domestic iron or steel unless such total exceeds the lowest total bid based on furnishing foreign iron and/or steel by more than 25 percent, in which case the award will be made to the lowest responsive and responsible bidder furnishing foreign iron and/or steel based upon furnishing verifiable supportive data. The bidder shall submit a bid based on permanently incorporating only domestic iron and/or steel in the construction of the project. The bidder may also submit a bid for the same proposed contract based on being allowed to permanently incorporate corresponding foreign iron and/or steel materials meeting the other contract requirements into the work on the contract. If he chooses to submit such a bid, that alternate bid shall clearly indicate which foreign iron and/or steel items will be permanently

installed in the work as well as contain prices for all other items listed in the corresponding domestic proposal to complete a total "Foreign" bid.

In the event the contract is awarded to the bidder furnishing foreign iron and/or steel materials or items the provision for price adjustment of steel items will be permitted, however, price fluctuations shall use the U.S. index as stated in the Special Provision for Price Adjustment For Steel. The Contractor must indicate which corresponding eligible steel items he chooses price adjustment to apply. In the event the contract is awarded to a bidder furnishing foreign iron and/or steel items and during the life of that contract the Contractor discovers he cannot furnish foreign iron and/or steel material as originally anticipated and agreed upon, he shall be responsible to honor the total bid price and furnish such iron and/or steel materials meeting the contract requirements from other sources as necessary to complete the work.

In the event the Contractor proposes to furnish "foreign" iron and steel and can verify a savings in excess of 25 percent of the overall project cost if bid using domestic materials, the Contractor shall submit a second complete paper bid proposal clearly marked "Foreign" including Form C-7 and supportive data supplement on all sheets. Supportive data shall list, but not be limited to, origin of material, best price offer, quantity and complete description of material, mill analysis, evidence or certification of conformance to contract requirements, etc. The "Foreign" bid shall be completed using the best price offer for each corresponding bid item supplying foreign material in the alternative bid and submit the same with the Contractor's "Domestic" bid. The Contractor shall write the word "Foreign" by the bid total shown on Form C-7 as well as last page of Schedule of Items showing the total bid amount. The bidder shall also contact the State Contract Engineer to inform him that he is also submitting an alternate "Foreign" paper bid.

The information listed on the supportive data sheet(s) will be used to provide the basis for verification of the required cost savings. In the event comparison of the prices given, or corrected as provided in Section 103.01 of the Specifications, shows that use of "foreign" iron and steel items does not represent a cost savings exceeding the aforementioned 25 percent, "domestic" iron and/or steel and prices given there for shall be used and the "100 percent Domestic Items Total" shall be the Contractor's bid.

Certification of Compliance:

Where domestic material is supplied, prior to incorporation into the Work, the Contractor shall furnish to the Department a certificate of compliance (such as may be furnished by steel mill test reports) that all steel and/or iron products supplied to the project except as may be permitted (one-tenth of one percent of the total contract cost or \$2,500, whichever is greater) and permanently incorporated into the work satisfies the domestic requirements herein. This certification shall contain a definitive statement about the origin of all products covered under the provisions of Buy America as stated herein.

In lieu of the Contractor providing personal certification, the Contractor may furnish a stepped certification in which each handler of the product, such as supplier, fabricator, manufacturer, processor, etc. furnishes an individual certification that their step in the process was domestically performed.

**VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
OPTIONAL ADJUSTMENT FOR FUEL**

July 1, 2015

The Department will adjust monthly progress payments up or down as appropriate for cost changes in fuel used on specific items of work identified in this provision. The Department will provide a master listing of standard bid items eligible for fuel adjustment on its website.

Included with this proposal is a listing of standard bid items the Department has identified as eligible for fuel adjustment on this project(s) as well as the respective fuel factors per pay unit for those items. Only items on this listing will be eligible for adjustment. The fuel usage factor for each item is considered inclusive of all fuel usage. Generally, non-standard pay items are not eligible for fuel adjustment.

The listing of eligible items applicable to this particular project is shown on Form C-21B "Bid Items Eligible for Fuel Adjustment" included with the bidding documents. The Bidder may choose to have fuel adjustment applied to any or all eligible items on this project's listing by designating the items for which the fuel adjustment will apply. The Bidder's selection of items for fuel adjustment may not be changed once he has submitted Form C-21B to the Department.

In order to be eligible for fuel adjustment under this provision, the apparent lowest responsive and responsible Bidder shall clearly identify on Form C-21B those pay items he chooses to have fuel adjustment applied on. Within 21 days after the receipt of bids the apparent successful Bidder shall submit his designated items on Form C-21B to the Contract Engineer. Items the successful Bidder chooses for fuel adjustment must be designated by writing the word "Yes" in the column titled "Option" by each bid item chosen for fuel adjustment. The successful Bidder's designations on Form C-21B must be written in ink or typed, and signed by this Bidder to be considered complete. Items not properly designated or left blank on the Bidder's C-21B "Bid Items Eligible for Fuel Adjustment" form may be not considered for adjustment. If the apparent successful Bidder fails to return his Form C-21B within the timeframe specified, items will not be eligible for fuel adjustment on this project.

The monthly index price to be used in the administration of this provision will be calculated by the Department from the Diesel fuel prices published by the U. S. Department of Energy, Energy Information Administration on highway diesel prices, for the Lower Atlantic region. The monthly index price will be the price for diesel fuel calculated by averaging each of the weekly posted prices for that particular month.

For the purposes of this provision, the base index price will be calculated using the data from the month preceding the receipt of bids. The base index price will be posted by the Department at the beginning of the month for all bids received during that month.

The current index price will be posted by the Department and will be calculated using the data from the month preceding the particular estimate being vouchered for payment.

The current monthly quantity for eligible items of work selected by the Contractor for fuel adjustment will be multiplied by the appropriate fuel factor to determine the gallons of fuel to be cost adjusted. The amount of adjustment per gallon will be the net difference between the current index price and the base index price. Computation for adjustment will be made as follows:

$$S = (E - B) QF$$

Where; S = Monetary amount of the adjustment (plus or minus)

B = Base index price

E = Current index price

Q = Quantity of individual units of work

F = Appropriate fuel factor

Adjustments will not be made for work performed beyond the original contract time limit unless the original time limit has been changed by an executed Work Order.

If new pay items are added to this contract by Work Order and they are listed on Department's master listing of eligible items, the Work Order must indicate which of these individual items will be fuel adjusted; otherwise, those items will not be fuel adjusted. If applicable, designating which new pay items will be added for fuel adjustment must be determined during development of the Work Order and clearly shown on Form C-10 Work Order. The Base Index price on any new eligible pay items added by Work Order will be the Base Index price posted for the month in which bids were received for that particular project. The Current Index price for any new eligible pay items added by Work Order will be the Index price posted for the month preceding the estimate on which the Work Order is paid.

When quantities differ between the last monthly estimate prepared upon final acceptance and the final estimate, adjustment will be made using the appropriate current index for the period in which that specific item of work was last performed.

In the event any of the base fuel prices in this contract increase more than 100 percent (i.e. fuel prices double), the Engineer will review each affected item of work and give the Contractor written notice if work is to stop on any affected item of work. The Department reserves the right to reduce, eliminate or renegotiate the unit price for remaining portions of affected items of work.

Any amounts resulting from fuel adjustment will not be included in the total cost of work for determination of progress or for extension of contract time.

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
NO FUEL ADJUSTMENT ELIGIBILITY FOR SPECIFIC SCHEDULE ITEMS

September 3, 2008

If the fuel adjustment form(s), as required in the Special Provision for **Optional Adjustment for Fuel**, is not included in the Contract for a specific schedule, the items in that schedule are not eligible for fuel adjustment.

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
POLYMER MODIFIED (PG 64V-28) ASPHALT CEMENT ADJUSTMENT

June 15, 2015

When asphalt concrete mixtures require the use of Performance Graded asphalt cement PG 64V-28, the Contractor shall show in the space provided on Form C-16A of the electronic bid proposal submitted by the Contractor, the f.o.b. cost per ton for asphalt cement PG 64V-28 upon which bid items containing PG 64V-28 were developed.

During the life of the Contract, the Contractor shall document to the Department, by invoice signed by the supplier, his cost for PG 64V-28 used. The Department will then adjust payments for asphalt concrete containing PG 64V-28 by the difference in the actual f.o.b. price and the f.o.b. quote submitted with the bid. Adjustments will be made at the time for partial payments for asphalt concrete containing PG 64V-28 in accordance with the requirements of Section 109.08 of the Specifications.

In the event the Contractor fails to show on Form C-16A of the electronic bid proposal the f.o.b. cost per ton for asphalt cement PG 64V-28 upon which bid items containing PG 64V-28 were developed, or during the life of the contract fails to provide the appropriate invoices with the Current cost for asphalt cement PG 64V-28 for the applicable calendar month during which the work was performed, the Department will base the price adjustment for asphalt concrete containing PG 64V-28 asphalt cement on the indexes for PG 64S-22 in accordance with the Special Provision For Asphalt Material Price Adjustment included in the Contract.

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
ASPHALT MATERIAL PRICE ADJUSTMENT

June 15, 2015c

All asphalt material contained in the attached master listing of eligible bid items and designated by pay items in the contract will be price adjusted in accordance with the provisions as set forth herein. Other items will not be adjusted, except as otherwise specified in the contract. If new pay items which contain asphalt material are established by Work Order, they will not be subject to Price Adjustment unless specifically designated in the Work Order to be subject to Price Adjustment.

Each month, the Department will publish an average state-wide PG 64S-22 f.o.b. price per ton and an average PG 64E-22 f.o.b. price per ton developed from the average terminal prices provided to the Department from suppliers of asphalt cement to contractors doing work in Virginia. The Department will collect terminal prices from approximately 12 terminals each month. These prices will be received once each month from suppliers on or about the last weekday of the month. The high and low prices will be eliminated and the remaining values averaged to establish the average statewide price for the following month. The monthly state-wide average price will be posted on the Construction Division website on or about the first weekday of the following month. In the event the average prices were to change by 10 percent or more of the Base Index during the middle of the month the Contractor can submit a letter to the Department and supplier that provides evidence of the difference in price. Upon receipt of the letter consideration will be given to extend additional adjustments as deemed necessary.

This monthly statewide average price will be the Base Index for all contracts on which bids are received during the calendar month of its posting and will be the Current Index for all asphalt placed during the calendar month of its posting. In the event an index changes radically from the apparent trend, as determined by the Engineer, the Department may establish an index which it determines to best reflect the trend.

The amount of adjustment applied will be based on the difference between the contract Base Index and the Current Index for the applicable calendar month during which the work is performed. The quantity of asphalt cement for asphalt concrete pavement to which adjustment will be applied will be the quantity based on the percent of asphalt cement shown on the appropriate approved job mix formula.

Adjustment of any asphalt material other than PG 64S-22 and PG 64E-22 will be based on the indexes for PG 64S-22.

The quantity of asphalt emulsion for surface treatments to which adjustment will be applied will be the quantity based on 65 percent residual asphalt.

Price adjustment will be shown as a separate entry on the monthly progress estimate; however, such adjustment will not be included in the total cost of the work for progress determination or for extension of contract time.

Any apparent attempt to unbalance bids in favor of items subject to price adjustment or failure to submit required cost and price data as noted hereinbefore may result in rejection of the bid proposal.

VIRGINIA DEPARTMENT OF TRANSPORTATION
**MASTER LISTING OF
 ASPHALT MATERIAL ITEMS ELIGIBLE FOR PRICE ADJUSTMENT**

ITEM	DESCRIPTION	UNITS	SPECIFICATION
10062	Asphalt-Stab. Open-Graded Material	Ton	313
10416	Liquid Asphalt	Gal	311 312
10420	Blotted Seal Coat Ty. B	SY	ATTD
10422	Blotted Seal Coat Ty. C	SY	ATTD
10423	Blotted Seal Coat Ty. C-1	SY	ATTD
10424	Blotted Seal Coat Ty. D	SY	ATTD
10598	Ns Asphalt Concrete	Ton	315
10606	Asphalt Concrete Ty. SM-9.5	Ton	315
10607	Asphalt Concrete Ty. SM-12.5A	Ton	315
10608	Asphalt Concrete Ty. SM-12.5D	Ton	315
10609	Asphalt Concrete Ty. SM-12.5E (64E-22)	Ton	315
10610	Asphalt Concrete Ty. IM-19.0A	Ton	315
10611	Asphalt Concrete Ty. IM-19.0D	Ton	315
10612	Asphalt Conc. Base Cr. Ty. BM-25.0	Ton	315
10613	Asphalt Concrete Ty. BM-37.5	Ton	315
10635	Asphalt Concrete Ty. SM-9.5A	Ton	315
10636	Asphalt Concrete Ty. SM-9.5D	Ton	315
10637	Asphalt Concrete Ty. SM-9.5E (64E-22)	Ton	315
10639	Asphalt Concrete Ty. SM-19.0	Ton	315
10642	Asphalt Concrete Ty. BM-25.0A	Ton	315
10643	Asphalt Concrete Ty. BM-25.0D	Ton	315
10650	Stone Matrix Asphalt SMA-9.5(64H-22)	Ton	317
10651	Stone Matrix Asphalt SMA-9.5(64E-22)	Ton	317
10652	Stone Matrix Asphalt SMA-12.5(64H-22)	Ton	317
10653	Stone Matrix Asphalt SMA-12.5(64E-22)	Ton	317
10654	Stone Matrix Asphalt SMA-19.0(64H-22)	Ton	317
10655	Stone Matrix Asphalt SMA-19.0(64E-22)	Ton	317
10701	Liquid Asphalt Coating	SY	ATTD
12505	Asphalt Concrete Curb Backup Material	Ton	315
13240	Asphalt Concrete Sidewalk	Ton	504
16110	Emul. Asph. Slurry Seal Type A	SY	ATTD
16120	Emul. Asph. Slurry Seal Type B	SY	ATTD
16130	Emul. Asph. Slurry Seal Type C	SY	ATTD
16144	Latex Mod. Emul. Treat. Type B	Ton	ATTD
16145	Latex Mod. Emul. Treat. Type C	Ton	ATTD
16146	Latex Mod. Emul. Treat. Rutfilling	Ton	ATTD
16161	Modified Single Seal	SY	ATTD
16162	Modified Double Seal	SY	ATTD
16249	Nontracking Tack Coat	Gal.	ATTD
16250	Liquid Asphalt Matl. CMS-2 (Mod)	Gal	ATTD
16251	Liquid Asphalt Matl. CMS-2	Gal	ATTD

16252	Liquid Asphalt Matl. CRS-2	Gal	ATTD
16253	Liquid Asphalt Matl. CRS-2H	Gal.	ATTD.
16254	Liquid Asphalt Matl. RC-250	Gal	ATTD
16256	Liquid Asphalt Matl. RC-800	Gal	ATTD
16257	Ns Liquid Asphalt Matl.	Gal	ATTD
16260	Liquid Asphalt Matl. CRS-2L	Gal	ATTD
16325	NS Asphalt Concrete	Ton	N/A
16330	Asphalt Concrete Ty. SM-9.0A	Ton	315
16335	Asphalt Concrete Ty. SM-9.5A	Ton	315
16337	Asph. Conc. Ty. SM-9.5ASL (Spot Level)	Ton	315
16340	Asphalt Concrete Ty. SM-9.5D	Ton	315
16342	Asph. Conc. Ty. SM-9.5DSL (Spot Level)	Ton	315
16345	Asphalt Concrete Ty. SM-9.5E (64E-22)	Ton	315
16350	Asphalt Concrete Ty. SM-12.5A	Ton	315
16352	Asph. Con. Ty. SM-12.5ASL (Spot Level)	Ton	315
16355	Asphalt Concrete Ty. SM-12.5D	Ton	315
16357	Asph. Con. Ty. SM-12.5DSL (Spot Level)	Ton	315
16360	Asphalt Concrete Ty. SM-12.5E (64E-22)	Ton	315
16362	Asphalt Concrete Ty. SM-19.0A	Ton	315
16365	Asphalt Concrete Ty. IM-19.0A	Ton	315
16370	Asphalt Concrete Ty. IM-19.0D	Ton	315
16373	Asphalt Concrete Ty. IM-19.0A (T)	Ton	315
16374	Asphalt Concrete Ty. IM-19.0D (T)	Ton	315
16377	Asphalt Concrete Ty. BM-37.5	Ton	315
16379	Asphalt Concrete Ty. IM-19.0T	Ton	315
16390	Asphalt Concrete Ty. BM-25.0A	Ton	315
16392	Asphalt Concrete Ty. BM-25.0D	Ton	315
16395	Asphalt Concrete Ty. BM-25.0A (T)	Ton	315
16397	Asphalt Concrete Ty. BM-25.0D (T)	Ton	315
16400	Stone Matrix Asphalt SMA-9.5(64H-22)	Ton	ATTD
16401	Stone Matrix Asphalt SMA-9.5(64E-22)	Ton	ATTD
16402	Stone Matrix Asphalt SMA-12.5(64H-22)	Ton	ATTD
16403	Stone Matrix Asphalt SMA-12.5(64E-22)	Ton	ATTD
16404	Stone Matrix Asphalt SMA-19.0(64H-22)	Ton	ATTD
16405	Stone Matrix Asphalt SMA-19.0(64E-22)	Ton	ATTD
16490	Hot Mix Asphalt Treatment	Ton	ATTD
16500	Surf.Preparation & Restoration Type I	Ton	ATTD
16502	Surf.Preparation & Restoration Type II	Ton	ATTD
16504	Surf.Preparation & Restoration Type III	Ton	ATTD
67201	NS Asphalt Concrete Overlay	Ton	315
67210	NS Asphalt Concrete	Ton	315
68240	NS Asphalt Concrete	Ton	315

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
PRICE ADJUSTMENT FOR STEEL

June 15, 2015

The Department will adjust monthly progress payments up or down as appropriate for cost changes in steel used on specific items of work identified in the contract in accordance with this provision. This Special Provision provides a master listing of standard bid items the Department has determined are eligible for steel price adjustment.

An automatically generated *project-specific* listing of *standard* bid items the Department has identified as eligible for steel price adjustment is included with the bidding proposal. Only items on this listing will be eligible for steel price adjustment. Generally, *non-standard* pay items will not be eligible for steel price adjustment unless such steel items are project-specific modifications of items normally eligible, are clearly and specifically identified by a separate and distinct steel pay item and the quantities present on the project constitute major items of the work. These items may be addressed by project specific provisions and their related pay items designated as being eligible in the bid proposal. Items eligible for steel price adjustment for a particular project will be shown on Form C-21C "Bid Items Eligible for Steel Price Adjustment" and included with the bidding documents. The Bidder may choose to have steel price adjustment applied to any, all or none of the eligible items shown on Form C-21C. The Bidder's selection of items for steel price adjustment or non-selection (non-participation) may not be changed once he has submitted Form C-21C to the Department

The Contractor shall use Form C-21C to submit to the State Contract Engineer, no later than 15 calendar days after the date of Contract Award letter, those pay items he chooses to have steel price adjustment applied on. Items the Contractor chooses for steel price adjustment must be designated by writing the word "Yes" in the column titled "Option" by each bid item chosen for adjustment. The Contractor's designations on Form C-21C must be written in ink or typed, and signed by the Contractor to be considered complete. Items not properly designated, or designated with "No" or left blank on the Contractor's C-21C "Bid Items Eligible for Steel Price Adjustment" form will automatically not be considered for adjustment. No steel items will be eligible for steel price adjustment on this project if the Contractor fails to return his Form C-21C on time.

Please note: Inventoried materials from the listing of eligible items are specifically excluded for consideration. Items from the listing of eligible items for which the Contractor has requested payment as Material on Hand in accordance with Section 109.09 are also specifically excluded for consideration past the delivery date to the fabricator. This provision also does not allow for price adjustment for embedded steel where the steel item is a component of the finished bid item and there is no separate or distinct payment for the steel item or for steel used for pre-tensioned or post-tensioned precast components where furnishing steel is included in the unit price of the finished bid item.

This provision shall apply only to material cost changes that occur between the date of the receipt of bids by the Department and the date the material is shipped to the fabricator. The Contractor, subcontractor and/or supplier are required to place their purchase order for the steel items designated in this contract for price adjustment within 30 calendar days after the date of execution of this contract with the Department. The timeliness of the Contractor's response is also to ensure the receipt of such items in a timely manner that shall not adversely affect his progress schedule or contract completion date. The items shall further be specifically stored, labeled, or tagged, recognizable by color marking, and identifiable by project for inspection and audit verification immediately upon arrival at the fabricator.

The Contractor shall submit documentation to the appropriate District Construction Engineer for all items listed in the Contract for which it is requesting a steel price adjustment. This documentation shall consist of material price quotes, bid papers, or other similar type of documentation satisfactory to the Department, and support the completion of the form establishing the average price per pound for the

eligible steel bid item. The Contractor must use the format as shown with this provision; no other format for presenting this information will be permitted. The Contractor shall certify that all items of documentation are original and were used in the computation of the amount bid for the represented eligible pay items for the month bids were opened. This documentation shall support the base line material price ("Base Price") of the steel item only. No adjustment will be made for changes in other components of the contract unit bid price, including, but not limited to, fabrication, shipping, storage, handling, and erection.

The Contractor will not be eligible for price adjustment of steel items if he fails to submit specifically required information (i.e., purchase order, price data, bill of lading, material information or other requested information) as noted herein.

Price adjustment of each qualifying item will only be considered if there is an increase or decrease in the cost of eligible steel materials in excess of 10 percent up to a maximum of 60 percent from the Base Price when compared with the latest published price index ("Price Index") in effect at the time material is shipped to the fabricator.

The Price Index the Department is using is based on The U.S. Department of Labor, Bureau of Labor Statistics, Producers Price Index (PPI), which measures the average price change over time of the specific steel eligible item from the perspective of the seller of goods. The specific Producers Price Index (PPI) to be used to adjust the price for the eligible VDOT steel items is shown in the table below. **Please note:** The Producers Price Index (PPI) is subject to revision 4 months after original publication, therefore, price adjustments and payments will not be made until the index numbers are finalized.

Items under consideration for price adjustment will be compared to the steel category index items and the corresponding I.D. numbers shown in the table attached to the end of this provision.

The price adjustment will be determined by comparing the percentage of change in index value beyond 10 percent above or below the index on the bid date to the index value on the date the steel material is shipped to the fabricator (Please see included sample examples). Weights and date of shipment must be documented by a bill of lading provided to the Department. The final price adjustment dollar value will be determined by multiplying this percent increase or decrease in the index (after 10%) by the represented quantity of steel shipped, by the Base Price per pound subject to the limitations herein.

Price increase/decrease will be computed as follows:

$$A = B \times P \times Q$$

- Where;
- A = Steel price adjustment in lump sum dollars
 - B = Average weighted price of steel submitted with bid on project in \$ per pound
 - P = Adjusted percentage change in PPI average from shipping date to bid date minus 10% (0.10) threshold
 - Q = Total quantity of steel in pounds shipped to fabricator for specific project

Delays to the work caused by steel shortages may be justification for a contract time extension but will not constitute grounds for claims for standby equipment, extended office overhead, or other costs associated with such delays.

The Engineer will determine, and specify in the Work Order, the need for application of the adjustments herein to extra work on an individual basis.

This price adjustment is capped at 60 percent. This means the maximum "P" value for increase or decrease that can be used in the above equation is 50% (60%-10% threshold).

Calculations for price adjustment shall be shown separate from the monthly progress estimate and will not be included in the total cost of work for determination of progress or for extension of contract time.

Any apparent attempt to unbalance bids in favor of items subject to price adjustment may result in rejection of the bid proposal.

20-Jan-05

Sample Form to be turned in for Steel Price Adjustment Provision
(All prices to be supported by project-specific quotes)

BID DATE

28-Apr-04

Bid Item 61720 High Strength Structural Steel

Supplier	Description of material	Unit price f.o.b supplier \$/lbs	Quantity In lbs.	Price Extension	Date of Quote
XYZ mill	Structural beams Various sizes (see quote)	\$0.28	1,200,000	\$336,000.00	21-Apr-04
ABC distributing	Various channel & angle shapes (see quote)	\$0.32	35,000	\$11,200.00	20-Apr-04

Total 1,235,000 \$347,200.00

Average weighted price = \$0.2816

Note: All prices are to include any surcharges on materials quoted as if they are shipped in the month the bid is submitted. Vendors must include this surcharge along with their base price on their quotes.

v

20-Jan-05

Sample Calculation of a Price Adjustment (increase)

Project bid on April 28, 2004.

Project has 450,000 lb. of structural steel.

Orders placed in timely manner and according to contract.

Contractor's *f.o.b. supplier price for the structural steel in bid is \$0.2816 per pound. *free on board

Adjusted** BLS Producers Price Index (PPI) most recently published average at time of bid is 139.6.

** final change
after 4 months

All steel shipped to fabricator in same month, October 2004.

Adjusted BLS Producers Price Index (PPI) most recently published average for month of October is 161.1

Adjustment formula is as follows:

$$A = B \times P \times Q$$

- Where;
- A = Steel price adjustment in lump sum dollars
 - B = Average weighted price of steel submitted with bid on project in \$ per pound
 - P = Adjusted percentage change in PPI average from shipping date to bid date minus 10% (0.10) threshold
 - Q = Total quantity of steel shipped to fabricator in October 2004 for this project in pounds

$$B = \$0.2816$$

$$P = (161.1 - 139.6) / 139.6 - 0.10 = 0.054$$

$$Q = 450,000 \text{ lb.}$$

$$A = 0.2816 \times 0.054 \times 450,000$$

$$A = \$6,842.88 \text{ pay adjustment to Contractor}$$

MASTER LISTING

STANDARD BID ITEMS ELIGIBLE FOR STEEL PRICE ADJUSTMENT

Sept. 24, 2008 rev # 1 added 4 corrosion resistant re-bar items.
 Dec. 4, 2008 rev # 2 deleted item 68138 straighten structural steel
 January 14, 2009 rev # 3 identified BLS WPU used in \$ adjustment
 March 18, 2009 added items 61813,68109 & 68110

BLS Series I. D.

ITEM NUMBER	ITEM DESCRIPTION	UNITS	Number WPU used in \$ adjust.
00519	SHEET PILE, STEEL	SF	avg. 1017 & 101
00540	REINF. STEEL	LB	101704
00541	CORROSION RESISTANT REINF. STEEL CL. I	LB	101704
00542	EPOXY COATED REINF. STEEL	LB	101704
00560	STRUCTURAL STEEL JB-1	LB	avg. 1017 & 101
11030	REINF. STEEL BRIDGE APPR. SLAB	LB	101704
11181	PATCH.HYDR.CEM.CONC. PAVE.	SY	101704
13290	GUARDRAIL GR-8 (NCHRP 350 TL-3)	LF	avg. 1017 & 101
13292	GUARDRAIL GR-8A (NCHRP 350 TL-3)	LF	avg. 1017 & 101
13294	GUARDRAIL GR-8B (NCHRP 350 TL-3)	LF	avg. 1017 & 101
13310	GUARDRAIL TERMINAL GR-6 (NCHRP 350)	LF	avg. 1017 & 101
13312	GUARDRAIL TERMINAL GR-7 (NCHRP 350)	EA	avg. 1017 & 101
13315	GUARDRAIL TERMINAL GR-11	EA	avg. 1017 & 101
13320	GUARDRAIL GR-2	LF	avg. 1017 & 101
13323	GUARDRAIL GR-2A	LF	avg. 1017 & 101
13331	RAD. GUARDRAIL GR-2	LF	avg. 1017 & 101
13333	RAD. GUARDRAIL GR-2A	LF	avg. 1017 & 101
13335	GUARDRAIL GR-3	LF	avg. 1017 & 101
13345	ALTERNATE BREAKAWAY CABLE TERMINAL(GR-9)	EA	avg. 1017 & 101
13351	GUARDRAIL GR-8	LF	avg. 1017 & 101
13352	GUARDRAIL GR-8A	LF	avg. 1017 & 101
13353	GUARDRAIL GR-8B	LF	avg. 1017 & 101
13355	GUARDRAIL GR-10	LF	avg. 1017 & 101
13421	MEDIAN BARRIER MB-3	LF	avg. 1017 & 101
13450	MEDIAN BARRIER MB-5	LF	avg. 1017 & 101
13451	MEDIAN BARRIER MB-5A	LF	avg. 1017 & 101
13452	MEDIAN BARRIER MB-5B	LF	avg. 1017 & 101
13545	REINF. STEEL	LB	101704
13594	TRAF. BARR. SER. GUARD RAIL TER. GR-7	EA	avg. 1017 & 101
13594	TRAF.BAR.SER.GD.RAIL TER. GR-7	EA	avg. 1017 & 101
14502	REINFORCING STEEL	LB	101704
15290	PATCH.CEM.CONC.PAVE.TY.CRCP-A	SY	101704
15302	PATCH.CEM.CONC.PAVE. TY. II	SY	101704
15305	PATCH.CEM.CONC.PAVE.TY. IV-A	SY	101704
17323	GUARDRAIL BEAM	LF	avg. 1017 & 101
17325	RADIAL GUARDRAIL BEAM	LF	avg. 1017 & 101
17327	RUB RAIL	LF	avg. 1017 & 101
17342	STEEL TUBE GR-7	EA	avg. 1017 & 101
17348	BREAKAWAY POST GR-7	EA	101704
17353	CABLE GR-3	LF	avg. 1017 & 101
17381	POST (BENT PLATE OR S 75 X 8.5 STEEL) GR	EA	avg. 1017 & 101
22501	FENCE FE-W1	LF	avg. 1017 & 101
22643	FENCE FE-CL	LF	avg. 1017 & 101
22645	FENCE FE-CL VINYL COATED	LF	avg. 1017 & 101
23043	WATER GATE FE-4 TY.III	LF	avg. 1017 & 101

23501	FENCE FE-W1 (FABRIC ONLY)	LF	avg. 1017 & 101
45522	4" STEEL ENCASE. PIPE	LF	101706
45532	6" STEEL ENCASE. PIPE	LF	101706
45562	16" STEEL ENCASE. PIPE	LF	101706
45572	18" STEEL ENCASE. PIPE	LF	101706
45582	24" STEEL ENCASE. PIPE	LF	101706
45584	24" JACKED STEEL ENCASUREMENT PIPE	LF	101706
45592	30" STEEL ENCASE. PIPE	LF	101706
50402	SIGN POST STEEL 3"	LF	101706
50404	SIGN POST STEEL 4"	LF	101706
50406	SIGN POST STEEL 6"	LF	101706
50410	SIGN POST STEEL 10"	LF	101706
50412	SIGN POST STEEL 12"	LF	101706
50414	SIGN POST STEEL 14"	LF	101706
50416	SIGN POST STEEL 16"	LF	101706
50418	SIGN POST STEEL 18"	LF	101706
51317	SIG. POLE MP-1 20' ONE ARM 30'	EA	101706
51319	SIG. POLE MP-1 20' ONE ARM 32'	EA	101706
51325	SIG. POLE MP-1 20' ONE ARM 38'	EA	101706
51327	SIG. POLE MP-1 20' ONE ARM 40'	EA	101706
51329	SIG. POLE MP-1 20' ONE ARM 42'	EA	101706
51331	SIG. POLE MP-1 20' ONE ARM 44'	EA	101706
51337	SIG. POLE MP-1 20' ONE ARM 50'	EA	101706
51339	SIG. POLE MP-1 20' ONE ARM 52'	EA	101706
51341	SIG. POLE MP-1 20' ONE ARM 54'	EA	101706
51344	SIG. POLE MP-1 20' ONE ARM 56'	EA	101706
51346	SIG. POLE MP-1 20' ONE ARM 58'	EA	101706
51347	SIG. POLE MP-1 20' ONE ARM 60'	EA	101706
51348	SIG. POLE MP-1 20' ONE ARM 62'	EA	101706
51368	SIG. POLE MP-1 20' TWO ARMS 36' & 42'	EA	101706
51400	SIG. POLE MP-1 CO. LU. ONE ARM 38'	EA	101706
51402	SIG. POLE MP-1 CO. LU. ONE ARM 40'	EA	101706
51408	SIG. POLE MP-1 CO. LU. ONE ARM 46'	EA	101706
51412	SIG. POLE MP-1 CO. LU. ONE ARM 50'	EA	101706
51414	SIG. POLE MP-1 CO. LU. ONE ARM 52'	EA	101706
51416	SIG. POLE MP-1 CO. LU. ONE ARM 54'	EA	101706
51418	SIG. POLE MP-1 CO. LU. ONE ARM 56'	EA	101706
51420	SIG. POLE MP-1 CO. LU. ONE ARM 58'	EA	101706
51422	SIG. POLE MP-1 CO. LU. ONE ARM 60'	EA	101706
55162	LIGHTING POLE LP-1 30'-4'	EA	101706
55163	LIGHTING POLE LP-1 30'-6'	EA	101706
55166	LIGHTING POLE LP-1 30'-12'	EA	101706
55169	LIGHTING POLE LP-1 35'-6'	EA	101706
55171	LIGHTING POLE LP-1 35'-10'	EA	101706
55176	LIGHTING POLE LP-1 40'-8'	EA	101706
55185	LIGHTING POLE LP-2 TYPE A	EA	101706
55186	LIGHTING POLE LP-2 TYPE B	EA	101706
55187	LIGHTING POLE LP-2 TYPE C	EA	101706
55188	LIGHTING POLE LP-2 TYPE D	EA	101706
55189	LIGHTING POLE LP-2 TYPE E	EA	101706
55190	LIGHTING POLE LP-2 TYPE F	EA	101706
55192	LIGHTING POLE LP-2 TYPE H	EA	101706
60452	REINF. STEEL BRIDGE APPR. SLAB	LB	101704
61700	REINF. STEEL	LB	101704
61704	CORROSION RESISTANT REINF. STEEL	LB	101704
61705	EPOXY COATED REINF. STEEL	LB	101704
61711	CORROSION RESISTANT REINF. STEEL CL. I	LB	101704

61712	CORROSION RESISTANT REINF.STEEL CL. II	LB	101704
61713	CORROSION RESISTANT REINF.STEEL CL. III	LB	101704
61750	STRUCT.STEEL HIGH STRG.PLT.GIRDERS	LB	avg. 1017 & 101
61811	STR.STEEL PLATE GIRDER ASTM A709 GRADE50	LB	avg. 1017 & 101
61812	STR.STEEL PLATE GIRDER ASTM A709 GRADE50	LB	avg. 1017 & 101
61813	STR.STEEL PLATE GIRDER ASTM A709 GRADEHPS50W	LB	avg. 1017 & 101
61814	STR.STEEL PLATE GIRDER ASTM A709 GRADEHPS70W	LB	avg. 1017 & 101
61820	STR.STEEL ROLLED BEAM ASTM A709 GRADE 36	LB	avg. 1017 & 101
61821	STR.STEEL ROLLED BEAM ASTM A709 GRADE50	LB	avg. 1017 & 101
61822	STR.STEEL ROLLED BEAM ASTM A709 GRADE50W	LB	avg. 1017 & 101
61990	STEEL GRID FLOOR	SF	avg. 1017 & 101
64110	STEEL PILES 10"	LF	avg. 1017 & 101
64112	STEEL PILES 12"	LF	avg. 1017 & 101
64114	STEEL PILES 14"	LF	avg. 1017 & 101
64768	DRIVING TEST FOR 12" STEEL PILE	LF	avg. 1017 & 101
64778	DRIVING TEST FOR 14" STEEL PILE	LF	avg. 1017 & 101
65200	REINF. STEEL	LB	101704
65204	CORROSION RESISTANT REINF. STEEL	LB	101704
65205	EPOXY COATED REINF. STEEL	LB	101704
65211	CORROSION RESISTANT REINF.STEEL CL. I	LB	101704
65212	CORROSION RESISTANT REINF.STEEL CL. II	LB	101704
65213	CORROSION RESISTANT REINF.STEEL CL. III	LB	101704
67086	PED. FENCE 6'	LF	avg. 1017 & 101
67088	PED. FENCE 8'	LF	avg. 1017 & 101
67089	PED. FENCE 10'	LF	avg. 1017 & 101
68091	CORROSION RESISTANT REINF.STEEL CL. I	LB	101704
68092	CORROSION RESISTANT REINF.STEEL CL. II	LB	101704
68093	CORROSION RESISTANT REINF.STEEL CL. III	LB	101704
68100	REINF. STEEL	LB	101704
68104	CORROSION RESISTANT REINF. STEEL	LB	101704
68105	EPOXY COATED REINF. STEEL	LB	101704
68107	STR.STEEL PLATE GIRDER ASTM A709 GRADE50	LB	avg. 1017 & 101
68108	STR. STEEL PLATE GIRDER ASTM A709 GR50W	LB	avg. 1017 & 101
68109	STR. STEEL PLATE GIRDER ASTM A709 GR.HPS50W	LB	avg. 1017 & 101
68110	STR. STEEL PLATE GIRDER ASTM A709 GR.HPS70W	LB	avg. 1017 & 101
68112	STR.STEEL ROLLED BEAM ASTM A709 GR.36	LB	avg. 1017 & 101
68113	STR.STEEL ROLLED BEAM ASTM A709 GR.50	LB	avg. 1017 & 101
68114	STR.STEEL ROLLED BEAM ASTM A709 GR. 50W	LB	avg. 1017 & 101
68115	STRUCT. STEEL	LB	avg. 1017 & 101
68270	REINF. STEEL BRIDGE APPR. SLAB	LB	101704
69060	SHEET PILES, STEEL	SF	avg. 1017 & 101
69091	CORROSION RESISTANT REINF.STEEL CL. I	LB	101704
69092	CORROSION RESISTANT REINF.STEEL CL. II	LB	101704
69093	CORROSION RESISTANT REINF.STEEL CL. III	LB	101704
69100	REINF. STEEL	LB	101704
69104	CORROSION RESISTANT REINF. STEEL	LB	101704
69105	EPOXY COATED REINF. STEEL	LB	101704
69110	STEEL PILES 10"	LF	avg. 1017 & 101
69112	STEEL PILE 12"	LF	avg. 1017 & 101
69113	DRIVING TEST FOR 12" STEEL PILE	LF	avg. 1017 & 101

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
NO STEEL PRICE ADJUSTMENT ELIGIBILITY FOR SPECIFIC SCHEDULE ITEMS

December 10, 2009

If the steel price adjustment form(s), as required in the special provision for **Price Adjustment For Steel**, is not included in the Contract for a specific schedule, the items in that schedule are **not** eligible for steel price adjustment.

PREDETERMINED MINIMUM WAGE RATES LETTER (VOLUME 2)

The predetermined minimum wage rates, required for this contract in the following letter, are contained in the Special Provision for **PREDETERMINED MINIMUM WAGE RATES (VOLUME 1)**. That special provision is contained in the contract document assembly titled "Bid Proposal and Contract" which this contract document assembly accompanies.

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U.S. DEPARTMENT OF LABOR
OFFICE OF THE SECRETARY
WASHINGTON
DECISION OF THE SECRETARY

This case is before the Department of Labor pursuant to a request for a wage predetermination as required by law applicable to the work described.

A study has been made of wage conditions in the locality and based on information available to the Department of Labor the wage rates and fringe payments listed are hereby determined by the Secretary of Labor as prevailing for the described classes for labor in accordance with applicable law.

This wage determination decision and any modifications thereof during the period prior to the stated expiration date shall be made a part of every contract for performance of the described work as provided by applicable law and regulations of the Secretary of Labor, and the wage rates and fringe payments contained in this decision, including modifications, shall be the minimums to be paid under any such contract and subcontractors on the work.

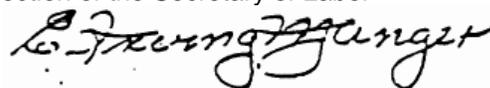
The contracting officer shall require that any class of laborers and mechanics which is not listed in the wage determination and which is to be employed under the contract, shall be classified or reclassified conformably to the wage determination, and a report of the action taken shall be sent by the Federal agency to the Secretary of Labor. In the event the interested parties cannot agree on the proper classification or reclassification of a particular class of laborers and mechanics to be used, the question accompanied by the recommendation of the contracting officer shall be referred to the Secretary for determination.

Before using apprentices on the job the contractor shall present to the contracting officer written evidence of registration of such employees in a program of a State apprenticeship and training agency approved and recognized by the U.S. Bureau of Apprenticeship and Training. In the absence of such a State agency, the contractor shall submit evidence of approval and registration by the U.S. Bureau of Apprenticeship and Training.

The contractor shall submit to the contracting officer written evidence of the established apprentice-journeyman ratios and wage in the project area, which will be the basis for establishing such ratios and rates for the project under the applicable contract provisions.

Fringe payments include medical and hospital care, compensation for injuries or illness resulting from occupational activity, unemployment benefits, life insurance, disability and sickness insurance, accident insurance (all designated as health and welfare), pensions, vacation and holiday pay, apprenticeship or other similar programs and other bona fide fringe benefits.

By direction of the Secretary of Labor



E. Irving Manger, Associate Administrator
Division of Wage Determinations
Wage and Labor Standards Administration

The following Form **FHWA-1273** titled **REQUIRED CONTRACT PROVISIONS, FEDERAL-AID CONSTRUCTION CONTRACTS** shall apply to this contract:



FHWA-1273 – Revised May 1, 2012

**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

ATTACHMENTS

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

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).

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.

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.

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).

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.
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.

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.

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 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.

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.

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.

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.

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.

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.

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 contacting 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.

3. 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.

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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.

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
**NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE
EQUAL EMPLOYMENT OPPORTUNITY (EXECUTIVE ORDER 11246)**

1. The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth herein.
2. The goals for female and minority participation, expressed in percentage terms of the Contractor's aggregate work force in each trade on all construction works in the covered area, are as follows:

Females- 6.9%
Minorities - See Attachment "A"

The goals are applicable to all the Contractor's construction work performed in the covered area, whether or not it is Federal or federally assisted. If the Contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the Contractor also is subject to the goals for both its federally involved and non-federally involved construction.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications, set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals established herein. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executives Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days the award of any construction subcontract in excess of \$10,000 at any tier for construction works under this contract. The notification shall list the name, address and telephone number of the subcontractor, employer identification number, estimated dollar amount of the subcontract, estimated starting and completion dates of the subcontract and the geographical area in which the contract is to be performed.

**STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY
CONSTRUCTION CONTRACT SPECIFICATIONS (EXECUTIVE ORDER 11246)**

1. As, used in this provision:
 - a. "Covered area" means the geographical area described in the solicitation from which this contract resulted;
 - b. "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority;
 - c. "Employer identification number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U. S. Treasury Department Form 941;

- d. "Minority" includes:
- (i) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);
 - (ii) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);
 - (iii) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and
 - (iv) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).
2. Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of \$10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation.
3. If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U. S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors and Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.
4. The Contractor shall implement the specific affirmative action standards provided in paragraphs 7 a through p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the coverer area. Covered construction Contractors performing construction work in geographical areas where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the Federal Register in notice form, and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting officers. The Contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.
5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.
6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U. S. Department of Labor.

7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:
- a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, shall assign two or more women to each construction project. The Contractor shall specifically ensure that all foreman, superintendents and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites in such facilities.
 - b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.
 - c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off the street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union, or if referred, not employed by the Contractor, this shall be documented in the file with the reason therefore, along with whatever additional actions the Contractor may have taken.
 - d. Provide immediate written notification to the Director when the union or unions which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or women sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.
 - e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources complied under 7b above.
 - f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper or annual report; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.
 - g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination, or other employment decisions including specific review of these items with onsite supervisory personnel such as Superintendents and General Foremen prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed and disposition of the subject matter.
 - h. Disseminate the Contractor's EEO policy externally by including in any news media advertisement that the Contractor is "An Equal Opportunity Employer" for minority and

female, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.

- i. Directs its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures and tests to be used in the selection process.
 - j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of Contractor's workforce.
 - k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.
 - l. Conduct, at least annually, an inventory and evaluation of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for such opportunities through appropriate training or other means.
 - m. Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.
 - n. Ensure that all facilities and company activities are nonsegregated, except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.
 - o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.
 - p. Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.
8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7a through p). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through p of these Specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.
9. Goals for women have been established. However, the Contractor IS required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner, that is even

thought the Contractor has achieved its goals for women, the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized.

10. The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex or nation origin.
11. The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.
12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246. as amended.
13. The Contractor, in fulfilling its obligations under these specifications shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director will proceed in accordance with 41 CFR 60-4.8.
14. The Contractor shall designate and make known to the Department a responsible official as the EEO Officer to monitor all employment related activity, to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, Contractors will not be required to maintain separate records.
15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

ATTACHMENT A

<u>Economic Area</u>	<u>Goal (Percent)</u>
Virginia:	
021 Roanoke-Lynchburg, VA	
SMSA Counties:	
4640 Lynchburg, VA	19.3
VA Amherst; VA Appomattox; VA Campbell; VA Lynchburg	
6800 Roanoke, VA	10.2
VA Botetourt; VA Craig; VA Roanoke; VA Roanoke City; VA Salem	
Non-SMSA Counties	12.0
VA Alleghany; VA Augusta; VA Bath; VA Bedford; VA Bland; VA Carroll;	
VA Floyd; VA Franklin; VA Giles; VA Grayson; VA Henry; VA Highland;	
VA Montgomery; VA Nelson; VA Patrick; VA Pittsylvania; VA Pulaski;	

	VA Rockbridge; VA Rockingham; VA Wythe; VA Bedford City; VA Buena Vista; VA Clifton Forge; VA Covington; VA Danville; VA Galax; VA Harrisonburg; VA Lexington; VA Martinsville; VA Radford; VA Staunton; VA Waynesboro; WV Pendleton.	
022 Richmond, VA		
	SMSA Counties:	
	6140 Petersburg - Colonial Heights - Hopewell, VA	30.6
	VA Dinwiddie; VA Prince George; VA Colonial Heights; VA Hopewell; VA Petersburg.	
	6760 Richmond, VA	24.9
	VA Charles City; VA Chesterfield; VA Goochland, VA Hanover; VA Henrico; VA New Kent; VA Powhatan; VA Richmond.	
	Non-SMSA Counties	27.9
	VA Albemarle; VA Amelia; VA Brunswick; VA Buckingham, VA Caroline; VA Charlotte; VA Cumberland; VA Essex; VA Fluvanna; VA Greene; VA Greensville; VA Halifax; VA King and Queen; VA King William; VA Lancaster; VA Louisa; VA Lunenburg; VA Madison; VA Mecklenburg; VA Northumberland; VA Nottoway; VA Orange; VA Prince Edward; VA Richmond VA Sussex; VA Charlottesville; VA Emporia; VA South Boston	
023 Norfolk - Virginia Beach - Newport News VA:		
	SMSA Counties:	
	5680 Newport News- Hampton, VA	27.1
	VA Gloucester; VA James City; VA York; VA Hampton; VA Newport News; VA Williamsburg.	
	5720 Norfolk - Virginia Beach - Portsmouth, VA - NC	26.6
	NC Currituck; VA Chesapeake; VA Norfolk; VA Portsmouth; VA Suffolk; VA Virginia Beach.	
	Non-SMSA Counties	29.7
	NC Bertie; NC Camden; NC Chowan; NC Gates; NC Hertford; NC Pasquotank; NC Perquimans; VA Isle of Wight; VA Matthews; VA Middlesex; VA Southampton; VA Surry; VA Franklin.	
Washington, DC:		
020 Washington, DC.		
	SMSA Counties:	
	8840 Washington, DC - MD - VA	28.0
	DC District of Columbia; MD Charles; MD Montgomery MD Prince Georges; VA Arlington; VA Fairfax; VA Loudoun; VA Prince William VA Alexandria; VA Fairfax City; VA Falls Church.	
	Non- SMSA Counties	25.2
	MD Calvert; MD Frederick; MD St. Marys; MD Washington; VA Clarke; VA Culpeper; VA Fauquier; VA Frederick; VA King George; VA Page; VA Rappahannock; VA Shenandoah; VA Spotsylvania; VA Stafford; VA Warren; VA Westmoreland; VA Fredericksburg; VA Winchester WV Berkeley; WV Grant; WV Hampshire; WV Hardy; WV Jefferson; WV Morgan.	
Tennessee:		
052 Johnson City - Kingsport - Bristol, TN - VA		
	SMSA Counties:	
	3630 Johnson City - Kingsport -Bristol, TN-VA	2.6
	TN Carter; TN Hawkins; TN Sullivan; TN Washington; VA Scott; VA Washington; VA Bristol.	
	Non-SMSA Counties	3.2
	TN Greene; TN Johnson; VA Buchanan; VA Dickenson; VA Lee; VA Russell; VA Smyth; VA Tazewell; VA Wise; VA Norton; WV McDowell; WV Mercer.	
Maryland:		

019 Baltimore MD	
Non-SMSA Counties	23.6
MD Caroline; MD Dorchester; MD Kent; MD Queen Annes; MD Somerset; MD Talbot; MD Wicomico; MD Worchester; VA Accomack; VA Northampton.	

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
DIVISION I—GENERAL PROVISIONS
(2016 PLANT MIX SCHEDULES)

December 10, 2015

SECTION 101—DEFINITIONS OF ABBREVIATIONS, ACRONYMS, AND TERMS

Section 101.02—Terms of the Specifications is amended to replace the definition for **Notice to Proceed** with the following:

Notice to Proceed. A date selected by the Contractor that is no earlier than 15 nor later than 30 calendar days after the date of contract execution on which the Contractor intends to begin the work, or a contract specific date on which the Contractor may begin the work identified as the Notice to Proceed date in the Contract Documents.

Section 101.02—Terms of the Specifications is amended to add the following:

Storm Sewer System - A drainage system consisting of a series of at least two interconnecting pipes and structures (minimum of two drop inlets, manholes, junction boxes, etc.) designed to intercept and convey stormwater runoff from a specific storm event without surcharge.

SECTION 102—BIDDING REQUIREMENTS AND CONDITIONS

Section 102.01— Prequalification of Bidders of the Specifications is amended to replace the first paragraph of (a) with the following:

All prospective Bidders, including all members of a joint venture, must prequalify with the Department and shall have received a certification of qualification in accordance with the Rules Governing Prequalification Privileges prior to bidding. These rules and regulations can be found within the Department's Rules Governing Prequalification Privileges via the Prequalification Application. This requirement may be waived by a project-specific provision in the bid proposal.

All subcontractors must be prequalified prior to performing any work on the contract, except that prequalification will not be required for subcontractors only performing a service as defined by the Code of Virginia, or only performing work items noted in the proposal as "Specialty Items".

In order to be eligible for DBE credit under Section 107.15 of the Specifications, DBE federal-aid contract subcontractors must be VDOT prequalified and DMBE certified at the time of bid submission. The prequalification and certification status of a DBE may affect the award of the contract to the prime contractor and the award of the subcontract to the DBE at any point during the contract.

Section 102.04(c) Notice of Alleged Ambiguities of the Specifications is amended to replace the first paragraph with the following:

If a word, phrase, clause, or any other portion of the proposal is alleged to be ambiguous, the Bidder shall submit to the State Contract Engineer a written notice of the alleged ambiguity not later than 10 days prior to the date of receipt of bids and request an interpretation thereof. This written notice shall be submitted via the CABB (Contractor Advertisement Bulletin Board) system located on the Construction website at www.VDOT.Virginia.gov. Authorized interpretations will be issued by the State Contract Engineer to each person who received a proposal and will be posted on the CABB system.

Section 102.05—Preparation Of Bid of the Specifications is amended to include the following:

The Bidder may bid on one or more individual contract schedule. The Bidder shall submit average unit prices in a contract schedule. Each contract schedule will be awarded and administered as a separate contract.

The Schedule of Items may contain permanent pavement marking bid items designated as “Bonus” in addition to the regular permanent pavement marking bid items. The bid submitted for the regular permanent pavement marking line items shall be the bidder’s price for the work. The bid submitted for the permanent pavement marking bid items designated as “Bonus” must be the bidder’s regular bid price with an adjustment of 1.25. Quantities in the Schedule of Items for permanent pavement marking bid items designated as “Bonus” will be one (1). Payment for bid items designated as “Bonus” will be determined by the quantity established in accordance with the Special Provision for **SECTION 704—PAVEMENT MARKINGS AND MARKERS** in the Contract.

Section 102.11— eVA Business-To-Government Vendor Registration of the Specifications is replaced with the following:

Bidders are not required to be registered with "eVA Internet e-procurement solution" at the time bids are submitted, however, prior to award, the lowest responsive and responsible bidder must be registered with “eVA Internet e-procurement solution” or the bid will be rejected. Registration shall be performed by accessing the eVA website portal www.eva.state.va.us, following the instructions and complying with the requirements therein.

When registering with eVa it is the bidder’s responsibility to enter or have entered their correct PA type address or addresses in eVa in order to receive payments on any contracts that the Department (VDOT) may award to them as the lowest responsive and responsible bidder. The Bidder shall also ensure their prequalification address(es) match those registered with eVa. Failure on the part of the bidder or Contractor to meet either of these requirements may result in late payment of monthly estimates.

SECTION 103—AWARD AND EXECUTION OF CONTRACTS

Section 103.01—Consideration of Bids of the Specifications is amended to add the following:

The Department may, as part of its deliberations toward award of a contract, enter into a Memorandum of Understanding (MOU) with the apparent lowest responsive and responsible bidder if any of the following is determined to be necessary:

- (a) Provide and document further clarification of a specification or drawing
- (b) Establish an order of priority (ranking) where there are conflicting specification requirements
- (c) Ensure proper understanding of the intent\meaning of a specification or drawing
- (d) Document the inclusion of inadvertently excluded pages from the contract documents
- (e) Document the correct unit of measurement where a conflict exists within the bid documents
- (f) Document the elimination of an item(s)

- (g) Limit the Department's exposure to contract overruns or potential unbalancing of a bid item.

This listing is not to be interpreted as all inclusive, but is provided to give examples of the types of issues that may be addressed in such an agreement. The MOU is not intended to be used to negotiate "as bid" unit prices\quantities or to renegotiate bid requirements with the apparent lowest responsive and responsible bidder, but merely to address intent, clarify points of confusion or limit the possible future effects of such issues on project budget. If the terms of the MOU are acceptable to both parties, the Department and the apparent lowest responsive and responsible bidder will document their acceptance of the terms of the MOU by both parties' signatures. In the case of Federal Oversight projects, FHWA concurrence also required. The MOU will be added to and become part of the executed contract.

Section 103.09—Execution of Contract of the Specifications is amended to include the following:

According to Section 2.2-4308.2 of the *Code of Virginia*, any employer with more than an average of 50 employees for the previous 12 months entering into a contract in excess of \$50,000 with the Department to provide work or provide services pursuant to such contract shall register and participate in the U.S. Department of Homeland Security's "E-Verify" system to verify information and work authorization of its newly hired employees performing work pursuant to such contract.

Contractors are not required to be enrolled with "E-Verify" at the time bids are submitted, however, prior to award, the lowest responsive and responsible bidder must be enrolled with "E-Verify". Contractors may use the following website to enroll in "E-Verify", <http://www.uscis.gov/e-verify>.

SECTION 104—SCOPE OF WORK

Section 104.01—Intent of Contract of the Specifications is replaced by the following:

The intent of the Contract is to provide for the completion of all work specified therein.

The Contractor shall base his bid on the cost of completing all work specified in the Contract.

Budgetary constraints as deemed necessary by the Department may be imposed at any time during the life of the Contract. This may affect the number of routes paved and thus the final quantity of work to be performed.

If prior to initiating or during the performance of the work, the Engineer determines that the cost of completion of all work specified in the Contract will exceed the limits of the budgeted funds, the Contractor will be notified immediately. With such notice the Engineer will specify which routes will be deleted according to the Department's predetermined listing of priorities.

If after routes are deleted and work proceeds, budgets revisions indicate that the cost of work to be completed by the Contractor will fall below the limits of the budgeted funds, the Department will determine which of the previously deleted routes will be returned to the Schedule to be completed at the contract unit price.

SECTION 105—CONTROL OF WORK

Section 105.01—Notice to Proceed of the Specifications is replaced with the following:

Unless otherwise indicated in the Contract, the Notice to Proceed date will be the date selected by the Contractor on which the Contractor intends to begin the work. That date shall be no earlier than 15 nor later than 30 calendar days after the date of contract execution. The State Contract Engineer

will contact the Contractor on the date of contract execution to inform him that the contract has been executed. The State Contract Engineer will also confirm this date in the Letter of Contract Execution. Copies of the Letter of Contract Execution will be distributed to Department personnel involved in the administration of the Contract and to the Contractor. Within 10 calendar days after the date of contract execution the Contractor shall submit to the Engineer written notice of the date he has selected as his Notice to Proceed date. If the Contractor fails to provide written notice of his selected Notice to Proceed Date within 10 calendar days of contract execution, the selected Notice to Proceed Date will become the date 15 calendar days after the date of contract execution. The Contractor shall begin work no later than 10 calendar days after the date he has selected as his Notice to Proceed date, unless the Notice to Proceed date is otherwise indicated in the Contract, in which case the Contractor shall begin work within 10 calendar days after the specific Notice to Proceed date indicated in the Contract.

Contract Time will commence on the date of the Notice to Proceed. The Letter of Contract Execution will identify the Chief Engineer's authorized representative, hereafter referred to as the Engineer, who is responsible for written directives and changes to the Contract. The Engineer will contact the Contractor after notice of award to arrange a pre-construction conference.

In the event the Contractor, for matters of his convenience, wishes to begin work earlier than 15 calendar days or later than 30 calendar days after the date of contract execution, he shall make such a request in writing to the Engineer within 10 calendar days of the date of contract execution or once a Notice to Proceed Date has been established, if he wishes to begin work more than 10 calendar days after his selected Notice to Proceed date or the Notice to Proceed Date indicated in the Contract, he shall make such a request to the Engineer in writing no later than 5 calendar days after the Notice to Proceed date. If this requested start date is acceptable to the Department, the Contractor will be notified in writing; however, the Contract fixed completion date will not be adjusted but will remain binding. The Contractor's request to adjust the start date for the work on the Contract will not be considered as a basis for claim that the time resulting from the Contractor's adjusted start date, if accepted by the Engineer, is insufficient to accomplish the work nor shall it relieve the Contractor of his responsibility to perform the work in accordance with the scope of work and requirements of the Contract. In no case shall work begin before the Department executes the Contract or prior to the Notice to Proceed date unless otherwise permitted by the Contract or authorized by the Engineer. The Contractor shall notify the Engineer at least 24 hours prior to the date on which he will begin the work.

Section 105.02—Pre-Construction Conference of the Specifications is amended to replace the first paragraph with the following:

After notification of award and prior to the Notice to Proceed date the Contractor shall attend a pre-construction conference scheduled by the Engineer to discuss the Contractor's planned operations for prosecuting and completing the work within the time limit of the Contract. At the pre-construction conference the Engineer and the Contractor will identify in writing the authorities and responsibilities of project personnel for each party. The pre-construction conference may be held simultaneously with the scheduling conference when the Engineer so indicates this in advance to the Contractor. When these are simultaneously held, the Contractor shall come prepared to discuss preparation and submittal details of the progress schedule in accordance with the requirements of the Contract.

Section 105.06—Subcontracting of the Specifications is replaced with the following:

No portion of the Contract shall be subcontracted or otherwise disposed of without the written consent of the District Administrator or his designee.

The Contractor shall perform with his own organization work amounting to not less than 30 percent of the original contract value unless otherwise noted in the Contract.

The Contractor shall not subcontract any part of the contract work to a contractor who is not prequalified with the Department in accordance with the requirements of Section 102.01 of the Specifications, unless otherwise indicated in the Contract. This restriction does not apply to contract specialty items, consultants, manufacturers, suppliers, or haulers. Consent to subcontract or otherwise dispose of any portion of the contract work shall not relieve the Contractor of any responsibility for the fulfillment of the entire Contract.

Any distribution of work shall be evidenced by a written binding agreement on file at the project site. Where no field office exists, such agreement shall be readily available upon request to Department inspector(s) assigned to the project.

The provisions contained in Form FHWA-1273 specifically, and other federal provisions included with the prime Contract are generally applicable to all Federal-aid construction projects and must be made a part of, and physically incorporated into all contracts, as well as, appropriate subcontracts for work so as to be binding in those agreements.

According to Commonwealth of Virginia Executive Order 20, the Contractor is encouraged to seek out and consider Small, Women-owned, and Minority-owned (SWaM) businesses certified by the Department of Small Business and Supplier Diversity (DSBSD) as potential subcontractors and vendors. Further, the Contractor shall furnish and require each subcontractor (first-tier) to furnish information relative to subcontractor and vendor involvement on the project.

For purposes of this provision, the term “vendor” is defined as any consultant, manufacturer, supplier or hauler performing work or furnishing material, supplies or services for the contract. The Contractor and, or subcontractor (first-tier) must insert this provision 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). The applicable requirements of this provision are incorporated by reference for work done by vendors under any purchase order, rental agreement or agreement for other services for the contract. The Contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or vendor.

The submission of a bid will be considered conclusive evidence that the Contractor agrees to assume these contractual obligations and to bind subcontractors contractually to the same at the Contractor's expense.

When an approved Form C-31 “Subletting Request” is required according to IIM-CD-2013-06.01, the Contractor shall indicate on the Subletting Request if a subcontractor is a certified DBE or SWAM business.

The Contractor shall report all SWAM, and Non-SWAM/DBE vendor payments annually on June 30th (if not a business day, then the next business day), and within 30 days after final acceptance of the work, to the District Civil Rights Section. The Contractor shall provide the information in a format consistent with revised Form C-61 Vendor Payment Report, subject to the approval of the Engineer.

DBE Participation and reporting shall be in accordance with **Section 107.15—Use of Disadvantaged Business Enterprises (DBEs)**. The Contractor shall provide the information in a format consistent with Form C-63 Vendor Payment Compliance Report.

If the Contractor fails to provide the required information, the Department may delay final payment according to Specification Section 109.10 of the Specifications.

Section 105.10(c)(1)—Steel Structures of the Specifications is replaced with the following:

Working drawings for steel structures, including metal handrails, shall consist of shop detail, erection, and other working drawings showing details, dimensions, sizes of units, and other information necessary for the fabrication and erection of metal work.

Section 105.14—Maintenance During Construction of the Specifications is amended to include the following:

The Contractor shall have at least one person on the project site during all work operations who is currently verified either by the Department's Basic or Intermediate Work Zone Traffic Control training, or by the American Traffic Safety Services Association (ATSSA) Virginia Intermediate Traffic Control Supervisor (TCS) training by a Department approved training provider. This person must have their verification card with them while on the project site. This person shall be responsible for the oversight of work zone traffic control within the project limits in compliance with the Contract requirements, the VWAPM, and the MUTCD. This person's duties shall include the supervision of the installation, adjustment (if necessary), inspection, maintenance, and removal when no longer required, of all work zone traffic control devices on the project.

The Department's Intermediate Work Zone Traffic Control trained person or an ATSSA Virginia Intermediate TCS can oversee multiple/separate work locations but shall be on site within 60 minutes of notification to oversee changes made to temporary traffic control otherwise the Engineer will suspend that maintenance operation until that operation is appropriately staffed in accordance with the requirements herein.

The Contractor shall have at least one person, at a minimum, on the project site who is verified in Basic Work Zone Traffic Control by the Department for each maintenance operation that involves installing, maintaining, or removing work zone traffic control devices. This person shall be responsible for the placement, maintenance and removal of work zone traffic control devices.

In the event none of the Contractor's personnel on the project site have, at a minimum, the required Basic Work Zone Traffic Control verification, the Engineer will suspend that construction/maintenance operation until that operation is appropriately staffed in accordance with the requirements herein.

Section 105.15(b) Mailboxes and Newspaper Boxes of the Specifications is replaced with the following:

(b) **Mailboxes and Newspaper Boxes:** When removal of existing mailboxes and newspaper boxes is made necessary by construction operations, the Contractor shall place them in temporary locations so that access to them will not be impaired. Prior to final acceptance, boxes shall be placed in their permanent locations as designated by the Engineer and left in as good condition as when found. Boxes or their supports that are damaged through negligence on the part of the Contractor shall be replaced at his expense. The cost of removing and resetting existing boxes shall be included in other pay items of the Contract. New mailboxes designated in the plans shall be paid for in accordance with the provisions of Section 521 of the Specifications.

Section 105.19—Submission and Disposition of Claims of the Specifications is amended to replace the first sentence of the third paragraph with the following:

Upon completion of the Contract, the Contractor may, within 60 days after the final estimate date established by the Department pursuant to Virginia Code, § 33.2-1101, deliver to the Department a written claim, which must be a signed original claim document along with three legible copies of the claim document, for the amount he deems he is entitled to under the Contract.

SECTION 106—CONTROL OF MATERIAL

Section 106.08—Storing Materials of the Specifications is amended to replace the third paragraph with the following:

Chemicals, fuels, lubricants, bitumens, paints, raw sewage, and other potential pollutant-generating materials as determined by the Engineer or defined in the VPDES *General Permit For Discharge of*

Stormwater From Construction Activities shall not be stored within any flood-prone area unless no other location is available. A flood-prone area is defined as the area adjacent to the main channel of a river, stream or other waterbody that is susceptible to being inundated by water during storm events and includes, but is not limited to, the floodplain, the flood fringe, wetlands, riparian buffers or other such areas adjacent to the main channel. If stored in a flood-prone area, the material shall be stored in one or more secondary containment structures with an impervious liner and be removed entirely from the flood-prone area at least 24 hours prior to an anticipated storm event that could potentially inundate the storage area. Any storage of these materials outside of a flood-prone area that is in proximity to natural or man-made drainage conveyances where the materials could potentially reach a river, stream, or other waterbody if a release or spill were to occur, must be stored in a bermed or diked area or inside a secondary containment structure capable of preventing a release. Any spills, leaks or releases of such materials shall be addressed in accordance with Section 107.16(b) and (e) of the Specifications. Accumulated rain water shall be pumped out of impoundment or containment areas into approved filtering devices. All proposed pollution prevention measures and practices must be identified by the Contractor in his Pollution Prevention Plan as required by the Specifications, other contract documents and/or the *VPDES General Permit for Discharge of Stormwater from Construction Activities*.

SECTION 107—LEGAL RESPONSIBILITIES

Section 107.02—Permits, Certificates, and Licenses of the Specifications is amended to replace (f) with the following:

- (f) **Virginia Department of Environmental Quality – VPDES General Permit For Discharge of Stormwater From Construction Activities (VPDES Construction Permit)**: All construction activities undertaken by or for VDOT involving land disturbances equal to or exceeding one acre must be covered by the VPDES Construction Permit. According to IIM-LD-242 and Section 107.16 of the Specifications, VDOT is responsible for securing VPDES Construction Permit coverage for all applicable land disturbing activities performed on VDOT rights of way or easements, including off-site support facilities that are located on VDOT rights of way or easements that directly relate to the construction site activity. The Contractor shall be responsible for securing VPDES Construction Permit coverage for support facilities that are not located on VDOT rights of way or easements.

The Contractor shall be responsible for all costs to obtain VPDES Construction Permit coverage for all support facilities (both on-site and off-site) not included in the construction plans or contract documents for the project. The Department will not be responsible for any inconvenience, delay, or loss experienced by the Contractor as a result of his failure to gain access to any support facility areas at the time contemplated.

Section 107.02—Permits, Certificates, and Licenses of the Specifications is amended to replace last eleven paragraphs with the following:

The Contractor shall 1) stockpile excavated material in a manner that prevents reentry into the stream, 2) restore original streambed and streambank contours, 3) revegetate barren areas, and 4) implement strict erosion and sediment control measures throughout the project period.

The Contractor shall provide fill material that is clean and free of contaminants in toxic concentrations or amounts in accordance with all applicable laws and regulations. The Contractor shall comply with all applicable FEMA-approved state or local floodplain management requirements.

The Contractor shall adhere to any time-of-year restriction conditions as required by state and federal permitting agencies. No in-stream work shall be permitted during in-stream time-of-year restriction.

The Contractor shall prohibit wet or uncured concrete from entry into surface waters. The Contractor shall not dispose of excess or waste concrete in surface waters and prevent wash water from discharging into surface waters. The Contractor shall employ measures to prevent spills of fuels or lubricants into state waters. All pollution prevention measures and practices proposed by the Contractor shall be identified in the Contractor's Pollution Prevention Plan as required by the Specifications, other contract documents and/or the VPDES *General Permit For Discharge of Stormwater From Construction Activities*.

The Contractor shall not violate the water quality standards as a result of the construction activities. The Contractor shall not alter the physical, chemical, or biological properties of surface waters and wetlands or make them detrimental to the public health, to animal or aquatic life, to the uses of such waters for domestic or industrial consumption, for recreation, or for other uses.

The Contractor shall not proceed with work covered by a permit until the work is released in writing by the Engineer.

If the Department has not released work covered by a U.S. Army Corps of Engineers permit and the Contractor has completed all other work within the limits of the project, the Contractor shall so advise the Engineer in writing. Upon receipt of the notification, the Engineer will evaluate the status of the project and advise the Contractor within 45 days of the portion of the project that is acceptable under Section 108.09 of the Specifications. If the Engineer determines that all of the work except that encumbered by the permit application is acceptable under the requirements of Section 108.09 of the Specifications, the Contractor will be notified accordingly. The Department or the Contractor may then elect to continue or terminate the remaining portion of the Contract.

The party electing to terminate the Contract shall so advise the other party in writing after the 45-day period. The terms of contract termination will be in accordance with the requirements of Section 108.08 of the Specifications. No compensation will be made for delays encountered or for work not performed except for an extension of time as determined in accordance with the requirements of Section 108.04 of the Specifications.

The Contractor shall submit a request to the Engineer in writing if he wants to deviate from the plans or change his proposed method(s) regarding any proposed work located in waterways or wetlands. Such work may require additional environmental permits. If the Engineer determines that the activities are necessary for completion of the work, the Contractor shall furnish the Engineer all necessary information pertaining to the activity. The Contractor shall be responsible for designing and supplying all plans, sketches and notes necessary to acquire any permit modification required for changes in the proposed construction methods. Such information shall be furnished at least 180 days prior to the date the proposed changed activity is to begin. For other than the VPDES *General Permit For Discharge of Stormwater From Construction Activities*, the District Environmental Manager will apply for the necessary permits modifications to the permits obtained by the Department. The Contractor shall not begin the activity until directed to do so by the Engineer. Additional compensation will not be made for delay to the work or change in the Contractor's proposed methods that result from jurisdiction agency review or disapproval of Contractor's proposed methods.

If additional permits are required to perform dredging for flotation of construction equipment or for other permanent or temporary work as indicated in the Contractor's accepted plan of operation, but have not been obtained by the Department, the Contractor shall furnish the Engineer, at least 75 days prior to the proposed activity, all necessary information pertaining to the proposed activity in order for the Department to apply for the permits. The Contractor shall not begin the proposed activity until the additional permits have been secured and the Engineer has advised the Contractor that the proposed activity may proceed.

The Contractor shall permit representatives of state and federal environmental regulatory agencies to make inspections at any time in order to insure that the activity being performed under authority of the permit(s) is in accordance with the terms and conditions prescribed herein.

Section 107.13—Labor and Wages of the Specifications is amended to add the following:

- (c) **Job Service Offices:** In advance of the Contract starting date, the Contactor may contact the Job Service Office of the Virginia Employment Commission at the nearest location to secure referral of available qualified workers in all occupational categories. The closest office may be obtained by accessing the VEC website at <http://www.vec.virginia.gov/vec-local-offices>.

Section 107.14(f) Training of the Specifications is amended to replace 5 and 6 with the following:

5. If the Contract provides a pay item for trainees, training shall be in accordance with the requirements of Section 518 of the Specifications.

Section 107.15 of the Specifications is replaced by the following:

Section 107.15—Use of Disadvantaged Business Enterprises (DBEs)

A. Disadvantaged Business Enterprise (DBE) Program Requirements

Any Contractor, subcontractor, supplier, DBE firm, and contract surety involved in the performance of work on a federal-aid contract shall comply with the terms and conditions of the United States Department of Transportation (USDOT) DBE Program as the terms appear in Part 26 of the Code of Federal Regulations (49 CFR as amended), the USDOT DBE Program regulations; and the Virginia Department of Transportation's (VDOT or the Department) Road and Bridge Specifications and DBE Program rules and regulations.

For the purposes of this provision, Contractor is defined as the Prime Contractor of the contract; and sub-contractor is defined as any DBE supplier, manufacturer, or subcontractor performing work or furnishing material, supplies or services to the contract. The Contractor shall physically include this same contract provision in every supply or work/service subcontract that it makes or executes with a subcontractor having work for which it intends to claim credit.

In accordance with 49 CFR Part 26 and VDOT's DBE Program requirements, the Contractor, for itself and for its subcontractors and suppliers, whether certified DBE firms or not, shall commit to complying fully with the auditing, record keeping, confidentiality, cooperation, and anti-intimidation or retaliation provisions contained in those federal and state DBE Program regulations. By bidding on this contract, and by accepting and executing this contract, the Contractor agrees to assume these contractual obligations and to bind the Contractor's subcontractors contractually to the same at the Contractor's expense.

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, administration, and performance of this contract. Failure by the Contractor to carry out these requirements is a material breach of this contract, which will result in the termination of this contract or other such remedy, as VDOT deems appropriate.

All administrative remedies noted in this provision are automatic unless the Contractor exercises the right of appeal within the required timeframe(s) specified herein. Appeal requirements, processes, and procedures shall be in accordance with guidelines stated herein and current at the time of the proceedings. Where applicable, the Department will notify the Contractor of any changes to the appeal requirements, processes, and procedures after receiving notification of the Contractor's desire to appeal.

All time frames referenced in this provision are expressed in business days unless otherwise indicated. Should the expiration of any deadline fall on a weekend or holiday, such deadline will automatically be extended to the next normal business day.

B. DBE Certification

The only DBE firms eligible to perform work on a federal-aid contract for DBE contract goal credit are firms certified as Disadvantaged Business Enterprises by the Virginia Department of Minority Business Enterprise (DMBE) or the Metropolitan Washington Airports Authority (MWAA) in accordance with federal and VDOT guidelines. DBE firms must be certified in the specific work listed for DBE contract goal credit. A directory listing of certified DBE firms can be obtained from the Virginia Department of Minority Business Enterprise and the Metropolitan Washington Airports Authority Internet websites: <http://www.dmbv.virginia.gov/>; <http://mwaa.com/362.htm>

C. Bank Services

The Contractor and each subcontractor are encouraged to use the services of banks owned and controlled by socially and economically disadvantaged individuals. Such banking services and the fees charged for services typically will not be eligible for DBE Program contract goal credit. Such information is available from the VDOT's Internet Civil Rights Division website:

<http://insidevdot/C7/Civil%20Rights/default.aspx>

D. DBE Program-Related Certifications Made by Bidders\Contractors

By submitting a bid and by entering into any contract on the basis of that bid, the bidder/Contractor certifies to each of the following DBE Program-related conditions and assurances:

1. That the management and bidding officers of its firm agree to comply with the bidding and project construction and administration obligations of the USDOT DBE Program requirements and regulations of 49 CFR Part 26 as amended, and VDOT's Road and Bridge Specifications and DBE Program requirements and regulations.
2. Under penalty of perjury and other applicable penal law that it has complied with the DBE Program requirements in submitting the bid, and shall comply fully with these requirements in the bidding, award, and execution of the contract.
3. To ensure that DBE firms have been given full and fair opportunity to participate in the performance of the contract. The bidder certifies that all reasonable steps were, and will be, taken to ensure that DBE firms had, and will have, an opportunity to compete for and perform work on the contract. The bidder further certifies that the bidder shall not discriminate on the basis of race, color, age, national origin, or sex in the performance of the contract or in the award of any subcontract. Any agreement between a bidder and a DBE whereby the DBE promises not to provide quotations for performance of work to other bidders is prohibited.
4. As a bidder, good faith efforts were made to obtain DBE participation in the proposed contract at or above the goal for DBE participation established by VDOT. It has submitted as a part of its bid true, accurate, complete, and detailed documentation of the good faith efforts it performed to meet the contract goal for DBE participation. The bidder, by signing and submitting its bid, certifies the DBE participation information submitted within the stated time thereafter is true, correct, and complete, and that the information provided includes the names of all DBE firms that will participate in the contract, the specific line item(s) that each listed DBE firm will perform, and the creditable dollar amounts of the participation of each listed DBE. The specific line item must reference the VDOT line number and item number contained in the proposal.

5. The bidder further certifies, by signing its bid, it has committed to use each DBE firm listed for the specific work item shown to meet the contract goal for DBE participation. Award of the contract will be conditioned upon meeting these and other listed requirements of 49 CFR Part 26.53 and the contract documents. By signing the bid, the bidder certifies on work that it proposes to sublet; it has made good faith efforts to seek out and consider DBEs as potential subcontractors. The bidder shall contact DBEs to solicit their interest, capability, and prices in sufficient time to allow them to respond effectively, and shall retain on file proper documentation to substantiate its good faith efforts. Award of the contract will be conditioned upon meeting these and other listed requirements of 49 CFR Part 26.53 and the contract documents.
6. Once awarded the contract, the Contractor shall make good faith efforts to utilize DBE firms to perform work designated to be performed by DBEs at or above the amount or percentage of the dollar value specified in the bidding documents. Further, the Contractor understands it shall not unilaterally terminate, substitute for, or replace any DBE firm that was designated in the executed contract in whole or in part with another DBE, any non-DBE firm, or with the Contractor's own forces or those of an affiliate of the Contractor without the prior written consent of VDOT as set out within the requirements of this provision.
7. Once awarded the contract, the Contractor shall designate and make known to the Department a liaison officer who is assigned the responsibility of administering and promoting an active and inclusive DBE program as required by 49 CFR Part 26 for DBEs. The designation and identity of this officer need be submitted only once by the Contractor during any twelve (12) month period at the preconstruction conference for the first contract the Contractor has been awarded during that reporting period. The Department will post such information for informational and administrative purposes at VDOT's Internet Civil Rights Division website.
8. Once awarded the contract, the Contractor shall comply fully with all regulatory and contractual requirements of the USDOT DBE Program, and that each DBE firm participating in the contract shall fully perform the designated work items with the DBE's own forces and equipment under the DBE's direct supervision, control, and management. Where a contract exists and where the Contractor, DBE firm, or any other firm retained by the Contractor has failed to comply with federal or VDOT DBE Program regulations and/or their requirements on that contract, VDOT has the authority and discretion to determine the extent to which the DBE contract regulations and/or requirements have not been met, and will assess against the Contractor any remedies available at law or provided in the contract in the event of such a contract breach.
9. In the event a bond surety assumes the completion of work, if for any reason VDOT has terminated the prime Contractor, the surety shall be obligated to meet the same DBE contract terms and requirements as were required of the original prime Contractor in accordance with the requirements of this specification.

E. Disqualification of Bidder

Bidders may be disqualified from bidding for failure to comply with the requirements of this Special Provision, the contract specifications, and VDOT Road and Bridge Specifications.

F. Bidding Procedures

The following bidding procedures shall apply to the contract for DBE Program compliance purposes:

- 1. Contract Goal, Good Faith Efforts Specified:** All bidders evidencing the attainment of DBE goal commitment equal to or greater than the required DBE goal established for the project must submit completed Form C-111, Minimum DBE Requirements, and Form C-48, Subcontractor/Supplier Solicitation and Utilization, as a part of the bid documents.

Form C-111 may be submitted electronically or may be faxed to the Department, but in no case shall the bidder's Form C-111 be received later than 10:00 a.m. the next business day after the time stated in the bid proposal for the receipt of bids. Form C-48 must be received within ten (10) business days after the bid opening.

If, at the time of submitting its bid, the bidder knowingly cannot meet or exceed the required DBE contract goal, it shall submit Form C-111 exhibiting the DBE participation it commits to attain as a part of its bid documents. The bidder shall then submit Form C-49, DBE Good Faith Efforts Documentation, within two (2) business days after the bid opening.

The lowest responsive and responsible bidder must submit its properly executed Form C-112, Certification of Binding Agreement, within three (3) business days after the bids are received. DBEs bidding as prime contractors are not required to submit Form C-112 unless they are utilizing other DBEs as subcontractors.

If, after review of the apparent lowest bid, VDOT determines the DBE requirements have not been met, the apparent lowest successful bidder must submit Form C-49, DBE Good Faith Efforts Documentation, which must be received by the Contract Engineer within two (2) business days after official notification of such failure to meet the aforementioned DBE requirements.

Forms C-48, C-49, C-111, and C-112 can be obtained from the VDOT website at:
<http://vdotforms.vdot.virginia.gov/>

Instructions for submitting Form C-111 can be obtained from the VDOT website at:
http://www.virginiadot.org/business/resources/const/Exp_DBE_Commitments.pdf

- 2. Bid Rejection:** The failure of a bidder to submit the required documentation within the timeframes specified in the **Contract Goal, Good Faith Efforts Specified** section of this Special Provision may be cause for rejection of that bidder's bid.

If the lowest bidder is rejected for failure to submit the required documentation in the specified time frames, the Department may award the work to the next lowest bidder, or re-advertise the proposed work at a later date or proceed otherwise as determined by the Commonwealth.

- 3. Good Faith Efforts Described:** In order to award a contract to a bidder that has failed to meet DBE contract goal requirements, VDOT will determine if the bidder's efforts were adequate good faith efforts, and if given all relevant circumstances, those efforts were made actively and aggressively to meet the DBE requirements. Efforts to obtain DBE participation are not good faith efforts if they could not reasonably be expected to produce a level of DBE participation sufficient to meet the DBE Program and contract goal requirements.

Good faith efforts may be determined through use of the following list of the types of actions the bidder may make to obtain DBE participation. This is not intended to be a mandatory checklist, nor is it intended to be exclusive or exhaustive. Other factors or types of efforts of similar intent may be relevant in appropriate cases:

- (a) Soliciting through reasonable and available means, such as but not limited to, attendance at pre-bid meetings, advertising, and written notices to DBEs who have the capability to perform the work of the contract. Examples include: advertising in at least one daily/weekly/monthly newspaper of general circulation, as applicable; phone contact with a completely documented telephone log, including the date and time called, contact person, or voice mail status; and internet contacts with supporting documentation, including dates advertised. The bidder shall solicit this interest no less than five (5) business days before the bids are due so that the solicited DBEs have enough time to reasonably respond to the solicitation. The bidder shall determine with certainty if the DBEs are interested by taking reasonable steps to follow up initial solicitations as evidenced by documenting such efforts as requested on Form C-49, DBE Good Faith Efforts Documentation.
- (b) Selecting portions of the work to be performed by DBEs in order to increase the likelihood that the DBE goals will be achieved. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate DBE participation, even when the Contractor might otherwise prefer to completely perform all portions of this work in its entirety or use its own forces;
- (c) Providing interested DBEs with adequate information about the plans, specifications, and requirements of the contract in a timely manner, which will assist the DBEs in responding to a solicitation;
- (d) Negotiating for participation in good faith with interested DBEs;
 - 1. Evidence of such negotiation shall include the names, addresses, and telephone numbers of DBEs that were considered; dates DBEs were contacted; a description of the information provided regarding the plans, specifications, and requirements of the contract for the work selected for subcontracting; and, if insufficient DBE participation seems likely, evidence as to why additional agreements could not be reached for DBEs to perform the work;
 - 2. A bidder using good business judgment should consider a number of factors in negotiating with subcontractors, including DBE subcontractors, and should take a firm's price, qualifications, and capabilities, as well as contract goals, into consideration. However, the fact that there may be some additional costs involved in finding and using DBEs is not sufficient reason for a bidder's failure to meet the contract goal for DBE participation, as long as such costs are reasonable and comparable to costs customarily appropriate to the type of work under consideration. Also, the ability or desire of a bidder to perform the work of a contract with its own organization does not relieve the bidder of the responsibility to make diligent good faith efforts. Bidders are not, however, required to accept higher quotes from DBEs if the price difference can be shown by the bidder to be excessive, unreasonable, or greater than would normally be expected by industry standards;
- (e) A bidder cannot reject a DBE as being unqualified without sound reasons based on a thorough investigation of the DBE's capabilities. The DBE's standing within its industry, membership in specific groups, organizations, associations, and political or social affiliations, and union vs. non-union employee status are not legitimate causes for the rejection or non-solicitation of bids in the bidder's efforts to meet the project goal for DBE participation;
- (f) Making efforts to assist interested DBEs in obtaining bonding, lines of credit, or insurance as required by VDOT or by the bidder/Contractor;

- (g) Making efforts to assist interested DBEs in obtaining necessary equipment, supplies, materials, or related assistance or services subject to the restrictions contained in these provisions;
- (h) Effectively using the services of appropriate personnel from VDOT and from DMBE; available minority/women community or minority organizations; contractors' groups; local, state, and Federal minority/ women business assistance offices; and other organizations as allowed on a case-by-case basis to provide assistance in the recruitment and utilization of qualified DBEs.

G. Documentation and Administrative Reconsideration of Good Faith Efforts

During Bidding: As described in the **Contract Goal, Good Faith Efforts Specified** section of this Special Provision, the bidder must provide Form C-49, DBE Good Faith Efforts Documentation, of its efforts made to meet the DBE contract goal as proposed by VDOT within the time frame specified in this provision. The means of transmittal and the risk for timely receipt of this information shall be the responsibility of the bidder. The bidder shall attach additional pages to the certification, if necessary, in order to fully detail specific good faith efforts made to obtain the DBE firms participation in the proposed contract work.

However, regardless of the DBE contract goal participation level proposed by the bidder or the extent of good faith efforts shown, all bidders shall timely and separately file their completed and executed forms C-111, C-112, C-48, and C-49, as aforementioned, or face potential bid rejection.

If a bidder does not submit its completed and executed forms C-111, or C-112, when required by this Special Provision, the bidder's bid will be considered non-responsive and may be rejected.

Where the Department upon initial review of the bid results determines the apparent low bidder has failed or appears to have failed to meet the requirements of the **Contract Goal, Good Faith Efforts Specified** section of this Special Provision and has failed to adequately document that it made a good faith effort to achieve sufficient DBE participation as specified in the bid proposal, that firm upon notification of the Department's initial determination will be offered the opportunity for administrative reconsideration before VDOT rejects that bid as non-responsive. The bidder shall address such request for reconsideration in writing to the Contract Engineer within five (5) business days of receipt of notification by the Department and shall be given the opportunity to discuss the issue and present its evidence in person to the Administrative Reconsideration Panel. The Administrative Reconsideration Panel will be made up of VDOT Division Administrators or their designees, none of who took part in the initial determination that the bidder failed to make the goal or make adequate good faith efforts to do so. After reconsideration, VDOT shall notify the bidder in writing of its decision and explain the basis for finding that the bidder did or did not meet the goal or make adequate good faith efforts to do so.

If, after reconsideration, the Department determines the bidder has failed to meet the requirements of the contract goal and has failed to make adequate good faith efforts to achieve the level of DBE participation as specified in the bid proposal, the bidder's bid will be rejected.

If sufficient documented evidence is presented to demonstrate that the apparent low bidder made reasonable good faith efforts, the Department will award the contract and reduce the DBE requirement to the actual commitment identified by the lowest successful bidder at the time of its bid. The Contractor is still encouraged to seek additional DBE participation during the life of the contract.

However, such action will not relieve the Contractor of its responsibility for complying with the reduced DBE requirement during the life of the contract or any administrative sanctions as may be appropriate.

During the Contract: If a DBE, through no fault of the Contractor, is unable or unwilling to fulfill his agreement with the Contractor, the Contractor shall immediately notify the Department and provide all relevant facts. If a Contractor relieves a DBE subcontractor of the responsibility to perform work under their subcontract, the Contractor is encouraged to take the appropriate steps to obtain a DBE to perform an equal dollar value of the remaining subcontracted work. In such instances, the Contractor is expected to seek DBE participation towards meeting the goal during the performance of the contract.

If the Contractor fails to conform to the schedule of DBE participation as shown on the progress schedule, or at any point at which it is clearly evident that the remaining dollar value of allowable credit for performing work is insufficient to obtain the scheduled participation, and the Contractor has not taken the preceding actions, the Contractor and any aforementioned affiliates may be subject to disallowance of DBE credit until such time as conformance with the schedule of DBE participation is achieved.

Project Completion: If the Contractor fails upon completion of the project to meet the required participation, the Contractor and any prime contractual affiliates, as in the case of a joint venture, may be enjoined from bidding as a prime Contractor, or participating as a subcontractor on VDOT projects for a period of 90 days.

Prior to enjoinder from bidding or denial to participate as a subcontractor for failure to comply with participation requirements, as provided hereinbefore, the Contractor may submit documentation to the State Construction Engineer to substantiate that failure was due solely to quantitative underrun(s), elimination of items subcontracted to DBEs, or to circumstances beyond their control, and that all feasible means have been used to obtain the required participation. The State Construction Engineer upon verification of such documentation shall make a determination whether or not the Contractor has met the requirements of the contract.

If it is determined that the aforementioned documentation is insufficient or the failure to meet required participation is due to other reasons, the Contractor may request an appearance before the Administrative Reconsideration Panel to establish that all feasible means were used to meet such participation requirements. The decision of the Administrative Reconsideration Panel shall be administratively final. If the decision is made to enjoin the Contractor from bidding on other VDOT work as described herein, the enjoinder period will begin upon the Contractor's failure to request a hearing within the designated time frame or upon the Administrative Reconsideration Panel's decision to enjoin, as applicable.

H. DBE Participation for Contract Goal Credit

DBE participation on the contract will count toward meeting the DBE contract goal in accordance with the following criteria:

1. Cost-plus subcontracts will not be considered to be in accordance with normal industry practice and will not normally be allowed for credit.
2. The applicable percentage of the total dollar value of the contract or subcontract awarded to the DBE will be counted toward meeting the contract goal for DBE participation in accordance with the **DBE Program-Related Certifications Made by Bidders\Contractors** section of this Special Provision for the value of the work, goods, or services that are actually performed or provided by the DBE firm itself or subcontracted by the DBE to other DBE firms.

3. When a DBE performs work as a participant in a joint venture with a non-DBE firm, the Contractor may count toward the DBE goal only that portion of the total dollar value of the contract equal to the distinctly defined portion of the contract work that the DBE has performed with the DBE's own forces or in accordance with the provisions of this Section. The Department shall be contacted in advance regarding any joint venture involving both a DBE firm and a non-DBE firm to coordinate Department review and approval of the joint venture's organizational structure and proposed operation where the Contractor seeks to claim the DBE's credit toward the DBE contract goal.
4. When a DBE subcontracts part of the work of the contract to another firm, the value of that subcontracted work may be counted toward the DBE contract goal only if the DBE's subcontractor at a lower tier is a certified DBE. Work that a DBE subcontracts to either a non-DBE firm or to a non-certified DBE firm will not count toward the DBE contract goal. The cost of supplies and equipment a DBE subcontractor purchases or leases from the prime Contractor or the prime's affiliated firms will not count toward the contract goal for DBE participation.
5. The Contractor may count expenditures to a DBE subcontractor toward the DBE contract goal only if the DBE performs a Commercially Useful Function (CUF) on that contract.
6. A Contractor may not count the participation of a DBE subcontractor toward the Contractor's final compliance with the DBE contract goal obligations until the amount being counted has actually been paid to the DBE. A Contractor may count sixty (60) percent of its expenditures actually paid for materials and supplies obtained from a DBE certified as a regular dealer, and one hundred (100) percent of such expenditures actually paid for materials and supplies obtained from a certified DBE manufacturer.
 - (a) For the purposes of this Special Provision, a regular dealer is defined as a firm that owns, operates, or maintains a store, warehouse, or other establishment in which the materials, supplies, articles, or equipment required and used under the contract are bought, kept in stock, and regularly sold or leased to the public in the usual course of business. To be a regular dealer, the DBE firm shall be an established business that regularly engages, as its principal business and under its own name, in the purchase and sale or lease of the products or equipment in question. Packagers, brokers, manufacturers' representatives, or other persons who arrange or expedite transactions will not be considered regular dealers.
 - (b) A DBE firm may be a regular dealer in such bulk items as petroleum products, steel, cement, gravel, stone, or asphalt without owning, operating, or maintaining a place of business where it keeps such items in stock if the DBE both owns and operates distribution equipment for the products it sells and provides for the contract work. Any supplementation of a regular dealer's own distribution equipment shall be by a long-term lease agreement and not on an *ad hoc* or contract-by-contract basis to be eligible for credit to meet the DBE contract goal.
 - (c) If a DBE regular dealer is used for DBE contract goal credit, no additional credit will be given for hauling or delivery to the project site goods or materials sold by that DBE regular dealer. Those delivery costs shall be deemed included in the price charged for the goods or materials by the DBE regular dealer, who shall be responsible for their distribution.
 - (d) For the purposes of this Special Provision, a manufacturer will be defined as a firm that operates or maintains a factory or establishment that produces on the premises the materials, supplies, articles, or equipment required under the contract and of the general character described by the project specifications. A manufacturer shall

include firms that produce finished goods or products from raw or unfinished material, or purchase and substantially alter goods and materials to make them suitable for construction use before reselling them.

- (g) A Contractor may count toward the DBE contract goal the following expenditures to DBE firms that are not regular dealers or manufacturers for DBE program purposes:
1. The entire amount of fees or commissions charged by a DBE firm for providing a bona fide service, such as professional, technical, consultant or managerial services, or for providing bonds or insurance specifically required for the performance of the federal-aid contract, if the fee is reasonable and not excessive or greater than would normally be expected by industry standards for the same or similar services.
 2. The entire amount of that portion of the construction contract that is performed by the DBE's own forces and equipment under the DBE's supervision. This includes the cost of supplies and materials ordered and paid for by the DBE for contract work, including supplies purchased or equipment leased by the DBE, except supplies and equipment a DBE subcontractor purchases or leases from the prime Contractor or its affiliates.
- (h) A Contractor may count toward the DBE contract goal one hundred (100) percent of the fees paid to a DBE trucker or hauler for the delivery of material and supplies required on the project job site, but not for the cost of those materials or supplies themselves, provided that the trucking or hauling fee is determined by VDOT to be reasonable, as compared with fees customarily charged by non-DBE firms for similar services. A Contractor shall not count costs for the removal or relocation of excess material from or on the job site when the DBE trucking company is not the manufacturer of or a regular dealer in those materials and supplies. The DBE trucking firm shall also perform a Commercially Useful Function (CUF) on the project and not operate merely as a pass through for the purposes of gaining credit toward the DBE contract goal. Prior to submitting a bid, the Contractor shall determine, or contact the VDOT Civil Rights Division or its district Offices for assistance in determining, whether a DBE trucking firm will meet the criteria for performing a CUF on the project. See section on **Miscellaneous DBE Program Requirements; Factors used to Determine if a DBE Trucking Firm is Performing a CUF.**
- (i) The Contractor will receive DBE contract goal credit for the fees or commissions charged by and paid to a DBE broker who arranges or expedites sales, leases, or other project work or service arrangements provided that those fees are determined by VDOT to be reasonable and not excessive as compared with fees customarily charged by non-DBE firms for similar services. For the purposes of this Special Provision, a broker is defined as a person or firm that regularly engages in arranging for delivery of material, supplies, and equipment, or regularly arranges for the providing of project services as a course of routine business but does not own or operate the delivery equipment necessary to transport materials, supplies, or equipment to or from a job site.

I. Performing a Commercially Useful Function (CUF)

No credit toward the DBE contract goal will be allowed for contract payments or expenditures to a DBE firm if that DBE firm does not perform a CUF on that contract. A DBE performs a CUF when the DBE is solely responsible for execution of a distinct element of the contract work and the DBE actually performs, manages, and supervises the work involved with the firm's own forces or in accordance with the provisions of the **DBE Participation for Contract Goal Credit** section of this Special Provision. To perform a CUF the DBE alone shall be

responsible and bear the risk for the material and supplies used on the contract, selecting a supplier or dealer from those available, negotiating price, determining quality and quantity, ordering the material and supplies, installing those materials with the DBE's own forces and equipment, and paying for those materials and supplies. The amount the DBE firm is to be paid under the contract shall be commensurate with the work the DBE actually performs and the DBE credit claimed for the DBE's performance.

Monitoring CUF Performance: It shall be the Contractor's responsibility to ensure that all DBE firms selected for subcontract work on the contract, for which he seeks to claim credit toward the contract goal, perform a CUF. Further, the Contractor is responsible for and shall ensure that each DBE firm fully performs the DBE's designated tasks with the DBE's own forces and equipment under the DBE's own direct supervision and management or in accordance with the provisions of the **DBE Participation for Contract Goal Credit** section of this Special Provision. For the purposes of this provision the DBE's equipment will mean either equipment directly owned by the DBE as evidenced by title, bill of sale or other such documentation, or leased by the DBE, and over which the DBE has control as evidenced by the leasing agreement from a firm not owned in whole or part by the prime Contractor or an affiliate of the Contractor under this contract.

VDOT will monitor the Contractor's DBE involvement during the performance of the contract. However, VDOT is under no obligation to warn the Contractor that a DBE's participation will not count toward the goal.

DBEs Must Perform a Useful and Necessary Role in Contract Completion: A DBE does not perform a commercially useful function if the DBE's role is limited to that of an extra participant in a transaction, contract, or project through which funds are passed in order to obtain the appearance of DBE participation.

DBEs Must Perform The Contract Work With Their Own Workforces: If a DBE does not perform and exercise responsibility for at least thirty (30) percent of the total cost of the DBE's contract with the DBE's own work force, or the DBE subcontracts a greater portion of the work of a contract than would be expected on the basis of normal industry practice for the type of work involve, VDOT will presume that the DBE is not performing a CUF and such participation will not be counted toward the contract goal.

VDOT Makes Final Determination On Whether a CUF Is Performed: VDOT has the final authority to determine whether a DBE firm has performed a CUF on a federal-aid contract. To determine whether a DBE is performing or has performed a CUF, VDOT will evaluate the amount of work subcontracted by that DBE firm or performed by other firms and the extent of the involvement of other firms' forces and equipment. Any DBE work performed by the Contractor or by employees or equipment of the Contractor shall be subject to disallowance under the DBE Program, unless the independent validity and need for such an arrangement and work is demonstrated.

J. Verification of DBE Participation and Imposed Damages

Within fourteen days after contract execution, the Contractor shall submit to the Responsible Engineer, with a copy to the District Civil Rights Office (DCRO), a fully executed subcontract agreement for each DBE used to claim credit in accordance with the requirements stated on Form C-112. The subcontract agreement shall be executed by both parties stating the work to be performed, the details or specifics concerning such work, and the price which will be paid to the DBE subcontractor. Because of the commercial damage that the Contractor and its DBE subcontractor could suffer if their subcontract pricing, terms, and conditions were known to competitors, the Department staff will treat subcontract agreements as proprietary Contractor trade secrets with regard to Freedom of Information Act requests. In lieu of subcontract agreements, purchase orders may be submitted for haulers, suppliers, and manufacturers.

These too, will be treated confidentially and protected. Such purchase orders must contain, as a minimum, the following information: authorized signatures of both parties; description of the scope of work to include contract item numbers, quantities, and prices; and required federal contract provisions.

The Contractor shall also furnish, and shall require each subcontractor to furnish, information relative to all DBE involvement on the project for each quarter during the life of the contract in which participation occurs and verification is available. The information shall be indicated on Form C-63, DBE and SWAM Payment Compliance Report. The department reserves the right to request proof of payment via copies of cancelled checks with appropriate identifying notations. Failure to provide Form C-63 to the District Civil Rights Office (DCRO) within five (5) business days after the reporting period may result in delay of approval of the Contractor's monthly progress estimate for payment. The names and certification numbers of DBE firms provided by the Contractor on the various forms indicated in this Special Provision shall be exactly as shown on the DMBE's or MWAA's latest list of certified DBEs. Signatures on all forms indicated herein shall be those of authorized representatives of the Contractor as shown on the Prequalification Application, Form C-32 or the Prequalification/Certification Renewal Application, Form C-32A, or authorized by letter from the Contractor. If DBE firms are used which have not been previously documented with the Contractor's bid and for which the Contractor now desires to claim credit toward the project goal, the Contractor shall be responsible for submitting necessary documentation in accordance with the procedures stipulated in this Special Provision to cover such work prior to the DBE beginning work.

Form C-63 can be obtained from the VDOT website at: <http://vdotforms.vdot.virginia.gov/>

The Contractor shall submit to the Responsible Engineer its progress schedule with a copy to the DCRO, as required by Section 108.03 of the Specifications or other such specific contract scheduling specification that may include contractual milestones, i.e., monthly or VDOT requested updates. The Contractor shall include a narrative of applicable DBE activities relative to work activities of the Contractor's progress schedule, including the approximate start times and durations of all DBE participation to be claimed for credit that shall result in full achievement of the DBE goal required in the contract.

On contracts awarded on the basis of good faith efforts, narratives or other agreeable format of schedule information requirements and subsequent progress determination shall be based on the commitment information shown on the latest Form C-111 as compared with the appropriate Form C-63.

Prior to beginning any major component or quarter of the work, as applicable, in which DBE work is to be performed, the Contractor shall furnish a revised Form C-111 showing the name(s) and certification number(s) of any current DBEs not previously submitted who will perform the work during that major component or quarter for which the Contractor seeks to claim credit toward the contract DBE goal. The Contractor shall obtain the prior approval of the Department for any assistance it may provide to the DBE beyond its existing resources in executing its commitment to the work in accordance with the requirements listed in the **Good Faith Efforts Described** section of this Special Provision. If the Contractor is aware of any assistance beyond a DBE's existing resources that the Contractor, or another subcontractor, may be contemplating or may deem necessary and that have not been previously approved, the Contractor shall submit a new or revised narrative statement for VDOT's approval prior to assistance being rendered.

If the Contractor fails to comply with correctly completing and submitting any of the required documentation requested by this provision within the specified time frames, the Department will withhold payment of the monthly progress estimate until such time as the required submissions are received VDOT. Where such failures to provide required submittals or documentation are repeated the Department will move to enjoin the Contractor and any prime

contractual affiliates, as in the case of a joint venture, from bidding as a prime Contractor, or participating as a subcontractor on VDOT projects until such submissions are received.

K. Documentation Required for Semi-final Payment

On those projects nearing completion, the Contractor must submit Form C-63 marked "Semi-Final" within twenty (20) days after the submission of the last regular monthly progress estimate to the DCRO. The form must include each DBE used on the contract work and the work performed by each DBE. The form shall include the actual dollar amount paid to each DBE for the accepted creditable work on the contract. The form shall be certified under penalty of perjury, or other applicable law, to be accurate and complete. VDOT will use this certification and other information available to determine applicable DBE credit allowed to date by VDOT and the extent to which the DBEs were fully paid for that work. The Contractor shall acknowledge by the act of filing the form that the information is supplied to obtain payment regarding a federal participation contract. A letter of certification, signed by both the prime Contractor and appropriate DBEs, will accompany the form, indicating the amount, including any retainage, if present, that remains to be paid to the DBE(s).

L. Documentation Required for Final Payment

On those projects that are complete, the Contractor shall submit a final Form C-63 marked "Final" to the DCRO, within thirty (30) days of the final estimate. The form must include each DBE used on the contract and the work performed by each DBE. The form shall include the actual dollar amount paid to each DBE for the creditable work on the contract. VDOT will use this form and other information available to determine if the Contractor and DBEs have satisfied the DBE contract goal percentage specified in the contract and the extent to which credit was allowed. The Contractor shall acknowledge by the act of signing and filing the form that the information is supplied to obtain payment regarding a federal participation contract.

M. Prompt Payment Requirements

The Contractor shall make prompt and full payment to the subcontractor(s) of any retainage held by the prime Contractor after the subcontractor's work is satisfactorily completed.

For purposes of this Special Provision, a subcontractor's work is satisfactorily completed when all the tasks called for in the subcontract have been accomplished, documented, and accepted as required by the contract documents by VDOT. When VDOT has made partial acceptance of a portion of the prime contract, the Department will consider the work of any subcontractor covered by that partial acceptance to be satisfactorily completed. Payment will be made in accordance with the requirements of Section 107.01, Section 109.08, and Section 109.09 of the Specifications.

Upon VDOT's payment of the subcontractor's portion of the work as shown on the monthly progress estimate and the receipt of payment by the Contractor for such work, the Contractor shall make compensation in full to the subcontractor for that portion of the work satisfactorily completed and accepted by the Department. For the purposes of this Special Provision, payment of the subcontractor's portion of the work shall mean the Contractor has issued payment in full, less agreed upon retainage, if any, to the subcontractor for that portion of the subcontractor's work that VDOT paid to the Contractor on the monthly progress estimate.

The Contractor shall make payment of the subcontractor's portion of the work within seven (7) days of the receipt of payment from VDOT in accordance with the requirements of Section 107.01, Section 109.08, and Section 109.09 of the Specifications.

If the Contractor fails to make payment for the subcontractor's portion of the work within the time frame specified herein, the subcontractor shall contact the Responsible Engineer and the Contractor's bonding company in writing. The bonding company and VDOT will investigate the cause for non-payment and, barring mitigating circumstances that would make the subcontractor ineligible for payment, ensure payment in accordance with the requirements of Section 107.01, Section 109.08, and Section 109.09 of the Specifications.

By bidding on this contract, and by accepting and executing this contract, the Contractor agrees to assume these contractual obligations, and to bind the Contractor's subcontractors contractually to those prompt payment requirements.

Nothing contained herein shall preclude the Contractor from withholding payment to the subcontractor in accordance with the terms of the subcontract in order to protect the Contractor from loss or cost of damage due to a breach of agreement by the subcontractor.

N. Miscellaneous DBE Program Requirements

Loss of DBE Eligibility: When a DBE firm has been removed from eligibility as a certified DBE firm, the following actions will be taken:

1. When a Bidder/Contractor has made a commitment to use a DBE firm that is not currently certified, thereby making the Contractor ineligible to receive DBE participation credit for work performed, and a subcontract has not been executed, the ineligible DBE firm does not count toward either the contract goal or overall goal. The Contractor shall meet the contract goal with a DBE firm that is eligible to receive DBE credit for work performed, or must demonstrate to the Contract Engineer that it has made good faith efforts to do so.
2. When a Bidder/Contractor has executed a subcontract with a certified DBE firm prior to official notification of the DBE firm's loss of eligibility, the Contractor may continue to use the firm on the contract and shall continue to receive DBE credit toward its DBE goal for the subcontractor's work.
3. When VDOT has executed a prime contract with a DBE firm that is certified at the time of contract execution but that is later ruled ineligible, the portion of the ineligible firm's performance on the contract before VDOT has issued the notice of its ineligibility shall count toward the contract goal.

Termination of DBE: If a certified DBE subcontractor is terminated, or fails, refuses, or is unable to complete the work on the contract for any reason, the Contractor must promptly request approval to substitute or replace that firm in accordance with this section of this Special Provision.

The Contractor, as aforementioned in **DBE Program-Related Certifications Made by Bidders/Contractors**, shall notify VDOT in writing before terminating and/or replacing the DBE that was committed as a condition of contract award or that is otherwise being used or represented to fulfill DBE contract obligations during the contract performance period. Written consent from the Department for terminating the performance of any DBE shall be granted only when the Contractor can demonstrate that the DBE is unable, unwilling, or ineligible to perform its obligations for which the Contractor sought credit toward the contract DBE goal. Such written consent by the Department to terminate any DBE shall concurrently constitute written consent to substitute or replace the terminated DBE with another DBE. Consent to terminate a DBE shall not be based on the Contractor's ability to negotiate a more

advantageous contract with another subcontractor whether that subcontractor is, or is not, a certified DBE.

1. All Contractor requests to terminate, substitute, or replace a certified DBE shall be in writing, and shall include the following information:
 - (a) The date the Contractor determined the DBE to be unwilling, unable, or ineligible to perform.
 - (b) The projected date that the Contractor shall require a substitution or replacement DBE to commence work if consent is granted to the request.
 - (c) A brief statement of facts describing and citing specific actions or inaction by the DBE giving rise to the Contractor's assertion that the DBE is unwilling, unable, or ineligible to perform;
 - (d) A brief statement of the affected DBE's capacity and ability to perform the work as determined by the Contractor;
 - (e) A brief statement of facts regarding actions taken by the Contractor which are believed to constitute good faith efforts toward enabling the DBE to perform;
 - (f) The current percentage of work completed on each bid item by the DBE;
 - (g) The total dollar amount currently paid per bid item for work performed by the DBE;
 - (h) The total dollar amount per bid item remaining to be paid to the DBE for work completed, but for which the DBE has not received payment, and with which the Contractor has no dispute;
 - (i) The total dollar amount per bid item remaining to be paid to the DBE for work completed, but for which the DBE has not received payment, and over which the Contractor and/or the DBE have a dispute.
2. Contractor's Written Notice to DBE of Pending Request to Terminate and Substitute with another DBE.

The Contractor shall send a copy of the "request to terminate and substitute" letter to the affected committed DBE firm, in conjunction with submitting the request to the DCRO. The affected DBE firm may submit a response letter to the Department within two (2) business days of receiving the notice to terminate from the Contractor. The affected DBE firm shall explain its position concerning performance on the committed work. The Department will consider both the Contractor's request and the DBE's response and explanation before approving the Contractor's termination and substitution request, or determining if any action should be taken against the Contractor.

If, after making its best efforts to deliver a copy of the "request to terminate and substitute" letter, the Contractor is unsuccessful in notifying the affected DBE firm, the Department will verify that the affected, committed DBE firm is unable or unwilling to continue the contract. The Department will immediately approve the Contractor's request for a substitution.

3. Proposed Substitution of Another Certified DBE

Upon termination of a DBE, the Contractor shall use reasonable good faith efforts to replace the terminated DBE. The termination of such DBE shall not relieve the

Contractor of its obligations pursuant to this section, and the unpaid portion of the terminated DBE's contract will not be counted toward the contract goal.

When a DBE substitution is necessary, the Contractor shall submit an amended Form C-111 with the name of another DBE firm, the proposed work to be performed by that firm, and the dollar amount of the work to replace the unfulfilled portion of the work of the originally committed DBE firm. The Contractor shall furnish all pertinent information including the contract I.D. number, project number, bid item, item description, bid unit and bid quantity, unit price, and total price. In addition, the Contractor shall submit documentation for the requested substitute DBE as described in this section of this Special Provision.

Should the Contractor be unable to commit the remaining required dollar value to the substitute DBE, the Contractor shall provide written evidence of good faith efforts made to obtain the substitute value requirement. The Department will review the quality, thoroughness, and intensity of those efforts. Efforts that are viewed by VDOT as merely superficial or pro-forma will not be considered good faith efforts to meet the contract goal for DBE participation. The Contractor must document the steps taken that demonstrated its good faith efforts to obtain participation as set forth in the **Good Faith Efforts Described** section of this Special Provision.

Factors Used to determine if a DBE Trucking Firm is performing a CUF:

The following factors will be used to determine whether a DBE trucking company is performing a CUF:

1. To perform a CUF the DBE trucking firm shall be completely responsible for the management and supervision of the entire trucking operation for which the DBE is responsible by subcontract on a particular contract. There shall not be a contrived arrangement, including, but not limited to, any arrangement that would not customarily and legally exist under regular construction project subcontracting practices for the purpose of meeting the DBE contract goal;
2. The DBE must own and operate at least one fully licensed, insured, and operational truck used in the performance of the contract work. This does not include a supervisor's pickup truck or a similar vehicle that is not suitable for and customarily used in hauling the necessary materials or supplies;
3. The DBE receives full contract goal credit for the total reasonable amount the DBE is paid for the transportation services provided on the contract using trucks the DBE owns, insures, and operates using drivers that the DBE employs and manages;
4. The DBE may lease trucks from another certified DBE firm, including from an owner-operator who is certified as a DBE. The DBE firm that leases trucks from another DBE will receive credit for the total fair market value actually paid for transportation services the lessee DBE firm provides on the contract;
5. The DBE may also lease trucks from a non-DBE firm, including an owner-operator. The DBE who leases trucks from a non-DBE is entitled to credit for the total value of the transportation services provided by non-DBE lessees, *not to exceed the value of transportation services provided by DBE-owned trucks on the contract*. For additional participation by non-DBE lessees, the DBE will only receive credit for the fee or commission it receives as a result of the lease arrangement.

EXAMPLE

DBE Firm X uses two (2) of its own trucks on a contract. The firm leases two (2) trucks from DBE Firm Y and six (6) trucks from non-DBE Firm Z.

		Value of Trans. Serv.
		(For Illustrative Purposes Only)
<u>Firm X</u>		
Truck 1	Owned by DBE	\$100 per day
Truck 2	Owned by DBE	\$100 per day
<u>Firm Y</u>		
Truck 1	Leased from DBE	\$110 per day
Truck 2	Leased from DBE	\$110 per day
<u>Firm Z</u>		
Truck 1	Leased from Non DBE	\$125 per day
Truck 2	Leased from Non DBE	\$125 per day
Truck 3	Leased from Non DBE	\$125 per day
Truck 4	Leased from Non DBE	\$125 per day
Truck 5	Leased from Non DBE*	\$125 per day
Truck 6	Leased from Non DBE*	\$125 per day

DBE credit would be awarded for the total transportation services provided by DBE Firm X and DBE Firm Y, and may also be awarded for the total value of transportation services by four (4) of the six (6) trucks provided by non-DBE Firm Z (not to exceed the value of transportation services provided by DBE-owned trucks).

Credit = 8 Trucks
Total Value of Transportation Services = \$820

In all, full DBE credit would be allowed for the participation of eight (8) trucks (twice the number of DBE trucks owned and leased) and the dollar value attributable to the Value of Transportation Services provided by the 8 trucks.

* With respect to the other two trucks provided by non-DBE Firm Z, DBE credit could be awarded only for the fees or commissions pertaining to those trucks that DBE Firm X receives as a result of the lease with non-DBE Firm Z.

6. For purposes of this section, the lease must indicate that the DBE firm leasing the truck has exclusive use of and control over the truck. This will not preclude the leased truck from working for others during the term of the lease with the consent of the DBE, provided the lease gives the DBE absolute priority for and control over the use of the leased truck. Leased trucks must display the name and identification number of the DBE firm that has leased the truck at all times during the life of the lease.

Data Collection: In accordance with 49CFR Section 26.11, all firms bidding on prime contracts and bidding or quoting subcontracts on federal-aid projects shall provide the following information to the Contract Engineer annually.

- o Firm name

- Firm address
- Firm's status as a DBE or non-DBE
- The age of the firm and
- The annual gross receipts of the firm

The means of transmittal and the risk for timely receipt of this information shall be the responsibility of the bidder. However, the above information can be submitted by means of the Annual Gross Receipts Survey as required in the Prequalification/Certification application.

All bidders, including DBE prime Contractor bidders, shall complete and submit to the Contract Engineer the Subcontractor/Supplier Solicitation and Utilization Form C-48 for each bid submitted; to be received within ten (10) business days after the bid opening. Failure of bidders to submit this form in the time frame specified may be cause for disqualification of the bidder and rejection of their bid in accordance with the requirements of this Special Provision, the contract specifications, and VDOT Road and Bridge specifications.

O. Suspect Evidence of Criminal Behavior

Failure of a bidder, Contractor, or subcontractor to comply with the Virginia Department of Transportation Road and Bridge Specifications and these Special Provisions wherein there appears to be evidence of criminal conduct shall be referred to the Attorney General for the Commonwealth of Virginia and/or the FHWA Inspector General for criminal investigation and, if warranted, prosecution.

Suspected DBE Fraud

In appropriate cases, VDOT will bring to the attention of the U. S. Department of Transportation (USDOT) any appearance of false, fraudulent, or dishonest conduct in connection with the DBE program, so that USDOT can take the steps, e.g., referral to the Department of Justice for criminal prosecution, referral to the USDOT Inspector General, action under suspension and debarment or Program Fraud and Civil Penalties rules provided in 49CFR Part 31.

P. Summary of Remedies for Non-Compliance with DBE Program Requirements

Failure of any bidder\Contractor to comply with the requirements of this Special Provision for Section 107.15 of the Virginia Road and Bridge Specifications, which is deemed to be a condition of bidding, or where a contract exists, is deemed to constitute a breach of contract shall be remedied in accordance with the following:

1. Disadvantaged Business Enterprise (DBE) Program Requirements

The Contractor shall carry out applicable requirements of 49 CFR Part 26 in the award, administration, and performance of this contract. Failure by the Contractor to carry out these requirements is a material breach of this contract, which will result in the termination of this contract or other such remedy, as VDOT deems appropriate.

All administrative remedies noted in this provision are automatic unless the Contractor exercises the right of appeal within the required timeframe(s) specified herein.

2. DBE Program-Related Certifications Made by Bidders\Contractors

Once awarded the contract, the Contractor shall comply fully with all regulatory and contractual requirements of the USDOT DBE Program, and that each certified DBE firm

participating in the contract shall fully perform the designated work items with the DBE's own forces and equipment under the DBE's direct supervision, control, and management. Where a contract exists and where the Contractor, DBE firm, or any other firm retained by the Contractor has failed to comply with federal or VDOT DBE Program regulations and/or their requirements on that contract, VDOT has the authority and discretion to determine the extent to which the DBE contract requirements have not been met, and will assess against the Contractor any remedies available at law or provided in the contract in the event of such a contract breach.

3. Disqualification of Bidder

Bidders may be disqualified from bidding for failure to comply with the requirements of this Special Provision, the contract specifications, and VDOT Road and Bridge Specifications.

4. Bidding Procedures

The failure of a bidder to submit the required documentation within the timeframes specified in the **Contract Goal, Good Faith Efforts Specified** section of this Special Provision may be cause for rejection of that bidder's bid. If the lowest bidder is rejected for failure to submit required documentation in the specified time frames, the Department may either award the work to the next lowest bidder, or re-advertise and construct the work under contract or otherwise as determined by the Commonwealth.

In order to award a contract to a bidder that has failed to meet DBE contract goal requirements, VDOT will determine if the bidder's efforts were adequate good faith efforts, and if given all relevant circumstances, those efforts were to the extent a bidder actively and aggressively seeking to meet the requirements would make. Regardless of the DBE contract goal participation level proposed by the bidder or the extent of good faith efforts shown, all bidders shall timely and separately file their completed and executed Forms C-111, C-112, C-48, and Form C-49, as aforementioned, or face potential bid rejection. If a bidder does not submit its completed and executed C-111, or C-112, when required by this Special Provision, the bidder's bid will be considered non-responsive and may be rejected. If, after reconsideration, the Department determines the bidder has failed to meet the requirements of the contract goal and has failed to make adequate good faith efforts to achieve the level of DBE participation as specified in the bid proposal, the bidder's bid will be rejected. If sufficient documented evidence is presented to demonstrate that the apparent low bidder made reasonable good faith efforts, the Department will award the contract and reduce the DBE requirement to the actual commitment identified by the lowest successful bidder at the time of its bid. The Contractor is encouraged to seek additional participation during the life of the contract.

If the Contractor fails to conform to the schedule of DBE participation as shown on the progress schedule, or at any point at which it is clearly evident that the remaining dollar value of allowable credit for performing work is insufficient to obtain the scheduled participation, the Contractor and any aforementioned affiliates may be enjoined from bidding for 60 days or until such time as conformance with the schedule of DBE participation is achieved. In such instances, the Contractor is expected to seek DBE participation towards meeting the goal during the prosecution of the contract.

If the Contractor fails upon completion of the project to meet the required participation, the Contractor and any prime contractual affiliates, as in the case of a joint venture, may be enjoined from bidding as a prime Contractor, or participating as a subcontractor on VDOT projects for a period of 90 days.

Prior to enjoinder from bidding or denial to participate as a subcontractor for failure to comply with participation requirements, as provided hereinbefore, the Contractor may submit documentation to the State Construction Engineer to substantiate that failure was due solely to quantitative underrun(s) or elimination of items subcontracted to DBEs, and that all feasible means have been used to obtain the required participation. The State Construction Engineer upon verification of such documentation shall make a determination whether or not the Contractor has met the requirements of the contract.

If it is determined that the aforementioned documentation is insufficient or the failure to meet required participation is due to other reasons, the Contractor may request an appearance before the Administrative Reconsideration Panel to establish that all feasible means were used to meet such participation requirements. The decision of the Administrative Reconsideration Panel shall be administratively final. The enjoinder period will begin upon the Contractor's failure to request a hearing within the designated time frame or upon the Administrative Reconsideration Panel's decision to enjoin, as applicable.

5. Verification of DBE Participation and Imposed Damages

If the Contractor fails to comply with correctly completing and submitting any of the required documentation requested by this provision within the specified time frames, the Department will withhold payment of the monthly progress estimate until such time as the required submissions are received by VDOT. Where such failures to provide required submittals or documentation are repeated the Department will move to enjoin the Contractor and any prime contractual affiliates, as in the case of a joint venture, from bidding as a prime Contractor, or participating as a subcontractor on VDOT projects until such submissions are received.

In addition to the remedies described heretofore in this provision VDOT also exercises its rights with respect to the following remedies:

Suspect Evidence of Criminal Behavior

Failure of a bidder, Contractor, or subcontractor to comply with the Virginia Department of Transportation Road and Bridge Specifications and these Special Provisions wherein there appears to be evidence of criminal conduct shall be referred to the Attorney General for the Commonwealth of Virginia and/or the FHWA Inspector General for criminal investigation and, if warranted prosecution.

In appropriate cases, VDOT will bring to the attention of the U. S. Department of Transportation (USDOT) any appearance of false, fraudulent, or dishonest conduct in connection with the DBE program, so that USDOT can take the steps, e.g., referral to the Department of Justice for criminal prosecution, referral to the USDOT Inspector General, action under suspension and debarment or Program Fraud and Civil Penalties rules provided in 49CFR Part 31.

Section 107.16(a) Erosion and Siltation of the Specifications is replaced with the following

- (a) **Erosion and Siltation:** The Contractor shall exercise every reasonable precaution, including temporary and permanent soil stabilization measures, throughout the duration of the project to control erosion and prevent siltation of adjacent lands, rivers, streams, wetlands, lakes, and impoundments. Soil stabilization and/or erosion control measures shall be applied to erodible soil or ground materials exposed by any activity associated with construction, including clearing, grubbing, and grading, but not limited to local or on-site sources of materials, stockpiles, disposal areas and haul roads.

The Contractor shall comply with the requirements of Sections 301.02 and 303.03 of the Specifications. Should the Contractor as a result of negligence or noncompliance, fail to provide soil stabilization in accordance with these specifications, the cost of temporary soil stabilization in accordance with the provisions of Section 303 of the Specifications shall be at the Contractor's expense. If the delay in stabilizing an exposed area of land is due to circumstances beyond the Contractor's control, the Department will be responsible for the expense.

Temporary measures shall be coordinated with the work to ensure effective and continuous erosion and sediment control. Permanent erosion control measures and drainage facilities shall be installed as the work progresses.

For projects that disturb 10,000 square feet or greater of land or 2,500 square feet or greater in Tidewater, Virginia, the Contractor shall have within the limits of the project during land disturbance activities, an employee certified by the Department in erosion and sediment control who shall inspect erosion and sediment control and pollution prevention practices, devices and measures for proper installation and operation and promptly report their findings to the Inspector. Failure on the part of the Contractor to maintain appropriate erosion and sediment control or pollution prevention devices in a functioning condition may result in the Engineer notifying the Contractor in writing of specific deficiencies. Deficiencies shall be corrected immediately or as otherwise directed by the Engineer. If the Contractor fails to correct or take appropriate actions to correct the specified deficiencies within 24 hours (or as otherwise directed) after receipt of such notification, the Department may do one or more of the following: require the Contractor to suspend work in other areas and concentrate efforts towards correcting the specified deficiencies, withhold payment of monthly progress estimates, or proceed to correct the specified deficiencies and deduct the entire cost of such work from monies due the Contractor. Failure on the part of the Contractor to maintain a Department certified erosion and sediment control employee within the project limits when land disturbance activities are being performed will result in the Engineer suspending work related to any land disturbance activity until such time as the Contractor is in compliance with this requirement.

Section 107.16(b)1 Water of the Specifications is replaced with the following:

1. **Water:** The Contractor shall exercise every reasonable precaution throughout the duration of the project to prevent pollution of rivers, streams, and impoundments. Pollutants such as, but not limited to, chemicals, fuels, lubricants, bitumens, raw sewage, paints, sedimentation, and other harmful material shall not be discharged into or alongside rivers, streams, or impoundments or into channels leading to them. The Contractor shall provide the Engineer a contingency plan for reporting and immediate actions to be taken in the event of a dump, discharge, or spill within eight hours after he has mobilized to the project site.

Construction discharge water shall be filtered to remove deleterious materials prior to discharge into state waters. Filtering shall be accomplished by the use of a standard dewatering basin or a dewatering bag or other measures approved by the Engineer. Dewatering bags shall conform to the requirements of Section 245 of the Specifications. During specified spawning seasons, discharges and construction activities in spawning areas of state waters shall be restricted so as not to disturb or inhibit aquatic species that are indigenous to the waters. Neither water nor other effluence shall be discharged onto wetlands or breeding or nesting areas of migratory waterfowl. When used extensively in wetlands, heavy equipment shall be placed on mats. Temporary construction fills and mats in wetlands and flood plains shall be constructed of approved nonerodible materials and shall be removed by the Contractor to natural ground when the Engineer so directs.

If the Contractor dumps, discharges, or spills any oil or chemical that reaches or has the potential to reach a waterway, he shall immediately notify all appropriate jurisdictional

state and federal agencies in accordance with the requirements of Section 107.01 and 107.16(e) of the Specifications and the VPDES *General Permit For Discharge of Stormwater From Construction Activities* and shall take immediate actions to contain, remove, and properly dispose of the oil or chemical.

Solids, sludges or other pollutants removed in the course of the treatment or management of pollutants shall be disposed of in a manner that prevents any pollutant from such materials from entering surface waters in compliance with all applicable state and federal laws and regulations.

Excavation material shall be disposed of in approved areas above the mean high water mark shown on the plans in a manner that will prevent the return of solid or suspended materials to state waters. If the mark is not shown on the plans, the mean high water mark shall be considered the elevation of the top of stream banks.

Constructing new bridge(s) and dismantling and removing existing bridge(s) shall be accomplished in a manner that will prevent the dumping or discharge of construction or disposable materials into rivers, streams, or impoundments.

Construction operations in rivers, streams, or impoundments shall be restricted to those areas where identified on the plans and to those that must be entered for the construction of structures. Rivers, streams, and impoundments shall be cleared of falsework, piling, debris, or other obstructions placed therein or caused by construction operations. Stabilization of the streambed and banks shall occur immediately upon completion of work or if work is suspended for more than 14 days.

The Contractor shall prevent stream constriction that would reduce stream flows below the minimum, as defined by the State Water Control Board, during construction operations.

If it is necessary to relocate an existing stream or drainage facility temporarily to facilitate construction, the Contractor shall design and provide temporary channels or culverts of adequate size to carry the normal flow of the stream or drainage facility. The Contractor shall submit a temporary relocation design to the Engineer for review and acceptance in sufficient time to allow for discussion and correction prior to beginning the work the design covers. Costs for the temporary relocation of the stream or drainage facility shall be included in the Contract price for the related pipe or box culvert, unless specifically provided for under another Pay Item. Stabilization of the streambed and banks shall occur immediately upon completion of, or during the work or if the work is suspended for more than 14 days.

Temporary bridges or other minimally invasive structures shall be used wherever the Contractor finds it necessary to cross a stream more than twice in a 6 month period, unless otherwise authorized by water quality permits issued by the U. S. Army Corps of Engineers, Virginia Marine Resources Commission or the Virginia Department of Environmental Quality for the Contract.

Section 107.16(b)2 Air of the Specifications is amended to include the following:

Reasonable precautions shall be taken at all times to prevent particulate matter from becoming airborne in accordance with the State Air Pollution Control Board regulation [9 VAC 5 Chapter 50](#), Article 1, Standards of Performance for Visible Emissions and Fugitive Dust/Emissions.

Section 107.16(e) Storm Water Pollution Prevention Plan of the Specifications is replaced with the following:

(e) **Storm Water Pollution Prevention Plan and VPDES General Permit for the Discharge of Stormwater from Construction Activities**

A Stormwater Pollution Prevention Plan (SWPPP) identifies potential sources of pollutants which may reasonably be expected to affect the stormwater discharges from the construction site and any on-site or off-site support facilities located on VDOT rights of way and easements. The SWPPP also describes and ensures implementation of practices which will be used to minimize or prevent pollutants in such discharges.

The SWPPP shall include, but not be limited to, the approved Erosion and Sediment Control (ESC) Plan, the approved Stormwater Management (SWM) Plan (if applicable), the approved Pollution Prevention Plan and all related Specifications and Standards and notes contained within all contract documents and shall be required for all land-disturbing activities that disturb 10,000 square feet or greater, or 2,500 square feet or greater in Tidewater, Virginia.

Land-disturbing activities that disturb one acre or greater require coverage under the Department of Environmental Quality's VPDES General Permit for the Discharge of Stormwater from Construction Activities (hereafter referred to as the VPDES Construction Permit). According to IIM-LD-242, VDOT will apply for and secure VPDES Construction Permit coverage for all applicable land disturbing activities on VDOT rights of way or easements for which it has contractual control, including off-site (outside the project limits) support facilities on VDOT rights of way or easements that directly relate to the construction activity.

The Contractor shall be responsible for securing VPDES Construction Permit coverage and complying with all permit conditions for all support facilities that are not located on VDOT rights of way or easements.

The required contents of a SWPPP for those land disturbance activities requiring coverage under the VPDES Construction Permit are found in Section II of the permit.

While a SWPPP is an important component of the VPDES Construction Permit, it is only one of the many requirements that must be addressed in order to be in full compliance with the conditions of the permit.

The Contractor and all other persons that oversee or perform activities covered by the VPDES Construction Permit shall be responsible for reading, understanding, and complying with all of the terms, conditions and requirements of the permit and the project's SWPPP including, but not limited to, the following:

1. Project Implementation Responsibilities

The Contractor shall be responsible for the installation, maintenance, inspection, and, on a daily basis, ensuring the functionality of all erosion and sediment control measures and all other stormwater runoff control and pollution prevention measures identified within or referenced within the SWPPP, the construction plans, the specifications, all applicable permits, and all other contract documents.

The Contractor shall be solely responsible for the temporary erosion and sediment control protection and permanent stabilization of all borrow areas and soil disposal areas located outside of VDOT right of way or easement.

The Contractor shall prevent or minimize any stormwater or non-stormwater discharge that will have a reasonable likelihood of adversely affecting human health or public and/or private properties.

2. Certification Requirements

In addition to satisfying the personnel certification requirements contained in Section 107.16(a) of the Specifications, the Contractor shall certify his activities by completing, signing, and submitting Form C-45 VDOT SWPPP Contractor Certification Statement to the Engineer at least 7 days prior to commencing any project related land-disturbing activities, both within the project limits and any support facilities located on VDOT rights of way or easements outside the project limits.

3. SWPPP Requirements for Support Facilities

VDOT will secure VSMP Construction Permit coverage for support facilities located on VDOT rights of way or easements according to IIM-LD-242. The Contractor shall be responsible for securing separate VSMP Construction Permit coverage for support facilities that are not located on VDOT rights of way or easements.

Support facilities shall include, but not be limited to, borrow and disposal areas, construction and waste material storage areas, equipment and vehicle washing, maintenance, storage and fueling areas, storage areas for fertilizers, fuels or chemicals, concrete wash out areas, sanitary waste facilities and any other areas that may generate a stormwater or non-stormwater discharge directly related to the construction site.

The Contractor shall develop and enforce a Spill Prevention Control and Countermeasure (SPCC) Plan conforming to 40 CFR 112 if the aggregated volume of Oil stored within the project limits at any one time is greater than 1320 gallons. Oil, in this context, shall be defined according to 40 CFR 112. The aggregated volume includes that of both stationary and portable storage facilities but does not include individual storage containers with less than a 55 gallon capacity. The contractor shall include the SPCC Plan as a part of his Pollution Prevention Plan for the project.

Support Facilities located on VDOT rights of way or easements:

- a. For those support facilities located within the project limits but not included in the construction plans for the project, the Contractor shall develop a SWPPP according to IIM-LD-246 which shall include, where applicable, an erosion and sediment control plan according to IIM-LD-11, a stormwater management plan according to IIM-LD-195 and a pollution prevention plan, according to these Specifications and the SWPPP General Information Sheet notes in the construction plans or other such contract documents. All plans developed shall be reviewed and approved by appropriate personnel certified through DEQ's ESC and SWM Certification program and shall be developed according to Section 105.10 of the Specifications and shall be submitted to the Engineer for review and approval. Once approved, the Engineer will notify the Contractor in writing that the plans are accepted as a component of the Project's SWPPP and VPDES Construction Permit coverage (where applicable) and shall be subject to all conditions and requirements of the VPDES Construction Permit and all other contract documents. No land disturbing activities can occur in the support area(s) until written notice to proceed is provided by the Engineer.
- b. For support facilities located outside the project limits and not included in the construction plans for the project, the Contractor shall develop a SWPPP according to IIM-LD-246 which shall include, where applicable, an erosion and sediment control plan according to IIM-LD-11, a stormwater management plan (where applicable) according to IIM-LD-195, a pollution prevention plan according to these specifications and the SWPPP General Information Sheet notes in the construction plans or other such contract documents and all

necessary documents for obtaining VPDES Construction Permit coverage according to IIM-LD-242. All plans developed shall be reviewed and approved by appropriate personnel certified through DEQ's ESC and SWM Certification program and shall be developed according to Section 105.10 of the Specifications and shall be submitted to the Engineer for review and approval. Once approved by the Engineer, VDOT will secure VPDES Construction Permit coverage according to IIM-LD-242. After VDOT secures VPDES Construction Permit coverage for the support facility, the Engineer will notify the Contractor in writing. The support facility shall be subject to all conditions and requirements of the VPDES Construction Permit and all other contract documents. No land disturbing activities can occur in the support area(s) until written notice to proceed is provided by the Engineer.

4. Inspection Procedures

a. Inspection Requirements

The Contractor shall be responsible for conducting site inspections according to the requirements herein. Site inspections shall include erosion, sediment control, and pollution prevention practices and facilities; all areas of the site disturbed by construction activity; all on-site support facilities; and all off site support facilities within VDOT right of way or easement. The Contractor shall document such inspections by completion of Form C-107, Construction Runoff Control Inspection Form, according to the directions contained within the form. Inspections shall be conducted using one of the following schedules:

- Schedule 1 - At least once every 7 calendar days (equivalent to the once every five business days schedule in the VPDES *General Permit for Discharge of Stormwater from Construction Activities*) and within 48 hours following any measureable storm event. If a measureable storm event occurs when there are more than 48 hours between business days, the Contractor shall perform his inspection no later than the next business day. The Contractor shall install a rain gage at a central location on the project site for the purposes of determining the occurrence of a measureable storm event. Where the project is of such a length that one rain gage may not provide an accurate representation of the occurrence of a measurable storm event over the entire project site, the Contractor shall install as many rain gages as necessary to accurately reflect the amount of rainfall received over all portions of the project. The Contractor shall observe all rain gages no less than once each business day at the time prescribed in the SWPPP General Information Sheet notes in the construction plans or other contract documents to determine if a measureable storm event has occurred. The procedures for determining the occurrence of a measurable storm event are identified in the SWPPP General Information Sheet notes in the construction plans or other contract documents.
- Schedule 2 - At least each Monday and Thursday (equivalent to the once every four business days schedule in the VPDES *General Permit for Discharge of Stormwater from Construction Activities*). Where Monday or Thursday is a non-business day, the inspection may be performed on the next business day afterward. In no case shall the inspections be performed less than once every four business days.

The inspection schedule (1 or 2) is to be selected prior to the beginning of land disturbance. Once an inspection schedule is selected, it shall be defined in the

appropriate note in the SWPPPP General Information Sheets contained in the construction plan set and shall be used for the duration of the project.

A business day is defined as Monday through Friday excluding State holidays. A measurable storm event is defined as one producing 0.25 inches of rainfall or greater over a 24 hour time period.

For those areas of the site that have been temporarily stabilized or where land disturbing activities have been suspended due to continuous frozen ground conditions and stormwater discharges are unlikely, the inspection schedule may be reduced to once per month. If weather conditions (such as above freezing temperatures or rain or snow events) make stormwater discharges likely, the Contractor shall immediately resume the regular inspection schedule. Those definable areas where final stabilization has been achieved will not require further inspections provided such areas have been identified in the project's Stormwater Pollution Prevention Plan.

b. Corrective Actions

If a site inspection identifies an existing control measure that is not being maintained properly or operating effectively or an existing control measure that needs to be modified or locations where an additional control measure is necessary or any other deficiencies in the erosion and sediment control and pollution prevention plan, corrective action(s) shall be completed as soon as practical and prior to the next anticipated measurable storm event but no later than seven days after the date of the site inspection that identified the deficiency.

5. Unauthorized Discharges and Reporting Requirements

The Contractor shall not discharge into state waters sewage, industrial wastes, other wastes or any noxious or deleterious substances nor shall he otherwise alter the physical, chemical, or biological properties of such waters that render such waters detrimental for or to domestic use, industrial consumption, recreational or other public uses.

(1) Notification of non-compliant discharges

The Contractor shall immediately notify the Engineer upon the discovery of or the potential of any unauthorized, unusual, extraordinary, or non-compliant discharge from the land construction activity or any of support facilities located on VDOT right of way or easement. Where immediate notification is not possible, such notification shall be not later than 24 hours after said discovery.

(2) Detailed report requirements for non-compliant discharges

The Contractor shall submit to the Engineer within 5 days of the discovery of any actual or potential non-compliant discharge a written report describing details of the discharge to include a description of the nature and location of the discharge, the cause of the discharge, the date of occurrence, the length of time that the discharge occurred, the volume of the discharge, the expected duration and total volume if the discharge is continuing, a description of any apparent or potential effects on private and/or public properties and state waters or endangerment to public health, and any steps planned or taken to reduce, eliminate and prevent a recurrence of the discharge. A completed Form C-107 shall be included in such reports.

6. Changes and Deficiencies

The Contractor shall report to the Engineer when any planned physical alterations or additions are made to the land disturbing activity or deficiencies in the project plans or contract documents are discovered that could significantly change the nature of or increase the potential for pollutants discharged from the land disturbing activity to surface waters and that have not previously been addressed in the SWPPP.

7. Amendments, Modifications, Revisions and Updates to the SWPPP

- a. The Contractor shall amend the SWPPP whenever site conditions, construction sequencing or scheduling necessitates revisions or modifications to the erosion and sediment control plan, the pollution prevention plan or any other component of the SWPPP for the land disturbing activity or onsite support facilities,
- b. The Contractor shall amend the SWPPP to identify any additional or modified erosion and sediment control and pollution prevention measures implemented to correct problems or deficiencies identified through any inspection or investigation process.
- c. The Contractor shall amend the SWPPP to identify any new or additional person(s) or contractor(s) not previously identified that will be responsible for implementing and maintaining erosion and sediment control and pollution prevention devices.
- d. The Contractor shall update the SWPPP to include:
 - (1) A record of dates when, major grading activities occur, construction activities temporarily or permanently cease on a portion of the site and stabilization measures are initiated.
 - (2) Documentation of replaced or modified erosion and sediment control and pollution prevention controls where periodic inspections or other information have indicated that the controls have been used inappropriately or incorrectly.
 - (3) Identification of areas where final stabilization has occurred and where no further SWPPP or inspection requirements apply.
 - (4) The date of any prohibited discharges, the discharge volume released, and what actions were taken to minimize the impact of the release.
 - (5) A description of any measures taken to prevent the reoccurrence of any prohibited discharge.
 - (6) A description of any measures taken to address any issues identified by the required erosion and sediment control and pollution prevention inspections.
- e. The Contractor shall update the SWPPP no later than seven days after the implementation and/or the approval of any amendments, modifications or revisions to the erosion and sediment control plan, the pollution prevention plan or any other component of the SWPPP.
- f. Revisions or modifications to the SWPPP shall be approved by the Engineer and shall be documented by the Contractor on a designated plan set (Record Set)

according to IIM-LD-246. All updates to the SWPPP shall be signed by the Contractor and the VDOT Responsible Land Disturber (RLD).

- g. The record set of plans shall be maintained with other SWPPP documents on the project site or at a location convenient to the project site where no on site facilities are available.

Section 107.21—Size And Weight Limitations of the Specifications is amended to add the following:

- (d) **Construction Loading of Structures:** In the course of planning and prosecuting the work for the asphalt maintenance schedules in the Contract, the Contractor shall consider the size and weight limitation of any existing structure(s) affecting the prosecuting the work in a schedule when contemplating construction loads, equipment access, haul and delivery routes of materials, and other related activities. If the size or weight limitation of an existing structure changes after the receipt of bid date for the Contract and remains so up to and including the actual prosecution of work for a schedule in the Contract, preventing or limiting access across the structure, and the Contractor determines this limitation impacts his operations; he shall notify the Engineer of such change. If the Engineer confirms such change has occurred, the change will be considered a change to the character of the work in accordance with the provisions of Section 104.03(a) of the Specifications and is eligible for adjustments in accordance with the provisions therein.

SECTION 108—PROSECUTION AND PROGRESS OF WORK

Section 108.01—Prosecution of Work of the Specifications is amended to replace the first paragraph with the following:

The Contractor shall begin work on the Contract within 10 calendar days after the date selected by the Contractor as his Notice to Proceed date or within 10 calendar days after the specific Notice to Proceed date indicated in the Contract, unless otherwise altered or amended by specific language in the Contract or as permitted by the provisions of Section 105.01 or Section 108.02 of the Specifications.

Section 108.01—Prosecution of Work of the Specifications is amended to include the following:

Once the Contractor has begun work on a given schedule or portion thereof he shall endeavor to prosecute such work fully and continuously in accordance with the details and requirements of the Contract to its completion. In the event the Contractor has to temporarily suspend the work on a given schedule or portion thereof he shall notify the Engineer at least 24 hours in advance of the time and date he plans to pull off the work site. Prior to leaving the work site, the Contractor shall ensure the work site has been properly and safely secured to protect the traveling public in accordance with the provisions of the *Virginia Work Area Protection Manual*, the *MUTCD*, Section 512 of the Specifications, and other requirements included in the Contract documents.

Section 108.02—Limitation of Operations of the Specifications is replaced with the following:

(a) **General**

The Contractor shall conduct the work in a manner and sequence that will ensure its expeditious completion with the least interference to traffic and shall have due regard for the location of detours and provisions for handling traffic. The Contractor shall not open any work to the prejudice or detriment of work already started. The Engineer may require the Contractor to finish a section of work before work is started on any other section.

The Contractor shall also be governed by the limitations of operations specified herein and elsewhere in the contract documents including but not limited to pavement and shoulder planing

operations, pavement and shoulder paving operations, trench widening, shoulder renovation, removal and placement of traffic control items, and maintaining traffic.

The Contractor shall also schedule work, for paving sites designated in the Contract, so that it is completed on or before the dates and time restrictions specified herein or elsewhere in the Contract.

(b) **Holidays**

Except as is necessary to maintain traffic, work shall not be performed on Sundays or the following holidays without the permission of the Engineer: **January 1, Easter, Memorial Day, July 4, Labor Day, Thanksgiving Day, and Christmas Day.**

If any of these holidays occurs on a Sunday, the following Monday shall be considered the holiday.

In addition to the Sunday or Holiday work limitations, mobile, short duration, short-term stationary, or intermediate-term stationary temporary traffic control zone (as defined in the *Virginia Work Area Protection Manual*) lane closures on mainline lanes, shoulders, or ramps shall not be performed during the following Holiday time periods without the written permission of the Engineer. Additionally, a long-term stationary temporary traffic control zone (as defined in the *Virginia Work Area Protection Manual*) shall not be initially put in place, adjusted, or removed during the following Holiday time periods without the written permission of the Engineer:

- **January 1:** From Noon on the preceding day until Noon on the following day, except as indicated below.
- **Easter:** As indicated below.
- **Memorial Day:** As indicated below.
- **July 4:** From Noon on the preceding day until Noon on the following day, except as indicated below.
- **Labor Day:** As indicated below.
- **Thanksgiving Day:** From Noon on the Wednesday preceding Thanksgiving Day until Noon on the Monday following Thanksgiving Day.
- **Christmas Day:** From Noon on the preceding day until Noon on the following day, except as indicated below.

If the Holiday occurs on a Friday or Saturday: From Noon on the preceding Thursday to Noon on the following Monday.

If the Holiday occurs on a Sunday or Monday: From Noon on the preceding Friday to Noon on the following Tuesday.

(c) **Environmentally Sensitive Areas (ESA)**

This project may be in an environmentally sensitive area for bat species protected under the Endangered Species Act (16 USC 1531 et seq., hereinafter “the Act”) and the Virginia Endangered Species Act (29.1-563 et seq.). Removal of trees greater than or equal to 3 inches in diameter at breast height (dbh) may result in adverse impacts to bat species by removing roosting habitat during summer months and is prohibited during the Time of Year Restriction period of April 15 to September 15. If tree removal is necessary for this project, the Contractor

shall notify the District Environmental Manager immediately to determine if coordination is required prior to tree removal.

Section 108.04—Determination and Extension of Contract Time Limit of the Specifications is amended to replace the second paragraph with the following:

With a fixed date contract when contract execution is not within 60 calendar days after the opening of bids, or when the Contractor is unable to commence work because of any failure of the Department, or when the Contractor is delayed because of the fault of the Department, the Contractor will be given an extension of time based on the number of days delayed beyond the 60 calendar days. No time extension will be allowed for a delay in the date of contract execution when the delay is the fault of the Contractor.

Section 108.04(a) Fixed Date of the Specifications is amended to add the following after the first paragraph as currently written:

If the Contract identifies a contract-specific Notice to Proceed date and the Contract is not executed by that date, the Contractor will receive an extension of time equal to the number of days between the contract-specific Notice to Proceed date and the eventual date of contract execution. If the Notice to Proceed date is selected by the Contractor and after prior approval the Engineer directs the Contractor not to begin work on that date, the Contractor will receive an extension of time equal to the number of days between the Contractor's selected Notice to Proceed date and the eventual date the Engineer informs the Contractor that he may commence the work.

Section 108.07—Default of Contract of the Specifications is amended to replace condition (a) with the following:

- (a) fails to begin the work under the Contract within 10 calendar days after the Contractor's selected Notice to Proceed date, or within 10 calendar days after a contract specific Notice to Proceed date indicated in the Contract, except as otherwise permitted by specific contract language or the provisions of Section 105.01 or Section 108.02 of the Specifications.

SECTION 109—MEASUREMENT AND PAYMENT

Section 109.01(a)—Measurement by Weight of the Specifications is amended to replace the first paragraph and second paragraph including subparagraphs 1-4 with the following:

- (a) **Measurement by Weight:** Materials that are measured or proportioned by weight shall be weighted on accurate scales as specified in this section. When material is paid for on a tonnage basis, personnel performing the weighing shall be certified by the Department and shall be bonded to the Commonwealth of Virginia in the amount of \$10,000 for the faithful observance and performance of the duties of the weighperson required herein. The bond shall be executed on a form having the exact wording as the Weighpersons Surety Bond Form furnished by the Department and shall be submitted to the Department prior to the furnishing of the tonnage material.

The Contractor shall have the weighperson perform the following:

1. Furnish a signed weigh ticket for each load that shows the date, load number, plant name, size and type of material, project number, schedule or purchase order number, and the weights specified herein.
2. Maintain sufficient documentation so that the accumulative tonnage and distribution of each lot of material, by contract, can be readily identified.

3. Submit by the end of the next working day a summary of the number of loads and total weights for each type of material by contract.

Section 109.01(a)—Measurement by Weight of the Specifications is also amended to delete the third paragraph.

Section 109.01(d)4 Asphalt of the Specifications is amended to replace the “formula” used in computing the volume of asphalt at temperatures other than 60 degrees F” with the following:

$$V^1 = V \times [1 - K(T - 60)]$$

Section 109.08(b)—Payment to Sub-Contractors of the Specifications is amended to replace the second paragraph with the following:

Payment to Sub-Contractors shall be in accordance with the provisions of §2.2-4354 of the *Highway Laws of Virginia*:

The Contractor shall take one of the following two actions within 7 days after receipt of payment from the Department for the subcontractor’s portion of the work as shown on the monthly progress estimate:

1. Pay the subcontractor for the proportionate share of the total payment received from the agency attributable to the work performed by the subcontractor under that contract; or
2. Notify the Department and subcontractor, in writing, of his intention to withhold all or a part of the subcontractor's payment with the reason for nonpayment.

The Contractor shall be obligated to pay interest in the amount 1 (one) percent per month on all amounts owed by the Contractor to the subcontractor that remain unpaid after 7 days following receipt by the Contractor of payment from the Department for work performed by the subcontractor, except amounts withheld as allowed in Section 2. The Contractor shall include in each of its subcontracts a provision requiring each subcontractor to include or otherwise be subject to the same payment and interest requirements with respect to each lower tier subcontractor.

Section 109.09—Payment for Material On Hand of the Specifications is replaced with the following:

When requested in writing by the Contractor, payment allowances may be made for material secured for use on the project. Such material payments will be for only those actual quantities identified in the contract, approved work orders, or otherwise **authorized and documented by the Engineer** as required to complete the project and shall be in accordance with the following terms and conditions:

- (a) **Structural Steel or Reinforcing Steel:** An allowance of 100 percent of the cost to the Contractor for structural steel or reinforcing steel materials secured for fabrication not to exceed 60 percent of the contract price may be made when such material is delivered to the fabricator and has been adequately identified for exclusive use on the project. **The provisions of this section for steel reinforcement will only apply where the quantity of steel reinforcement is identified as a separate and distinct bid item for payment.** An allowance of 100 percent of the cost to the Contractor for superstructure units and reinforcing steel, not to exceed 90 percent of the contract price, may be made when fabrication is complete. Prior to the granting of such allowances, the materials and fabricated units shall have been tested or certified and found acceptable to the Department and shall have been stored in accordance with the requirements specified herein. Allowances will be based on invoices, bills, or the estimated value as approved by the Engineer and will be subject to the retainage requirements of Section 109.08 of the Specifications. **For the purposes of this section fabrication is defined as any manufacturing process such as bending, forming,**

welding, cutting or coating with paint or anti-corrosive materials which alters, converts, or changes raw material for its use in the permanent finished work.

- (b) **Other Materials:** For aggregate, pipe, guardrail, signs and sign assemblies, and other nonperishable material, an allowance of 100 percent of the cost to the Contractor for materials, not to exceed 90 percent of the contract price, may be made when such material is delivered **to the project** and stockpiled or stored in accordance with the requirements specified herein. Prior to the granting of such allowances, the material shall have been tested and found acceptable to the Department. Allowances will be based on invoices, bills, or the estimated value of the material as approved by the Engineer and will be subject to the retainage provisions of Section 109.08 of the Specifications.
- (c) **Excluded Items:** No allowance will be made for fuels, form lumber, falsework, temporary structures, or other work that will not become an integral part of the finished construction. **Additionally, no allowance will be made for perishable material such as cement, seed, plants, or fertilizer.**
- (d) **Storage:** Material for which payment allowance is requested shall be stored in an approved manner in areas where damage is not likely to occur. If any of the stored materials are lost or become damaged, the Contractor shall repair or replace them **at no additional cost to the Department. Repair or replacement of such material will not be considered the basis for any extension of contract time.** If payment allowance has been made prior to such damage or loss, the amount so allowed or a proportionate part thereof will be deducted from the next progress estimate payment and withheld until satisfactory repairs or replacement has been made.

When it is determined to be impractical to store materials within the limits of the project, the Engineer may approve storage on private property or, for structural units and reinforcing steel, on the manufacturer's or fabricator's yard. Requests for payment allowance for such **stored** material shall be accompanied by a release from the owner or tenant of such property or yard agreeing to permit the removal of the materials from the property without cost to the Commonwealth.

- (e) **Materials Inventory:** If the Contractor requests a payment allowance for properly stored material, he shall submit a certified and itemized inventory statement to the Engineer no earlier than five days and no later than two days prior to the progress estimate date. The statement shall be submitted on forms furnished by the Department and shall be accompanied by **supplier's or manufacturer's** invoices or other documents that will verify the material's cost. Following the initial submission, the Contractor shall submit to the Engineer a monthly-certified update of the itemized inventory statement within the same time frame. The updated inventory statement shall show additional materials received and stored with invoices or other documents and shall list materials removed from storage since the last certified inventory statement, with appropriate cost data reflecting the change in the inventory. If the Contractor fails to submit the monthly-certified update within the specified time frame, the Engineer will deduct the full amount of the previous statement from the progress estimate.

At the conclusion of the project, the cost of material remaining in storage for which payment allowance has been made will be deducted from the progress estimate.

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VIRGINIA DEPARTMENT OF TRANSPORTATION  
SPECIAL PROVISION FOR  
**LOCATING, REMOVING AND DISPOSING OF RECESSED PAVEMENT MARKERS AND RAISED  
SNOW-PLOWABLE MARKERS**

October 17, 2010

The Contractor shall locate, remove and dispose of existing recessed pavement markers and raised snow-plowable markers prior to resurfacing. The cavity left by the removal of the existing recessed pavement markers shall be cleaned of debris, filled with the approved mix for resurfacing and compacted.

Locating, removing and disposing of recessed pavement markers and raised snow-plowable markers; cleaning and filling the cavity, and compacting the material placed in the cleaned cavity will not be measured for payment. The cost for performing this work shall be included in the price bid for other appropriate items of work.

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VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SURFACE PREPARATION AND RESTORATION PRIOR TO PLANT MIX OVERLAY

February 2, 2011

I. DESCRIPTION

This work shall consist of removing deteriorated pavement, cleaning the area and repairing with the appropriate asphalt mixes in areas designated by the Engineer. This work is applicable only to the routes or areas designated to be overlaid in this contract and where the Engineer has authorized the limits for preparation and restoration. This preparation and restoration will be accomplished prior to the overlay paving operation. After the preparation, the Contractor will be responsible for maintaining the prepared surface until the overlay has been completed.

Definitions: For the purpose of the Specifications surface preparation is defined as the following:

- TYPE I -** A localized disintegration of the pavement, including distorted areas, no more than 5 inches in depth and no more than 20 square feet in surface area.
- TYPE II -** A localized disintegration of pavement, including distorted areas, no more than 5 inches in depth and more than 20 square feet in surface area.
- TYPE III -** A localized disintegration more than 5 inches in depth, limits of surface area as defined by the Engineer.

II. MATERIALS

Surface preparation and restoration material shall be as follows:

For 0-2 inches - use surface mix

For 2-5 inches - use intermediate mix

For greater than 5 inches - use base mix or intermediate mix

Tack coat shall conform to the requirements of Section 210 of the Specifications.

III. PROCEDURES

The Engineer will designate the limits of surface area for preparation and restoration to be achieved prior to beginning the work.

Areas designated for surface preparation and restoration shall be thoroughly cleaned, unsuitable material removed and edges shaped to vertical sides prior to applying tack coat.

A tack coat shall be applied to all exposed surfaces of the area which will receive asphalt material.

The Contractor shall utilize the mix and type of asphalt for surface preparation and restoration in accordance with Section II Materials that he shall use with that route's overlay. Asphalt material shall be placed in lifts of no more than 3 inches in depth. After leveling each lift, it shall be compacted with an approved mechanical tamper or other approved method. Care shall be taken to ensure the surface of the finished repaired area conforms to the grade of the surrounding pavement.

IV. MEASUREMENT AND PAYMENT

When the bid proposal contains a pay item, corresponding to any of the types below, specified in the "Schedule of Items"; that type of surface preparation and restoration will include the work designated in the corresponding type's description and be paid for in accordance with the price designated by the bidder. If the bid proposal contains no pay item for the type of surface preparation and restoration as described herein, such as may be discovered in the field; that surface preparation and restoration shall meet the definition of Section I and will be measured and paid for in accordance with the following:

Surface Preparation and Restoration Type I will be measured in tons of asphalt material and paid for at the rate of three times the contract unit bid price per ton of the mix type(s) of asphalt authorized by the Engineer. This price shall include removing and disposing of unsuitable material, preparing the area, furnishing and applying tack coat, furnishing and applying asphalt material, and compaction.

Surface Preparation and Restoration Type II will be measured in tons of asphalt material and paid for at the rate of four times the contract unit bid price per ton of the mix type(s) of asphalt authorized by the Engineer. This price shall include removing and disposing of unsuitable material, preparing the area, furnishing and applying tack coat, furnishing and applying asphalt material, and compaction.

Surface Preparation and Restoration Type III will be measured in tons of asphalt material and paid for at the rate of five times the contract unit bid price per ton of the mix type(s) of asphalt authorized by the Engineer. This price shall include removing and disposing of unsuitable material, preparing the area, furnishing and applying tack coat, furnishing and applying asphalt material, and compaction.

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
ASPHALT CONCRETE SCRATCH/LEVELING COURSE PRIOR TO PLANT MIX OVERLAY

September 24, 2015

I. DESCRIPTION

This work shall consist of scratching and/or leveling a crack sealed, scabbed or distorted pavement surface (milled or unmilled) with the appropriate asphalt mixes in areas designated by the Engineer. This work is applicable only to the routes or areas designated to be overlaid in this contract and where the Engineer has authorized the limits for scratching/leveling. This work will be accomplished prior to the overlay paving operation. After the scratching/leveling, the Contractor will be responsible for maintaining the prepared surface until the overlay has been completed.

Definitions: For the purpose of the Specifications surface preparation is defined as the following:

TYPE I - A localized scratch/level of the pavement, including crack sealed, distorted or scabbed areas, no more than 50 percent of the surface area to be overlaid in each distinct paving site/location on the contract.

TYPE II - A widespread scratch/level of the pavement, including crack sealed, distorted or scabbed areas, more than 50 percent of the surface to be overlaid in each distinct paving site/location on the contract.

II. MATERIALS

Asphalt concrete scratch and/or leveling material shall be the surface mix asphalt designated in the contract or as approved by the Engineer. SMA should not be used as a scratch/leveling course material. Limestone mixes (L) may be used in leveling courses when approved by the Engineer.

Tack coat shall conform to the requirements of Section 210 of the Specifications and be the same material as used for the final surface course.

III. PROCEDURES

For surfaces that will receive a direct overlay, the Engineer will designate the limits of surface area for scratch/leveling course to be achieved prior to beginning the work. For pavements that are milled, the Engineer will identify and designate the limits of surface area for scratch/leveling course to be placed as the work progresses, with communication(s) frequency and method(s) agreed upon before the work begins.

Areas designated for scratch/leveling course shall be thoroughly cleaned prior to applying tack coat.

A tack coat shall be applied to all exposed surfaces of the area which will receive asphalt material in accordance with Section 310 of the Specifications.

The Contractor shall utilize the mix and type of asphalt for scratch/leveling course in accordance with Section II Materials that he shall use with that route's overlay unless otherwise approved by The Engineer. Asphalt material shall be placed in a lift of no more than 2 inches in depth; typical lifts are approximately 1 inch in depth. After each lift, it shall be compacted with equipment in accordance with Section 315.03(c) using a minimum of 3 passes of a minimum 8 ton roller. Density testing will

not be required. Care shall be taken to ensure the surface of the finished repaired area conforms to the grade of the surrounding pavement.

IV. MEASUREMENT AND PAYMENT

When the bid proposal contains a pay item, corresponding to any of the types below, specified in the "Schedule of Items"; that type of scratch/leveling course will include the work designated in the corresponding type's description and be paid for in accordance with the price designated by the bidder. If the bid proposal contains no pay item for the type of scratch/leveling course as described herein, such as may be discovered in the field; that scratch/leveling course shall meet the definition of Section I and will be measured and paid for in accordance with the following:

Scratch/Leveling Course Type I will be measured in tons of asphalt material and paid for at the rate of two times the contract unit bid price per ton of the mix type(s) of asphalt authorized by the Engineer. This price shall include preparing the area, furnishing and applying tack coat, furnishing and applying asphalt material, and compaction.

Scratch/Leveling Course Type II will be measured in tons of asphalt material and paid for at the rate of one and one-half times the contract unit bid price per ton of the mix type(s) of asphalt authorized by the Engineer. This price shall include preparing the area, furnishing and applying tack coat, furnishing and applying asphalt material, and compaction.

When included in the "Schedule of Items", payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Scratch/Level Type I	Tons
Scratch/Level Type II	Tons

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
**SEALING CRACKS IN ASPHALT CONCRETE SURFACES OR
HYDRAULIC CEMENT CONCRETE PAVEMENT**

October 19, 2014

I. DESCRIPTION

This Specification covers the cleaning and sealing of cracks with Type A material for pavements which will not be overlaid with asphalt concrete (AC) within one year. Type B material shall be used to fill cracks in AC surfaces or hydraulic cement pavement (HCC) joints or cracks that will be overlaid within one year. Type C material shall be used to fill cracks in AC surfaces that may or may not be overlaid within one year. The Contract will designate which sites are to use each material.

In addition, this Specification covers the routing (Type C only), cleaning and sealing of cracks in existing surfaces including, but not limited to, cracks along the longitudinal joint(s) between lanes. Cracks ranging in width from 1/8 inch to 1 ½ inches shall be sealed. Cracks that exceed 1 ½ inches are not included in this contract.

II. MATERIALS

All sealant materials shall be certified or tested and approved by the Department before being incorporated into the work. Where installation procedures or any part thereof are required to be in accordance with recommendations of the manufacturer of sealant compounds, the Contractor shall submit catalogue data and copies of recommendations to the Engineer prior to installation of the materials for review and approval. All such recommendations shall be adhered to unless directed otherwise by the Engineer.

TYPE A

The crack sealant shall be of the following type and shall meet all the requirements of ASTM D-6690 and exceed all requirements of AASHTO M-173 and Federal Specification SS-S-164:

A HOT-POURED MODIFIED ASPHALT RUBBER WITH GRANULATED CRUMB RUBBER AND LATEX PLASTICIZERS. The proportions of the materials, by weight, shall be up to 80 percent maximum asphalt and up to 25 percent maximum crumb rubber.

The crumb rubber shall be 100 percent vulcanized rubber and meet the following gradation requirement:

Sieve	Percent Passing
No. 10	100%
No. 40	0-40%

TYPE B

Type B material shall consist of PG 64H-22 and polyester fibers from the Materials Division *Manual of Instructions* approved list of Stabilizers for Asphalt Mixtures (fibers only). The Contractor shall provide the PG 64H-22 suppliers data for heating. Fibers shall not exceed 5 percent by weight. Fiber loading will be determined at the project site in order to

minimize/eliminate the need for over banding as described. The fiber loading will be approved by the Engineer.

TYPE C

Type C material shall consist of PG 64H-22 and polyester fibers from the Materials Division Manual of Instructions approved list of Stabilizers for Asphalt Mixtures (fibers only) at 5 percent by weight. The Contractor shall provide the PG 64H-22 suppliers data for heating.

III. EQUIPMENT

Proper sealing equipment must be used for the specific material listed in accordance with the manufacturer's recommendations for the Sealant specified. The equipment for hot applied sealant compounds shall be a melting kettle of double boiler, indirect heating type, using oil as a heat-transfer medium. The kettle shall have an effective mechanically operated agitator, a recirculation pump and shall be equipped with a positive thermostatic temperature control which shall be checked for calibration before beginning work. The unit shall be capable of maintaining the specified mixing temperature within 10 degrees F. Manufacturer's recommendations for mixing and application temperatures shall be followed with the latter being measured at the nozzle of the applicator wand. Overheating or direct heating of the sealant material shall not be permitted. The hoses, connectors and applicator wand shall all be insulated.

IV. CONSTRUCTION

The sealant shall not be placed when the ambient or pavement temperatures fall below 45 degrees F, or when moisture is present in the crack to be sealed.

Prior to sealing, cracks shall be thoroughly cleaned as approved by the Engineer using an oil free hot air blasting heat lance capable of a velocity of 3000 fps at 3000 degrees F. Cracks shall be cleaned such that all dirt, debris, moisture and other foreign materials that will prevent bonding of the sealant are removed to a minimum depth of 1 inch. All foreign material (i.e., dirt, grass, rocks) shall be removed from the pavement to prevent re-contamination of the crack. Cracks shall be completely dry before sealing. Any crack not meeting the approval of the Engineer shall be re-cleaned and dried.

The sealant shall be pumped directly into the crack from the heater-melter unit at the temperature specified by the manufacturer **immediately following the cleaning of each crack**. Cracks shall be sealed in the following manner as approved by the Engineer:

TYPE A - Cracks shall be filled from the bottom up in a continuous manner such that the crack is completely filled level with the pavement surface, and the sealant shall overlay the crack at the pavement surface leaving a maximum "over-banded" appearance of 1-inch wide on each side of the crack. The material shall not continue to flow beyond these limits once a crack is sealed. The height of the sealant above the pavement surface shall not exceed 1/8 inch. For this method of sealing, the applicator wand shall be equipped with a shoe that will produce the extruded over-band as well as completely fill the crack.

TYPE B - Cracks shall be filled from the bottom up in a continuous manner such that the crack is completely filled level with the pavement surface. The sealant may overlay the surface on each side of the by no more than 1/2 inch or leave a no "over-banded" appearance. The material shall not continue to flow beyond these limits once a crack is sealed. The height of the sealant above the pavement surface shall not exceed 1/8 inch. For this method of sealing, the applicator wand shall be equipped with a shoe that will minimize the extruded over-band as well as completely fill the crack.

TYPE C – Prior to sealing, the cracks shall be routed to a minimum depth of 1 inch and to a minimal width of ½ inch. Cracks shall be filled from the bottom up in a continuous manner such that the crack is completely filled level with the pavement surface, and the sealant shall overlay the crack at the pavement surface leaving a no “over-banded” appearance. The material shall not continue to flow beyond these limits once a crack is sealed. The height of the sealant above the pavement surface shall not exceed 1/8 inch.

Prior to the start of each day’s operation, the applicator wand and hose shall be heated per the equipment manufacturer’s recommendations and the material in the heater-melter unit re-circulated.

The applicator wand shall be returned to the mixing unit and the sealant material re-circulated immediately upon completion of each crack sealing.

Any crack in hydraulic cement concrete pavement which cannot be filled due to the sealant draining into a large void, shall be plugged with a suitable material (i.e. backer rod) approved by the Engineer prior to the project, and then filled. After being plugged, recleaning of the crack may be required prior to filling with sealant.

During the heating and application of the crack sealing material, the temperature of the material shall be measured and recorded on two hour intervals by the Contractor. For Type A material, the material shall never be heated over 420 degrees F. For Type B and C material, the material shall not be heated above 375 degrees F. Any material heated above these temperatures shall be discarded (i.e. all material in the heater-melter unit) and not paid for by the Department. Additionally, if the material becomes lumpy or has poor flow at elevated temperature, then the material shall be discarded (i.e. all material in the heater-melter unit) and not paid for by the Department.

Traffic shall be kept off the pavement surface until the crack sealant has cured to the point it will not track or be distorted by traffic. The Contractor shall replace, at his or her expense, any sealant that pulls out within 96 hours after opening the pavement to traffic.

V. METHOD OF MEASUREMENT

METHOD A – CONVERSION APPROACH

Sealant for cracks or joints will be measured by the pound. At the beginning of each workday, the Engineer, or his or her appointed representative, shall measure the amount of material in the heater-melter unit and log all additional material added during the day, and measure the amount of material remaining in the heater-melter to determine the total poundage used for that day. No payment will be made for waste material.

For the purpose of converting the liquid material in the heater-melter unit from gallons to pounds, the Contractor shall use a calibrated measuring rod to determine the actual quantity of material in gallons, and same shall be converted to pounds taking into consideration the temperature of the material at the time of measurement. A chart or other approved conversion method furnished by the sealant material manufacturer/supplier shall be used to perform the conversion from gallons to pounds.

METHOD B – DIRECT MEASUREMENT APPROACH

Sealant for cracks or joints will be measured by the pound. At the beginning of each workday, the Contractor shall provide the Engineer the certified weight of the heater-melter unit. During the day’s operation, the Engineer will log all additional material added to the heater-melter unit. At the end of the day’s operation, the Contractor shall provide the Engineer the certified weight of the heater-melter unit including the unused material in the heater-melter unit. The Engineer will

determine the pounds of material applied for payment purposes. No payment will be made for waste material.

VI. BASIS OF PAYMENT

TYPE A and B

Crack Sealant/Filler will be paid for at the contract unit price per pound, which price shall be full compensation for providing the sealant/filler, complete-in-place, including cleaning and sealing the cracks and for all tools, labor, equipment, materials and incidentals related fully completing the installation.

TYPE C

Crack /Sealant/Filler will be paid for at the contract unit price per pound, which price shall be full compensation for providing the sealant/filler, complete-in-place, including routing, cleaning and sealing the cracks and for all tools, labor, equipment, materials and incidentals related fully completing the installation.

Payment will be made under:

Pay Item	Pay Unit
Crack Sealant/Filler (Type A)	Pound
Crack Sealant/Filler (Type B)	Pound
Crack Sealant/Filler (Type C)	Pound

VIRGINIA DEPARTMENT OF TRANSPORTATION
2007 ROAD AND BRIDGE SUPPLEMENTAL SPECIFICATIONS**SUPPLEMENTAL SECTION 310—TACK COAT**

SECTION 310—TACK COAT of the Specifications is completely replaced with the following:

310.01—Description

This work shall consist of preparing and treating an existing asphalt or concrete surface with asphalt in accordance with these specifications and in conformity with the lines shown on the plans or as established by the Engineer.

310.02—Materials

- (a) **Tack Coat** asphalt tack coat shall be CQS-1h, CRS-1h, or CSS-1h conforming to Section 210 of the Specifications. Asphalt emulsion CMS-2 conforming to Section 210 of the Specifications may be used during the winter months.
- (b) **Non-Tracking Tack Coat** liquefied asphalt shall be selected from the Materials Division Approved Products List 50.1A. The Contractor shall not dilute non-tracking tack coat materials with water.

310.03—Procedures

The existing surface shall be patched, cleaned, and rendered free from irregularities to the extent necessary to provide a reasonably smooth and uniform surface. The Contractor shall remove unstable corrugated areas, and replace with suitable patching materials when required by the contract specifications. The Contractor shall clean the edges of existing pavements that are to be adjacent to new pavement to permit adhesion of asphalt.

The Contractor shall uniformly apply tack coat or non-tracking tack coat material with a pressure distributor conforming to Section 314.04(b) of the Specifications. Hand spray equipment shall not be used except in areas inaccessible by a pressure distributor.

The distributor shall be calibrated by the Contractor in the presence of the Engineer prior to initial asphalt plant mix placement to demonstrate an even and accurate spray application. Calibration will be considered acceptable when the spray rate is uniform and within 0.02 gallon per square yard of the design application rate.

All tack coat and non-tracking tack coat materials stored longer than 30 days from the shipping date on the Bill of Lading shall be retested in accordance with Section 210.06 of the Specifications to verify the material still meets product specifications.

Tack at joints, adjacent to curbs, gutters, or other appurtenances shall be applied with a hand wand or with spray bar at the rate of 0.2 gallon per square yard. At joints, the tack applied by the hand wand or a spray bar shall be 2 feet in width with 4 to 6 inches protruding beyond the joint for the first pass. Tack for the adjacent pass shall completely cover the vertical face of the pavement mat edge so that slight puddling of asphalt occurs at the joint, and extend a minimum of one foot into the lane to be paved.

Care shall be taken to prevent spattering adjacent items during the application of tack coat. The distributor shall not be cleaned or discharged into ditches or borrow pits, onto shoulders, or along the right of way.

When not in use, the Contractor shall ensure equipment is parked so that the spray bar or mechanism will not drip asphalt on the surface of the traveled way.

The tack coat or non-tracking tack coat shall be applied to the pavement surface in such a manner that it will bond the overlay and the underlying surfaces together.

The Contractor shall apply tack coat and non-tracking tack coat in accordance with the weather limitations that apply to the course being placed as well as the manufacturer's recommendations. The Engineer will verify, and reserves the right to alter, the quantity, rate of application, temperature, and areas to be treated prior to application.

The tack coat or non-tracking tack coat shall be applied in a manner to offer the least inconvenience to traffic and to permit one-way traffic without pick up or tracking of the asphalt onto adjacent non-treated areas. All traffic, including construction traffic, shall be excluded from tacked sections until the tack has cured.

Tack shall not be required atop asphalt stabilized open-graded material drainage layers.

The contractor shall measure and report to the agency on forms provided by the Engineer, the rate of tack material applied on a daily basis using VTM-137 Method B (Tack Yield Method).

The Engineer shall verify the desired tack application rate is achieved using VTM-137 Method A (Tack Plate Method). This test shall be performed at a minimum frequency of once per each roadway, within the first 500 tons of asphalt mix placed, unless otherwise approved by the Engineer.

The Engineer reserves the right to perform the tack plate method testing at a higher frequency, as determined necessary, to ensure adherence to specifications.

(a) Tack Coat

Equipment for heating and applying asphalt shall conform to Section 314.04(b) of the Specifications. The maximum application temperature of liquid asphalt shall conform to Table III-1.

**TABLE III-1
Liquid Asphalt Application Temperature**

Type	Max. Temperature (°F)
RC-70	180
RC-250	220
RC-800	225
RC-3000	290
MC-70	180
MC-250	220
MC-800	255
MC-3000	290
AC-5	300
AC-10	300
AC-20	300
AC-40	300
RS-2	175
SS-1h	180

AE-4	150
CRS-2	175
CSS-1h	180
CMS-2	200
CRS-1h	175
CRS-1	175
CQS-1h	180

The Contractor shall apply asphalt at the rate of 0.05 to 0.10 gallons per square yard.

The Contractor shall allow the tack coat to properly cure and break before placement of the hot mix asphalt course.

(b) Non-Tracking Tack Coat

The Contractor shall apply non-tracking tack coat between May 1 and October 1. The Contractor may use tack coat as specified herein at other times.

Equipment for heating and applying asphalt shall conform to Section 314.04(b) of the Specifications or the non-tracking tack coat material's manufacturer's recommendations. The maximum application temperature of liquefied asphalt shall conform to the manufacturer's requirements.

The Contractor shall apply tack material at the rate recommended by the manufacturer. This rate is typically between 0.05 to 0.10 gallons per square yard.

Adjacent concrete or asphalt concrete surfaces shall show minimal visible evidence and white or yellow pavement markings shall show no visible evidence of the asphalt tack material tracking at the end of the production shift. Tracking of the tack material on pavement markings will require the Contractor to restore the marking to their original pre-tack condition. The Contractor shall remove Build-up of the tacking material on existing pavement surfaces.

(c) Referee System

When a new asphalt course is placed on a milled or non-milled surface, the Contractor shall take steps to ensure an adequate bond is made between the new material and the existing surface. If the Engineer suspects the Contractor is failing to apply good bond promoting procedures or adequately tacking the existing surface per the manufacturer's recommendations, the Engineer may core a minimum of 10 locations to determine the shear and tensile strength at the interface.

The Engineer will determine these locations by using a stratified random selection process. The Department will test cores in the Department's laboratory in accordance with VTM-128. For the surface to be acceptable, the average results for shear and tensile strength specified herein must be met. The Department will test a minimum of 5 cores for shear strength and at least 5 cores for tensile strength.

1. **Milled surfaces:** The average shear strength must meet or exceed 100 psi with no single core having a shear strength less than 50 psi. The average tensile strength of the remaining cores must meet or exceed 40 psi with no single core having a tensile strength less than 20 psi.
2. **Un-milled surfaces:** The average shear strength must meet or exceed 50 psi with no single core having a shear strength less than 30 psi. The average tensile strength of the remaining cores must meet or exceed 30 psi with no single core having a tensile strength less than 20 psi.

The Engineer will reduce the payment for the asphalt concrete tonnage placed in the area of dispute by 10 percent if the minimum shear or tensile strength requirements in that area are not met.

310.04—Measurement and Payment

Tack coat, including Tack Coat and Non-Tracking Tack Coat materials, when a pay item, will be measured in gallons and will be paid for at the contract unit price per gallon.

On a daily basis, the Contractor shall provide the Engineer readings taken from the calibrated distributor establishing the quantity of gallons placed for that day. Quantity for payment will be based on volume and temperature corrections in accordance with Section 109 of the Specifications.

When not a pay item the Contractor shall include the cost in the contract unit price for other appropriate items.

Payment will be made under:

Pay Item	Pay Unit
Tack coat	Gallon

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
COLD PLANING (MILLING) ASPHALT CONCRETE OPERATIONS

December 3, 2015

I. DESCRIPTION

This provision shall govern cold planing (milling) asphalt concrete operations in preparation for pavement repair and/or pavement overlay. Cold planing of asphalt concrete pavement shall be performed according to Section 515 of the Specifications and the requirements herein.

II. GENERAL PROCEDURES

The Contractor is permitted to perform either regular pavement planing or performance pavement planing to the contract specified depth or as directed by the Engineer in order to provide a uniform sound substrate prior to paving roadways designated in the schedules according to Section 315 of the Specifications, the requirements herein, or elsewhere in the Contract documents.

A. Regular and Performance Planing

The following general conditions apply to either type of cold pavement planing:

Limitations of operations for planing shall be performed according to the requirements of Section 108.02 of the Specifications, other Contract specific requirements, and as specified herein.

Where the depth of planing designated in the Contract or directed by the Engineer is 2 inches or less, the Contractor shall have the option of planing the abutting lane or shoulder on alternate days or squaring up the planing operation at the end of each work shift. However, abutting lanes or shoulders shall be planed and squared up regardless of planing depth prior to holidays or any temporary shutdowns.

Where the depth of planing designated in the Contract or directed by the Engineer is greater than 2 inches in the Contract documents, the Contractor shall square up the planing operation at the end of each workday or plane adjacent lanes including abutting shoulders within the same day for the length of that day's planing operation.

The Contractor will not be permitted to plane a portion of the width of a travel lane, ramp, loop or shoulder and leave it unplaned and open to traffic. Abutting shoulders may also be planed during single and multiple lane planing operations. Planing operations shall be planned and performed to maintain positive drainage according to the requirements of Section 315.05(c) of the Specifications.

In the event an emergency or an unforeseen circumstance such as equipment failure or breakdown occurs during the Contractor's operations and such emergency or unforeseen circumstance within his control prevents the Contractor from squaring up the planed surface on adjacent lanes prior to a holiday or temporary shutdown, any additional signage, traffic control devices or temporary markings or markers required to protect the traveling public shall be the Contractor's responsibility and at his expense.

Where uneven pavement joints exist either transversely or longitudinally at the edges of travel lanes, the Contractor shall provide advance warning signage and traffic control devices to inform the traveling public according to the details provided in the Contract for the scope of operation he is performing. The cost for such advance warning signage and traffic control devices shall be included in the cost of other appropriate items

Where appropriate according to contract requirements and site specific conditions, the existing asphalt concrete layers shall be planed to permit the transition of the top course of the asphalt concrete overlay according to the details of the ACOT-1 Standard. Any sub-courses termination may be notched into the existing pavement or blended with the next course of pavement.

B. Performance Planing Only Limitations:

When the Contractor elects to performance plane on roadways specified to be planed to a depth of 2 inches or less, the Contractor shall performance plane only that amount of pavement which can be paved back within the time allowance specified herein for completion of planing the roadway or portion of roadway. The Contractor is required to perform pavement surface testing as specified in Section 515.04 of the Specifications to verify the Contractor has achieved the acceptable surface texture specified in that Section prior to opening the performance planed surface to traffic. Additional traffic control devices and signage required for the extended pave back time allowance specified herein for performance planing operations versus the traffic control devices required for the pave back operations for regular pavement planing operations specified herein shall be at the Contractor's expense.

III. ROADWAY CLASSIFICATION LIMITATIONS

The following restrictions, based on the type of roadway, shall apply:

A. All Interstates and other Limited Access Roadways including Ramps and Loops posted at 55 Mph or Greater

1. Regular planing and performance planing in multiple lanes

The Contractor shall plan, execute and maintain pavement planing operations to avoid trapping water on the roadway. On roadways with a combination of 3 or 4 lanes and shoulders (i.e. 2 travel lanes and 1 or 2 shoulders in one direction) where the travel lanes and shoulders will not be completely planed to drain prior to the start of paving operations, planing shall be performed so that water will not pond on the travel surface. When the contract does not include the removal of the shoulder at the specific roadway planing location, the Contractor shall cut drainage outlets through the shoulder at locations the Engineer designates (excluding curb and gutter sections) for those portions of the planed roadway that are to be opened to traffic. The Contractor shall restore the shoulders to their original grades once paving operations are completed, unless otherwise directed by the Engineer. The cost for cutting and restoring roadway shoulders shall be included in the price bid for other items of work.

On roadways with a combination of 5 or more lanes and shoulders (i.e. 3 or more travel lanes and 2 shoulders in one direction), the extent to which the interior lanes shall be planed will be such that the planed portions can be repaved within the work-zone time limits unless provisions are made to mitigate the ponding of

water (i.e., milling adjacent lane(s) and shoulders or cutting drainage outlets through the shoulder).

Ramps and exits shall be planed in such a manner that an even longitudinal joint (elevation difference of greater than 1 inch) is not left for vehicles to cross within the posted speed limits in a "run on" situation. To prevent this, the Contractor can plane ramps and exits to the extent that the joint line between new and existing pavement crossed by traffic is traversed at an angle close to ninety (90) degrees per the ACOT-1 Standard for temporary transverse joints or can perform tapered planing along the ramp/exit longitudinal joint to provide a smooth transition for vehicles to cross, or can square up ramp or exit pavement with the adjacent mainline lane at the time of installation.

The following additional restrictions will apply to roadways where **regular pavement planing** is applicable:

- The Contractor will be limited in the case of regular pavement planing, whether in a single lane or multiple lane operation, to only that amount of pavement that can be paved back within 24 hours of completion of planing that roadway or portion of roadway. If the Contractor does not pave back the planed travel lanes within 24 hours from the end of the regular planing operation, the Department will assess a disincentive in the amount of \$5,000 for each calendar day the planed travel lane surface is not paved back, including Sundays and Holidays.
- The Contractor shall pave all roadways, ramps and loops planed during the week before that weekend.
- On roadways with a combination of 4 or more lanes and shoulders (i.e. 2 or more travel lanes and 2 shoulders) in one direction, all travel lanes must be paved back before the weekend. Up to two thousand five hundred (2,500) feet of shoulder may be planed and left over the weekend provided the portion of planed shoulder left unpaved over the weekend is paved within 24 hours after the end of the weekend period.

The following additional restrictions will apply to roadways where **performance pavement planing** is planned by the Contractor:

- Performance planing may be performed in multiple lanes across the entire widths of the lanes up 4 miles of travel lane unless otherwise stated in the Contract. Performance planed travel lanes surfaces must be paved back within 96 hours from the end of the performance planing operation. If the Contractor does not pave back the planed travel lanes within 96 hours from the end of the performance planing operation, the Department will assess a disincentive in the amount of \$5,000 for each calendar day the planed travel lane surface is not paved back, including Sundays and Holidays.
- Where the Contractor decides to performance plane multiple lanes, the Contractor shall be responsible for furnishing and installing advance warning signage and traffic control devices to inform the traveling public according to the details provided in the Contract. Temporary pavement markings and markers used for lane demarcation on performance planed surfaces will be in accordance with Section 704.04 of the Specifications and the *Special Provision for SECTION 704—PAVEMENT MARKINGS AND MARKERS* included in the Contract. The cost for such warning devices and advance signage required by multiple lane planing operations shall be included in the

cost of other appropriate items unless otherwise specified in the contract by a specific pay item(s) for separate payment.

B. Non-Limited Access Roadways with an ADT of 10,000 or Greater (Traffic Group XV and above) and a Posted Speed Limit of 45 Mph or Greater

1. Regular planing and performance planing in multiple lanes

The Contractor shall plan and proceed with the pavement planing operation to avoid trapping water on the roadway. On roadways with a combination of 3 or 4 lanes and shoulders (i.e. 2 travel lanes and 1 or 2 shoulders) in one direction where the travel lanes and shoulders will not be completely planed prior to the start of paving operations, planing operations shall be performed so water will not pond on the travel surface. When the contract does not include the removal of the shoulder, the Contractor shall cut drainage outlets through the shoulder at locations the Engineer designates, excluding curb and gutter sections, for those portions of the planed roadway that are to be opened to traffic. The Contractor shall restore the shoulders to their original grades once paving operations are completed, unless otherwise directed by the Engineer. The cost for cutting and restoring the roadway shoulder shall be included in the price bid for other items of work.

On roadways with a combination of 5 or more lanes and shoulders (i.e. 3 or more travel lanes and 2 shoulders in one direction), the extent of pavement planing on the interior lanes shall be such that the planed surface can be repaved within the timeframe of the work-zone time limits unless provisions are made to mitigate the ponding of water (i.e. planing adjacent lane(s) to mitigate the ponding of water).

The following additional restrictions will apply to roadways where **performance pavement planing** is planned by the Contractor:

- Performance planing may be performed in multiple lanes across the entire widths of the lanes up a total of 4 miles of travel lane unless otherwise stated in the Contract.
- Performance planed travel lane surfaces must be paved back within 10 days from the start of the performance planing operation.
- Where the Contractor decides to performance plane multiple lanes, the Contractor shall be responsible for furnishing and installing advance warning signage and traffic control devices to inform the traveling public according to the details provided in the Contract. The cost for such warning devices and advance signage required by multiple lane planing operations shall be included in the cost of other appropriate items unless otherwise specified in the contract by a specific pay item(s) for separate payment. Temporary pavement markings required by such operations will be handled according to the requirements of Section 704.04 and the *Special Provision for **SECTION 704—PAVEMENT MARKINGS AND MARKERS*** included in the Contract.

The following additional restrictions will apply to roadways where **regular pavement planing** is applicable:

- The Contractor will be limited whether in a single lane or multiple lane operation, to only that amount of pavement that can be paved back within 24 hours of completion of planing that roadway or portion of roadway.

- The Contractor shall pave all roadways that have been regular planed during the week before that weekend.
- On roadways with a combination of 4 or more lanes and shoulders (i.e. 2 or more travel lanes and 2 shoulders in one direction, all travel lanes must be paved back before the weekend. Up to two thousand five hundred (2,500) feet of shoulder may be planed and left over the weekend provided the portion of planed shoulder left unpaved over the weekend is paved within 24 hours after the end of the weekend period.

C. All Other Roadways

1. Regular Pavement Planing (single or multiple lanes)

If the Contractor elects to perform regular pavement planing the Contractor will be permitted to leave up to two miles of travel lane open to the traveling public provided such planing (milling) is performed across the entire lane width. This same total length restriction will apply in cases where multiple-lane regular pavement planing is permitted in the Contract or allowed by the Engineer. The Contractor will be limited in the case of regular pavement planing, whether in a single lane or multiple lane operation, to only that amount of pavement that can be paved back within 96 hours of completion of planing that roadway or portion of roadway.

2. Performance Pavement Planing

When the Contractor elects to performance plane roadways specified to be planed to a depth of 2 inches or less, the Contractor shall plane only the amount of pavement that can be paved back within 14 calendar days of completion of planing that roadway or portion of roadway. The Contractor is required to perform pavement surface testing as specified in Section 515.04 of the Specifications to verify the Contractor has achieved the acceptable surface texture prior to opening the performance planed surface to traffic. The additional traffic control devices and signage required for the 14 calendar day pave back operation allowance for performance planing operations shall be at the Contractor's expense.

Temporary pavement markings required by such operations will be handled according to the requirements of Section 704.04 and the *Special Provision for SECTION 704—PAVEMENT MARKINGS AND MARKERS* included in the Contract.

Roadways on which the roadway edges (i.e. edge milling) are to be planed shall be paved back within 10 days from the completion of the planing operation.

IV. MEASUREMENT AND PAYMENT

Measurement and payment will be in accordance with Section 515.05 of the **SUPPLEMENTAL SPECIFICATION FOR SECTION 515—PLANING OR MILLING PAVEMENT.**

VIRGINIA DEPARTMENT OF TRANSPORTATION
2007 ROAD AND BRIDGE SUPPLEMENTAL SPECIFICATIONS**SUPPLEMENTAL SECTION 515—PLANING OR MILLING PAVEMENT**

SECTION 515—PLANING PAVEMENT of the Specifications is completely replaced with the following:

SECTION 515—PLANING OR MILLING PAVEMENT**515.01—Description**

This work shall consist of planing (milling) of rigid or flexible pavement to the designated depth specified in the plans or other Contract documents in preparation for pavement repair or pavement overlay. For the purposes of this section, rigid pavement shall mean hydraulic cement concrete pavement or hydraulic cement concrete surfaced pavements. Flexible pavement shall mean asphalt concrete or asphalt concrete surface pavements. Planing as used herein is also referred to as milling or grinding. Milled cuttings shall be removed and disposed of by the Contractor in accordance with the requirements of Section 106.04 of the Specifications or used in the work if permitted in the Contract or directed by the Engineer.

515.02—Equipment

Planing shall be performed with a pavement planing or pavement grinding machine of a type that has operated successfully on work comparable to that specified in the Contract. Milling and cold planing equipment shall be capable of accurately cutting to the length, width, depth and typical section specified in the Contract in flexible pavement or rigid pavement while leaving a uniformly cut or ground roadway surface capable of handling traffic prior to overlay placement. The milling equipment shall not damage the underlying pavement surface. The milling machine shall be equipped with an automatic grade control system that will control the longitudinal profile and cross slope of the existing pavement milled surface as the milling operations proceed. The ground speeds of the machine and the cutting equipment shall be independent. The machine shall have a self-contained water system for the control of dust and fine particles. The width of the machine shall allow for the passage of controlled public traffic while in use. The machine shall have a dust collection system or have a system to minimize dust created by the planing (milling) operation from escaping into the atmosphere.

The Contractor shall continuously monitor the cutting or grinding head of the machine so as to ensure and maintain the creation of a uniformly textured milled surface. Equipment and vehicles in use under traffic shall be equipped according to the requirements of the Work Area Protection Manual.

515.03—Procedures

Limitations of operations for planing operations shall be in accordance with the requirements of Section 108.02 of the Specifications and as specified in the Contract.

The Contractor may perform either regular planing or performance based planing at his option unless otherwise specified in the Contract. Unless otherwise directed by the Engineer, the finished surface for regular pavement planing and performance planing shall have a tolerance of plus or minus 1/4 inch per foot between any two contacts of the resultant surface and the testing edge of a 10-foot straightedge.

No application of pavement overlay shall decrease the vertical clearance under a bridge. In situations where the existing pavement under the overpass cannot be planed in direct proportion

to the proposed overlay, the new pavement is to be tied down to the existing pavement under the overpass no less than 75 feet from the outer edges of the overpass in accordance with Standards.

The finished surface macrotexture for performance planing shall have a pavement macrotexture MTD (mean texture depth) of less than 2.0 millimeters. Testing for performance pavement planing shall be as described hereinafter.

Irregularities and high spots of existing pavement shall be eliminated. The pavement surface shall be milled, ground or planed to the designated grade or gradient as specified on the plans, or where not specified as a grade, shall parallel that of the existing roadway. Transversely, the cross slopes of tangent sections shall be planed to approximately 1/4 inch per foot or as directed by the Engineer. Superelevated curves shall be planed as directed by the Engineer. Where the pavement is to be resurfaced by means of the application of an overlay on curb and gutter roadways, a 1-inch shoulder shall be cut along the gutter line to eliminate the necessity of feathering the edge of the new surface. Payment for providing the 1-inch shoulder shall be based on the total square yards of removed material regardless of the variable depth of the pass.

The finished planed surface shall be true to grade, free from gouges, grooves, ridges, soot, oil film, and other imperfections and shall have a uniformly textured appearance suitable as a temporary riding surface.

Humps and depressions that exceed the specified tolerances and require additional grinding or planing will be subject to correction or replacement as directed by the Engineer at no additional cost to the Department.

The Contractor shall ensure positive drainage is provided for all planed surfaces in accordance with the requirements of Section 315.05(c) of the Specifications. When planing curb and gutter sections the Contractor shall endeavor to work with existing drainage and grades to maintain positive flow. In the event of significant buildup of standing water, the Contractor may be required to erect signage to warn motorists, sweep the roadway to vacate the water, or in extreme cases, close the lane to traffic until proper drainage of the planed surface can be restored.

Temporary transverse pavement-wedge tie-ins shall be constructed where planed existing pavement is to remain temporarily without overlay to the extent allowed or required herein, in Section 315 of the Specifications, elsewhere in the Contract documents, or by the Engineer. Each tie-in shall be constructed no less than 3 feet in length for every inch of depth of pavement planing performed and shall consist of a mix that is suitable for a riding surface that provides a smooth transition between planed existing pavement and existing pavement or bridge decks. Such tie-ins shall be constructed prior to the planed surface being opened to traffic.

When planing to a depth of 2 inches or less at a bridge, the planed (milled) surface at the bridge may be left unpaved for up to 10 days.

Additional or other limitations and conditions to planing operations will be as specified and applicable to the Contract.

515.04—Performance Pavement Planing Testing

This section gives testing procedures and criteria for opening a section of performance planed pavement to public traffic on roadways with posted speed limits of 55 mph or greater as specified herein. The test procedure performed by the Contractor shall measure the mean texture depth (MTD) of the resultant macrotexture surface after performance planing operations have been completed. The measurement for performance planed surface texture shall be conducted in accordance with the requirements of ASTM E965 using a volumetric technique. The Contractor shall randomly select 10 locations at each site. Each individual location shall be tested and the

average MTD of the entire 10 locations per site determined. Prior to opening a lane or roadway to traffic the average MTD of the performance planed site shall be less than 2.0 millimeters and the upper limit for any one MTD measurement shall not exceed 3.10 millimeters in order for that site to be exposed to traffic.

515.05—Measurement and Payment

Where pavement is to be planed to a uniform depth, planing will be measured in square yards of removed pavement of the surface area to the depth(s) specified in the contract documents. The Engineer may direct the depth to be adjusted during the initial pass $\pm \frac{1}{2}$ inch due to field conditions at no additional cost, except where such adjustment constitutes a changed condition as explained herein. The planed area is defined as the actual length and width of the planed pavement surface visually verified and accepted by the Engineer for payment. If scabbing or laminations still exist after planing to the maximum potential depth of the initial pass, the Engineer may direct the Contractor to perform additional passes or to increase the depth beyond the maximum potential depth of the initial pass. Such additional passes or increased depth beyond the maximum potential depth of the initial pass will also be measured and paid for in square yards for the depth authorized by the Engineer. Such additional depth passes (beyond the maximum potential depth of the original pass) will not be adjusted, as in averaging or as a percentage of original depth or maximum potential depth of the initial pass, to achieve final measurement or payment. In the event the authorized adjustment of the $\frac{1}{2}$ inch for field conditions by the Engineer changes the requirements of the “square up” provisions (in excess of 2 inches), this will be considered a changed condition in accordance with the provisions of Section 104.02 of the Specifications.

Where planing is variable depth and used to tie into existing structures such as curbs and combination curb and gutters and at bridges, except in cases as mentioned below, such tie-in planing will be measured in square yards of removed pavement for the full surface area (the actual length and width of the planed pavement surface visually verified and accepted by the Engineer for payment) within the range of depth specified in the contract documents. **Note:** The Engineer may direct the depth to be adjusted during the initial pass $\pm \frac{1}{2}$ inch of the specified depth due to field conditions such as scabbing or delamination at no additional cost, except where such adjustment constitutes a changed condition as explained herein.

If scabbing or laminations still exist after planing to the maximum potential depth of the initial tie-in planing pass, the Engineer may direct the Contractor to perform additional passes or to increase the depth beyond the maximum potential depth of the initial **pass**. Additional passes or depths beyond the maximum potential depth of the initial **pass**, authorized by the Engineer, will also be measured and paid for in square yards of removed pavement of the additional surface area for the depth authorized by the Engineer. Areas of variable depth tie-in planing will not be adjusted, as in averaging or as a percentage of original depth, to achieve final measurement or payment. In the event the authorized adjustment of the $\frac{1}{2}$ inch for field conditions by the Engineer changes the requirements of the “square up” provisions, this will be considered a changed condition in accordance with Section 104.02 of the Specifications.

Planing performed to tie-in overlaid pavement to existing pavement or bridge decks that is determined by the Engineer to be a part of the mainline planing operations will not be measured for separate payment, the cost of which, shall be included in the price bid for the appropriate depth range of flexible or rigid pavement planing.

This price shall include furnishing vehicles, labor, tools, materials, incidentals, safety equipment, warning devices, and removing and disposing of existing pavement.

Payment will be made under:

Pay Item	Pay Unit
Flexible pavement planing (0-2" depth)	Square yard
Flexible pavement planing (Above 2"-4" depth)	Square yard
Flexible pavement tie-in planing (0-2" depth)	Square yard
Flexible pavement tie-in planing (Above 2"-4" depth)	Square yard
Flexible pavement planing (over 4" depth)	Square yard
Rigid pavement planing (0-2" depth)	Square yard
Rigid pavement tie-in planing (0-2" depth)	Square yard

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
PLACEMENT OF ASPHALT CONCRETE OVERLAYS

December 3, 2015

I. DESCRIPTION

This work shall consist of furnishing and placing asphalt concrete overlay pavement courses on existing roadway surfaces in accordance with the requirements herein and in conformity with the lines, grades, and thickness as established in the Contract or directed by the Engineer. This work shall be performed in accordance with the requirements of Section 211 and Section 315 of the Specifications, and where Stone Matrix Asphalt (SMA) is specified in the Contract, Sections 248 and 317 of the Specifications.

II. EQUIPMENT

Equipment for placing asphalt concrete overlay material shall be conform to Section 315.03 of the Specifications, and where Stone Matrix Asphalt (SMA) is specified, Section 317 of the Specifications.

III. PROCEDURES

Where pavement planing is required it shall be performed in accordance with the requirements of the *Special Provision for **COLD PLANING (MILLING) ASPHALT CONCRETE OPERATIONS*** and Section 515 of the Specifications. No placement of an overlay or deck planing will be permitted on a bridge deck without the prior written approval of the District Bridge Engineer.

Limitations of operations for placing asphalt concrete overlays shall be in accordance with the requirements of Section 108.02 of the Specifications, the Contract requirements, and as specified herein.

Prior to commencement of paving overlay operations the Contractor shall clean the existing pavement surface to the satisfaction of the Engineer of accumulated dust, mud, or other debris that may adversely affect the bond of the new overlay. In the event the thoroughness of the Contractor's efforts to clean the existing pavement is questionable, the Engineer may require the Contractor to perform a bond strength test in accordance with the referee system for Nontracking Tack Coat in Section 310 of the Specifications. The cost for cleaning and surface preparation shall be included in the bid price for the asphalt concrete.

The following will be corrected by the Engineer ahead of the Contractor's operations or included in the work performed by the Contractor. When such corrective work is performed by the Contractor, the work will be paid for as designated by the specific pay item(s) in the Contract.

- Pavement irregularities greater than 1 inch in depth shall be filled with a material approved by the Engineer.
- Pavement cracks or joints shall be cleaned and filled in accordance with the *Special Provision for **SEALING CRACKS IN ASPHALT CONCRETE SURFACES OR HYDRAULIC CEMENT CONCRETE PAVEMENT.***

The Contractor shall remove thermoplastic and tape pavement markings and raised pavement markers prior to performing paving overlay operations. Thermoplastic and tape pavement markings shall be 90 percent removed so as not to interfere with bonding of pavement overlay or the transfer of the existing marking thickness up through the overlay. In lieu of grinding to eradicate thermoplastic, the Contractor will be permitted to mechanically scrape off thermoplastic markings employing adequate controls so as not to damage the affected pavement to a point where such markings are flush with the existing pavement surface. This work shall be performed in accordance with the requirements of Section 512 and Section 704 of the Specifications except as otherwise permitted herein.

The Contractor shall protect and reference utility structures prior to paving in order to locate and/or adjust these structures, if necessary, after paving operations are completed. The protection and referencing of utility structures shall be at no cost to the Department.

Temporary transverse pavement-wedge tie-ins shall be constructed where pavement overlay operations are temporarily halted as allowed or required herein, in Section 315 of the Specifications, elsewhere in the Contract documents, or by the Engineer. Each temporary tie-in shall be no less than 3 feet in length for every inch of depth of overlaid pavement and shall consist of a mix that is suitable as a surface mix asphalt to provide a smooth transition between the installed overlay and existing pavement or bridge deck. Such temporary tie-ins shall be constructed prior to the overlaid pavement being opened to traffic.

Final transverse pavement tie-ins shall be constructed to provide a smooth transition between newly overlaid pavement and existing pavements, bridge decks, and existing pavement underneath bridge overpasses. Such tie-ins shall conform to the requirements of Standard Drawing ACOT-1 or Section 315.05(c) of the Specifications, as applicable, except that all joints at tie-in locations shall be tested using a 10-foot straightedge in accordance with the requirements of Section 315.07(a) of the Specifications. The variation from the testing edge of the straightedge between any two contact points with the pavement surface shall not exceed 1/4 inch. When planing is necessary at tie-ins to existing pavement or bridge decks to obtain the required overlay depth specified in the Contract; the existing pavement shall be planed in accordance with the requirements of the ACOT-1 Standard or the requirements herein.

No pavement overlay shall decrease the vertical clearance under a bridge. In situations where the pavement under the overpass cannot be planed in direct proportion to the overlay to be placed, the new pavement is to be tied down to the existing pavement under the overpass a minimum of 75 feet from the outer edges of the bridge overpass in accordance with Standard Drawing ACOT-1.

The ACOT-1 Standard for asphalt concrete overlay transitions shall apply when there is at least one (1.00) inch of grade change between the finished asphalt concrete overlay surface and the existing pavement surface and where any of the following conditions exist:

- a. Bridge decks or bridge overpasses are located within the project site to receive the overlay.
- b. The Contractor has to tie-in the top course of asphalt concrete overlay to an existing hydraulic cement concrete pavement surface.
- c. The Contractor has to tie-in the top course of the asphalt concrete overlay to an existing asphalt concrete pavement surface and planing is included in the Contract as pay item.

When tying in the top course of the asphalt concrete overlay to an existing asphalt concrete pavement surface and there is no pay item in the Contract for planing, the asphalt concrete overlay tie-in shall conform to the requirements of Section 315.07 (a) of the Specifications

When the *Special Provision for RIDEABILITY* applies as specified in the Contract, a distance of 105 feet (0.02 of a mile), measured from the line of the tie-in will be exempted from pay adjustment.

The following restrictions, based on the type of roadway, will apply:

Roadways with Posted Speed Limit of 55 Mph or Greater

The Contractor shall install asphalt concrete overlays to the depths specified for the specific routes identified in the Contract. Where asphalt concrete is being overlaid by 2 inches or less on roadways carrying traffic, the Contractor shall have the option of squaring up the overlay operation at the end of each workday or squaring up all travel lanes, excluding shoulders, before the weekend. Shoulders must be squared up within 48 hours after the weekend and prior to continuing mainline paving. All lanes including shoulders must be squared up before holidays or any temporary shutdowns.

Where overlays of more than 2 inches are being placed, the Contractor must square up the overlay operation at the end of each workday. This requirement shall apply to travel lanes and shoulders.

Asphalt concrete pavement overlay operations shall be performed in only one travel lane at a time. Under no circumstance will the Contractor be permitted to overlay a portion of the width of a travel lane, ramp or loop and leave it exposed to traffic.

Where uneven pavement joints exist either transversely or longitudinally at the edges of travel lanes due to the overlay operations, the Contractor shall provide advance warning signage and traffic control devices for the scope of the overlay operation the Contractor is performing in accordance with the details provided in the Contract. The cost for the advance warning devices and signage shall be included in the cost of other appropriate items. Temporary pavement markings and markers required as a result of staging such operations will be measured and paid for in accordance with the *Special Provision for SECTION 704—PAVEMENT MARKINGS AND MARKERS* included in the Contract.

In the event an emergency or an unforeseen circumstance such as equipment failure or breakdown occurs during the Contractor's operations that prevents the Contractor from squaring up the overlaid surface on adjacent lanes prior to a weekend, a holiday or a temporary shutdown, any additional signage, traffic control devices, or markings or markers required to protect the traveling public shall be provided at the Contractor's expense.

Ramps, exits, and turn lanes are to be paved in such a manner that a longitudinal joint with a surface elevation of 1 inch or more between the existing pavement and the overlay (where the overlay is the higher of the two elevations) will not be left for vehicles to cross within the posted speed limits in a "run-on" situation. Ramps, exits, and turn lanes are to be paved to the extent that the joint crossed by traffic is traversed at an angle close to 90 degrees (perpendicular), or the ramp, exit and turn lane shall be squared up with the adjacent mainline lane at the time of installation.

Only approved mixes that have been verified in accordance with the requirements of Section 211.03(f) of the Specifications and have met the requirement for roller pattern density shall be placed on limited access roadways.

The Contractor shall ensure positive drainage is provided for all overlaid surfaces in accordance with the requirements of Section 315.05(c) of the Specifications.

B. All Other Roadways

Where asphalt concrete is being overlaid to a height of 2 inches or less on roadways carrying traffic, the Contractor shall have the option of squaring up the overlay operation at the end of each workday or squaring up all lanes including shoulders at least once every 4 consecutive workdays, excluding weekends. All lanes including shoulders must be squared up before weekends, holidays, or any temporary shutdowns.

Where overlays of more than 2 inches are being placed on roadways carrying traffic the Contractor shall square up the overlay operation at the end of each workday. This requirement shall apply to travel lanes and shoulders.

Asphalt concrete pavement overlay operations shall be performed in only one travel lane at a time. Under no circumstance will the Contractor be permitted to overlay a portion of the width of a travel lane, ramp or loop and leave it overnight.

Where uneven pavement joints exist either transversely or longitudinally at the edges of travel lanes due to the overlay operations, the Contractor shall provide advance warning signage and traffic control devices at his expense in accordance with the details provided in the Contract for the scope of overlay operation he is performing.

In the event an emergency or an unforeseen circumstance such as equipment failure or breakdown occurs during the Contractor's operations that prevents the Contractor from squaring up the overlaid surface on adjacent lanes prior to a weekend, a holiday or a temporary shutdown, any additional signage, traffic control devices required to protect the traveling public shall be the Contractor's expense

Overlay tie-in requirements to intersecting roads or streets shall be in accordance with the *Special Provision for* **LIMITS OF MAINLINE OVERLAY AT INTERSECTIONS TO PAVED ROADS**.

The Contractor shall ensure positive drainage is provided for all overlaid surfaces in accordance with the requirements of Section 315.05(c) of the Specifications.

(STANDARD DRAWING ACOT-1 is attached)

(Attachment)
STANDARD DRAWING ACOT-1 December 2012

NOTES

- TIE-IN REQUIREMENTS TO INTERSECTING ROADS OR STREETS SHALL BE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS OR AT THE DIRECTION OF THE ENGINEER.
- EXISTING PAVEMENT SURFACE SHALL BE PLANED TO TRANSITION THE TOP COURSE OF THE ASPHALT CONCRETE OVERLAY. ANY SUB-COURSE TERMINATION MAY BE NOTCHED INTO THE EXISTING PAVEMENT OR BLENDED WITH THE NEXT COURSE OF PAVEMENT.
- WHEN THERE IS A SPECIAL PROVISION FOR RIDEABILITY INCLUDED IN THE CONTRACT, A DISTANCE OF 105 FEET (0.02 OF A MILE) MEASURED FROM THE LINE OF THE TIE-IN WILL BE EXEMPTED FROM PAY ADJUSTMENT.
- TRANSITION SHALL BEGIN/END AT THE PROJECT LIMITS, AT BRIDGE APPROACH SLAB/ABUTMENT (OR AN INTERMEDIATE POINT DETERMINED BY THE ENGINEER), AND A MINIMUM OF 75 FEET FROM A VERTICAL PLANE OF THE NEAREST OUTER FACE OF THE BRIDGE OVERPASS.
- NO OVERLAY OR MILLING SHALL BE PERMITTED ON THE BRIDGE DECK WITHOUT THE PRIOR WRITTEN APPROVAL OF THE DISTRICT BRIDGE ENGINEER.

ACOT-1

SINGLE COURSE OVERLAY TRANSITION GEOMETRY
(NOT TO SCALE)

TWO COURSE OVERLAY TRANSITION GEOMETRY
(NOT TO SCALE)

THREE COURSE OVERLAY TRANSITION GEOMETRY
(NOT TO SCALE)

VDOT
ROAD AND BRIDGE STANDARDS
REVISION DATE SHEET 1 OF 1
SPECIAL DESIGN

TRANSITION RATE		
POSTED SPEED MPH		
25	35	45
40	50	60
55	65	70

TEMPORARY WEDGE DETAIL

EXISTING PAVEMENT OR BRIDGE DECK

PLANNED SURFACE

TEMP. PAVEMENT WEDGE

EXISTING PAVEMENT

TEMPORARY PAVEMENT WEDGE SHALL BE CONSTRUCTED OF SURFACE MIX ASPHALT A MINIMUM OF 3 FEET IN LENGTH FOR EVERY INCH OF DEPTH OF PAVEMENT MILLING.

SPECIFICATION REFERENCE	210 315 515	VDOT ROAD AND BRIDGE STANDARDS
ASPHALT CONCRETE OVERLAY TRANSITIONS		REVISION DATE SHEET 1 OF 1 SPECIAL DESIGN
A COPY OF THE ORIGINAL SEALED AND SIGNED DRAWING IS ON FILE IN THE CENTRAL OFFICE.		
VIRGINIA DEPARTMENT OF TRANSPORTATION		

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
LIMITS OF MAINLINE OVERLAY AT INTERSECTIONS TO PAVED ROADS

July 28, 2010

I. DESCRIPTION

This work shall consist of furnishing and placing asphalt concrete overlay pavement courses on existing paved roadway surfaces that intersect the mainline roadway pavement overlay. This work shall be performed in accordance with the requirements of the Special Provision for Placement of Asphalt Concrete Overlays, Sections 211 and 315 of the Specifications; and where Stone Matrix Asphalt (SMA) is specified in the Contract, Sections 248 and 317 of the Specifications; and as specified herein. Where pavement planing is required it shall be performed in accordance with the requirements of the Special Provision for Cold Planing (Milling) Asphalt Concrete Operations and Section 515 of the Specifications and as specified herein.

II. MATERIALS

Materials shall be in accordance with the requirements of Section 211 of the Specifications; and where Stone Matrix Asphalt (SMA) is specified in the Contract, Section 248 of the Specifications; and the Special Provision for Placement of Asphalt Concrete Overlays.

III. EQUIPMENT

Equipment for furnishing and placing asphalt concrete overlay shall be in accordance with the requirements of Section 315 of the Specifications; and where Stone Matrix Asphalt (SMA) is specified in the Contract, Section 317 of the Specifications. Pavement planing equipment shall be in accordance with the requirements of the Special Provision for Cold Planing (Milling) Asphalt Concrete Operations and Section 515 of the Specifications.

IV. PROCEDURES

Furnishing and placing asphalt concrete overlay shall be in accordance with the requirements of Section 315 of the Specifications; and where Stone Matrix Asphalt (SMA) is specified in the Contract, Section 317 of the Specifications. Where pavement planing is required, it shall be in accordance with the requirements of the Special Provision for Cold Planing (Milling) Asphalt Concrete Operations and Section 515 of the Specifications and as specified herein.

The Contractor shall overlay the intersecting paved road from the edge of pavement of the mainline roadway pavement overlay to a point that includes the entire radius of the intersecting paved road in accordance with the attached drawing. This distance from the edge of pavement of the mainline roadway pavement overlay shall not exceed 50 feet measured in accordance with the drawing herein.

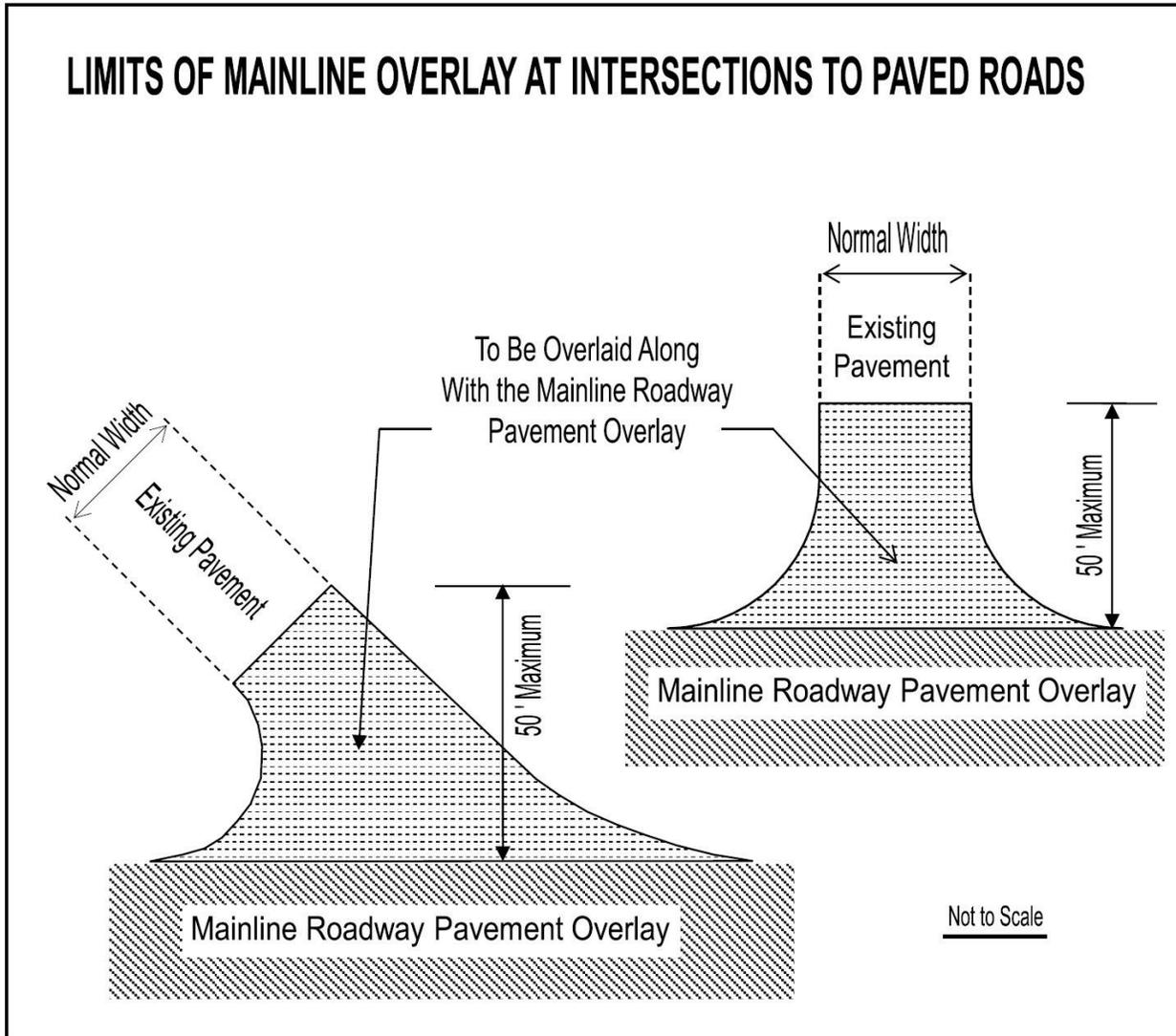
On curb and gutter sections where planing is required for the mainline roadway overlay, planing shall also be required on the intersecting paved road area prior to these areas being overlaid.

Asphalt concrete overlay pavement placed on existing paved roadway surfaces that intersects the mainline roadway pavement overlay shall be constructed using a method approved by the Engineer, which shall include the cutting of a notch into the pavement. The approved method shall provide a smooth transition between new pavement and existing pavement. Such tie-ins shall conform to the requirements of Section 315.05(c) of the Specifications except that all joints at tie-in locations shall be tested using a 10-foot straightedge in accordance with the requirements

of Section 315.07(a) of the Specifications. The variation from the testing edge of the straightedge between any two contact points with the pavement surface shall not exceed 1/4 inch.

V. MEASUREMENT AND PAYMENT

Overlay at intersections to paved roads will be measured and paid for in accordance with the pay items of Section 315 of the Specifications; and where Stone Matrix Asphalt (SMA) is specified in the Contract, Section 317 of the Specifications, and the Special Provision for Cold Planing (Milling) Asphalt Concrete Operations and Section 515 of the Specifications.



VIRGINIA DEPARTMENT OF TRANSPORTATION
2007 ROAD AND BRIDGE SUPPLEMENTAL SPECIFICATIONS**SUPPLEMENTAL SECTION 200—GENERAL**

SECTION 200—GENERAL of the Specifications is amended as follows:

200.06-Technician and Batchers Certification is replaced with the following:

Certification for technicians and batchers will be awarded by the Department upon a candidate's satisfactory completion of an examination.

- (a) **Central Mix Aggregate Technician:** A Central Mix Aggregate Technician designs and makes necessary adjustments in job mixtures at the plant based on an analysis of the specified material. The technician also samples materials and conducts any tests necessary to put the plant into operation and produce a mixture in accordance with the applicable Specifications.
- (b) **Asphalt Plant Level I Technician:** An Asphalt Plant Level I Technician samples materials.
- (c) **Asphalt Plant Level II Technician:** An Asphalt Plant Level II Technician samples material and is capable of conducting any tests necessary to put the plant into operation.
- (d) **Concrete Plant Technician:** A Concrete Plant Technician performs necessary adjustments in the proportioning of material used to produce the specified concrete mixtures
- (e) **Concrete Batchers:** A Concrete Batchers performs the batching operation. The batchers implements adjustments only at the direction of a certified Concrete Plant Technician unless the batchers's certification authorizes otherwise.
- (f) **Asphalt Field Level I Technician:** An Asphalt Field Level I Technician provides quality control of the placement operations of Asphalt Concrete.
- (g) **Asphalt Field Level II Technician:** An Asphalt Field Level II Technician inspects asphalt concrete placement in accordance with applicable requirements.
- (h) **Concrete Field Technician:** A Concrete Field Technician provides quality control of placement operations for hydraulic cement concrete in accordance with applicable requirements.
- (i) **Asphalt Mix Design Technician:** An Asphalt Mix Design Technician is responsible for designing and adjusting mixes as needed, reviewing and approving all test results, having direct communication with the plant for making recommended adjustments and is capable of conducting any tests necessary to put the plant into operation.
- (j) **Aggregate Properties Technician:** An Aggregate Properties Technician conducts all aggregate tests on aggregate used in asphalt concrete in accordance with applicable requirements
- (k) **Slurry Surfacing Technician:** A Slurry Surfacing Technician inspects the placement of emulsified asphalt slurry seal and latex modified emulsion treatment (Micro-surfacing) in accordance with applicable requirements.

- (l) **Surface Treatment Technician:** A Surface Treatment Technician inspects the placement of single seal and modified (blotted) seal coats in accordance with applicable requirements.

VIRGINIA DEPARTMENT OF TRANSPORTATION
2007 ROAD AND BRIDGE SUPPLEMENTAL SPECIFICATIONS**SUPPLEMENTAL SECTION 210—ASPHALT MATERIALS**

SECTION 210—ASPHALT MATERIALS of the Specifications is replaced with the following:

210.01—Description

These specifications cover the manufacturing and material requirements for asphalt material consisting of asphalt, asphalt cement, asphalt cutback, or asphalt emulsion as defined in ASTM D8.

210.02—Materials

Asphalt material shall be homogeneous and shall conform to the following:

- (a) **Rapid curing and medium curing liquid asphalts used as surface treatments** shall contain a heat-stable additive conforming to the requirements of Section 211 of the Specifications.
- (b) **Liquid asphalt material** will be tested for coating ability in accordance with the requirements of AASHTO T182, with the following modifications:
 - 1. Material that can coat 95 percent of a shady dolomite will be classified Type I.
 - 2. Material that can coat 95 percent of a siliceous gravel wetted with 2 percent water by weight will be classified Type II.
- (c) **Rapid curing cutback asphalts** shall conform to the requirements of AASHTO M81.
- (d) **Medium curing cutback asphalts** shall conform to the requirements of AASHTO M82.
- (e) **Cements** shall be viscosity graded and shall conform to the requirements of AASHTO M226, Table 2, except that the loss on heating shall be not greater than 1.0 for AC-5, 0.8 for AC-20, and 0.5 for all other grades.
- (f) **Emulsions** shall conform to the requirements of AASHTO M208 and shall be Type I as specified herein except that CRS-2 shall be Type II as specified herein. CRS-1h shall conform to the requirements of AASHTO M208 for CRS-1 except that the penetration shall be 40 to 110. Emulsions will be sampled and tested in accordance with the requirements of AASHTO T59 except that viscosity will be tested in accordance with the requirements of VTM-64.
- (g) **Polymer Modified Cationic Emulsified Asphalt** shall conform to the requirements of AASHTO M316.
- (h) **Non-tracking tack** will be tested in accordance with the requirements set forth in Section 210.07 of the Specifications.

210.03—VDOT Asphalt Acceptance Program (VAAP)

Acceptance into the VAAP

- (a) Asphalt materials will be accepted under the VDOT Asphalt Acceptance Program (VAAP). This involves sampling, testing, documentation and certification of the product by the manufacturer in combination with a Department monitoring effort. Performance Graded Binder suppliers shall conform to AASHTO R-26 and Emulsion supplies shall conform to AASHTO PP-71 to be added to the VAAP, with provisions listed below.
- (b) To have a new facility added to the VAAP, producers shall:
 - 1. Submit a split sample of each material to be approved to VDOT Central Office Materials Division for testing.
- (c) Approved shipping facilities from the VAAP that need to add a material to the approved list shall:
 - 1. Submit a split sample of the material to be approved to VDOT Central Office Materials Division for testing.

210.04—VDOT Asphalt Acceptance Program Requirements and Compliance

The manufacturer shall ensure the following are performed:

- (a) Asphaltic materials shall be sampled at a minimum frequency of once a month and when additional materials are added to existing material and tested in accordance with the specified methods in Section 210.07 of the Specifications.
- (b) A file or certified test reports representing the asphaltic material shall be maintained by the manufacturer.
- (c) A copy of the certified test report shall be provided to the VDOT Central Office Materials Division at Elko within 30 days of sampling. Failure to comply with this requirement can result in removal from the VAAP and the approved materials list.
- (d) Manufacturers shall supply to the Central Office Materials Division at Elko a summary sheet of quantities shipped to state work annually in January of the following year. This summary sheet will show the number of gallons of each type/grade of material shipped to Virginia addresses.
- (e) The manufacturer shall submit to the Department a detailed plan of action describing the procedures to be taken to ensure tracking of sample test results and the material represented by these results.

210.05—Sampling

- (a) Samples shall be taken in the presence of VDOT personnel or a VDOT representative.
- (b) Samples taken for testing of asphaltic materials are to be not less than one quart (one liter) of material (0.5 gallons (2 liters) for asphalt emulsions).
- (c) Care is to be taken to ensure that the samples are not contaminated and the sample containers are perfectly clean and dry before filling.

- (d) Immediately after filling, sample containers are to be tightly closed, and properly marked for identification on the container itself.

210.06—Testing

- (a) The Manufacturer shall conduct the standard control tests on asphaltic materials as detailed in Section 210.07 of the Specifications.
- (b) Testing for certified test reports shall be performed by the Manufacturer's personnel in the Manufacturer's VDOT approved laboratory or by a VDOT approved commercial testing facility.
- (c) The Department shall conduct acceptance testing at a frequency of a minimum of 1 test per month per type/grade of asphaltic material that has been supplied to VDOT projects during the previous month at the VDOT Central Office Materials at Elko. This frequency is to be maintained during the construction season, with a lesser frequency during the remainder of the year.
- (d) Laboratories conducting quality control must be certified by VDOT as meeting the requirements of certification:
 - 1. All Binder Laboratories shall hold AASHTO Accreditation and provide VDOT with a copy of accreditation.
 - 2. All Emulsion Laboratories shall be one of the following two levels:
 - a. Level I: AASHTO Accreditation
 - (1) Provide VDOT with a copy of accreditation.
 - b. Level II: AMRL Proficiency Sample Program
 - (1) Provide VDOT with copies of last "Round Robin" results, with ratings for each type of asphaltic material tested and copies of the lab's response for each sample.
 - (2) Development of a calibration program and personnel record keeping procedure, with results being kept on file at site.
 - 3. All laboratories under the VAAP shall be AASHTO accredited by January 1, 2016.
 - 4. Test Reports
 - a. The Manufacturer shall maintain a file of certified test reports for all asphaltic materials ultimately shipped to Contractors that perform work for VDOT.
 - b. Test Reports shall indicate that the material shipped meets the requirements for that type/grade of asphaltic material and will show the test results that were obtained to determine compliance with the applicable specifications.
 - c. Records shall be kept by the Manufacturer for at least 12 months and shall be available for verification by VDOT personnel.

- d. Copies of certified test results shall also be sent to the VDOT Central Office Materials Division at ELKO.
- e. Certified Test Reports shall be a company's standard form containing the following information:
 - (1) Manufacturer's name and address
 - (2) Type and grade of asphaltic material
 - (3) Testing performed (AASHTO or Virginia Test Method designation)
 - (4) Test results and date obtained
 - (5) Quantity represented
 - (6) Tank Number
 - (7) Unique Report Identifier
 - (8) Statement indicating that the Manufacturer "certified that these are the test results obtained on the material tested under the VAAP program".

210.07—Tests

(a) **PG Asphalt Binders:**

- 1. Certified Test Reports for **PG Asphalt Binders** shall be based upon the results of tests performed in accordance with AASHTO M332, Table 1. The Manufacturer is not required to perform the Direct Tension Test, AASHTO T314.
- 2. Certified test results for Superpave PG Asphalt Binders are to be based upon the results of tests performed in accordance with AASHTO R 29, as specified below:

a. Original Material

Flash Point °C	AASHTO T 48
Viscosity @ 135°C/100°C	AASHTO T316
Dynamic Shear, 10 Rad/sec	AASHTO T 315

b. RTFO (AASHTO T 240) Material

Mass Loss %	AASHTO T 240
Dynamic Shear, 10 Rad/sec	AASHTO T 315
Multiple Stress Creep Recovery (MSCR) Test	AASHTO T 350

c. Pressure Aging Vessel, Residue at 100°C (AASHTO R 28)

Dynamic Shear, 10 Rad/sec	AASHTO T 315
Creep Stiffness, 60 sec	AASHTO T 313
M-Slope	AASHTO T 313

3. For asphalt binders tested in accordance with AASHTO T 350, indication of elastic response shall be determined using Figure X1.1 Nonrecoverable Creep Compliance Versus Percent Recovery in AASHTO M 332.

(b) **Cutback Asphalts:**

1. Certified Test Reports for **Cutback Asphalts** shall be based upon the results of tests performed in accordance with AASHTO M81 and M82. The Manufacturer is not required to perform the Flash Point, Ductility, and Solubility tests unless otherwise directed by the Engineer. VDOT shall perform Ductility and Solubility tests on all acceptance samples. Flash Point tests will be performed by VDOT periodically. When performed by VDOT, failure of either sample on Flash Point, Ductility, and Solubility will be considered sufficient reason to require the Manufacturer to perform this testing. If the Manufacturer elects to conduct these tests to better control production, the results shall be included on the certified test report.
2. When used in surface treatments, the Coating Ability test shall be conducted subject to the specifications listed in Section 210.02 of the Specifications.

(c) **Emulsified Asphalts:**

1. Certified Test Reports for **Emulsified Asphalts** shall be based upon the results of tests performed in accordance with AASHTO M208 or AASHTO M316, as specified below:
 - a. Cationic Emulsions- Table 1, specifically
 - (1) Tests on Emulsions:
 - Saybolt Furol Viscosity
 - Sieve Test (if necessary)
 - Demulsibility or Classification test
 - Particle Charge Test
 - Residue by Distillation
 - (2) Tests on residue from distillation:
 - Penetration
 - b. CSS-1h (Quick Set):

Same tests as Cationic Emulsions, as well as:

 - Quick set Emulsified Asphalt Setting Time (VTM-89)
 - c. Latex Modified Cationic Emulsions (Quick Set)
 - (1) CQS-1h Latex Modified (CQS-1hLM)
 - a) Tests on Emulsions
 - Saybolt Furol Viscosity
 - Sieve Test (if necessary)
 - Particle Charge Test
 - Residue by Evaporation (VTM-78)
 - b) Tests on residue
 - Penetration

- Ring and Ball Softening Point

(2) CRS-2 Latex

- a) Tests on Emulsions
 - Saybolt Furol Viscosity
 - Sieve Test (if necessary)
 - Particle Charge Test
 - Residue by Distillation
- b) Tests on residue by Distillation
 - Penetration
 - Ring and Ball Softening Point
 - Elastic Recovery

2. The Manufacturer is not required to perform the Flash Point, Ductility, and Solubility tests unless otherwise directed by the Engineer. VDOT shall perform Ductility and Solubility tests on all independent assurance (monitor) and Q.A. samples. Flash Point tests will be performed by VDOT periodically. When performed by VDOT, failure of either sample on Flash Point, Ductility, and Solubility will be considered sufficient reason to require the Manufacturer to perform this testing. If the Manufacturer elects to conduct these tests to better control production, the results shall be included on the certified test report.

(d) **Non-Tracking Tack:**

1. Certified Test Reports for Non-Tracking Tack shall be based upon the results of tests performed, as specified below:
 - a. Tests on Non-Tracking Tack:
 - Saybolt Furol Viscosity
 - Residue by Distillation
 - b. Tests on residue by distillation:
 - Ring and Ball Softening Point

210.08—Storing and Shipping

(a) **Shipping:**

1. Shipments of asphalt material shall be made in transporting media that are free from contamination. Tank trucks or trailers shall be equipped with an Engineer approved sampling device. The device shall have an inside diameter of 1/2 to 1 inch and a gate valve or petcock. The device shall be built into the tank or the recirculating or discharge line so that a sample can be drawn during circulation or discharge.
2. All Shipping documents shall contain sufficient information such that at any point, the material may be traceable back to the original test results. If the material is mixed with other approved material for storage, the record system will be such as to assure the traceability of all the material which is being mixed.
3. All shipping documents shall be accompanied by a statement similar to "We certify that all material being shipped on this invoice/bill of lading has been tested and approved under the Virginia Asphalt Acceptance Program and that the

material has been loaded under the supervision of our representative into carriers that are suitable for shipment of this material.”

4. All shipping documents shall be kept by the recipient of the material for at least 12 months and are to be available for verification by VDOT personnel I.
 5. Only material tested and certified in accordance with the VAAP shall be mixed and shipped to VDOT projects.
- (b) **Storing:** Asphalt material shall be placed in storage tanks that are free from contamination.

210.09—Payment Adjustment System

If the asphalt material represented by any one sample does not conform to the requirements herein and the material is a pay item, the Engineer will reduce the contract unit price for the item by 4 percent for each property that does not conform to the Specifications for the quantity represented by the sample that was used on the project. The Engineer will reject any unused material represented by the failing sample.

The Engineer will consider any failed sampled asphalt material that is not a pay item unacceptable and subject to the requirements of Section 105.18 and Section 106.10 of the Specifications.

VIRGINIA DEPARTMENT OF TRANSPORTATION
2007 ROAD AND BRIDGE SUPPLEMENTAL SPECIFICATIONS

SUPPLEMENTAL SECTION 211—ASPHALT CONCRETE

SECTION 211—ASPHALT CONCRETE of the Specifications is replaced with the following:

211.01—Description

Asphalt concrete shall consist of a combination of mineral aggregate and asphalt material mixed mechanically in a plant specifically designed for such purpose.

An equivalent single-axle load (ESAL) will be established by the Engineer, and SUPERPAVE mix types may be specified as one of the types listed as follows:

Mix Type	Equivalent Single-Axle Load (ESAL) Range (millions)	Minimum Asphalt Performance Grade (PG) ²	Aggregate Nominal Maximum Size ¹
SM-9.0A	0 to 3	64S-16	3/8 in
SM-9.0D	3 to 10	64H-16	3/8 in
SM-9.0E	Above 10	64E-22	3/8 in
SM-9.5A	0 to 3	64S-16	3/8 in
SM-9.5D	3 to 10	64H-16	3/8 in
SM-9.5E	Above 10	64E-22	3/8 in
SM-12.5A	0 to 3	64S-16	1/2 in
SM-12.5D	3 to 10	64H-16	1/2 in
SM-12.5E	Above 10	64E-22	1/2 in
IM-19.0A	Less than 10	64S-16	3/4 in
IM-19.0D	10 to 20	64H-16	3/4 in
IM-19.0E	20 and above	64E-22	3/4 in
BM-25.0A	All ranges	64S-16	1 in
BM-25.0D	Above 10	64H-16	1 in

¹**Nominal Maximum Size** is defined as one sieve size larger than the first sieve to retain more than 10 percent aggregate.

²**Minimum Asphalt Performance Grade (PG)** is defined as the minimum binder performance grade for the job mixes as determined by AASHTO T170 or AASHTOM332.

Note: SM = Surface Mixture; IM = Intermediate Mixture; BM = Base Mixture

Asphalt concrete shall conform to the requirements for the mix type designated on the plans or elsewhere in the contract for use

At the Contractor's option, an approved Warm Mix Asphalt (WMA) additive or process may be used to produce the asphalt concrete (AC) mix type designated.

211.02—Materials

- (a) **Asphalt materials** shall conform to the requirements of Section 210 of the Specifications except asphalt cement materials shall be performance graded (PG) in accordance with the requirements of AASHTO M332. In addition, asphalt mixtures with the E designation shall meet the asphalt cement requirements in Section 211.04(e)1 of the Specifications.

- (b) **Coarse aggregate** shall be Grade A or B conforming to the requirements, except for grading, of Section 203 of the Specifications for quality. In addition, the coarse aggregate sizes retained on and above the No. 4 sieve shall comply with the coarse aggregate requirements in Table II-12A. Flat and elongated (F&E) particles shall be tested in accordance with the requirements of ASTM D 4791, and coarse aggregate angularity (CAA) shall only be tested on crushed gravel in accordance with the requirements of ASTM D 5821.
- (c) **Fine aggregate** shall conform to the requirements, except for grading, of Section 202 of the Specifications for quality and the fine aggregate requirements in Table II-12A. Fine aggregate angularity (FAA) shall be tested in accordance with the requirements of AASHTO T 304 (Method A) and the sand equivalent (SE) shall be tested in accordance with the requirements of AASHTO T 176.
- (d) After a gradation test is performed:
1. If 10 percent or more of the material is retained on the No. 4 sieve, that portion shall be tested in accordance with the requirements for coarse aggregate.
 2. If 10 percent or more of the material passes the No. 4 sieve, that portion shall be tested for SE.
 3. If 10 percent or more of the material passes the No. 8 sieve, that portion shall be tested for FAA.
- (e) Fine or coarse aggregates that tend to polish under traffic will not be permitted in any final surface exposed to traffic except in areas where the two-way average daily traffic is less than 750 vehicles per day and as permitted elsewhere in these Specifications.

**TABLE II-12A
Aggregate Properties**

Mix Type	Coarse Aggregate Properties			Fine Aggregate Properties	
	CAA		ASTM D4791 F & E "(5:1) % by weight	SE	FAA
	1 fractured face	2 fractured faces			
SM-9.0 A	85% min.	80% min.	10% max. ¹	40% min.	40% min.
SM-9.0 D	85% min.	80% min.	10% max. ¹	45% min.	45% min.
SM-9.0 E	95% min.	90% min.	10% max. ¹	45% min.	45% min.
SM-9.5 A	85% min.	80% min.	10% max. ¹	45% min.	45% min.
SM-9.5 D	85% min.	80% min.	10% max. ¹	45% min.	45% min.
SM-9.5 E	95% min.	90% min.	10% max. ¹	45% min.	45% min.
SM-12.5 A	85% min.	80% min.	10% max. ¹	45% min.	45% min.
SM-12.5 D	85% min.	80% min.	10% max. ¹	45% min.	45% min.
SM-12.5 E	95% min.	90% min.	10% max. ¹	45% min.	45% min.
IM-19.0 A	85% min.	80% min.	10% max. ¹	45% min.	45% min.
IM-19.0 D	95% min.	90% min.	10% max. ¹	45% min.	45% min.
IM-19.0 E	95% min.	90% min.	10% max. ¹	45% min.	45% min.
BM-25.0 A	80% min.	75% min.	10% max. ¹	45% min.	45% min.
BM-25.0 D	80% min.	75% min.	10% max. ¹	45% min.	45% min.

¹10 percent measured at 5:1 on maximum to minimum dimensions

- (f) **Mineral filler** shall conform to the requirements of Section 201 of the Specifications.
- (g) **Aggregate for asphalt concrete** shall be provided in sufficient sizes and amounts to produce a uniform mixture. The Contractor shall indicate on the proposed job-mix formula the separate approximate sizes of aggregate to be used.

Where segregation or nonuniformity is evident in the finished pavement, the Engineer reserves the right to require the Contractor to discontinue the use of crusher run or aggregate blends and to furnish separate sizes of open-graded aggregate material.

- (h) An antistripping additive shall be used in all asphalt mixes. It may be hydrated lime or a chemical additive from the VDOT Materials Division Approved Products List No. 7 or a combination of both. The approved chemical additive shall be added at a rate of not less than 0.30 percent by weight of the total asphalt content of the mixture.

The mixture shall produce a tensile strength ratio (TSR) of not less than 0.80 for the design and production tests. The TSR shall be determined in accordance with AASHTO T283, including a freeze-thaw cycle (4-inch specimens compacted with a Marshall Hammer or 3.5 by 6-inch specimens when compacted with a gyratory compactor); except that the 16-hour curing time requirement and the 72 to 96-hour storage period will not be enforced by the Department. Design tests shall use the same materials that are to be used in the production mix and shall be conducted in a laboratory approved by the Department.

When a chemical additive is used, it shall be added to the asphalt cement prior to the introduction of the cement into the mix. Any chemical additive or particular concentration of chemical additive found to be harmful to the asphalt material or that changes the original asphalt binder performance grade (PG) shall not be used.

- (i) **Hydrated lime** shall conform to the requirements of ASTM C977. Hydrated lime shall be added at a rate of not less than 1 percent by weight of the total dry aggregate.

A separate bin or tank and feeder system shall be provided to store and accurately proportion the dry or slurried lime into the aggregate.. The lime and aggregate shall be mixed by pugmill or other Department approved means to achieve a uniform lime coating of the aggregate prior to entering the drier. If lime is added in dry form, the aggregate shall contain at least 3 percent free moisture. The Department will not permit the stockpiling of lime treated aggregate.

The feeder system shall be controlled by a proportioning device, which shall be accurate to within ± 10 percent of the specified amount. The proportioning device shall have a convenient and accurate means of calibration. A flow indicator or sensor shall be provided with the proportioning device and interlocked with the plant controls, aggregate feed or weigh system, such that production of the mixture shall be consistently maintained and, if there is a stoppage of the lime feed, interrupted.

The method of introducing and mixing the lime and aggregate shall be subject to approval by the Engineer prior to beginning production.

- (j) **Reclaimed Asphalt Pavement (RAP)** material may be used as a component material of asphalt mixtures in conformance with the following:

1. Asphalt surface, intermediate and base mixtures containing RAP (but without RAS) should use the performance grade (PG) of asphalt cement as indicated in Table II-I4A, however, the choice of PG to use in the mix shall be the responsibility of the Contractor in order to meet the requirements of Section 211.01 of the Specifications.

2. The final asphalt mixture shall conform to the requirements for the type specified.
3. During the production process, RAP material shall not be allowed to contact open flame.
4. RAP material shall be handled, hauled, and stored in a manner that will minimize contamination. Further, the material shall be stockpiled and used in such manner that variable asphalt contents and asphalt penetration values will not adversely affect the consistency of the mixture.
5. RAP shall be processed in such a manner as to ensure that the maximum top size particle of material introduced into the mix shall be 2 inches. The Engineer may require smaller sized particles to be introduced into the mix if the reclaimed particles are not broken down or uniformly distributed throughout the mixture during heating and mixing.

(k) **Reclaimed Asphalt Shingles (RAS) – Tear-off RAS Materials** in Asphalt Concrete

1. Asphalt surface, intermediate, and base mixtures containing **Tear-off RAS Materials** shall meet the requirements of Section 211.01 and 211.03 of the Specifications.
2. Tear-off RAS Materials shall be discarded shingle scrap from the re-roofing of domestic buildings. These tear-offs shall have been produced by the manufacturing process for roofing shingles.

Tear-off RAS materials shall contain less than 3.0 percent foreign materials such as paper, roofing nails, wood, or metal flashing. Materials shall be shredded prior to being incorporated in the AC mixture so that at least 99 percent of the shredded pieces passes the ½ inch (12.5 mm) sieve and at least 80 percent passed the #4 (4.75 mm) sieve.

Tear-off RAS materials shall not have asbestos containing material (ACM) as defined by the National Emission Standards for Hazardous Air Pollutants (NESHAP), which is less than 1 percent asbestos. The Contractor shall furnish a certification obtained from the recycler that Polarized Light Microscopy (PLM) tests were performed on random samples of RAS at the rate of 1 test per 100 tons or if operating under a Virginia DEQ permit the rate will be the 1 test per 750 tons. The test results shall reveal no detectable level of ACM. Copies of the test results from the recycler shall be available upon request.

3. Asphalt Binder of the asphalt concrete mixture shall be Performance Grade (PG) of asphalt conforming to the requirements specified in Section 211 of the Specifications.
4. RAS tear-offs in asphalt concrete shall be mixed mechanically in a plant specifically designed for asphalt concrete production.
5. Contractors shall store tear-off RAS materials by stockpiling either whole or as partial shingles which have not been shredded or shredded shingles that meet the maximum size requirements. Stockpiled RAS shall not be contaminated by dirt or other objectionable foreign materials. Blending of the shingles with fine aggregate may be necessary to prevent conglomeration of shingle particles. When fine aggregate is used for this purpose, this material shall be accounted for in the mix design.

(l) **Reclaimed Asphalt Shingles (RAS) – Tabs RAS Materials** in Asphalt Concrete

1. Asphalt surface, intermediate, and base mixtures containing **Tabs RAS Materials** shall meet the requirements of Section 211.01 and 211.03 of the Specifications.

2. Tabs RAS Materials shall be produced by the manufacturing process for domestic roofing shingles. Blending or mixing of Tabs and Tear-offs shall not be permitted.

Tabs RAS Materials shall be shredded prior to being incorporated into the asphalt concrete mixture so that one hundred percent of the shredded pieces are less than ½ inches (12.5mm) in any dimension.

Tabs RAS Materials shall not contain asbestos fibers. The Contractor shall furnish the Department a certification from the manufacturer of the shingles stating that the shingles are free of asbestos. If a certification cannot be obtained then the contractor shall furnish test results of RAS sample analysis for Polarized Light Microscopy (PLM) on the shingles which certify the material to be used is free of asbestos. Testing is required at the specified rate of 1 per manufacturer per type of RAS prior to processing and results shall be submitted prior to or during the stockpile approval process.

3. Asphalt Binder of the asphalt concrete mixture shall be Performance Grade (PG) of asphalt conforming to the requirements specified in Section 211 of the Specifications.
 4. Tabs RAS Materials in asphalt concrete shall be mixed mechanically in a plant specifically designed for asphalt concrete production.
 5. Contractors shall store Tabs RAS materials by stockpiling either whole or as partial shingles which have not been shredded or shredded shingles that meet the maximum size requirements. Stockpiled RAS shall not be contaminated by dirt or other objectionable foreign materials. Blending of the shingles with fine aggregate may be necessary to prevent conglomeration of shingle particles. When fine aggregate is used for this purpose, this material shall be accounted for in the mix design.
- (k) **Warm Mix Asphalt (WMA)** additives or processes shall be approved by the Department prior to use and shall be obtained from the Department's approved list which is included in the Materials Division's Manual of Instructions.

211.03—Job-Mix Formula

The Contractor shall submit a job-mix formula for each mixture planned for use on the project for the Department's evaluation and approval through the "Producer Lab Analysis and Information Details" (PLAID) website. Paper copies of the job mix formula along with supporting documentation shall also be submitted to the Department. The job-mix formula shall be within the design range specified. The job-mix formula shall establish a single percentage of aggregate passing each required sieve, a single percentage of asphalt material to be added to the aggregate, a temperature at which the mixture is to be produced, and a temperature at which the mixture is to be compacted for SUPERPAVE testing in accordance with the requirements of AASHTO R35. Each approved job-mix formula shall remain in effect provided the results of tests performed on material currently being produced consistently comply with the requirements of the job-mix formula for grading, asphalt content, temperature, and SUPERPAVE compaction results and the requirements of Section 315 of the Specifications.

- (a) SUPERPAVE mixes shall be designed and controlled in accordance with the requirements of AASHTO R35 and as specified herein. The Contractor shall have available all of the equipment outlined in AASHTO T312 (Section 4-6) and a Department-certified Asphalt Mix Design Technician. The SUPERPAVE mixture shall be compacted in a gyratory compactor with an internal angle of 1.16 ± 0.02 degrees. **The internal angle shall be measured and calibrated using a cold (non-mix) device.** The SUPERPAVE Gyratory Compactor (SGC) shall be one from the Department's approved list of devices found in the VDOT Materials Division's Manual of Instructions. The SUPERPAVE mixes shall conform to the requirements

of Table II-13 and Table II-14. Section 7.1.2 of AASHTO R30 shall be modified such that the compaction temperature is as specified in (d) 6 herein.

- (b) In conjunction with the submittal of a job-mix formula, the Contractor shall submit complete SUPERPAVE design test data, ignition furnace calibration data in accordance with VTM-102 prepared by an approved testing laboratory, and viscosity data or supplier temperature recommendations for the asphalt cement if different from (d) 6 herein.
- (c) Three trial blends for gradation shall be run at one asphalt content

**TABLE II-13
Asphalt Concrete Mixtures: Design Range**

Mix Type	Percentage by Weight Passing Square Mesh Sieves										
	2 in	1 1/2 in	1 in	3/4 in	1/2 in	3/8 in	No. 4	No. 8	No. 30	No. 50	No. 200
SM-9.0 A,D,E					100 ¹	90-100	90 max.	47-67			2-10
SM-9.5 A,D,E					100 ¹	90-100	58-80	38-67	23 max		2-10
SM-12.5 A,D,E				100	95-100	90 max.	58-80	34-50	23 max		2-10
IM-19.0 A,D,E			100	90-100	90 max.	--	--	28-49			2-8
BM-25.0 A,D		100	90-100	90 max.	--	--	--	19-38			1-7
C (Curb Mix)					100	92-100	70-75	50-60	28-36	15-20	7-9

¹A production tolerance of 1% will be applied to this sieve regardless of the number of tests in the lot.

**TABLE II-14
Mix Design Criteria**

Mix Type	VTM (%)	VFA (%)	VFA (%)	Min. VMA (%)	Fines/Asphalt Ratio	No. of Gyration N Design
	Production	Design	Production			
SM-9.0A ^{1,2}	2.0-5.0	75-80	70-85	16	0.6-1.3	65
SM-9.0D ^{1,2}	2.0-5.0	75-80	70-85	16	0.6-1.3	65
SM-9.0E ^{1,2}	2.0-5.0	75-80	70-85	16	0.6-1.3	65
SM-9.5A ^{1,2}	2.0-5.0	75-80	70-85	16	0.7-1.3	50
SM-9.5D ^{1,2}	2.0-5.0	75-80	70-85	16	0.7-1.3	50
SM-9.5E ^{1,2}	2.0-5.0	75-80	70-85	16	0.7-1.3	50
SM-12.5A ^{1,2}	2.0-5.0	73-79	68-84	15	0.7-1.3	50
SM-12.5D ^{1,2}	2.0-5.0	73-79	68-84	15	0.7-1.3	50
SM-12.5E ^{1,2}	2.0-5.0	73-79	68-84	15	0.7-1.3	50
IM-19.0A ^{1,2}	2.0-5.0	69-76	64-81	13	0.6-1.2	65
IM-19.0D ^{1,2}	2.0-5.0	69-76	64-81	13	0.6-1.2	65
IM-19.0E ^{1,2}	2.0-5.0	69-76	64-81	13	0.6-1.2	65
BM-25.0A ^{2,3}	1.0-4.0	67-87	67-92	12	0.6-1.3	65
BM-25.0D ^{2,3}	1.0-4.0	67-87	67-92	12	0.6-1.3	65

¹Asphalt content should be selected at 4.0% air voids for A & D mixes, 3.5% air voids for E mix.

²Fines-asphalt ratio is based on effective asphalt content.

³Base mix shall be designed at 2.5% air voids. BM-25A shall have a minimum asphalt content of 4.4% unless otherwise approved by the Engineer. BM-25D shall have a minimum asphalt content of

4.6% unless otherwise approved by the Engineer.

(d) The SUPERPAVE design test data shall include, but not be limited to, the following information:

1. Grading data for each aggregate component of three trial blends shall be submitted to the Department. The data for the mixture shall show percent passing for the following sieves: 2 inch, 1 1/2 inch, 1 inch, 3/4 inch, 1/2 inch, 3/8 inch, No. 4, No. 8, No. 16, No. 30, No. 50, No. 100, and No. 200. The grading shall be reported to the nearest 1.0 percent except the No. 200 sieve shall be reported to the nearest 0.1 percent.
2. The test data shall include, but not be limited to, the percentage of each aggregate component as compared to the total aggregate in the asphalt mixture. The specific gravity and aggregate properties for coarse and fine aggregates defined in Section 211.02 (b) and (c) of the Specifications, including flat and elongated properties, for each aggregate component or for the total aggregates used in the mixture shall be reported. Aggregate properties, except sand equivalent, shall be reported for RAP portions of a mixture. The aggregate specific gravity of RAP shall be the effective aggregate specific gravity calculated from the results of tests conducted in accordance with AASHTO T 209 and VTM-102.
3. The aggregate grading in the asphalt mixture shall be determined by igniting or extracting the asphalt from a laboratory-prepared sample. The laboratory sample shall be batched on the basis of component percentages as indicated in (d) 2. herein and at the proposed job-mix asphalt content. The aggregate shall be obtained in accordance with the requirements of VTM-102 or VTM-36, when approved. Sieves specified in (d) 1. herein shall be reported, beginning with the top size for the mix.
4. The following volumetric properties of the compacted mixture, calculated on the basis of the mixture's maximum specific gravity determined in accordance with AASHTO T-209, shall be reported to the Engineer. The mixture shall be aged in accordance with AASHTO R30 and the bulk specific gravity of the specimens determined in accordance with AASHTO T-166, Method A, for each asphalt content tested. Properties shall be determined and reported in accordance with the requirements of AASHTO R35.
 - a. Voids in total mix (VTM)
 - b. Voids in mineral aggregate (VMA)
 - c. Voids filled with Asphalt (VFA)
 - d. Fines/Asphalt ratio (F/A)
5. The value of the maximum specific gravity of the asphalt mixture used in (c) 4. herein shall be reported to three decimal places.
6. The mixing and compaction temperature for testing shall be as follows:
 - a. For mixes designation A, the mix temperature shall be 300 degrees F to 310 degrees F and the compaction temperature shall be 285 degrees F to 290 degrees F.
 - b. For mixes designation D, the mix temperature shall be 310 degrees F to 320 degrees F and the compaction temperature shall be 295 degrees F to 300 degrees F.
 - c. In cases involving PG 64E-22 or modified binders, the temperatures shall be based on documented supplier's recommendations.

7. The field correction factor as determined by subtracting the bulk specific gravity of the aggregate from the effective specific gravity of the aggregate at the design asphalt content.
 8. For surface mixes, permeability test data shall be submitted in accordance with VTM 120 using either single point verification or the regression method for each surface mix having a different gradation. If the average of the permeability results from the single point verification method exceeds 150×10^{-5} cm/sec, or if the regression method predicts a permeability exceeding 150×10^{-5} cm/sec at 7.5% voids, the Contractor shall redesign the mixture to produce a permeability number less than 150×10^{-5} cm/sec.
- (e) The SUPERPAVE design binder content test data shall be plotted on graphs as described in AASHTO R 35 and shall show that the proposed job-mix formula conforms to the requirements of the designated mix type.
- (f) A determination will be made to verify if any asphalt concrete mixture being produced conforms to the job-mix formula approved by the Department. The Department and Contractor will test the mixture using samples removed from production. The following tests will be conducted to determine the properties listed:

Property	Test
Asphalt content	VTM-102, (VTM-36 when approved)
Gradation	AASHTO T-30
SUPERPAVE properties	AASHTO R35
Asphalt cement material	AASHTO T316 or T-201

For Warm Mix Asphalt (WMA), SUPERPAVE properties for mixing and compaction temperatures will be determined by the Department and Contractor based on the mix designations in Section 211.03(d)6 of the Specifications.

The Department will perform rut testing in accordance with the procedures detailed in VTM-110. If the results of the rut testing do not conform to the following requirements, the Engineer reserves the right to require adjustments to the job-mix formula:

Mix Designation	Maximum Rut Depth, mm
A	7.0
D	5.5
E, (S)	3.5

After calibration of the gyratory compactor is completed, the Engineer may require the Contractor to make adjustments to the job-mix formula.

If the Department determines that the mixture being produced does not conform to the approved job-mix formula and volumetric properties specified in Table II-14 based on the Department's or Contractor's test results, the Contractor shall immediately make corrections to bring the mixture into conformance with the approved job-mix formula or cease paving with that mixture.

Subsequent paving operations using either a revised or another job-mix formula that has not been verified as described herein shall be limited to a test run of 100 to 300 tons of mixture if such material is to be placed in Department project work. No further paving for the Department using that specific mixture shall occur until the acceptability of the mixture being produced has been verified using the 100 to 300 ton constraint.

**TABLE II-14A
Recommended Performance Grade of Asphalt Cement**

Mix Type	Percentage of Reclaimed Asphalt Pavement (RAP) in Mix		
	%RAP ≤ 25.0%	25.0% < %RAP ≤ 30%	25.0% < %RAP ≤ 35%
SM-4.75A, SM-9.0A, SM-9.5A, SM-12.5A	PG 64S-22	PG 64S-22	
SM-4.75D, SM-9.0D, SM-9.5D, SM-12.5D	PG 64H-22	PG 64S-22	
IM-19.0A	PG 64S-22	PG 64S-22	
IM-19.0D	PG 64H-22	PG 64S-22	
BM-25.0A	PG 64S-22		PG 64S-22
BM-25.0D	PG 64H-22		PG 64S-22

Based on rut testing performed by the Department and/or field performance of the job mix, the Engineer reserves the right to require the Contractor to make adjustments to the job-mix formula.

- (g) When utilizing **RAS Materials (Tear-off or Tabs)**, the Contractor shall submit material samples to include the RAS stockpiled tear-off shingles, reclaimed asphalt pavement (RAP) and PG Binder.

The amount of RAS material used in the recycled mixture shall be no more than five percent of the total mixture weight. However, the combined percentages of RAS and RAP shall not contribute more than 30 percent (by weight) of the total asphalt content of the mixture, according to the following equation:

$$\frac{\left(\%RAS_{mix} \times \%AC_{RAS} / 100 \right) + \left(\%RAP_{mix} \times \%AC_{RAP} / 100 \right)}{\%AC_{JMF}} \leq 30.0\%$$

Where:

- % RAS_{mix} = Percent RAS in the Job Mix Formula
- % AC_{RAS} = Average Percent AC in the RAS
- % RAP_{mix} = Percent RAP in the Job Mix Formula
- % AC_{RAP} = Average Percent AC in the RAP
- % AC_{JMF} = Design AC content of the JMF

The Contractor shall determine the asphalt content of the RAS using AASHTO T-164, Method B, or VTM-102 and report the average results to the nearest 0.1 percent. When the ignition furnace is used, a correction factor shall be applied for the non-asphalt combustible materials in the RAS. Unless the actual correction factor is determined by comparing the test results on paired samples from AASHTO T-164 Method B and VTM-102, the estimated correction factor for the RAS shall be 5 percent.

Used separately or with RAP, RAS can be used to stiffen the asphalt concrete mixture binder to meet the requirements in Section 211.01 of Specifications. Asphalt surface, intermediate, and base mixtures containing RAS in order to meet the asphalt concrete mixture stiffness of PG 64H-

16 should use PG 64S-22 asphalt cement. Further, mixes using RAS shall not exceed the 30% (by weight) and are required to use the maximum binder replacement criteria noted here:

- 5% RAS and 0% RAP
- 4% RAS and 5% RAP minimum
- 3% RAS and 10% RAP minimum
- 2% RAS and 20% RAP minimum

Interpolation shall be used to determine combinations between the whole number RAS/RAP usage figures shown herein, subject to review and approval by the Engineer.

211.04—Asphalt Concrete Mixtures

Asphalt concrete mixtures shall conform to the requirements of Table II-14 and the following:

- (a) **Types SM-9.0A, SM-9.0D, SM-9.0E, SM-9.5A, SM-9.5D, SM-9.5E, SM-12.5A, SM-12.5D, and SM-12.5E asphalt concrete** shall consist of crushed stone, crushed slag, or crushed gravel and fine aggregate, slag or stone screenings, or a combination thereof combined with asphalt cement.

NOTE: For all surface mixes, except where otherwise noted, no more than 5 percent of the aggregate retained on the No. 4 sieve and no more than 20 percent of the total aggregate may be polish susceptible. At the discretion of the Engineer, SM-9.5AL or SM-12.5AL may be specified and polish susceptible aggregates may be used (without percentage limits).

NOTE: Unless Type C (curb mix) is specified by the Engineer in the contract plans and specifications, SM-9.0, SM-9.5, and SM-12.5 mix types are acceptable for use in the construction of asphalt curbing.

- (b) **Types IM-19.0A, IM-19.0D, and IM-19.0E asphalt concrete** shall consist of crushed stone, crushed slag, or crushed gravel and fine aggregate, slag or stone screenings, or a combination thereof combined with asphalt cement.

NOTE: At the discretion of the Engineer, an intermediate mix may be designated as either SM-19.0A, SM-19.0D or SM-19.0E. When designated as such, no more than 5 percent of the aggregate retained on the No. 4 sieve may be polish susceptible. All material passing the No. 4 sieve may be polish susceptible.

- (c) **Types BM-25.0A and BM-25.0D asphalt concrete** shall consist of crushed stone, crushed slag, or crushed gravel and fine aggregate, slag or stone screenings, or a combination thereof combined with asphalt cement.

- (d) **Type C (curb mix) asphalt concrete** shall consist of a blend of No. 78 or No. 8 crushed aggregate, No. 10 crushed aggregate, fine aggregate, mineral filler, and a stabilizing additive from the Department's approved list found in the Materials Division's Manual of Instructions combined with 6.0 to 9.0 percent of PG 64S-22. This mix does not require a volumetric mix design or volumetric testing under the SUPERPAVE system.

- (e) **Type SM-9.5, SM-12.5, IM-19.0 and BM-25.0 asphalt concrete** may be designated E (polymer modified), or stabilized (S). Asphalt concrete mixtures with the E designation may not be stabilized.

1. **Type E designated mixtures** shall consist of mixes incorporating a neat asphalt material with polymer modification complying with the requirements of PG 64E-22 and have a rolling thin film oven test residue elastic recovery at 77 degrees F of a minimum of 70 percent when tested in accordance with ASTM D 6084 procedure A.. E designated mixtures shall not

contain more than 15 percent reclaimed asphalt pavement (RAP) material (by weight) or 3% recycled asphalt shingles (RAS) (by weight).

2. **Type (S) asphalt mixtures** shall consist of mixes incorporating a stabilizing additive from the Department's approved list found in the Materials Division's Manual of Instructions. These mixes shall be designated with an (S) following the standard mix designation. The minimum required additive shall be as specified on the Department's approved list found in the Materials Division's Manual of Instructions.
3. **Type L asphalt mixtures** will be allowed to contain a 100 percent polishing coarse and fine aggregate. These mixes shall be designated with a L following the standard mix designation.

211.05—Testing

The Contractor shall provide the quality control and quality assurance necessary for the Department to determine conformance with the required grading, asphalt content, and temperature properties for asphalt concrete.

The Contractor shall have a Department-certified Asphalt Mix Design Technician for designing and adjusting mixes as necessary. The Asphalt Mix Design Technician or Asphalt Plant Level II Technician may perform testing of asphalt mixes. The Asphalt Mix Design Technician shall be responsible for reviewing and approving the results of all testing. The Asphalt Mix Design Technician shall be available and have direct communication with the plant for making necessary adjustments in the asphalt concrete mixes at the mixing plant. The Asphalt Mix Design Technician and Asphalt Plant Level II Technician shall each be capable of conducting any tests necessary to put the plant into operation; however, the Asphalt Mix Design Technician shall be responsible for producing a mixture that complies with the requirements of these Specifications. The Department will award certification.

The Contractor shall maintain all records and test results associated with the material production and shall maintain appropriate current quality control charts. Test results and control charts shall be available for review by the Engineer.

The Contractor shall execute a quality control plan of process inspections and tests, including the determination of SUPERPAVE properties. The results of the SUPERPAVE tests shall be used, along with the results of other quality control efforts, to achieve and maintain the quality of the mixture being produced.

The Contractor shall perform at least one field SUPERPAVE test per day per mix or per 1,000 tons per mix if more than 1,000 tons of a mix is produced per day. Aging as described in AASHTO R30 shall not be performed. If less than 300 tons of asphalt mixture is produced under a single job-mix formula in a day, field SUPERPAVE testing will not be required on that day. That day's tonnage shall be added to subsequent production. When the accumulated tonnage exceeds 300 tons, minimum testing frequency shall apply. Field SUPERPAVE test results shall be plotted and displayed in control chart form in the plant immediately following the completion of each individual test. The tests shall determine asphalt content in percentages to the nearest 0.01. The tests shall determine VTM, VMA, VFA, and F/A in percentages to the nearest 0.1 percent. The Department will conduct on-site inspections so the Contractor's Asphalt Mix Design Technician can demonstrate knowledge of the SUPERPAVE mix design and production requirements on Department-supplied mixtures.

Aggregate specific gravity and aggregate property tests shall be conducted by a Department-certified Aggregate Properties Technician or Asphalt Mix Design Technician on each aggregate component (including RAP) or total aggregate mixture once at mix design stage and once prior to beginning production in each calendar year. Sand equivalent shall not be determined on RAP. In addition, for each 50,000 tons of each aggregate size used at each plant, aggregate specific gravity and the results of aggregate property tests shall be reported for each aggregate component or the total aggregate mixture.

Otherwise, if the total blend (cold feed) is used to determine aggregate specific gravity and aggregate properties, these tests shall be run for each 50,000 tons of the total blend.

Field SUPERPAVE tests shall be performed to N_{design} gyrations as specified in Table II-14.

For surface mixes, permeability test data shall be submitted in accordance with VTM 120 using either single point verification or the regression method for each surface mix having a different gradation.

A minimum of one permeability samples will be taken and test run in the first lot, and every other lot thereafter, and results submitted to the District Materials Engineer.

211.06—Tests

The Department may sample materials entering into the composition of the asphalt concrete, the mixture, or the completed pavement. The Contractor shall cooperate with the Engineer in obtaining these samples. When samples are obtained from the pavement by coring, the resulting voids shall be filled and refinished by the Contractor without additional compensation.

Abson recovery samples shall be PG graded according to the requirements of AASHTO M 322-14. Samples meeting the required grades specified in Section 211.01 of the Specifications shall be acceptable.

When the Department performs PG grading on the asphalt in a Contractor's liquid asphalt storage tank, the Engineer will notify the asphalt concrete producer and binder supplier if tests indicate that the binder properties of the asphalt material differ from those of the approved job-mix. The asphalt concrete producer and binder supplier shall determine what corrective action must be taken with the approval of the Engineer.

211.07—Plant Inspection

The Department will accept the preparation of asphalt concrete mixtures under a quality assurance plan. The Contractor shall provide a laboratory as specified in Section 106.07 of the Specifications.

In addition, the Contractor shall have all laboratory scales and gyratory compactors calibrated once a year by an independent source. The Contractor shall maintain the calibration records for 3 years from the date of the last calibration.

211.08—Acceptance

Acceptance will be made under the Department's quality assurance program, which includes the testing of production samples by the Contractor and of monitor samples by the Department. Sampling and testing for the determination of grading, asphalt cement content, and temperature shall be performed by the Contractor, and the Department will perform independent monitor checks at a laboratory of its choosing. The Contractor shall input such test results within 24 hours of sampling to the Department through the "Producer Lab Analysis and Information Details" (PLAID) website <https://plaid.vdot.virginia.gov>, unless otherwise approved by the appropriate District Materials Engineer.

Where the Contractor's test results indicate that the mixture conforms to the gradation, asphalt cement content, and mix temperature requirements of the Specifications, the mixture will be acceptable for these properties; however, nothing herein shall be construed as waiving the requirements of Section 106.06, Section 200.02, Section 200.03, and Section 315 of the Specifications or relieving the Contractor of the contractual obligation to furnish and install a finished functional product that conforms to the requirements of the Contract.

If a statistical comparative analysis of the Contractor's test results and the Department's monitor tests indicate a statistically significant difference in the results and either of the results indicates that the material does not conform to the grading and asphalt cement content requirements of the Specifications, the Department and the Contractor will make an investigation to determine the reason for the difference. If it is determined from the investigation that the material does not conform to the requirements of the Contract, price adjustments will be made in accordance with the requirements of Section 211.09 of the Specifications.

Acceptance for gradation and asphalt cement content will be based on the mean of results of eight tests performed on samples taken in a stratified random manner from each 4,000-ton lot (8,000-ton lots may be used when the normal daily production of the source from which the material is being obtained is in excess of 4,000 tons). The Contractor shall take samples from the approximate center of the truckload of material unless otherwise approved by the Engineer. Any statistically acceptable method of randomization may be used to determine when to take the stratified random sample; however, the Department shall be advised of the method to be used prior to the beginning of production.

A lot will be considered to be acceptable for gradation and asphalt content if the mean of the test results obtained is within the tolerance allowed for the job-mix formula as specified in Table II-15.

The temperature of the mixture at the plant shall be controlled to provide load-to-load uniformity during changing weather conditions and surface temperatures. The maximum temperature of mix designations A and D and base mixes shall not exceed 350 degrees F unless otherwise directed by the Engineer. The maximum temperature as recommended by the supplier shall not be exceeded for a mix designated E or (S).

If the job-mix formula is modified within a lot, the mean test results of the samples taken will be compared to the applicable process tolerance shown in Table II-15.

Asphalt content will be measured as extractable asphalt or weight after ignition.

Field SUPERPAVE tests will be performed by the Department in accordance with the requirements of AASHTO R35 during the production of the approved job mixes designed by the SUPERPAVE method. Aging, as described in AASHTO R30, will not be performed. Should any field SUPERPAVE test fail with regard to the limits specified in Table II-14, the Department may require that production be stopped until necessary corrective action is taken by the Contractor. The Engineer will investigate and determine the acceptability of material placed and represented by failing field SUPERPAVE test results.

Should visual examination by the Engineer reveal that the material in any load or portion of the paved roadway is obviously contaminated or segregated, that load or portion of the paved roadway will be rejected without additional sampling or testing of the lot. If it is necessary to determine the gradation or asphalt content of the material in any load or portion of the paved roadway, samples will be taken and tested and the results will be compared to the requirements of the approved job-mix formula. The results obtained in the testing will apply only to the material in question.

**TABLE II-15
Process Tolerance**

Tolerance on Each Laboratory Sieve and Asphalt Content: Percent Plus and Minus												
No. Tests	Top Size ¹	1 1/2"	1"	3/4"	1/2"	3/8"	No. 4	No. 8	No. 30	No. 50	No. 200	A.C.
1	0.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	6.0	5.0	2.0	.60
2	0.0	5.7	5.7	5.7	5.7	5.7	5.7	5.7	4.3	3.6	1.4	0.43
3	0.0	4.4	4.4	4.4	4.4	4.4	4.4	4.4	3.3	2.8	1.1	0.33
4	0.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	2.5	1.0	0.30
5	0.0	3.6	3.6	3.6	3.6	3.6	3.6	3.6	2.7	2.2	0.9	0.27
6	0.0	3.3	3.3	3.3	3.3	3.3	3.3	3.3	2.4	2.0	0.8	0.24
7	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.3	1.9	0.8	0.23
8	0.0	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.1	1.8	0.7	0.21
12	0.0	2.3	2.3	2.3	2.3	2.3	2.3	2.3	1.7	1.4	0.6	0.17

¹Defined as the sieve that has 100% passing as defined in Table II-13.

211.09—Adjustment System

If a lot of material does not conform to the acceptance requirements of Section 211.08 of the Specifications, the Department will determine adjustment points as follows:

**Adjustment Points for Each 1% the Gradation Is Outside the Process Tolerance Permitted In
Table II-15**

Sieve Size	(Applied in 0.1% increments)
1 1/2 in	1
1 in	1
3/4 in	1
1/2 in	1
3/8 in	1
No. 4	1
No. 8	1
No. 30	2
No. 50	2
No. 200	3

One adjustment point will be applied for each 0.1 percent that the material is out of the process tolerance for asphalt content.

If the total adjustment for a lot is greater than 25 points, the Contractor shall remove the failing material from the road. If the total adjustment is 25 points or less and the Contractor does not elect to remove and replace the material, the unit price for the material will be reduced 1 percent of the unit price bid for each adjustment point the material is outside of the process tolerance. The Engineer will apply this adjustment to the tonnage represented by the sample(s). If the Engineer applies adjustment points against two successive lots, the Contractor shall ensure plant adjustment is made prior to continuing production.

The Contractor shall control the variability of the Contractor's product in order to furnish a consistently uniform mix. When the quantity of any one type of material furnished to a project (i.e., SMA, SM, IM, BM,

etc) exceeds 4,000 tons, the variability of the total quantity furnished will be determined on the basis of the standard deviation for each sieve size and the asphalt content. If the standard deviation is within the ranges specified in Table II-16, the Engineer will adjust the unit bid price for the material as indicated herein. The Engineer will not make adjustments for standard deviation computations on more than two job mixes for the same type of material.

**TABLE II-16
Standard Deviation**

Sieve Size and A.C.	Standard Deviation 1 Adjustment Point for Each Sieve Size and A.C.	2 Adjustment Points for Each Sieve Size and A. C.	3 Adjustment Points for Each Sieve Size and A.C.
1/2 in.	3.8-4.7	4.8-5.7	5.8-6.7
3/8 in	3.8-4.7	4.8-5.7	5.8-6.7
No. 4	3.8-4.7	4.8-5.7	5.8-6.7
No. 8	3.0-3.9	4.0-4.9	5.0-5.9
No. 30	2.2-3.1	3.2-4.1	4.2-5.1
No. 50	1.5-2.4	2.5-3.4	3.5-4.4
No. 200	1.1-2.0	2.1-3.0	3.1-4.0
A.C.	0.27-0.36	0.37-0.46	0.47-0.56

The Engineer will reduce the unit bid price by 0.5 percent for each adjustment point applied for standard deviation.

211.10—Referee System

- (a) If the test results obtained from one of the eight samples taken to evaluate a particular lot appear to be questionable, the Contractor may request in writing that the results of the questionable sample be disregarded, whereupon the Contractor shall have either an AASHTO-accredited lab or a Department lab perform tests on five additional samples taken from randomly selected locations in the roadway where the lot was placed.

If the Engineer determines that one of the 8 test results appears to be questionable, the Department will perform tests on five additional samples taken from the randomly selected locations in the roadway where the lot was placed. The test results of the seven original, i.e. unquestioned, samples will be averaged with the test results of the five road samples, and the mean of the test values obtained for the twelve samples will be compared to the requirements for the mean of twelve tests as specified in Table II-15.

- (b) If the Contractor questions the mean of the eight original test results obtained for a particular lot, the Contractor may request in writing approval to have either an AASHTO-accredited lab or a Department lab perform additional testing of that lot.

If the Engineer determines that the mean of the eight original test results are questionable, the Department will perform additional testing of that lot. The test results of the eight samples will be averaged with the test results of four additional samples taken from randomly selected locations in the roadway where the lot was placed, and the mean of the test values obtained from the twelve samples will be compare to the requirements for the mean of twelve tests as specified in Table II-15.

If the Contractor requests additional tests, as described in (a) or (b) herein, the Contractor shall sample the material and have either an AASHTO-accredited lab or Department lab test the

material in accordance with Department-approved procedures. The Engineer may observe the sampling and testing.

If the mean of the test values obtained for the twelve samples conforms to the requirements for the mean of twelve tests, the material will be considered acceptable. If the mean of the test values obtained for the twelve samples does not conform to the requirements for the mean result of twelve tests, the lot will be adjusted in accordance with the adjustment rate specified in Section 211.09 of the Specifications.

Samples of the size shown herein shall be saw cut by the Contractor for testing without the use of liquids:

Application Rate	Minimum Sample Size
125 lb/yd ²	8 by 8 in
150 lb/yd ²	7 by 7 in
200 lb/yd ²	6 by 6 in
300 lb/yd ²	5 by 5 in

211.11—Handling and Storing Aggregates

Aggregates shall be handled, hauled, and stored in a manner that will minimize segregation and avoid contamination. Aggregates shall be stockpiled in the vicinity of the plant and on ground that is denuded of vegetation, hard, well drained, or otherwise prepared to protect the aggregate from contamination. Placing aggregate directly from the crusher bins into the cold feed may be permitted provided the material is consistent in gradation. When different size aggregates are stockpiled, the stockpiles shall be separated to prevent commingling of the aggregates.

211.12—Asphalt Concrete Mixing Plant

Plants used for the preparation of asphalt concrete mixtures shall conform to the following requirements:

- (a) **Certification for Plant Operation and Sampling:** A Certified Asphalt Plant Level I Technician or a Certified Asphalt Plant Level II Technician shall sample material at the plant.
- (b) **Plant Scales:** Scales shall be approved in accordance with the requirements of Section 109.01 of the Specifications.
- (c) **Drier:** The plant shall include a drier(s) that continuously agitates the aggregate during the heating and drying process. The aggregate shall be dried to a point at which the moisture content of the completed mixture does not exceed 1 percent as determined from samples taken at the point of discharge from the mixing operation.
- (d) **Feeder for Drier:** The plant shall be equipped with accurate mechanical means for uniformly feeding the aggregate into the drier so that a consistent production and temperature are reached and maintained. Where different size aggregates are required to comply with grading specifications, they shall be proportioned by feeding into the cold elevator through a multiple compartment feeder bin, one bin for each size used, equipped with positive action gates that can be securely locked to maintain desired proportioning.
- (e) **Bins:** When bins are used, adequate and convenient facilities shall be provided to make possible the sampling of representative aggregate material from each bin. Each compartment shall be provided with an overflow pipe of such size and location to prevent contamination of the

aggregate in adjacent compartments. Bins shall be provided with individual outlet gates that, when closed, will allow no leakage.

- (f) **Thermometric Equipment:** The plant shall be equipped with a thermometric instrument so placed at the discharge chute of the drier as to register automatically or indicate the temperature of the heated aggregate or the completed mix if a drier drum mixing plant is used.

A thermometric device shall be fixed in the asphalt feed line at a suitable location near the charging valve at the mixer unit.

Thermometric devices shall be maintained in good working condition and shall be subject to checking against the laboratory thermometer. Any thermometric devices that do not operate or accurately register temperatures shall be removed and repaired or replaced.

- (g) **Pollution Control:** Pollution control shall conform to the requirements of Section 107.16 of the Specifications.

- (h) **Equipment for Preparation of Asphalt Material:** Tanks for the storage of asphalt material shall be equipped with a heating system capable of heating and holding the material at the required temperatures. A separate storage tank or a storage tank having separate compartments shall be available for each grade of asphalt cement being used on the project. The heating system shall be designed to heat the contents of the tank by means of steam, electricity, or other approved means so that no flame is in direct contact with the heating surface of the tank. The circulating system for the asphalt material shall be designed to assure proper and continuous circulation during the operating period and to minimize oxidation. Pipelines shall be steam jacketed or insulated to prevent undue loss of heat. Storage facilities for asphalt material shall be sufficient capacity for at least one day's operation or an equivalent means of supply shall be provided that will ensure continuous operation. Provisions shall be made for measuring and sampling asphalt within storage tanks. When asphalt material is proportioned by volume, the temperature of the asphalt material in storage shall be uniformly maintained at ± 20 degrees F during operation of the plant by means of an automatic temperature control device. A sampling valve shall be provided for sampling of each asphalt storage tank used in production of the mix. If there are multiple storage tanks, a dedicated valve for each tank shall be provided.

- (i) **Asphalt Control:** Asphalt material shall be accurately proportioned by volume or weight. When volumetric methods are used, measurements shall be made by means of meters or pumps, calibrated for accuracy. The section of the asphalt line between the charging valve and the spray bar shall be provided with an outlet valve for checking the meter.

When proportioned by weight, the asphalt material shall be weighed on approved scales. Dial scales shall have a capacity of not more than 15 percent of the capacity of the mixer. The value of the minimum graduation shall not be greater than 2 pounds.

Except when a drier-drum mixing plant is used, the asphalt material bucket and its valves and spray bar shall be steam jacketed or heated by other Department approved means. The bucket shall have a capacity of at least 115 percent of the weight of the asphalt material required in any mixture and shall be supported by fulcrums.

The asphalt shall be delivered to the mixer in multiple uniform streams for the full width of the mixer.

- (j) **Proportioning Aggregates:** Mineral filler and any bag house fines the Contractor uses shall be metered or introduced by means of an approved device for uniform proportioning by weight or by volume.

The weigh hopper shall be of sufficient size to hold the maximum required weight of aggregate for one batch without hand raking or running over. Sufficient clearance between the weigh hopper and supporting devices shall be provided to prevent accumulation of foreign materials.

The discharge gate of the weigh hopper shall be situated in such a manner that the aggregates will not segregate when dumped into the mixer. Gates on the bins and weigh hopper shall be constructed to prevent leakage when closed.

- (k) **Drum Mixer:** The aggregate shall be proportioned by a positive weight control at the cold aggregate feed by use of a belt scale that will automatically regulate the supply of material being fed and permit instant correction of variations in load. The cold feed flow shall be automatically coupled with the asphalt flow to maintain the required proportions.
- (l) **Batch Mixer:** The batch mixer shall be of a twin pugmill or other approved type, steam jacketed or heated by other approved means, and capable of producing uniform mixtures within the specified tolerances. It shall be equipped with a sufficient number of paddles or blades operating at such speeds as to produce a properly and uniformly mixed batch. The number and arrangement of the mixer paddles shall be subject to the Engineer's approval. Worn or defective blades shall not be used in mixing operations.

The mixer shall be provided with an approved time lock that will lock the discharge gate after the aggregates and asphalt have been placed in the mixer and will not release the gate until the specified time for mixing has elapsed.

Batch-type mixing plants used to produce asphalt concrete shall be equipped with approved automatic proportioning devices. Such devices shall include equipment for accurately proportioning batches of the various components of the mixture by weight or volume in the proper sequence and for controlling the sequence and timing of mixing operations. The automated system shall be designed to interrupt and stop the batching operation at any time batch quantities are not satisfied for each of the materials going into the mix. A means shall be provided for observing the weight of each material during the batching operation.

The aggregate may be proportioned by cold feed controls in lieu of plant screens provided the cold aggregate feed conforms to the requirements specified in (j) herein.

Should the automatic proportioning devices become inoperative, the plant may be allowed to batch and mix asphalt materials for a period of not more than 48 hours from the time the breakdown occurs provided alternate proportioning facilities are verbally approved by the Engineer. Written permission of the Engineer will be required for operation without automatic proportioning facilities for periods longer than 48 hours.

- (m) **Continuous Mixing Plant:** A continuous mixing plant shall include a means for accurately proportioning each size of aggregate either by weighing or volumetric measurement. When gradation control is by volume, the unit shall include a feeder mounted under the compartment bins. Each bin shall have an accurately controlled individual gate to form an orifice for volumetrically measuring the material drawn from each respective bin compartment. The orifice shall be rectangular, with one dimension adjustable by positive mechanical means, and shall be provided with a lock. Indicators shall be provided to show the individual gate opening in inches. The plant shall be equipped with a satisfactory revolution counter.

The plant shall include a means for calibrating gate openings by weight. The materials fed out of the bins through individual orifices shall be bypassed to a suitable test box, with each component material confined in a separate section. The plant shall be equipped to conveniently handle test samples weighing up to 200 pounds per bin with accurate platform scales provided for this purpose.

Positive interlocking control shall be provided between the flow of aggregate from the bins and the flow of asphalt material from the meter or other proportioning device. This shall be accomplished by approved interlocking devices or other approved positive means.

Accurate control of the asphalt material shall be obtained by weighing, metering, or volumetric measurement.

The aggregate may be proportioned by cold feed controls in lieu of plant screens provided the cold aggregate feed conforms to the requirements specified in (j) herein.

The plant shall include a continuous mixer of an approved type that is steam jacketed or heated by other approved means. The paddles shall be of any adjustable type for angular position on the shafts and reversible to retard the flow of the mixture.

Interlock cutoff circuits shall be included to interrupt and to stop the proportioning and mixing operations when the aggregate level in the plant or the asphalt material in storage falls below that necessary to produce the specified mixture.

- (n) **Trucks, Truck Scales, and Automatic Printer System:** These shall conform to the requirements of Section 109.01 of the Specifications.

211.13—Preparation of Mixture

The asphalt and aggregate shall be introduced into the mixer at a temperature that will produce a mixture that conforms to the requirements of the job-mix formula.

After the required amounts of aggregate and asphalt material have been introduced into the mixer, the materials shall be mixed until a uniform coating of asphalt and a thorough distribution of the aggregate throughout the mixture are secured that comply with the requirements of the Ross count procedure in AASHTO T195.

The wet mixing time, based on the procedures in AASHTO T195, shall be determined by the Contractor at the beginning of production and will be approved by the Engineer for each individual plant or mixer and for each type of aggregate used; however, in no case shall the wet mixing time be less than 20 seconds. The *wet mixing time* is the interval of time between the start of introduction of the asphalt material into the mixer and the opening of the discharge gate. A wet mixing time that results in fully coating a minimum of 95 percent of the coarse particles, based on the average of the three samples is acceptable, provided that none of the three sample results has a coating less than 92 percent of the coarse particles shall be the minimum wet mixing time requirement.

A dry mixing time of up to 15 seconds may be required by the Engineer to accomplish the degree of aggregate distribution necessary to obtain complete and uniform coating of the aggregate with asphalt.

211.14—Storage System

If the Contractor elects to use a storage system, the system shall be capable of conveying the mix from the plant to the storage bins and storing the mix without a loss in temperature or segregation or oxidation of the mix. Storage time shall be limited by the ability of the bins to maintain the mix within the quality requirements specified herein with a maximum time limit not to exceed 10 days. Material may be stored in bins for no more than 24 hours without a Department approved heating system.

The conveyor system may be a continuous or skip bucket type. Continuous type conveyors shall be enclosed so that the mix temperature is maintained.

The storage bins shall be designed in a manner to prevent segregation of the mix during discharge from the conveyor into the bins and shall be equipped with discharge gates that will not cause segregation of the mix while the mix is being loaded into the trucks.

Approval for the use of storage bins may be withdrawn by the Engineer if the amount of heat loss, segregation, or oxidation of the mix is excessive.

211.15—Initial Production

- (a) **Warm Mix Asphalt (WMA):** At the start of production, the Contractor shall place no more than 500 tons or up to one day's production as directed by the Engineer at an approved site, which may be the project site, so the Engineer can examine the process control of the mixing plant, the Contractor's placement procedures, surface appearance of the mix, compaction patterns of the Contractor's roller(s), and correlation of the nuclear density device.
- (b) **Hot Mix Asphalt (HMA):** At the start of production of a mix not previously used on a state roadway, the Contractor shall place 100 to 300 tons or up to one day's production as directed by the Engineer at an approved site, which may be the project site, so the Engineer can examine the process control of the mixing plant, the Contractor's placement procedures, surface appearance of the mix, compaction patterns of the Contractor's roller(s), and correlation of the nuclear density device.

The material shall be placed at the specified application rate. The Engineer will determine the disposition of material that was not successfully produced and/or placed due to negligence in planning, production, or placement by the Contractor.

VIRGINIA DEPARTMENT OF TRANSPORTATION
2007 ROAD AND BRIDGE SUPPLEMENTAL SPECIFICATIONS**SUPPLEMENTAL SECTION 315—ASPHALT CONCRETE PLACEMENT**

SECTION 315—ASPHALT CONCRETE PAVEMENT of the Specifications is replaced with the following:

315.01—Description

This work shall consist of constructing one or more courses of asphalt concrete on a prepared foundation in accordance with the requirements of these specifications and within the specified tolerances for the lines, grades, thicknesses, and cross sections shown on the plans or established by the Engineer. At the Contractor's option, the asphalt concrete mix may be produced using a warm-mix additive or warm-mix process approved by the Department. When used, the temperature placement limitations for Warm Mix Asphalt (WMA) shall apply.

This work shall also consist of constructing asphalt concrete curb and rumble strips in accordance with the requirements of these specifications, plan details, and the Standard Drawings.

315.02—Materials

- (a) **Asphalt concrete** shall conform to the requirements of Section 211. The Contractor shall alter the design if SUPERPAVE design densities begin to exceed 98 percent of the theoretical maximum density during construction.
- (b) **Asphalt for Tack Coat** Nontracking Tack will be required only between May 1 and October 1. Tack coat, in accordance with Section 310 of the Specifications, may be used at other times. Asphalt for prime coat shall conform to the requirements in Section 311. Asphalt for Prime Coat may be changed one viscosity grade by the Engineer at no change in the contract unit price.
- (c) **Curb backup material** shall be asphalt concrete conforming to any surface or intermediate mixture listed in Table II-13 and Table II-14 of Section 211.
- (d) **Liquid asphalt coating (emulsion) for rumble strips** shall conform to the requirements of Section 210. The Contractor shall use CSS-1h or CQS-1h asphalt emulsions conforming to Section 210 for centerline rumble strips. The CSS-1h or CQS-1h liquid asphalt may be diluted by up to 30 percent at the emulsion manufacturer's facility.

315.03—Equipment

- (a) **Hauling Equipment:** Trucks used for hauling asphalt mixtures shall have tight, clean, smooth metal or other non-absorptive, inert material bodies equipped with a positive locking metal tailgate. Surfaces in contact with asphalt mixtures shall be given a thin coat of aliphatic hydrocarbon invert emulsion release agent (nonpuddling), a lime solution, or other release agent materials on the VDOT Materials Division Approved Products Listing (List No. 8). The beds of dump trucks shall be raised to remove excess release agent prior to loading except when a nonpuddling release agent is used. Only a nonpuddling agent shall be used in truck beds that do not dump. Each Contractor truck used for hauling

asphalt shall be equipped with a tarpaulin or other cover acceptable to the Engineer that shall protect the mixture from moisture and foreign matter and prevent the rapid loss of heat during transportation.

- (b) **Asphalt Pavers:** The asphalt paver shall be designed and recommended by the manufacturer for the type of asphalt to be placed and shall be operated in accordance with the manufacturer's recommendations. The Contractor shall readily have and maintain on the project site any written recommendations from the manufacturer of the mix relative to handling and placing of the mixture. In the absence of the manufacturer's recommendations, the recommendations of the National Asphalt Pavement Association shall be followed. The paver shall be capable of producing a smooth uniform texture, dense joints, and a smooth riding surface even when screed extensions are used.
- (c) **Rollers:** Rollers shall be steel wheel, static or vibratory, or pneumatic tire rollers and shall be capable of reversing without backlash. The Contractor shall operate rollers at speeds slow enough to avoid displacement of the mixture. The number and weight of rollers shall be sufficient to compact the mixture to the required density while it is still in a workable condition. The Engineer will not allow the use of equipment that results in excessive crushing of aggregate or marring of the pavement surface. If during construction the Contractor's equipment mars the surface of the pavement to the extent that imperfections cannot satisfactorily be corrected or produces permanent blemishes, the Engineer will require the Contractor to discontinue the use of that particular equipment and replace that equipment with satisfactory units.
- (d) **Rotary Saw:** The Contractor shall supply a gasoline-powered rotary saw with a carbide blade for cutting test samples from the pavement. The Contractor shall provide gasoline, oil, additional carbide blades, and maintenance for the rotary saw. The Contractor shall cool the pavement prior to sawing the sample. As an alternative, the Contractor may furnish the necessary equipment for coring and testing 4-inch core samples in accordance with the requirements of VTM-22.
- (e) **Material Transfer Vehicle (MTV):** When required in the Contract, the Contractor shall furnish a self-propelled MTV storage unit capable of receiving material from trucks, storing the material and transferring the material from the unit to the paver hopper or hopper insert via a conveyor system. The paver hopper insert and unit shall have a combined minimum storage capacity of 15 tons. The storage unit or paver hopper insert must be able to remix the material in order to produce a uniform, non-segregated mix having a uniform temperature prior to placing the asphalt material on the roadway surface.

315.04—Placement Limitations

The Contractor shall not place asphalt concrete mixtures when weather or surface conditions are such that the material cannot be properly handled, finished, or compacted. The surface upon which asphalt mixtures is to be placed shall be free of standing water, dirt, and mud and the base temperature shall conform to the following:

- (a) **Asphalt Concrete Produced with Warm Mix Asphalt Additives or Processes:**
 - 1. **When the base temperature is 40 degrees F and above:** The Engineer will permit laydown at any temperature below the maximum limits given in Section 211.08 of the Specifications. The minimum base temperature for laydown shall be 40 degrees F, unless approved by the Engineer.

2. **When the mixture temperature is below 200 degrees F**, material shall not be permitted to be placed.

(b) **Asphalt Concrete Produced without Warm Mix Asphalt Additives or Processes:**

1. **When the base temperature is above 80 degrees F:** The Engineer will allow laydown of the mixture at any temperature conforming to the limits specified in Section 211 of the Specifications.
2. **When the base temperature is between 40 degrees F and 80 degrees F:** The Contractor shall use the Nomograph, Table III-2, to determine the minimum laydown temperature of the asphalt concrete mixes. At no time shall the minimum base temperature for base (BM) and intermediate (IM) mixes be less than 40 degrees F. At no time shall the minimum laydown temperature for base (BM) and intermediate (IM) mixes be less than 250 degrees F.

The minimum base and laydown temperatures for surface mixes (SM) shall never be less than the following:

PG Binder/Mix Designation	Percentage of Reclaimed Asphalt Pavement (RAP) Added to Mix	Minimum Base Temperature	Minimum Placement Temperature
PG 64S-22 (A)	<=25%	40 °F	250 °F
PG 64S-22 (A)	>25%	50 °F	270 °F
PG 64H-22 (D)	<=30%	50 °F	270 °F
PG 64E-22 (E)	<=15%	50 °F	290 °F
PG 64S-22 (S)	<=30%	50 °F	290 °F

Intermediate and base courses that are placed at rates of application that exceed the application rates shown in Table III-2 shall conform to the requirements for the maximum application rate shown for 8-minute and 15-minute compaction rolling as per number of rollers used.

If the Contractor is unable to complete the compaction rolling within the applicable 8-minute or 15-minute period, the Engineer will either require the placing of the asphalt mixture to cease until sufficient rollers are used or other corrective action be taken to complete the compaction rolling within the specified time period.

The Contractor shall complete compaction rolling prior to the mat cooling down to 175 degrees F. Finish rolling may be performed at a lower mat temperature.

The Contractor shall not place the final asphalt pavement finish course until construction (temporary) pavement markings will no longer be required.

315.05—Procedures

- (a) **Base Course:** The Contractor shall prepare the subgrade or subbase as specified in Section 305. The Contractor shall grade and compact the course to the required profile upon which the pavement is to be placed, including the area that will support the paving equipment.

- (b) **Conditioning Existing Surface:** The Engineer will direct the Contractor to bring the surface of the existing pavement or base to a uniform grade and cross section if they are irregular. Unless approved by the engineer, the uniform grade and cross section achieved shall be consistent with VDOT design standards for the roadway being paved. The surface on which the asphalt concrete is to be placed shall be prepared in accordance with the requirements of the applicable specifications and shall be graded and compacted to the required profile and cross section as established by VDOT design standards for the roadway being paved.

When specified in the Contract, prior to placement of asphalt concrete the Contractor shall seal longitudinal and transverse joints and cracks by the application of an approved crack sealing material.

Crack sealant for asphalt concrete pavement shall meet all the requirements of ASTM D-3405 and exceed all requirements of ASTM D-1190, AASHTO M-173 and Federal Specification SS-S-164:

A hot-poured modified asphalt rubber with granulated crumb rubber and latex plasticizers. The proportions of the materials, by weight, shall be up to 80 percent maximum asphalt and up to 25 percent maximum crumb rubber.

The crumb rubber shall be 100 percent vulcanized rubber and meet the following gradation requirement:

Sieve	Percent Passing
No. 10	100%
No. 40	0-40%

The Contractor shall paint contact surfaces of curbing, gutters, manholes, and other structures projecting into or abutting the pavement and cold joints of asphalt with a thick, uniform coating of asphalt prior to the placement of the asphalt mixture.

The Engineer will require the Contractor to place a tack or prime coat of asphalt conforming to the applicable requirements of Section 310 or 311 of the Specifications as specified below. Liquid asphalt classified as cutbacks or emulsions shall be applied ahead of the paving operations, and the time interval between applying and placing the paving mixture shall be sufficient to ensure a tacky residue has formed to provide maximum adhesion of the paving mixture to the base. The Contractor shall not place the mixture on tack or prime coats that have been damaged by traffic or contaminated by foreign material. Traffic shall be excluded from such sections.

1. Priming and Tacking:

- a. **Priming aggregate base or subbase:** The Engineer will not require priming with asphalt material on aggregate subbase or base material prior to the placement of asphalt base, intermediate or surface layers unless otherwise specified in the contract documents.
- b. **Tacking:** Application of tack at joints, adjacent to curbs, gutters, or other appurtenances shall be applied with a hand wand or with spray bar at the rate of 0.2 gallon per square yard. At joints, the tack applied by the hand wand or a spray bar shall be 2 feet in width with 4 to 6 inches protruding beyond the joint for the first pass. Tack for the adjacent pass shall

completely cover the vertical face of the pavement mat edge so that slight puddling of asphalt occurs at the joint, and extend a minimum of 1 foot into the lane to be paved.

Milled faces that are to remain in place shall be tacked in the same way for the adjacent pass. Use of tack at the vertical faces of longitudinal joints will not be required when paving is performed in echelon.

On rich sections or those that have been repaired by the extensive use of asphalt patching mixtures, the tack coat shall be eliminated when directed by the Engineer.

Tack shall not be required atop asphalt stabilized open-graded material drainage layers.

Tack shall be applied between the existing asphalt surface and each asphalt course placed thereafter.

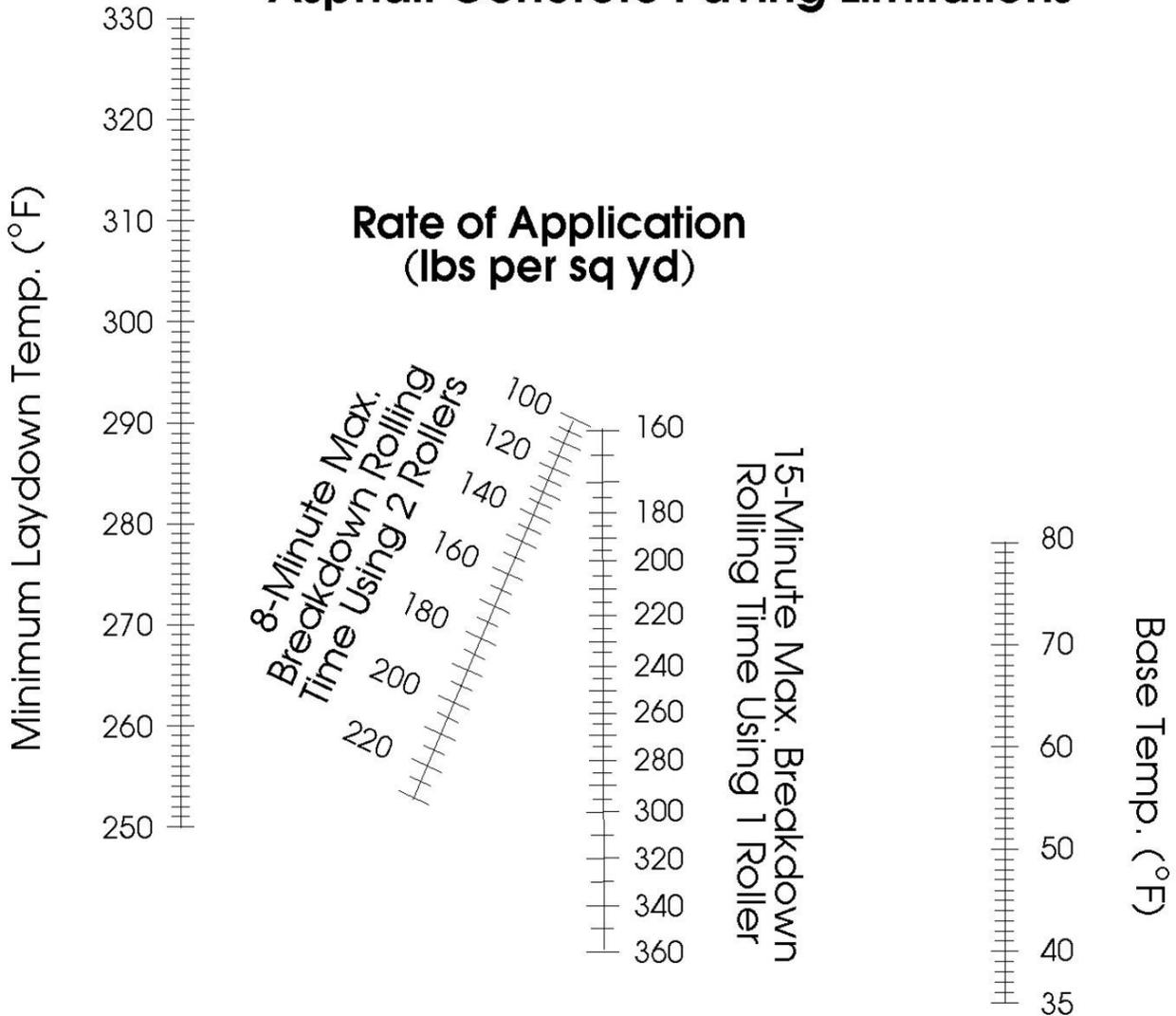
2. **Removing depressions and elevating curves:** Where irregularities in the existing surface will result in a course more than 3 inches in thickness after compaction, the Contractor shall bring the surface to a uniform profile by patching with asphalt concrete and thoroughly tamping or rolling the patched area until it conforms with the surrounding surface. The mixture used shall be the same as that specified for the course to be placed.

When the Contractor elects to conduct operations to eliminate depressions, elevate curves, and place the surface course simultaneously, he shall furnish such additional spreading and compacting equipment as required to maintain the proper interval between the operations.

TABLE III-2

Cold Weather Paving Limitations

Asphalt Concrete Paving Limitations



- (c) **Placing and Finishing:** The Contractor shall not place asphalt concrete until the Engineer approves the surface upon which it is to be placed.

The Contractor's equipment and placement operations shall properly control the pavement width and horizontal alignment. The Contractor shall use an asphalt paver to distribute asphalt concrete over the widest pavement width practicable. Wherever practicable and when the capacity of sustained production and delivery is such that more than one paver can be successfully and continuously operated, pavers shall be used in echelon to place the wearing course in adjacent lanes. Crossovers, as well as areas containing manholes or other obstacles that prohibit the practical use of mechanical spreading and finishing equipment may be constructed using hand tools. However, the Contractor shall exercise

care to obtain the required thickness, jointing, compaction, and surface smoothness in such areas.

The longitudinal joint in one layer shall offset that in the layer immediately below by approximately 6 inches or more. The joint in the wearing surface shall be offset 6 inches to 12 inches from the centerline of the pavement if the roadway comprises two traffic lanes. The joint should be offset approximately 6 inches from the lane lines if the roadway is more than two lanes in width. The Engineer will not require offsetting layers when adjoining lanes are paved in echelon and the rolling of both lanes occurs within 15 minutes after laydown.

The Contractor shall have a certified Asphalt Field Level II Technician present during all paving operations. Immediately after placement and screeding, the surface and edges of each layer shall be inspected by the Asphalt Field Level II Technician to ensure compliance with the asphalt placement requirements and be straightedge to verify uniformity and smoothness. The Asphalt Field Level II Technician shall make any corrections to the placement operations, if necessary, prior to compaction. The finished pavement shall be uniform and smooth.

The Contractor's Asphalt Field Level II Technician shall be present during all density testing.

The placement of asphalt concrete shall be as continuous as possible and shall be scheduled such that the interruption occurring at the completion of each day's work will not detrimentally affect the partially completed work. Material that cannot be spread and finished in daylight shall not be dispatched from the plant unless the Engineer approves the use of artificial lighting. When paving is performed at night, the Contractor shall provide sufficient light to properly perform and thoroughly inspect every phase of the operation. Such phases include cleaning planed surfaces, applying tack, paving, compacting, and testing. Lighting shall be provided and positioned so as to not create a blinding hazard to the traveling public.

During compaction of asphalt concrete, the Contractor shall ensure the roller shall not pass over the end of freshly placed material except when a transverse construction joint is to be formed. Edges of pavement shall be finished true and uniform.

Asphalt concrete SUPERPAVE pavement courses shall be placed in layers not exceeding four times the nominal maximum size aggregate in the asphalt mixture. The maximum thickness may be reduced if the mixture cannot be adequately placed in a single lift and compacted to the required uniform density and smoothness. The minimum thickness for a pavement course shall be no less than 2.5 times the nominal maximum size aggregate in the asphalt mixture. Nominal maximum size aggregate for each mix shall be defined as one sieve size larger than the first sieve to retain more than 10 percent aggregate as shown in the design range specified in Section 211.03, Table II-13. The Contractor may place base courses in irregularly shaped areas of pavement such as transitions, turn lanes, crossovers, and entrances in a single lift.

The Contractor shall square up overlays in excess of 220 pounds per square yard or lanes with a milled depth greater than 2 inches prior to opening to traffic.

The Contractor shall cut drainage outlets through the shoulder at locations the Engineer designates, excluding curb and gutter sections, on the milled roadway areas that are to be opened to traffic. Plan and prosecute the milling operation to avoid the trapping of water on the roadway and restore drainage outlets to original grade once paving operations are completed, unless otherwise directed by the Engineer. The cost for cutting and restoring the drainage slots in the roadway shoulder shall be included in the price bid for other items of work.

The Contractor shall plan and prosecute a schedule of operations so that milled roadways shall be overlaid with asphalt concrete as soon as possible. In no instance, shall the time lapse exceed 14 days after the milling operations, unless otherwise specified in Section 515 or other provisions in the contract. The Contractor shall keep milled areas of the roadway free of irregularities and obstructions that may create a hazard or annoyance to traffic in accordance with the requirements of Section 104.

The Contractor shall use a short ski or shoe to match the grade of the newly overlaid adjacent travel lane on primary, interstate, and designated secondary routes. Unless otherwise directed by the Engineer, a 24-foot minimum automatic grade control ski shall be used on asphalt mixtures on divided highways, with the exception of overlays that are less than full width and the first course of asphalt base mixtures over aggregate subbases. Care shall be exercised when working along curb and gutter sections to provide a uniform grade and joint.

The Contractor shall construct the final riding surface to tie into the existing surface by an approved method, which shall include the cutting of a notch into the pavement. In addition to notching, the Contractor may use an asphalt mix design containing a fine-graded mix to achieve a smooth transition from the new asphalt concrete overlay to the existing pavement, with the approval of the Engineer. The material shall be of a type to ensure that raveling will not occur. The cost for constructing tie-ins in the asphalt concrete overlay shall be included in the price bid for asphalt concrete.

The Contractor shall clean the existing pavement surface of all accumulated dust, mud, or other debris that may in the opinion of the Engineer detrimentally affect or prevent the bond of the new overlay prior to application of tack coat and commencement of paving operations. The Contractor shall ensure the surface remains clean until commencement of and during paving operations. The cost for cleaning and surface preparation shall be included in the bid price for asphalt concrete.

The Contractor shall employ a Material Transfer Vehicle (MTV) during the placement of surface mixes (SM) on all Interstate routes. The Contractor's paving operation shall have remixing capability in either the MTV or a paver-mounted hopper to produce a uniform, nonsegregated mix with uniform temperature. The MTV and paver combination shall have a minimum storage capacity of 15 tons. In the event of an equipment break down of the paving train, paving shall be discontinued once the material on-site has been placed and no more material shall be shipped from the asphalt plant.

When required in the Contract, a MTV shall be used during the placement of designated asphalt mixes on full lane width applications.

- (d) **Compacting:** Immediately after the asphalt mixture is placed and struck off and surface irregularities are corrected, the mixture shall be thoroughly and uniformly compacted by rolling. Rolling shall be a continuous process, insofar as practicable, and all parts of the pavement shall receive uniform compaction.

The asphalt surface shall be rolled when the mixture is in the proper condition. Rolling shall not cause undue displacement, cracking, or shoving of the placed mixture.

The Contractor shall use the number, weight, and type of rollers sufficient to obtain the required compaction while the mixture is in a workable condition. The sequence of rolling operations and the selection of roller types shall provide the specified pavement density.

Rolling shall begin at the sides and proceed longitudinally parallel with the center of the pavement, each trip overlapping at least 6 inches, gradually progressing to the crown of

the pavement. When abutting a previously placed lane, rolling shall begin at the outside unconfined side and proceed toward the previously placed lane. On superelevated curves, rolling shall begin at the low side and proceed to the high side by overlapping of longitudinal trips parallel with the centerline.

The Contractor shall correct displacements occurring as a result of reversing the direction of a roller or other causes at once by the use of rakes or lutes and the addition of fresh mixture when required. Care shall be taken in rolling not to displace or distort the line and grade of the edges of the asphalt mixture.

The Contractor shall keep the wheels/drums of the rollers properly moistened with water, water mixed with a very small quantity of detergent or other Engineer approved material to prevent adhesion of the mixture to the rollers. The Engineer will not allow the use or presence of excess liquid on the rollers.

The Contractor shall thoroughly compact the mixture by the use of hot hand tampers, smoothing irons, or mechanical tampers along forms, curbs, headers, walls, and other places not accessible to rollers. On depressed areas, a trench roller or cleated compression strips may be used under the roller to ensure proper compression.

Edges of finished asphalt pavement surfaces shall be true curves or tangents. The Contractor shall correct irregularities.

The Contractor shall protect the surface of the compacted course until the material has cooled sufficiently to support normal traffic without marring.

(e) **Density:** Density shall be determined in accordance with the following:

1. The Contractor shall perform roller pattern and control strip density testing on surface, intermediate, and base courses in accordance with the requirements of VTM-76. The Contractor shall have a certified Asphalt Field Technician II perform all density testing.

Density shall be determined with a thin-lift nuclear gauge conforming to the requirements of VTM-81 or from the testing of plugs/cores taken from the roadway where the mixture was placed. Density test locations shall be marked and labeled in accordance with the requirements of VTM-76. When acceptance testing is performed with a nuclear gauge, the Contractor shall have had the gauge calibrated within the previous 12 months by an approved calibration service. In addition, the Contractor shall maintain documentation of such calibration service for the 12-month period from the date of the calibration service. The required density of the compacted course shall not be less than 98.0 percent and not more than 102.0 percent of the target control strip density.

Nuclear density roller pattern and control strip density testing shall be performed on asphalt concrete overlays placed directly on surface treatment roadways and when overlays are placed at an application rate less than 125 pounds per square yard, based on 110 pounds per square yard per inch, on any surface. In these situations, the Engineer will not require sawed plugs or core samples and the minimum control strip densities as specified in Table III-3 will not be required. The required density of the compacted course shall not be less than 98.0 percent and more than 102.0 percent of the target control strip.

TABLE III-3
Density Requirements

Mixture Type	Min. Control Strip Density (%)¹
SM-9.5A, 12.5A	92.5
SM-9.5D, 12.5D	92.2
SM-9.5E, 12.5E	92.2
IM-19.0A, IM-19.0D, IM-19.0E	92.2
BM-25.0A, BM-25.0D	92.2

¹The control strip density requirement is the percentage of theoretical maximum density of the job-mix formula by SUPERPAVE mix design or as established by the Engineer based on two or more production maximum theoretical density tests.

The Engineer will divide the project into "control strips" and "test sections" for the purpose of defining areas represented by each series of tests.

- a. Control Strip: Control strips shall be constructed in accordance with these specifications and VTM-76.

The term *control strip density* is defined as the average of 10 determinations selected at stratified random locations within the control strip.

The Contractor shall construct one control strip at the beginning of work on each roadway and shoulder course and on each lift of each course. The Engineer will require the Contractor to construct an additional control strip when a change is made in the type or source of materials; whenever a significant change occurs in the composition of the material being placed from the same source; or when there is a failing test strip. During the evaluation of the initial control strip, the Contractor may continue paving operations, however, paving and production shall be discontinued during construction and evaluation of any additional control strips. In the event two consecutive control strips fail, subsequent paving operations shall cease until the Contractor recommends correctives actions to the Engineer and the Engineer has approved the Contractor to proceed with the corrective action(s). If the Contractor and the Engineer mutually agree that the required density cannot be obtained because of the condition of the existing pavement structure, the target control strip density shall be determined from the roller pattern that achieves the optimum density and this target control strip density shall be used on the remainder of the roadway that exhibits similar pavement conditions.

Either the Engineer or the Contractor may initiate the construction of an additional control strip at any time.

The length of the control strip shall be approximately 300 feet and the width shall not be less than 6 feet. On the first day of construction or beginning of a new course, the control strip shall be started between 500 and 1,000 feet from the beginning of the paving operation. The

Contractor shall construct the control strip using the same paving, rolling equipment, procedures, and thickness as shall be used on the remainder of the course being placed.

The Contractor's Asphalt Field Level II Technician shall take one reading at each of 10 stratified random locations. No determination shall be made within 12 inches of the edge of any application width for surface and intermediate mixes or within 18 inches of the edge of any application width for base mixes. The average of these 10 determinations shall be the control strip density recorded to the nearest 0.1 pound per cubic foot. The minimum control strip density shall be determined in accordance with the requirements of VTM-76.

The control strip shall be considered a lot. If the control strip density conforms to the requirements specified in Table III-3, the Engineer will consider the control strip to be acceptable and the control strip density shall become the target control strip density. If the density does not conform to the requirements specified in Table III-3, the tonnage placed in the control strip and any subsequent paving prior to construction of another control strip will be paid for in accordance with Table III-4 on the basis of the percentage of the Table III-3 value achieved. The Contractor shall take corrective action(s) to comply with the density requirement specified in Table III-3.

**TABLE III-4
Payment Schedule for Lot Densities**

% of Target Control Strip Density	% of Payment
Greater than 102.0	95
98.0 to 102.0	100
97.0 to less than 98.0	95
96.0 to less than 97.0	90
Less than 96.0	75

- b. **Test section (lot):** For the purposes of determining acceptance, the Engineer will consider each day's production as a lot unless the paving length is less than 3,000 linear feet or greater than 7,500 linear feet. When paving is less than 3,000 feet, that day's production will be combined with the previous day's production or added to the next day's production to create a lot as described below.

The standard size of a lot will be 5,000 linear feet (five 1,000 foot sublots) of any pass 6 feet or greater made by the paving train for the thickness of the course. If the Engineer approves, the lot size may be increased to 7,500 linear foot lots with five 1,500 foot sublots when the Contractor's normal daily production exceeds 7,000 feet. Pavers traveling in echelon will be considered as two passes. When a partial lot occurs at the end of a day's production or upon completion of the project, the lot size will be redefined as follows:

- If the partial lot contains one or two sublots, the sublots will be added to the previous lot.

- If the partial lot contains three or four sublots, the partial lot will be redefined to be an entire lot.

The Contractor shall test each lot for density by taking a nuclear density gauge reading from two random test sites selected by the Engineer within each subplot. When saw cores are used to determine acceptance, a single test site will be selected by the Engineer. Test sites will not be located within 12 inches of the edge of any application width for surface and intermediate mixes or within 18 inches of the edge of any application width for base mixes.

The Engineer will compare the average of the subplot density measurements to the target nuclear density, or for cores, to the target percent of theoretical maximum density achieved on the control strip to determine the acceptability of the lot. Once the average density of the lot has been determined, the Engineer will not allow the Contractor to provide additional compaction to raise the average. The Contractor shall immediately institute corrective action if two consecutive sublots produce density results less than 98 percent or more than 102 percent of the target control strip density.

Longitudinal joints shall also be tested for density using a nuclear density gauge at each test site in the subplot. For surface and intermediate mixes, the edge of the gauge shall be placed within 4 inches of the joint. For base mixes, the edge of the gauge shall be placed within 6 inches of the joint. The Contractor shall not place the gauge over top of the joint. The joint density value shall be recorded. The Contractor shall report to the Engineer and institute corrective action if a single longitudinal joint density reading is less than 95 percent of the target control strip density. The Engineer will not use the values obtained from the joint readings in payment calculation. The Contractor shall furnish the test data developed during the day's paving to the Engineer by the end of the day's operations.

When sawn cores are used for density acceptance, the Contractor shall perform acceptance testing for density for each subplot by obtaining one sawed 4 inch by 4 inch specimen, or one 4-inch-diameter cores, at a single random test site selected by the Engineer.

- The sub-lot site shall be marked as described in VTM-76.
- The bulk specific gravity of the cores shall be determined in accordance with VTM-6.
- The density of the cores shall be determined in accordance with the requirements of VTM-22.

Cores or plugs shall be bulked in the presence of the Engineer. The Department reserves the right to have the cores or plugs bulked on the project site. The Contractor shall number subplot test sites sequentially per lot, mark these on the pavement, fill them with the paving mixture, and compact them prior to the completion of each day of production.

The tonnage of each lot will be based on the lot's width and length and the mixture application rate as designated in the Contract or as revised by the

Engineer. Payment will be made in accordance with the requirements of Table III-4.

The Engineer at any time on any project may perform lot density verification testing. Lot density verification is performed by testing plugs. The Contractor shall be responsible for taking plugs for testing. The Engineer will perform verification testing of the plugs.

Surface, Intermediate, and Base mixes:

The Contractor shall take two plugs per Verification, Sampling and Testing (VST) lot at locations selected by the Engineer. If the Engineer determines the density of the plugs does not conform to the requirements for the lot in question or the same payment percentage determined by the Contractor's testing for that lot, then the Contractor may request the referee procedure to be invoked. The Contractor shall take one additional plug from the remaining sublots. Payment for that lot, based on the results of the initial two plugs/cores or referee procedure, will be in accordance with the specifications in Table III-4 on the basis of the percentage of the control strip bulk density achieved.

2. **Surface, intermediate, and base courses** not having a sufficient quantity of material to run a roller pattern and control strip shall be compacted to a minimum density of 91.5 percent of the theoretical maximum density as determined in accordance with the requirements of VTM-22. The Contractor shall be responsible for cutting cores or sawing plugs for testing by the Department. One set of plugs/cores shall be obtained within the first 20 tons of small quantity paving and every 100 tons thereafter for testing by the Department. Core/plug locations shall be randomly selected. If the density is determined to be less than 91.5 percent, the Engineer will make payment in accordance with the requirements of Table III-5.

**TABLE III-5
Payment Schedule for Surface, Intermediate and Base Courses
(Not sufficient quantity to perform density roller pattern and control strip)**

% TMD	% of Payment
Greater than 91.5	100
90.2-91.4	95
88.3-90.1	90
Less than 88.2	75

Any section in which a mixture (e.g., SM-9.0) is being placed at an application rate of less than 125 pounds per square yard (based on 110 pounds per square yard per inch) that does not have a sufficient quantity of material for a roller pattern and control strip shall be compacted by rolling a minimum of three passes with a minimum 8-ton roller. The Engineer will not require density testing.

For asphalt patching, the minimum density of 91.5 percent of the maximum theoretical density will be determined in accordance with the requirements of VTM-22. The Contractor is responsible for cutting cores or sawing plugs. One set of plugs/cores shall be obtained within the first 20 tons of patching material

and every 100 tons thereafter for testing by the Contractor or the Department. The Engineer will randomly select core/plug locations. If the density is less than the 91.5 percent, payment will be made on the tonnage within the 20 or 500 ton lot in accordance with the requirements of Table III-5.

- (f) **Joints:** Transverse joints shall be formed by cutting back on the previous run to expose the full depth of the course. A coat of asphalt shall be applied to contact surfaces of transverse joints just before additional mixture is placed against the previously rolled material.

Joints adjacent to curbs, gutters, or adjoining pavement shall be formed by hand placing sufficient mixture to fill any space left uncovered by the paver. The joint shall then be set up with rakes or lutes to a height sufficient to receive full compression under the rollers.

- (g) **Rumble Strips:** This work shall consist of constructing rumble strips on mainline shoulders of highways by cutting 1/2-inch-deep concave depressions into existing asphalt concrete surfaces as shown on the VDOT Standards Drawings and as directed by the Engineer.

Rumble strips shall be installed in accordance with the details of the RS-1 (shoulders) or RS-3 (centerline) Standard Drawings. The Contractor shall demonstrate to the Engineer the ability to achieve the desired surface regarding alignment, consistency, and conformity with these specifications and the Standards Drawings prior to beginning production work on mainline shoulders. The test site shall be approximately 25 feet longitudinally at a location mutually agreed upon by the Contractor and Engineer.

The Contractor shall coat the entire rumble strip area with liquid asphalt coating (emulsion) using a pressure distributor following the cutting and cleaning of the depressions of waste material. For rumble strips installed on the shoulder, the approximate application rate shall be 0.1 gallons per square yard. For rumble strips installed in a new asphalt concrete surface (new construction or overlay) along the centerline, no sealing of the rumble strip area shall be performed. When the rumble strip is installed along the centerline in an existing asphalt concrete surface (i.e. more than one year since placement), the approximate application rate shall be 0.05 gallons per square yard. The application temperature shall be between 160 degrees F and 180 degrees F. For shoulder rumble strips only, overspray shall not extend more than 2 inches beyond the width of the cut depressions and shall not come in contact with pavement markings.

Rumble strips shall not be installed on shoulders of bridge decks, in acceleration/deceleration lanes, on surface drainage structures, or in other areas identified by the Engineer.

Waste material resulting from the operation shall be removed from the paved surface and shall not be disposed of where waterways may be at risk of contamination.

- (h) **Saw-Cut Asphalt Pavement:** This work shall consist of saw-cutting the existing asphalt pavement to a depth shown on the plans or as directed by the Engineer.

315.06—Pavement Samples

The Contractor shall cut samples from the compacted pavement for testing of depth and density. Samples shall be taken for the full depth of the course at the locations selected by the Engineer. The removed pavement shall be replaced with new mixture and refinished. No additional compensation will be allowed for furnishing test samples and reconstructing areas from which they were taken.

315.07—Pavement Tolerances

- (a) **Surface Tolerance:** The Engineer will test the pavement surface by using a 10-foot straightedge. The variation of the surface from the testing edge of the straightedge between any two contacts with the surface shall not be more than 1/4 inch. The Contractor shall correct humps and depressions exceeding the specified tolerance or the defective work shall be removed and replaced with new material.
- (b) **Finished Grade Tolerance:** After placement of the final pavement layer, finished grade elevations shall be within ± 0.04 foot of the elevations indicated in the plans unless otherwise specified, provided that the actual cross slope does not vary more than 0.20 percent from the design cross slope indicated in the plans and the pavement thickness conforms to the thickness tolerances specified herein.

If the Engineer determines either the finished grade elevations or cross slope exceed the tolerances specified, the Contractor shall submit a plan of corrective action to the Engineer for approval.

- (c) **Thickness Tolerance:** The thickness of the base course will be determined by the measurement of cores as described in VTM-32.

Acceptance of asphalt concrete base course for depth will be based on the mean result of measurements of samples taken from each lot of material placed. A *lot* of material is defined as the quantity being tested for acceptance except that the maximum lot size will be 1 mile of 24-foot-width base course.

A lot will be considered acceptable for depth if the mean result of the tests is within the following tolerance of the plan depth for the number of tests taken:

Plan Depth	1 test	2 tests	3 tests	4 tests
≤ 4"	0.6"	0.5"	0.4"	0.3"
>4." ≤8"	0.9"	0.7"	0.5"	0.4"
>8" ≤12"	1"	0.9"	0.7"	0.5"
>12"	1.2"	1"	0.8"	0.6"

If an individual depth test exceeds the one test tolerance for the specified plan depth, the Engineer will exclude that portion of the lot represented by the test from the lot. If an individual test result indicates that the depth of material represented by the test is more than the tolerance for one test, the Contractor will not be paid for that material in excess of the tolerance throughout the length and width represented by the test. If an individual test result indicates that the depth of the material represented by the test is deficient by more than the one test tolerance for the plan depth, the Contractor shall correct the base course represented by the test as specified hereinafter.

If the mean depth, based on two or more tests, of a lot of material is excessive (more than the plan depth specified in the contract), the Engineer will not pay the Contractor for any material in excess of the tolerance throughout the length and width of the lots represented by the tests.

If the mean depth, based on two or more tests, of a lot of material is deficient (less than the plan depth specified in the contract) by more than the allowable tolerance, the Contractor will be paid for the quantity of material that has been placed in the lot. Any required corrective action will be determined by the Engineer.

For excessive depth base courses, the rate of deduction from the tonnage allowed for payment as base course will be calculated at a weight of 115 pounds per square yard per inch of depth in excess of the tolerance. For sections of base course that are deficient in depth by more than the one test tolerance and less than two and half times the one test tolerance, the Contractor shall furnish and place material specified for the subsequent course to bring the base course depth within the tolerance. This material will be measured on the basis of tonnage actually placed, determined from weigh tickets, and will be paid for at the contract unit price for the base course material. Such material shall be placed in a separate course. If the deficiency is more than two and half times the one test tolerance, the Contractor shall furnish and place base course material to bring the base course thickness within the tolerance. Corrections for deficient base course depth shall be made in a manner to provide a finished pavement that is smooth and uniform. Sections requiring significant grade adjustments which have been previously identified and documented by the Engineer as being outside of the control of the Contractor will be exempt from deduction or corrective action.

When the Contract provides for the construction or reconstruction of the entire pavement structure, the surface and intermediate courses shall be placed at the rate of application shown on the plans within an allowable tolerance of ± 5 percent of the specified application rate for application rates of 100 pounds per square yard or greater and within 5 pounds per square yard for application rates of less than 100 pounds per square yard. The Engineer will deduct the amount of material exceeding the allowable tolerance from the quantities eligible for payment.

When the Contract provides for the placement of surface or intermediate courses over existing pavement, over pavements constructed between combination curb and gutter, or in the construction or reconstruction of shoulders, such courses shall be placed at the approximate rate of application shown on the plans. However, the specified rate of application shall be altered where necessary to produce the required riding quality.

315.08—Measurement and Payment

Asphalt concrete base will be measured in tons and will be paid for at the contract unit price per ton. This price shall include preparing and shaping the subgrade or subbase, constructing and finishing shoulders and ditches, and removing and replacing unstable subgrade or subbase.

Asphalt concrete will be measured in tons and will be paid for at the contract unit price per ton. Net weight information shall be furnished with each load of material delivered in accordance with the requirements of Section 211. Batch weights will not be permitted as a method of measurement unless the Contractor's plant is equipped in accordance with the requirements of Section 211, in which case the cumulative weight of the batches will be used for payment.

Asphalt used in the mixtures, when a pay item, will be measured in tons in accordance with the requirements of Section 109.01 except that transporting vehicles shall be tare weighed prior to each load. The weight will be adjusted in accordance with the percentage of asphalt indicated by laboratory extractions.

Tack coat shall be included in the price for other appropriate pay items.

Asphalt curb backup material will be measured in tons and will be paid for at the contract unit price per ton. This price shall include placing, tamping, and compacting.

Liquid asphalt cement, when a pay item, will be measured in tons and will be paid for at the contract unit price per ton.

Material Transfer Vehicle (MTV), when required in the Contract, will not be measured for separate payment. The cost for furnishing and operating the MTV shall be included in the price bid for other appropriate items.

Warm Mix Asphalt (WMA) additive or process will not be measured for separate payment, the cost of which, shall be included in the price bid for other appropriate items.

Rumble strips will be measured in linear feet and will be paid for at the contract unit price per linear foot of shoulder where the rumble strips are actually placed and accepted, excluding the test site. This distance will be measured longitudinally along the edge of pavement with deductions for bridge decks, acceleration/deceleration lanes, surface drainage structures, and other sections where the rumble strips were not installed. This price shall be full compensation for installation, cleaning up debris and disposal of waste material. The test site will not be measured for payment but shall be included in the unit price for rumble strip.

Liquid asphalt coating (rumble strips) will be measured in square yards and will be paid for at the contract unit price per square yard as described herein. This price shall include cleaning rumble strips prior to application of the coating and furnishing and applying coating as specified herein.

Saw-cut asphalt concrete pavement will be measured in linear feet for the depth specified and will be paid for at the contract unit price per foot, which price shall be full compensation for saw-cutting the asphalt pavement to the depth specified.

These prices shall also include heat stabilization additive, furnishing samples, and maintaining traffic.

Payment will be made under:

Pay Item	Pay Unit
Asphalt concrete base course (Type)	Ton
Asphalt concrete (Type) (Class)	Ton
Asphalt concrete curb backup material	Ton
Liquid asphalt cement	Ton
Rumble strip (Asphalt)	Linear foot
Liquid asphalt coating (Rumble strips)	Square yard
Saw-cut asphalt concrete (depth)	Linear foot

VIRGINIA DEPARTMENT OF TRANSPORTATION
2007 ROAD AND BRIDGE SUPPLEMENTAL SPECIFICATIONS

SUPPLEMENTAL SECTION 248—STONE MATRIX ASPHALT CONCRETE

SECTION 248—STONE MATRIX ASPHALT CONCRETE of the Specifications is replaced with the following:

248.01—Description

These specifications cover the materials used to produce stone matrix asphalt (SMA) concrete pavement. SMA shall be in accordance to this specification and Section 211. SMA consists of a combination of coarse aggregate, fine aggregate, mineral filler, fiber additives, and liquid asphalt binder mechanically mixed in a plant to produce a stable gap-graded asphalt concrete paving mixture.

248.02—Materials

(a) **Coarse Aggregate:** Coarse aggregate shall conform to the following requirements when tested in accordance with the specified tests:

1. Los Angeles Abrasion	AASHTO T96	40% max.
2. Flat and Elongated Particles: Measured on No. 4 retained, 3 to 1 5 to 1	VTM-121	20% max. 5% max.
3. Magnesium Sulfate Soundness Loss, 5 cycles	AASHTO T104	15% max.
4. Particles retained on No. 4 sieve shall have at least 1 fractured face 2 fractured faces	ASTM D5821	100% min. 90% min.
5. Absorption	AASHTO T 85	2% max.

Except for the determination of flat and elongated particles in (a)2 herein, the aggregate properties specified are for each stockpile of coarse aggregate material designated on the job mix form (Form No. TL-127). The material contained in each stockpile shall meet the minimum or maximum criteria specified.

For flat and elongated particles, these values are based on the mathematical blend of the coarse aggregate material designated on the job mix form (TL-127). During production, these values are based on the SMA material sampled during the acceptance process (QC testing).

SMA must contain two or more coarse aggregate sizes. At least two of the aggregate sizes must comprise a minimum of 10 percent of the total mix composition each. At least one cold feed bin shall be used for each aggregate size.

The Engineer will not permit the use of slag in the job mix formula.

At the Engineer's discretion, mixes containing Reclaimed Asphalt Pavement (RAP) may be tested by VDOT for aggregate breakdown during lab compaction in accordance with VTM-99. If the percent of the total mix passing the No. 4 sieve increases by more than 10 percent after being compacted to N_{design} then the RAP component shall be changed or the Engineer will discontinue its use in the mix.

- (b) **Fine Aggregate:** Virgin fine aggregates shall consist of a blend of 100 percent crushed aggregate. If RAP is being used as a component in SMA then the portion of the final SMA blend passing the No. 8 sieve shall have a minimum Fine Aggregate Angularity value of 45 percent as determined in accordance with AASHTO T 304 (Method A). The magnesium sulfate soundness loss in 5 cycles shall not exceed 20 percent. In addition, the liquid limit shall not exceed 25 as determined in accordance with AASHTO T89.
- (c) **Asphalt Binder:** Asphalt binders shall be performance graded binder PG 64H-22 or polymer modified binder PG 64E-22 conforming to the requirements of the mix designation (E) designated by the Department. The supplier shall certify to the Department that the binder complies with the requirements for all properties of the grade as specified in AASHTO M332 Table 1 for performance-graded asphalt binder. This certification shall be based on testing performed on samples of binder provided to the Contractor for incorporation into the mixture. The Engineer will not allow certification based on testing performed on laboratory-produced binders.

The Contractor shall submit to the Engineer for Department review the source, formulation, and PG grading of the binder at least 15 days prior to the production of the SMA mixture.

The Department will perform testing during mixture production to determine the binder PG grade on samples taken from storage at the hot-mix asphalt plant at the Engineer's direction. The Contractor shall be responsible for obtaining the sample of binder when requested by the Engineer. If the Department determines the binder does not comply with the requirements of the specified PG grade, production shall be stopped until further testing indicates that the problem has been corrected.

- (d) **Mineral Filler:** Mineral filler shall consist of finely divided mineral matter such as rock or limestone dust or other suitable material. The Engineer will not permit the use of hydrated lime and fly ash. The supplier may blend up to two mineral fillers to comply with the mineral filler requirements. Mineral filler shall conform to the requirements of Section 201 with the following modifications. The mineral filler or mineral filler blend used in surface and intermediate SMA shall have a minimum of 55 percent passing the No. 200 sieve. At the time of use, it shall be sufficiently dry to flow freely and be essentially free from agglomerations.
- (e) **Fiber Additive:** The supplier shall use cellulose fiber in either loose or pelletized form. The minimum dosage rate for cellulose is 0.3 percent by weight of the total mixture. The Department may require the percentage of fiber additive to be increased during production if visual inspection or draindown testing on plant-produced material indicates that draindown in excess of 0.3 percent by weight of the mixture is occurring as determined in accordance with VTM-100. Allowable tolerances of fiber dosage shall be ± 10 percent of the required fiber weight.

NOTE: When using pelletized fiber, the dosage rate shall be adjusted to comply with the specified minimum dosage rates for cellulose fiber. Pelletized fiber consists of cellulose fiber and a binder. The specified minimum dosage rates are based on fiber content only. Therefore, the amount of pelletized fiber added shall typically be higher than for loose fiber.

The Engineer will accept fibers based on the manufacturer's certification.

TABLE II-23

Cellulose Fiber Properties

Sieve Analysis		
Method A: Alpine Sieve¹ Analysis		
Fiber Length:		0.25 inch max.
Passing	No. 100 Sieve	70% (±10%)
Method B: Mesh Screen² Analysis		
Fiber Length:		0.25 inch max.
Passing	No. 20 Sieve	85% (±10%)
	No. 40 Sieve	65% (±10%)
	No. 140 Sieve	30% (±10%)
Ash Content³		18% (±5%) non-volatile
pH⁴		7.5 (±1.0)
Oil Absorption⁵		5.0 (±1.0) (times fiber weight)
Moisture Content⁶		<5%

¹*Method A: Alpine Sieve Analysis.* Performed using an Alpine Air Jet Sieve (Type 200 LS). A representative 5-gram sample of fiber is sieved for 14 minutes at a controlled vacuum of 22 inches (±3 inches) of water. The portion remaining on the screen is weighed.

²*Method B: Mesh Screen Analysis.* This test is performed using standard Nos. 20, 40, 60, 80, 100, and 140 sieves, nylon brushes, and a shaker. A representative 10-gram sample of fiber is sieved, using a shaker and two nylon brushes on each screen. The amount retained on each sieve is weighed and the percentage passing calculated.

³*Ash Content:* A representative 2- to 3-gram sample of fiber is placed in a tared crucible and heated between 1100 and 1200 degrees F for not less than 2 hours. The crucible and ash are cooled in a desiccator and reweighed.

⁴*pH Test:* Five grams of fiber is added to 3.5 ounces of distilled water, stirred, and allowed to set for 30 minutes. The pH is determined with a probe calibrated with a pH 7.0 buffer.

⁵*Oil Absorption Test:* Five grams of fiber is accurately weighed and suspended in an excess of mineral spirits for not less than 5 minutes to ensure total saturation. It is then placed in a screen mesh strainer (with a hole size of approximately 0.5 square millimeter), and shaken on a wrist action shaker for 10 minutes (approximately 1¼-inch motion at 20 shakes/minute). The shaken mass is then transferred without touching to a tared container and weighed. Results are reported as the amount (number or times its own weight) the fibers are able to absorb.

⁶*Moisture Content:* Ten grams of fiber is weighed and placed in a 250 degree F forced air oven for 2 hours. The sample is then reweighed immediately upon removal from the oven.

- (f) **Antistripping Additive:** An antistripping additive shall be used in all stone matrix asphalt mixes. It may be hydrated lime or a chemical additive from the VDOT Materials Division Approved Products List No. 7 or a combination of both. The approved chemical additive shall be added at a rate of not less than 0.30 percent by weight of the total asphalt content of the mixture.

The mixture shall produce a tensile strength ratio (TSR) of not less than 0.80 for the design and production tests. The TSR shall be determined in accordance with AASHTO T283, including a freeze-thaw cycle (4-inch specimens compacted with a Marshall Hammer or 3.5 by 6-inch specimens when compacted with a gyratory compactor); except that the 16-hour curing time requirement and the 72 to 96-hour storage period will not be enforced by the Department. Design tests shall use the same materials that are to be used in the production mix and shall be conducted in a laboratory approved by the Department.

When a chemical additive is used, it shall be added to the asphalt cement prior to the introduction of the asphalt cement into the mix. Any chemical additive or particular concentration of chemical additive found to be harmful to the asphalt material or that changes the original asphalt binder performance grade (PG) shall not be used.

- (g) **Hydrated lime** shall conform to the requirements of ASTM C977. Hydrated lime shall be added at a rate of not less than 1 percent by weight of the total dry aggregate.

A separate bin or tank and feeder system shall be provided to store and accurately proportion the dry or slurried lime into the aggregate. The lime and aggregate shall be mixed by pugmill or other Department approved means to achieve a uniform lime coating of the aggregate prior to entering the drier. If lime is added in dry form, the aggregate shall contain at least 3 percent free moisture. The Department will not permit the stockpiling of lime treated aggregate.

The feeder system shall be controlled by a proportioning device, which shall be accurate to within ± 10 percent of the specified amount. The proportioning device shall have a convenient and accurate means of calibration. A flow indicator or sensor shall be provided with the proportioning device and interlocked with the plant controls, aggregate feed or weigh system, such that production of the mixture shall be consistently maintained and, if there is a stoppage of the lime feed, interrupted.

The method of introducing and mixing the lime and aggregate shall be subject to approval by the Engineer prior to beginning production.

- (h) **RAP:** The Contractor or his supplier may use Reclaimed Asphalt Pavement (RAP) material as a component material of SMA mixtures provided it conforms to the following:

1. SMA surface and intermediate mixtures containing RAP shall use the PG grade of asphalt cement designated by the mix specified on the plans or in the proposal e.g. an SMA-12.5 (64E-22).
2. The final asphalt mixture shall conform to the requirements for the type specified.
3. During the production process, RAP material shall not be allowed to contact open flame.
4. The Contractor or his supplier shall handle, haul and store the RAP material in a manner that will minimize contamination. Further, the material shall be

stockpiled and used in such manner that variable asphalt contents and asphalt penetration values will not adversely affect the consistency of the mixture.

248.03—Composition of SMA Mixture

The Contractor or his supplier shall design and test the SMA mixture using a gyratory compactor. The mixture shall conform to the requirements listed in Table II-24 and Table II-25. One percent hydrated lime will be required as an antistripping additive. An alternative antistripping additive can be used only with the Engineer’s permission.

**TABLE II-24
SMA Design Range**

Percentage by Weight Passing Square Mesh Sieves (in)								
Type No. (See Note)	1	¾	1/2	3/8	No. 4	No. 8	No. 30	No. 200
Surface Mixes								
SMA 12.5		100	83-93	80 max	22-28	16-24	15-20	9-11
SMA 9.5		100	90-100	65-75	25-32	15-25		9-11
Intermediate Mixes								
SMA 19.0	100	85-95	50-60	30-45		16-24	12-16	8-10

Note: The required PG binder will be shown in parentheses as part of the mix type on the plans or proposal, e.g., SMA 12.5 (64E-22).

**TABLE II-25
SMA Mixture Requirements**

Mix Type	VTM ¹ (%)	VMA Design (Min. %)	VMA Production (Min. %)	VCA Design and Production ² (%)	AC (Min. %)	Draindown (%)	Design Gyrations	Specimen Height ³
SMA 9.5	2.0-4.0	18.0	17.0	<VCA _{DRC}	6.3	0.3 max	75	115
SMA 12.5	2.0-4.0	18.0	17.0	<VCA _{DRC}	6.3	0.3 max	75	115
SMA19.0	2.0-4.0	17.0	16.0	<VCA _{DRC}	5.5	0.3 max	75	115

- 1) Asphalt content shall be selected at the midpoint of the VTM range but shall not be less than the minimum specified.
- 2) The voids in coarse aggregates (VCA) of the dry rodded condition (DRC) and mix shall be determined in accordance with VTM-99.
- 3) Specimen height after compaction shall be between 4.33 inches (110mm) and 4.75 inches (120mm). The fines-effective asphalt ratio shall be 1.2-2.0

NOTE: The SUPERPAVE gyratory compactor (SGC) shall be from the Department’s approved list maintained by the Department’s Materials Division. Gyratory procedures shall be performed in accordance with VTM-99. Calculations for volumetrics shall be performed in accordance with VTM-57 and VTM-58, 6-inch specimens.

Draindown testing shall be conducted in accordance with VTM-100.

RAP Percentages are allowed as follows:

**TABLE II-26
Specified Performance Grade of Asphalt and Use of RAP**

Mix Type & PG	Allowable RAP Percentage in Mix
SMA-9.5 (64H-22), SMA-12.5 (64H-22) & SMA-19.0(64H-22)	0.0 to 20.0
SMA-9.5 (64E-22), SMA-12.5 (64E-22) & SMA-19.0 (64E-22)	0.0 to 15.0

248.04—Acceptance

The Engineer will consider a lot to be acceptable for gradation and asphalt content if the mean of the test results obtained is within the tolerance allowed from the job-mix formula. The production tolerances for the control sieves and asphalt content shall be as follows:

Process Tolerance

Tolerance on Each Laboratory Sieve and Asphalt Content: Percent Plus and Minus									
No. Tests	Top Size	¾"	½"	3/8"	No. 4	No. 8	No. 30	No. 200	A.C.
1	0.0	8.0	8.0	8.0	6.0	6.0	6.0	4.0	0.60
2	0.0	5.7	5.7	5.7	4.3	4.3	4.3	2.8	0.43
3	0.0	4.4	4.4	4.4	3.3	3.3	3.3	2.2	0.33
4	0.0	4.0	4.0	4.0	3.0	3.0	3.0	2.0	0.30
5	0.0	3.6	3.6	3.6	2.7	2.7	2.7	1.8	0.27
6	0.0	3.3	3.3	3.3	2.4	2.4	2.4	1.6	0.24
7	0.0	3.0	3.0	3.0	2.3	2.3	2.3	1.5	0.23
8	0.0	2.8	2.8	2.8	2.1	2.1	2.1	1.4	0.21
12	0.0	2.3	2.3	2.3	1.7	1.7	1.7	1.2	0.17

The production tolerance for the specimen height after compaction is 4.33 inches (110mm) and 4.75 inches (120mm).

The Contractor shall check and report the VCA of the mix during production for each gyratory sample. If the VCA of the mix exceeds the VCA of the DRC, the Contractor shall stop production and notify the Engineer. Production shall not resume until the Contractor has taken corrective action and the Engineer has accepted the Contractor's means of correction.

The Contractor shall check and report the percentage of flat and elongated particles (F&E) in the coarse aggregates of the mix design during production. When the Contractor samples the SMA material for acceptance (gradation and AC content), two of eight sub-lots must be selected for F&E verification in the first lot. The F&E testing shall be performed on the coarse aggregate material retained on the #4 sieve, in accordance with the requirements of VTM-121, after the gradation is performed. If passing results are obtained on each sample in the first lot, then F&E testing shall be performed on a frequency of every second lot of material produced (i.e., Lots 3, 5, 7, etc.) by

randomly selecting two sub-lots. If the F&E of the mix exceeds the specified limits, the Contractor shall stop production and notify the Engineer. Production shall not resume until the Contractor has taken corrective action and the Engineer has accepted the Contractor's means of correction.

Once production has resumed, the Contractor shall determine the F&E of the mix for two consecutive lots by randomly selecting two sub-lots per lot. If passing results are obtained for these two lots, then the F&E testing frequency shall return to every second lot of material produced.

If the Department determines that the mixture being produced does not conform to the approved job-mix formula and volumetric properties in Table II-25 based on Department or Contractor's test results, the Contractor shall immediately make corrections to bring the mixture into conformance with the approved job-mix formula or cease paving with that mixture.

The Engineer will limit subsequent paving operations, using either a revised or other job-mix formula which has not been verified as described herein, to a test run of 300 tons maximum if such material is to be placed in Department project work. The Engineer will not allow any further paving for the Department using that specific mixture until the acceptability of the mixture being produced has received the Engineer's approval based on the 300-ton constraint.

For SMA surface mixes, permeability test data shall be submitted in accordance with VTM 120 using either single point verification or the regression method for each surface mix having a different gradation.

Samples will be taken in the first lot, and every other lot thereafter, and results submitted to the District Materials Engineer.

248.05—SMA Mixing Plant

Plants used for the preparation of the SMA mixture shall conform to the following:

- (a) **Handling of Mineral Filler:** Adequate dry storage shall be provided for the mineral filler that will, at a minimum, consist of a waterproof cover that shall completely cover the stockpile at all times. Provisions shall be made for metering of the filler into the mixture uniformly and in the desired quantities. In a batch plant, mineral filler shall be added directly into the weigh hopper. In a drum plant, mineral filler shall be added directly onto the cold feed belt. Equipment shall be capable of accurately and uniformly metering the large amounts of mineral filler up to 25 percent of the total mix.
- (b) **Fiber Addition:** Adequate dry storage shall be provided for the fiber additive, and provisions shall be made for accurately and uniformly metering fiber into the mixture at plus or minus 10 percent of the desired quantities.

Introduction of loose or pelletized fiber shall require a separate system that can accurately proportion, by weight, the required quantity of fiber in such a manner as to ensure consistent, uniform blending into the mixture at all rates of production and batch sizes. This supply system shall be interlocked with the other feeding devices of the plant system, and sensing devices shall provide for interruption of mixture production if the introduction of fiber fails.

Batch Plant: Loose fiber or pelletized fiber shall be added through a separate inlet directly into the weigh hopper above the pugmill. The addition of fiber shall be timed to occur during the hot aggregate charging of the hopper. Adequate dry mixing time is required to ensure proper blending of the aggregate and fiber stabilizer. Therefore, dry mixing time shall typically be increased 5 to 15 seconds. Wet mixing time shall typically

be increased at least 5 seconds for cellulose fibers to ensure adequate blending with the asphalt cement.

When fiber is used, the fiber supply system shall include low level and no flow indicators and a printout of the date, time, and net batch weight of fiber.

Drum Mix Plant: When fiber is used, the fibers shall be added in such a manner as not to be entrained into the exhaust gases of the drum plant. The fiber supply system shall include low level and no flow indicators and a printout of status of feed rate in pounds per minute.

When pelletized fibers are used, they shall be added directly into the drum mixer through the RAP inlet or a specialized fiber inlet. Operation of the drum mixer shall be such as to ensure complete blending of the pelletized fiber into the mix.

- (c) **Hot Mixture Storage:** When the Contractor does not immediately haul and place the hot mixture on the project, it, he shall provide suitable bins for storage of the hot mixture. Such bins shall be either surge bins to balance production capacity with hauling and placing capacity or storage bins that are heated and insulated and that have a controlled atmosphere around the mixture. The Engineer will impose limitations on the holding times based on laboratory tests of the stored mixture. In no case shall the SMA mixture be kept in storage more than 8 hours.
- (d) **Mixing Temperature:** The recommended plant mixing temperatures for PG 64H-22 should be 315 to 340 degrees F and at no time shall the temperature exceed 350 degrees F. For PG 64E-22, the plant mixing temperatures shall be within the limits of the asphalt supplier's recommendations.

VIRGINIA DEPARTMENT OF TRANSPORTATION
2007 ROAD AND BRIDGE SUPPLEMENTAL SPECIFICATIONS**SUPPLEMENTAL SECTION 317—STONE MATRIX ASPHALT CONCRETE PLACEMENT**

SECTION 317—STONE MATRIX ASPHALT CONCRETE PAVEMENT of the Specifications is replaced with the following:

317.01—Description

This specification covers the furnishing, installation, and acceptance criteria for constructing stone matrix asphalt (SMA) concrete pavement. SMA shall be in accordance with these specifications and Section 315.

317.02—Materials

- (a) **Coarse aggregate** shall conform to the requirements of Section 248.02(a).
- (b) **Fine aggregate** shall conform to the requirements of Section 248.02(b).
- (c) **Asphalt binder** shall conform to the requirements of Section 248.02(c).
- (d) **Mineral filler** shall conform to the requirements of Section 248.02(d).
- (e) **Fiber additive** shall conform to the requirements of Section 248.02(e).

317.03—Composition of SMA Mixture

Composition of Stone Matrix Asphalt shall conform to the requirements of Section 248.

317.04—Acceptance

Acceptance of Stone Matrix Asphalt shall conform to the requirements of Section 248.

317.05—SMA Mixing Plant

- (a) **Mineral filler handling** shall be in accordance with the requirements of Section 248.05(a).
- (b) **Fiber addition** shall be in accordance with the requirements of Section 248.05(b).
- (c) **Hot-mixture storage** shall conform to the requirements of Section 248.05(c).
- (d) **Mixing temperatures** shall conform to the requirements of Section 248.05(d).

317.06—Weather Restrictions

SMA mixture shall be placed only when the ambient and surface temperatures are 50 degrees F or above, unless a warm mix additive or process approved by the Department is used to produce the SMA at which the surface temperature must be 40 degrees F or above.

317.07—Placing and Finishing

For mixtures containing PG 64H-22 asphalt binder, the mixture temperature shall not be less than 300 degrees F in the truck and less than 290 degrees F immediately behind the screed.

For mixtures containing PG 64E-22 asphalt binder, the mixture temperature in the truck and immediately behind the screed shall not be less than the minimum compaction temperature provided by the liquid asphalt supplier.

The minimum mixture or compaction temperature immediately behind the screed when a warm mix asphalt additive or process is used to produce the SMA shall not be less than 200°F.

The Contractor shall be responsible for a continuous paving operation that provides for maintaining constant steady movement of the paver. In the event that stop and go of the paver occurs to the extent that screed settlement, thermal segregation, mechanical segregation, or any other visibly deleterious impacts to the mat are being observed, the Engineer will stop production and laydown of the mixture until the Contractor has made satisfactory changes in the production, hauling, and placement operations resulting in a constant steady movement of the paver.

The Contractor shall employ a Material Transfer Vehicle (MTV) during the placement of SMA mixes. The Contractor's paving operation shall have remixing capability in either the MTV or a paver-mounted hopper to produce a uniform, nonsegregated mix with uniform temperature. The MTV and paver combination shall have a minimum storage capacity of 15 tons. In the event of an equipment break down of the paving train, paving shall be discontinued once the material on-site has been placed and no more material shall be shipped from the hot-mix plant.

317.08—Compaction

Immediately after the mixture has been spread and struck off, it shall be thoroughly and uniformly compacted by rolling. Rolling shall be accomplished with steel wheel roller(s) with a minimum weight of 10 tons. A minimum of three rollers shall be available at all times for compaction and/or finish rolling.

The Contractor shall approach the use of vibratory rollers on SMA with caution to minimize coarse aggregate fracture/breakage in the aggregate skeleton of SMA mixes. If the Contractor elects to use a vibratory roller, the mat should not receive more than three vibratory passes. The Contractor shall use the roller on only the highest frequency and lowest amplitude setting.

It shall be the Contractor's responsibility to adjust the rolling procedures to provide the specified pavement density. Rollers shall move at a uniform speed. Rolling shall be continued until all roller marks are eliminated and the minimum density has been obtained. The Contractor shall monitor density during the compaction process by use of nuclear density gages to ensure that the minimum required compaction is being obtained. During the trial section, the Department will randomly select 3 plug or core locations to determine the in-place density in accordance to VTM-22.

The Contractor shall keep the wheels of the rollers properly moistened with water that has been mixed with very small quantities of detergent or other approved additives to prevent adhesion of the mixture to the rollers.

For the purposes of evaluating and determining acceptance, each day's production shall be considered a lot unless the paving length is less than 3,000 linear feet or greater than 7,500 linear feet. When paving is less than 3,000 feet, it shall be combined with the previous day's production or added to the next day's production to create a lot as described below.

The standard size of a lot shall be 5,000 linear feet, with 1,000 foot sublots, of any pass 6 feet or greater made by the paving train for the thickness of the course. With the Engineer's approval the lot size may be increased to 7,500 linear foot lots with 1,500 foot sublots when the normal daily production is in excess of 7,000 feet. Pavers traveling in echelon will be considered as two passes. When a partial lot occurs at the end of a day's production or upon completion of the project, the lot size shall be redefined as follows:

- If the partial lot contains one or two sublots, the sublots will be added to the previous lot.
- If the partial lot contains three or four sublots, the partial lot will be redefined to be an entire lot.

The Contractor shall perform acceptance testing for density for each subplot by obtaining one sawed 4 inch by 4 inch specimen, or one 4-inch-diameter cores, at a single random test site specified by the Engineer. Test sites shall not be located within 12 inches of the edge of any application width for surface and intermediate mixes.

- The sub-lot site shall be marked as described in VTM-76.
- The bulk specific gravity of the cores shall be determined in accordance with VTM-6.
- The density of the cores shall be determined in accordance with the requirements of VTM-22.

Cores or plugs shall be bulked in the presence of the Department. The Department reserves the right to have the cores or plugs bulked on the project site. Sublot test sites shall be numbered sequentially per lot, marked on the pavement, filled with the paving mixture, and compacted prior to completion of each day's production. The payment for lot density will be in accordance with the following schedule:

Payment Schedule

% Density Achieved	% of Payment
More than 98.0	97
94.0 to 98.0	100
92.0 to 93.9	85
90.0 to 91.9	65
Less than 90.0	Remove and replace

317.09—Trial Section

The Engineer will require the Contractor to construct a trial section(s) for evaluation at least 1 week but not more than 30 days prior to the start of production of a SMA mix not placed the previous year on a state roadway. The trial section shall be a maximum of 300 tons, and shall be constructed at a site designated in the contract or proposed by the contractor and approved by the Engineer. The Department will use the trial section to evaluate the mixing plant process control, mixture draindown characteristics, placement procedures, SMA surface appearance, and compaction patterns and to

calibrate the nuclear density device. In addition, the percentage of flat and elongated particles will be calculated on the SMA material produced for the trial section in accordance with the requirements of VTM-121 and compared to the maximum limits specified in the Coarse Aggregate Table in Section 248.02(a). The Engineer will require a passing flat and elongated sample for acceptance of the trial section.

During the trial section(s), the Engineer will randomly select 3 plugs or core locations to determine the in-place density in accordance with VTM-22. Payment for density will be in accordance with the Payment Schedule listed in Sec. 317.08.

The Contractor shall remove and replace failing trial sections based on the following criteria. The Engineer will deem a trial section to have failed if the VTM is less than 1.0 percent or exceeds 5.0 percent; if the VCA of the mix exceeds the VCA of the dry rodded condition; if the field density is less than 90.0 percent of the maximum theoretical density; or if excessive flushing/bleeding occurs in the wheel paths. Payment for, and limitations on, the trial section shall be as stipulated in Section 317.11. The Contractor shall be responsible for the cost for removing any failed trial section.

317.10—Prepaving Conference

The Department will hold a prepaving conference with the Contractor prior to the start of production for those contractors who have never produced or placed Stone Matrix Asphalt.

317.11—Measurement and Payment

Stone matrix asphalt will be measured in tons and will be paid for at the contract unit price per ton for the mix type specified, which price shall include all materials, additives, and equipment as described herein.

The initial trial section will be paid for at the contract unit price for the mix type specified. Up to one additional trial section of the mix type specified will be paid for at the contract unit price. If additional trial sections are needed, the Department and the Contractor shall negotiate the price based upon a reduced percentage of the contract unit price. The Department will pay for no more than four trial sections. The Contractor shall be fully responsible for any additional test sections required to produce and install an acceptable mixture at the Contractor's expense.

Payment will be made under:

Pay Item	Pay Unit
Stone matrix asphalt, (Type) (Class)	Ton

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
DENSE GRADED ASPHALT MIX TYPE SM-4.75

October 16, 2015

I. DESCRIPTION

This work shall consist of the production, placement and acceptance criteria of the thin asphalt concrete material designated as type SM-4.75 in accordance with the Contract requirements, this provision, and as directed by the Engineer. SM-4.75 mix types are specified as one of the types listed as follows:

Mix Type	Asphalt Performance Grade
SM-4.75A	64S-22
SM-4.75D	64H-22
SM-4.75E	64E-22

II. MATERIALS

- A. **Asphalt:** The asphalt cement shall be performance graded asphalt (PG) 64S-22, 64H-22 or 64E-22 meeting the requirements of Section 210 of the Specifications or as designated by the Engineer.
- B. **RAP:** Recycled asphalt pavement material will be permitted in accordance with Table II-14A in Section 211 of the Specifications.
- C. **Coarse aggregate** shall conform to the requirements of Section 203 of the Specifications, except for grading, or as directed by the Engineer.
- D. **Fine aggregate** shall conform to the requirements of Section 202 of the Specifications, except for grading. The uncompacted void content shall not have a value less than 40 percent when tested in accordance with AASHTO T 304 Method A and the sand equivalent value shall not be less than 40 percent when tested in accordance with AASHTO T 176.
- E. **Anti-stripping Additive** shall be hydrated lime at a rate of one percent of the total mix or a chemical anti-stripping agent, which has a proven performance in asphalt concrete using the same aggregate sources as approved by the Engineer.

III. MIX GRADATION LIMITS

The Contractor shall submit for the Engineer's approval, a job mix formula within the following design ranges of percent passing each sieve size as noted:

Table 1 - Design Ranges

Sieve Size	Percent By Weight Passing Square Mesh Sieves (in)	
	Maximum	Minimum
1/2"	-	100

3/8"	100	95
#4	100	90
#16	55	30
#200	13	6

IV. MIX VOLUMETRICS

The Contractor shall submit for the Engineer's approval, a job mix formula within the following design ranges of volumetrics as noted:

Table 2 - Mix Design and Production Criteria

Mix Type	VTM (%) Production (Note 1)	VFA (%) Design	VFA (%) Production (Note 2)	Min. VMA (%)	Fines/Asphalt Ratio (Note 3)	Number of Gyrations
						N Design
SM-4.75 <small>Notes 1,2,3</small>	3.0-6.0	70-75	70-80	16.5	1.0 – 2.0	50

Note 1: Asphalt content should be selected at 5.0 percent Air Voids.

Note 2: During production of an approved job mix, the VFA shall be controlled within these limits.

Note 3: Fines-Asphalt Ratio is based on effective asphalt content.

V. MIX PERMEABILITY

For mix design approval, permeability test data shall be submitted in accordance with VTM 120 using the regression method. The pill height shall be one inch. If the regression method predicts a permeability exceeding 150×10^{-5} cm/sec at 7.5 percent voids, the Contractor shall redesign the mixture to produce a permeability number less than 150×10^{-5} cm/sec.

VI. PLANT ACCEPTANCE

A lot will be considered acceptable for gradation and asphalt content in accordance with Section 211 of the Specifications with process tolerances as defined Table 3 applied to the design sieves in Table 1. One adjustment point will be applied for each 1 percent that the material is out of the process tolerance for the No. 16 Sieve, applied in 0.1 percent increments, all other adjustments will be applied in accordance with Section 211.09 of the Specifications.

In the event the Department determines that the mixture being produced does not conform to the approved job-mix formula and volumetric properties in Table 1 and 2 based on the Department's or Contractor's test results, the Contractor shall immediately make corrections to bring the mixture into conformance with the approved job-mix formula or cease paving with that mixture. Subsequent paving operations using either a revised or another job-mix formula that has not been verified for acceptance as described herein shall be limited to a test run of 300 tons maximum. No further paving using that specific mixture shall occur until the acceptability of the mixture being produced has been verified using the 300-ton constraint.

**TABLE 3
Process Tolerance**

Tolerance on Each Laboratory Sieve and Asphalt Content: Percent Plus and Minus

No. Tests	Top Size ¹	1 1/2"	1"	3/4"	1/2"	3/8"	No. 4	No. 16	No. 200	A.C.
1	1.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	2.0	.60
2	1.0	5.7	5.7	5.7	5.7	5.7	5.7	5.7	1.4	0.43
3	1.0	4.4	4.4	4.4	4.4	4.4	4.4	4.4	1.1	0.33
4	1.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	1.0	0.30
5	1.0	3.6	3.6	3.6	3.6	3.6	3.6	3.6	0.9	0.27
6	1.0	3.3	3.3	3.3	3.3	3.3	3.3	3.3	0.8	0.24
7	1.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.8	0.23
8	1.0	2.8	2.8	2.8	2.8	2.8	2.8	2.8	0.7	0.21
12	1.0	2.3	2.3	2.3	2.3	2.3	2.3	2.3	0.6	0.17

¹Defined as the sieve that has 100% passing as defined in Table II-13.

A lot will be considered acceptable for permeability if each of the individual test results have a value less than 150×10^{-5} cm/sec at 7.5 percent voids. Mixture samples for permeability testing shall be collected at the same time volumetric samples are obtained. Permeability testing shall be performed using the regression or single point method in accordance with VTM 120. The Contractor shall provide the results of the permeability testing to the Engineer. In the event the Department or Contractor determines that the mixture being produced does not conform to the approved job-mix formula and permeability maximum value based on the Department's or Contractor's test results, the Contractor shall immediately make corrections to bring the mixture into conformance with the approved job-mix formula or cease paving with that mixture. Subsequent paving operations using either a revised or other job-mix formula that has not been verified for acceptance as described herein shall be limited to a test run of 300 tons maximum. No further paving using that specific mixture shall occur until the acceptability of the mixture being produced has been verified using the 300-ton constraint.

VII. PLACING, FINISHING AND COMPACTION

The application rates of SM-4.75 will be specified in the Contract or as directed by the Engineer.

The Contractor shall plan his operation so a continuous paving operation provides for a constant steady movement of the paver. The placement of the SM-4.75 shall be as continuous as possible and shall be scheduled such that the interruption occurring at the completion of each day's work will not detrimentally affect the partially completed work.

Immediately after the mixture has been spread and struck off, it shall be thoroughly and uniformly rolled and compacted. Breakdown rolling shall be accomplished with steel wheel roller(s) with a minimum weight of 10 tons. The mixture shall receive a minimum of three breakdown roller passes prior to intermediate and finish rolling.

Should visual examination by the Engineer reveal that the material in any load, or portion of the paved roadway is contaminated, segregated, or flushed with asphalt cement, that load, or portion of the paved roadway may be rejected without additional sampling of the material.

VIII. FIELD ACCEPTANCE

Lot Density, roller pattern and control strip density testing shall be performed per VTM-76. However, sawn cores/plugs will not be required to determine the field percentage of the maximum theoretic density for the mixture. The required density of the compacted mixture shall not be less

than 98.0 percent and not more than 102.0 percent of the target control strip for the test section. Payment schedules for lot density will be accordance with Table III-4 in Section 315.05 of the Specifications.

IX. MEASUREMENT AND PAYMENT

Asphalt concrete type SM-4.75A will be measured in tons and paid for at the contract unit price per ton, which price shall include surface preparation; furnishing and applying tack coat; and all materials, additives, labor, testing and equipment necessary to complete the work.

Asphalt concrete type SM-4.75D will be measured in tons and paid for at the contract unit price per ton, which price shall include surface preparation; furnishing and applying tack coat; and all materials, additives, labor, testing and equipment necessary to complete the work.

Asphalt concrete type SM-4.75E will be measured in tons and paid for at the contract unit price per ton, which price shall include surface preparation; furnishing and applying tack coat; and all materials, additives, labor, testing and equipment necessary to complete the work.

Payment will be made under:

Pay Item	Pay Unit
Asphalt Concrete Type SM-4.75A	Ton
Asphalt Concrete Type SM-4.75D	Ton
Asphalt Concrete Type SM-4.75E	Ton

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
BM-25.0D WITH INCREASED ASPHALT CONTENT

October 19, 2014

I. DESCRIPTION

The work described in this special provision is specifically intended for supplying, testing and installing asphalt concrete base with additional asphalt cement. BM-25.0D+0.4 and/or BM-25.0D+0.8 shall be placed at locations identified in the contract documents.

II. MATERIALS

The Contractor shall furnish, test and install BM-25.0D with additional asphalt cement content in accordance with the requirements of this special provision. The mix(es) shall conform to all of the requirements of a standard BM-25.0D in Section 211 of the Specifications except as noted herein.

Construction and Acceptance of one or more courses of asphalt concrete consisting of BM-25.0D+0.4 or BM-25.0D+0.8 asphalt concrete base shall be in accordance with the requirements of a BM-25.0D in Section 315 of the Specifications and the density specified in Table 5 herein.

An equivalent single axle load (ESAL) will be established by the Engineer and the mix types may be specified as one of the types listed in Table 1 herein.

TABLE 1

Mix Type	Equivalent Single Axle Load (ESAL) Range (millions)	Final Asphalt Performance Grade (PG)	Aggregate Nominal Maximum Size*
BM-25.0D+0.4	All ranges	64H-16	1"
BM-25.0D+0.8	All ranges	64H-16	1"

Asphalt concrete shall conform to the requirements for the type designated.

*Nominal Maximum Size is defined as one sieve size larger than the first sieve to retain more than 10 percent aggregate.

Job-Mix Formulas

The asphalt concrete base mix(es) will be supplied to the project per the contract documents. To determine the AC content for the BM-25.0D plus additional asphalt cement, an approved BM-25.0D per Section 211 will be used to determine the optimum AC content and aggregate gradations. While the optimum AC content for the BM-25.0D will be selected at 2.5 percent per Section 211, the initial AC content for the BM-25.0D+0.4 and/or BM-25.0D+0.8 will be selected using the 3.5 percent air voids for the BM-25.0D. The additional asphalt cement (0.4% or 0.8%) will be added to the initial AC content at 3.5 percent air voids in order to establish the design AC content.

During production the BM-25.0D+0.4 and BM-25.0D+0.8 mixes shall be controlled according to the requirements of Table 2 herein.

**TABLE 2
PRODUCTION CRITERIA**

Mix Type	VTM Production (%)	VFA (%)	Min. VMA (%)	Fines/Asphalt Ratio	Number of Gyations	
					N Design	N Initial
BM-25.0D+0.4	1.0 – 4.0	67 – 92	12.0	0.6 – 1.3	65	7
BM-25.0D+0.8	0.5 – 3.5	67 – 92	12.0	0.6 – 1.3	65	7

1. The Laboratory mixing temperature shall be 310 °F to 320 °F and the compaction temperature shall be 295 °F to 300 °F for both testing and design.
2. Field correction factor. The field correction factor is determined by subtracting the bulk specific gravity of the aggregate from the effective specific gravity of the aggregate determined at the JMF AC content achieved.

**TABLE 3
RECOMMENDED PERFORMANCE GRADE OF ASPHALT**

Mix Type	Percentage of Reclaimed Asphalt Pavement (RAP) in Mix	
	%RAP < 25.0	35.0 ≥ %RAP ≥ 25.0
BM-25.0D (+0.4 and +0.8)	PG 64H-22	PG 64S-22

III. TESTING

When asphalt cement is extracted and recovered in accordance with AASHTO T170, the recovered asphalt cement shall meet the required grade specified in Table 1 herein.

IV. ACCEPTANCE AND ADJUSTMENTS

Acceptance and adjustments shall be in accordance with the requirements for a BM-25.0D in Section 211.08 and 211.09 of the Specifications.

V. DENSITY

Density shall be determined in accordance with Section 315.05(e) of the Specifications. The minimum density requirements for BM-25.0D+0.4 and BM-25.0D+0.8 shall be as specified in Table 5 herein.

**TABLE 5
DENSITY REQUIREMENTS**

Mixture Type	Minimum Control Strip Density (%) ¹
BM-25.0D+0.4	94.0
BM-25.0D+0.8	96.0

¹ The control strip density requirement is the percentage of theoretical maximum density of the job mix formula by SUPERPAVE® mix design or as established by the Engineer based on two or more production maximum theoretical density tests.

VI. MEASUREMENT AND PAYMENT

BM-25.0D with increased asphalt content will be measured in tons and paid for at the contract unit price per ton. This price shall include all materials and labor specified in Section 315 of the Specifications as modified in this specification for asphalt concrete base.

Payment will be made under:

Pay Item	Pay Unit
Asphalt Concrete Base Course Type BM-25.0D+0.4	Ton
Asphalt Concrete Base Course Type BM-25.0D+0.8	Ton

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
TRENCH WIDENING ASPHALT MIXTURES
BM-25.0(T), IM-19.0D(T) or IM-19.0A(T)

October 17, 2008cc

SECTION 315—ASPHALT CONCRETE PAVEMENT of the Specifications is amended as follows:

Section 315.01—Description is amended to include the following:

Certain routes in the Contract are designated to use asphalt concrete type **BM-25.0(T)**, **IM-19.0A(T)** or **IM-19.0D(T)**. Those routes are referred to herein as trench widening routes.

Section 315.02—Materials is amended to add the following:

- (e) **Trench widening route** materials shall conform to the requirements of Section 211 of the Specifications. IM-19.0A shall be used for **IM-19.0A(T)** and IM-19.0D shall be used for **IM-19.0D(T)**. Where **BM-25.0(T)** is designated, either BM-25.0A or BM-25.0D shall be used by the Contractor.

Section 315.05(e)2 Surface, Intermediate and Base Courses is amended to include the following:

Trench Widening Routes — The minimum lift density as determined in accordance with the requirements of VTM-22 is based on the type of trench widening as defined below and specified in the Contract. Where trench widening is 2 foot in width compaction may be performed with small single drum walk-behind rollers or other mechanical means acceptable to the Engineer at the Contractor's discretion.

Type 1 — Paved Shoulder Only:

Trench widening routes where the widening will serve as a paved shoulder and will not be subjected to constant traffic: The painted edge line will not be on the trench widening. The minimum density requirement will not be enforced. Steel double drum rollers weighing no less than 8 tons shall perform compaction of the asphalt concrete. No less than five passes shall be completed.

Type 2 — Widened Travel Lane and Paved Shoulder:

Trench widening routes where the widening will serve as a wider travel lane and paved shoulder that will be subjected to traffic: The widening will not include removal of existing travel lane pavement, i.e., inside the edge line marking. The painted edge line will be on the trench widening. The minimum density of **91.5** percent shall be enforced.

Type 3 — Repaired Travel Lane and Paved Shoulder:

Trench widening routes where the widening will include a portion of the existing travel lane, serve as a paved shoulder and will be subjected to traffic as a part of the travel lane: The widening will include removal of existing pavement (i.e. inside the edge line marking). The painted edge line will be on the trench widening. The minimum density of **91.5** percent will be enforced.

Where density requirements apply, the Contractor is responsible for cutting cores or sawing plugs for density testing. One set of plugs/cores per course of material shall be obtained within the first

500 linear feet and every 2,500 linear feet thereafter of the trench widening route for testing by the Contractor or the Department. Core/plug locations shall be randomly selected within each section. If the density achieved is less than **91.5** percent for the Type 2 or 3 trench widening routes, payment will be made on the theoretical tonnage within the 500 or 2,500 linear feet lot in accordance with the requirements of Table III-5 of the Specifications.

Section 315.05—Procedures is amended to include the following:

- (i) **Trench widening routes** shall be widened by trenching on one or both sides of the existing roadway and placing **BM-25.0(T)**, **IM-19.0A(T)** or **IM-19.0D(T)** commensurate with the required width and depth specified for that route.

Any remaining material, after final grading, shall be classified as excess material, and will be disposed of in accordance with the requirements of Section 106.04 of the Specifications or as directed by the Engineer.

The trench shall be shaped to have vertical sides, the width, depth and type as specified in the contract documents (2-foot minimum to 6-foot maximum width), be free of excess material, and shall be tacked against the existing pavement side before **BM-25.0(T)**, **IM-19.0D(T)** or **IM-19.0A(T)** is placed.

The Contractor shall ensure that disruption to driveways, entrances, mail boxes and intersections are minimized and that precautions are taken to ensure that roadway drainage does not pond on the roadway surface.

Section 315.08 Measurement and Payment is amended to include the following:

Asphalt Concrete Type BM-25.0(T), **IM-19.0A(T)** or **IM-19.0D(T)** will be measured in tons and will be paid for at the contract unit price per ton, which price bid shall include furnishing and placing the **BM-25.0(T)**, **IM-19.0A(T)** or **IM-19.0D(T)** mix, trenching, tack grading and disposal of excess material.

Payment will be made under:

Pay Item	Pay Unit
Asphalt Concrete Type BM-25.0(T)	Ton
Asphalt Concrete Type IM-19.0A(T)	Ton
Asphalt Concrete Type IM-19.0D(T)	Ton

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
RIDEABILITY

January 22, 2015

SECTION 315—ASPHALT CONCRETE PAVEMENT of the Specifications is amended as follows:

Section 315.07 Pavement Tolerances is amended to include the following:

For pavements designated in the Contract, the final ride quality acceptance will be based on the lowest average International Roughness Index (IRI) for each 0.01-mile section produced by a minimum of two test runs, using a South Dakota style road profiling device and reported for each travel lane. The device shall measure both wheelpaths with laser height sensing instruments. The Department will conduct the testing within 30 calendar days from Contractor's written request for testing following the completion of the final surface course and final pavement striping over the designated section. If temporary pavement marking is placed and the lanes are clearly delineated over the completed final surface course, the Contractor may request ride testing in writing and the Department will conduct testing within 30 calendar days from the request. The Department will conduct the testing as soon as possible upon receipt of the Contractor's testing request, providing the Contractor can arrange unimpeded access to the paved surface for constant highway speed test runs. Testing will be conducted in accordance to VTM – 106.

I. Acceptance

An IRI number in inches per mile will be established for each 0.01-mile section for each designated lane. The last 0.01-mile (52 feet) section before a bridge, the first 0.01-mile (52 feet) section after a bridge, and the beginning and end 0.01-mile (52 feet) sections of the final surface will not be subject to a pay adjustment.

Areas excluded from testing by the road profiling device will be tested using a 10-foot straightedge. The variation of the surface from the testing edge of the straightedge between any two contacts with the surface shall not be more than 1/4 inch. Humps and depressions exceeding the specified tolerance shall be subject to correction as directed by the Engineer, at no additional cost to the Department.

A. Incentive-disincentive projects

1. General

The following tables provide the acceptance quality of pavement based on the finished rideability for interstate and non-interstate roadways.

TABLE A - INTERSTATE SYSTEM	
IRI After Completion (Inches Per Mile)	Pay Adjustment (Percent Pavement Unit Price)
45.0 and Under	115
45.1-55.0	110
55.1-70.0	100
70.1-80.0	90

80.1-90.0	80
90.1-100.0	70
100.1-120.0	60 or Subject To Corrective Action
120.1-140.0	40 or Subject to Corrective Action
140.1-160.0	20 or Subject to Correction Action
Over 160.1	0 or Subject to Corrective Action

TABLE B - NON- INTERSTATE SYSTEM	
IRI After Completion (Inches Per Mile)	Pay Adjustment (Percent Pavement Unit Price)
55.0 and Under	115
55.1-65.0	110
65.1-80.0	100
80.1-90.0	90
90.1-100.0	80
100.1-110.0	70
110.1-130.0	60 or Subject To Corrective Action
130.1-150.0	40 or Subject to Corrective Action
150.1-170.0	20 or Subject to Corrective Action
Over 170.1	0 or Subject to Corrective Action

The Engineer reserves the right to require corrective action in accordance with Table A and B. The method of correction shall be reviewed and approved by the Engineer and correction shall be performed at the Contractor's expense. The Engineer may require correction of any or all adjoining traffic lanes or shoulders at the Contractor's expense to assure uniform cross section. Methods of correction may include, but are not limited to diamond grinding, remove and replace, and asphalt concrete (AC) overlay.

Where corrections are made after the initial Department rideability test, the pavement will be retested by the Department to verify that corrections have produced the acceptable ride surface. No incentives will be provided for sections on which corrective actions have been required by the Engineer. Additional corrections may be required by the Engineer based on the retested IRI measurements at the Contractor's expense. In the event the corrective action(s) do not result in 100 percent payment, and not subject to further corrective action, the Contractor will be assessed the corresponding percent payment.

2. Single-Lift Construction

An AC layer is defined as a material lift equal to or greater than 2.5 times the maximum nominal aggregate size for the AC mix(es) specified in the Contract. A material lift less than the specified application rate or less than 2.5 times the maximum nominal aggregate size for the AC mix(es) specified in the Contract is considered a "scratch course" and not an AC layer.

Where only one AC layer shall be placed, the Department will test pavement sites subject to this special provision prior to work by the Contractor. Upon request by the Contractor, the Department will provide the IRI testing results. If this IRI testing is conducted more than 180 calendar days prior to the scheduled beginning of the work, the Department or Contractor may request new IRI testing.

Based on the average IRI (original surface and completed overlay) for each 0.1-mile length of each travel lane subject to this special provision, no corrective action will be required if the completed surface has IRI test results which indicate a 30 percent or more improvement in the ride quality. This percent improvement is based on the 0.1-mile paved section average IRI and not the individual 0.01-mile increments. When the percent improvement is achieved for a 0.1-mile section, the payments (incentives, disincentives and full payment) for the individual 0.01-mile increments will be summed. The Contractor will then be paid the greater of the total adjusted payments or 100 percent for that 0.1-mile section.

This rideability specification does not relieve the Contractor from responsibility concerning workmanship in accordance with the requirements of the Specifications, other contract requirements or as defined by the Engineer.

B. Incentive Only Projects

For projects designated as “incentive only”, Table C will be applied for calculating pay adjustment. A pay adjustment calculation will be made at each 0.01 mile segment and summed over each 0.1 mile. Any penalties, calculated at each 0.1 mile, will be ignored for incentive only projects. Only pay adjustment calculation producing an incentive for each 0.1 mile (if any) section will be summed to determine the total incentive over the project. Therefore, no disincentive will be assessed over the entire project. The contractor will be paid the greater of the total incentive or 100 percent payment for the project. The standard exemptions will be applied to calculate the average IRI over the lane.

TABLE C – INCENTIVE ONLY PROJECT	
IRI After Completion (Inches Per Mile)	Pay Adjustment (Percent Pavement Unit Price)
60.0 and Under	115
60.1-70.0	110
70.1-85.0	100
85.1-95.0	90
95.1-105.0	80
105.1-115.0	70
115.1-135.0	60
135.1-155.0	40
155.1-175.0	20
Over 175.1	0

Incentive only projects will not be subject to corrective action as a result of the rideability results. Ride testing prior to paving by the Department is not required for incentive only projects. Pay adjustments will be applied to the theoretical tonnage of the surface mix asphalt material for the lane width and section length tested. This rideability specification does not relieve the Contractor from responsibility concerning workmanship in accordance with the requirements of the Specifications, other contract requirements or as defined by the Engineer.

II. Payment

Pay adjustments will be applied to the theoretical tonnage of the surface mix asphalt material for the lane width and section length tested (generally 12 feet wide and 52.8 feet long) based on

testing prior to any corrective action directed by the Engineer. For the section(s) where corrective action is required, pay adjustment will be based on the testing after the corrective action has been accomplished.

VIRGINIA DEPARTMENT OF TRANSPORTATION
2007 ROAD AND BRIDGE SUPPLEMENTAL SPECIFICATIONS

SUPPLEMENTAL SECTION 208—SUBBASE AND AGGREGATE BASE MATERIAL

SECTION 208—SUBBASE AND AGGREGATE BASE MATERIAL of the Specifications is amended as follows:

Section 208.04—Job Mix Formula is amended to replace the first paragraph with the following:

The Contractor shall submit, or shall have the source of supply submit a job-mix formula for each mixture for the Engineer's approval through the "Producer Lab Analysis and Information Detail" (PLAID) website <https://plaid.vdot.virginia.gov> prior to starting work. The formula shall be within the design range specified in Table II-9. If unsatisfactory results or other conditions make it necessary, the Contractor shall prepare and submit a new job-mix formula for approval.

Section 208.06—Acceptance is amended to replace the second and third paragraphs with the following:

Sampling and testing for determination of grading, moisture, and Atterberg limits shall be performed by the Contractor. The Contractor shall provide such test results within 48 hours of sampling to the Department through "the Producer Lab Analysis and Information Details" (PLAID) website <https://plaid.vdot.virginia.gov>. The Contractor shall maintain appropriate current quality control charts. The Department will perform independent monitor tests at a laboratory of its choice. If there is a statistically significant difference between the two sets of results, an investigation will be made to determine the reason for the difference. If it is determined that the material does not conform to the requirements of the Contract, the material will be rejected or a payment adjustment will be made in accordance with the requirements of Section 208.08 of the Specifications.

Determination of gradation and Atterberg limits will be based on a mean of the results of tests performed on four samples taken in a stratified random manner from each lot. Lots of 2000 tons or 4000 tons may be used at the discretion of the Engineer when warranted by annual plant shipping quantity and past performance. Samples shall be obtained by methods approved by the Engineer. Any statistically acceptable method of randomization may be used to determine the time and location of the stratified random sample to be taken. The Department shall be advised of the method to be used prior to the beginning of production.

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
CRUSHED HYDRAULIC CEMENT CONCRETE (CHCC)
(USED AS SUBBASE AND AGGREGATE BASE MATERIAL)

January 14, 2008c

SECTION 208—SUBBASE AND AGGREGATE BASE MATERIAL of the Specifications is amended as follows:

Section 208.02—Materials is replaced with the following:

- (a) **Subbase material** may consist of any mixture of natural or crushed gravel, crushed stone or slag, crushed hydraulic cement concrete (CHCC), natural or crushed sand; with or without soil mortar. Subbase material may be used in a stabilized or unstabilized form.
- (b) **Aggregate base material** may be designated as Type I or Type II as follows: **Type I** shall consist of crushed stone, crushed slag, crushed hydraulic cement concrete (CHCC), crushed gravel or any combination of these material: with or without soil mortar or other admixtures. Crushed gravel shall consist of particles of which at least 90 percent by weight of the material retained on the No. 10 sieve shall have at least one face fractured by artificial crushing. **Type II** shall consist of gravel, stone, or slag screening; fine aggregate and crushed coarse aggregate; sand-clay-gravel mixtures; crushed hydraulic cement concrete; or any combination of these materials; with or without soil mortar or other admixtures. Aggregate base materials Type I or II may be used in a stabilized or unstabilized form.
- (c) **Crushed Hydraulic Cement Concrete** shall not be used as Subbase or aggregate base material when any subsurface drainage system, such as standard underdrains (UD-4 or UD-5) and /or a stabilized open graded aggregate drainage layer (OGDL) is present, except when the CHCC is cement stabilized.

Section 208.03(b) Atterberg Limits is amended to add the following:

Plasticity: Subbase and aggregate base materials shall be either non-plastic (PI=0) or shall conform to the requirements of Table II-11 of the Specifications when tested in accordance with VTM-7. If the material is classified as non-plastic (PI=0), in accordance with VTM-7, the Liquid Limit requirement will be waived. Exceptions to this provision are noted as follows:

1. 100% CHCC and 20% or less CHCC Blends will be tested and subject to penalty as noted in Table II-11 of the Specifications for the plasticity index, excluding Liquid Limit penalties.
2. Greater than 20% CHCC Blends will follow testing guidelines as set forth in Section 208.06 (b) for Atterburg limits.

Section 208.03 is amended to add the following:

- (h) **Deleterious Material:** The quantity of deleterious materials present in stockpiles of Crushed Hydraulic Cement Concrete, to be used in blending with virgin aggregates or as 100 percent CHCC, shall not exceed the following values:

MATERIAL	PERCENT BY WEIGHT (MASS)
Asphalt Concrete	5.0
Glass and Metals	5.0

Section 208.04—Job-Mix Formula is replaced by the following:

- (a) The Contractor shall submit, or shall have the source of supply submit, for the Engineer's approval, a job-mix formula for each mixture to be supplied for the project prior to starting work. The formula shall be within the design range specified in Table II-9 of the Specifications. If unsatisfactory results or other conditions make it necessary, the Contractor shall prepare and submit a new job-mix formula for approval.
- (b) A job mix formula shall be submitted for the engineer's approval for each category of CHCC mixture used. Designated categories shall indicate the mixture percentage of CHCC used according to the following criteria:
 1. **Category 1:** 100% CHCC
Category 2: 20% or less CHCC (□ 20%)
Category 3: greater than 20% CHCC but less than 100% CHCC (>20%<100%)
 2. The quantity of CHCC in the mix shall be expressed as a percentage of the total mix.

Section 208.06—Acceptance is replaced with the following:

- (a) The Contractor shall provide the quality assurance necessary for the Engineer to determine conformance to the required grading and Atterberg limits of subbase and aggregate base material.

Sampling and testing for determination of grading and Atterberg limits shall be performed by the Contractor. The Contractor shall provide copies of test results to the Department on forms furnished by the Department and shall maintain appropriate current quality control charts. The Department will perform independent monitor tests at a laboratory of its choice. If there is a statistically significant difference between the two sets of results, an investigation will be made to determine the reason for the difference. If it is determined that the material does not conform to the requirements of the Contract, the material will be rejected or a payment adjustment will be made in accordance with the requirements of Section 208.08 of the Specifications.

Determination of grading and Atterberg limits will be based on a mean of the results of tests performed on four samples taken in a stratified random manner from each 2,000-ton lot. Lots of 4,000 tons may be used when the normal daily production of the source from which the material being obtained is more than 2,000 tons. Unless otherwise approved, samples shall be obtained from the approximate center of truckloads of material. Any statistically acceptable method of randomization may be used to determine the time and location of the stratified random sample to be taken. The Department shall be advised of the method to be used prior to the beginning of production.

A lot will be considered acceptable for grading if the mean of the test results is within the deviation from the job-mix formula specified in Table II-10 of the Specifications.

A lot will be considered acceptable for Atterberg limits if the mean of the test results is less than the maximum for the liquid limit and plasticity index specified in Table II-11 of the Specifications.

If the liquid limit exceeds 30 or the plasticity index exceeds 6 for Type I base material or No. 19 subbase material; or the plasticity index exceeds 9 for Type II base material or subbase

materials No. 20, 21, 21A, 21B, or 22 on any individual sample; that portion of the lot from which the sample was taken will be considered a separate part of the lot and shall be removed from the road.

If either the amount of material in the lot is less than 2,000 tons (4,000 tons if applicable), the job-mix formula is modified within a lot, or a portion of the lot is rejected on the basis of individual test results, the mean test results of the samples taken will be compared to the job-mix formula with the tolerances given in Tables II-10 and II-11 of the Specifications for the number of tests performed.

If a visual examination reveals that material in any load is obviously contaminated or segregated, the load will be rejected without additional sampling or testing of the lot. If it is necessary to determine grading or Atterberg limits of material in an individual load, one sample (taken from the load) will be tested and the results compared to the job-mix formula with the tolerances given in Tables II-10 and II-11 of the Specifications for one test. Results obtained in the testing of a specific individual load will apply only to the load in question.

- (b) The following applies specifically to the use of Crushed Hydraulic Cement Concrete (CHCC) mixtures. All provisions for acceptance of these products shall conform to the same criteria as in (a) herein with the following additions:
1. **100% CHCC** shall conform to the requirements of this special provision.
 2. **20% or Less CHCC Blends** shall conform to the requirements of this special provision.
 3. **Greater than 20% CHCC Blends** shall conform to the following:
 - a. The virgin aggregate portion of the blend will be tested for Atterberg limits, prior to CHCC blending.
 - b. Price adjustments for Liquid Limit and the Plasticity Index of the virgin aggregates used in the blend with CHCC shall be in accordance with Table II-11 of the Specifications.
 - c. No additional testing for Liquid Limit or Plasticity Index will be required on the final blended product.
 4. All shipments of products containing CHCC must be designated on the shipping ticket (scale ticket) by the use of the letter "R". Examples: [22R, 21AR and 21BR] for: Aggregate Base material, Type I or Subbase materials.

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
STABILIZED AND PAVED SHOULDER OVERLAY

December 3, 2015

I. DESCRIPTION

This work shall consist of furnishing and placing stabilized and paved shoulder overlay on existing stabilized and paved shoulder surfaces in accordance with the requirements of the Road and Bridge Standards and the Specifications. The purpose of this work is to provide a resurfaced shoulder with a slope and guardrail height that conforms to the Road and Bridge Standards, the Specifications and the requirements herein when work is completed.

II. MATERIALS

Materials for stabilized and paved shoulder overlay shall be in accordance with the applicable requirements for the materials placed at the locations indicated in the Contract.

III. PROCEDURES

The Contractor shall furnish and place stabilized and paved shoulder overlay where specified. The material shall be spread, graded, and compacted in accordance with the requirements for stabilized and paved shoulders in Section 305.03(e) of the Specifications or as indicated elsewhere in the Contract. When overlaying the existing stabilized shoulder, the material may be paced in a single lift.

At locations without guardrail or other guide device, the width of placement of stabilized and paved shoulder overlay shall be the same as the existing stabilized or paved shoulder.

At locations with guardrail or other guide device where the existing stabilized or paved shoulder does not extend to the guardrail or other guide device, the width of placement of stabilized and paved shoulder overlay shall be the same as the existing stabilized or paved shoulder.

At locations with guardrail or other guide device where the existing stabilized or paved shoulder extends to and behind the guardrail or other guide device, the width of placement of stabilized and paved shoulder overlay shall extend to the front edge of the guardrail.

The final compacted resurfaced stabilized and paved shoulder overlay slope shall be in accordance with the requirements of the applicable standard shoulder design of Road and Bridge Standards and the Specifications. At locations where existing guardrail is not disturbed or where guardrail improvements or replacements are required, the finished guardrail height shall conform to the Road and Bridge Standards when work is completed.

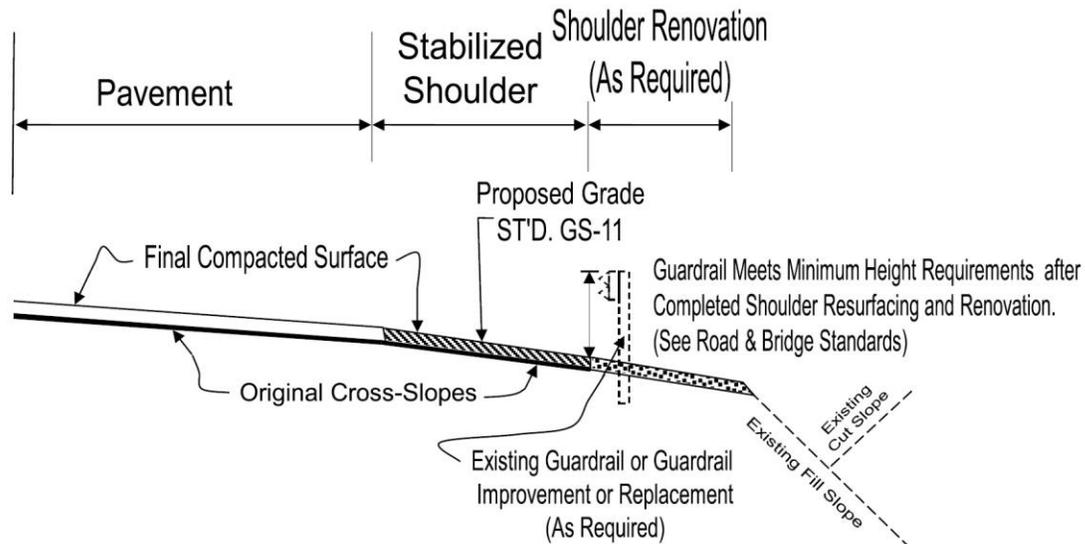
Shoulder renovation shall be as applied as required in accordance with the requirements in the Special Provision for **Shoulder Renovation**.

IV. MEASUREMENT AND PAYMENT

Stabilized and paved shoulder overlay will be measured and paid for in accordance with the applicable items required for overlaying stabilized and paved shoulders.

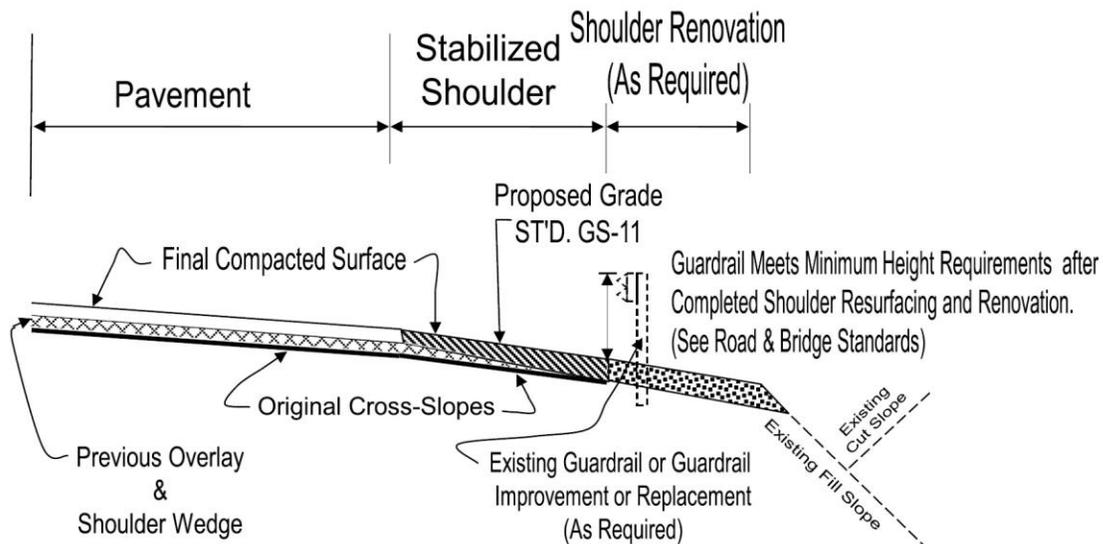
Shoulder Renovation will be measured and paid for in accordance with the Special Provision for **Shoulder Renovation**.

STABILIZED AND PAVED SHOULDER OVERLAY



Typical Section for First Overlay

Not to Scale



Typical Section for Previous Overlay

Not to Scale

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SHOULDER RENOVATION

December 9, 2015

I. DESCRIPTION

This work shall consist of renovating existing low (erosion or overlay) and high shoulders (debris buildup) and shoulders disturbed due to plant mix overlay and/or guardrail work as specified in the Contract to provide finished shoulder designs and guardrail heights that conform to the applicable Road and Bridge Specifications, Road and Bridge Standards, and these specifications. For the purposes of this provision, machining shoulders and manual shoulder restoration shall be viewed as placing, grading, and compacting operations of approved shoulder materials performed by mechanized equipment or manually. Materials allowed for renovating shoulders shall include furnishing and delivery of these materials to the jobsite or to the location(s) designated in the contract documents.

II. MATERIALS

Allowable shoulder materials shall conform to the following:

Aggregate base material (type and size as specified) shall be virgin material conforming to Section 208 of the Specifications.

Alternate Shoulder Material may include Recycled Asphalt Pavement Material (RAP), non-fractionated Crushed Hydraulic Cement Concrete (CHCC), or a blend of virgin aggregate base material and RAP or CHCC as requested for use. The use of Alternate Shoulder Material is permissive and subject to the limitations as described herein and elsewhere in the Special Provision Copied Note for Alternate Category Bid Items and Award of Contract included in the Contract.

Alternate Shoulder Material, if used, shall be 1-inch maximum size as determined visually or by field measurement. Alternate Shoulder Material shall have a loose, unconsolidated consistency and shall not contain any clusters of materials that exceed the 1-inch grading requirement. Material out of conformance with the maximum size limitation will be rejected.

Blended material, if used, shall be thoroughly mixed (manipulated) and shall have a dappled appearance when placed, graded, and compacted.

III. PROCEDURES

The following general procedures shall apply to shoulder renovation work:

The use of more than one type of approved material on uninterrupted runs of shoulder work will not be permitted.

The use of CHCC or any CHCC blended material as Alternate Shoulder Material will only be permitted in areas meeting the following conditions: No more than 3 feet in width and no more than 3 inches in compacted depth once placed.

Shoulder material shall be spread, graded, and compacted in accordance with the requirements of Section 305.03(e) of the Specifications, except as noted herein. Subgrade shaping will generally not be required unless directed by the Engineer. However, when shaping of the subgrade is required, the cost of such work shall be included in the cost of machining shoulders or manual shoulder renovation work.

The maximum compacted lift thickness of Aggregate Base Material or Alternate Shoulder Material (except CHCC or CHCC blends) shall be 6 inches. The acceptability of furnished and finished (compacted) shoulder material will be determined by visual inspection, field measurement, or a combination thereof, at the discretion of the Engineer.

Final pavement surface edge or final paved or stabilized shoulder surface edge shall include existing pavement not designated for overlay and completely compacted pavement overlays, and their corresponding shoulders.

The Contractor shall promptly remove and dispose of surplus shoulder material encountered as a result of shoulder renovation work as well as any shoulder material spilled, left or tracked on the pavement.

Grading for shoulder renovation shall be performed by the following methods:

- A. Machining shoulders** shall be performed in areas where there is no existing guardrail and none is scheduled to be placed or updated under this contract, or in areas with existing guardrail where that guardrail will not be disturbed. Machining shoulders shall also be performed in areas scheduled for new guardrail installation before new guardrail is installed, or in areas where existing guardrail will be removed in preparation for guardrail improvement or guardrail replacement. In each of these grading situations it is to be assumed grading can be performed by mechanized equipment unencumbered by existing or newly installed guardrail.

Machining shoulders shall include grading shoulders to appropriate slope and grade where sufficient material is present to renovate the existing shoulders, grading existing shoulders to fill in low areas after allowable shoulder material has been placed, or grading down areas where high shoulders exist due to debris buildup.

Machining shoulders shall result in a uniformly finished slope to the shoulder break that conforms to the applicable Road and Bridge Standards (See included sketch) after compaction. Renovated shoulders shall smoothly tie the graded shoulder edge elevation to the adjoining elevation of the final pavement surface edge and final paved or stabilized shoulder surface edge.

- B. Manual shoulder restoration** shall be used to renovate shoulders in areas where existing guardrail will be undisturbed by adjacent plant mix or other operations specified in the contract.

Manual shoulder restoration shall include grading shoulders around existing guardrail by hand or other intensive production methods to appropriate slope and grade where sufficient material is present to restore the existing shoulders, grading existing shoulders to fill in low areas after allowable shoulder material has been placed, or grading down areas where high shoulders exists due to debris buildup.

Manual shoulder restoration shall result in a uniformly finished slope to the shoulder break that conforms to the applicable Road and Bridge Standards (See included sketch) after compaction. Restored shoulder work shall smoothly tie the graded shoulder edge elevation to the adjoining elevation of the final pavement surface edge and final paved or stabilized shoulder surface edge.

Note: Aggregate base material is the only allowable material for manual shoulder restoration work unless otherwise approved by the Engineer.

Allowable shoulder materials (depending on the type of shoulder renovation operation specified in the contract or directed by the Engineer) shall be furnished and placed by the Contractor in low shoulder areas, then machined or manually graded off as necessary, and then compacted to provide a finished cross slope that conforms to the applicable Road and Bridge Standards as well as the existing road profile grade.

Where guardrail is to be installed or reinstalled, the placement widths and limits of allowable shoulder materials shall be in accordance with the detail requirements for the specific type of guardrail as designated in the contract documents and as shown in the Road and Bridge Standards, the attached sketch, or as otherwise indicated in the contract documents. Guardrail height shall conform to the Road and Bridge Standards for the applicable guardrail type once work is completed. This work shall proceed as directed by the Engineer.

IV. MEASUREMENT AND PAYMENT

Machining shoulders will be measured in linear feet along the adjacent edge of pavement and will be paid for at the contract unit price per linear foot. The price shall include placing, grading, and compaction. This price shall also include removing and disposing of surplus, spilled, and tracked material resulting from the Contractor's operations.

Manual shoulder restoration will be measured in linear feet along the adjacent edge of pavement specified in the contact documents or directed by the Engineer, and will be paid for at the contract unit price per linear foot. The price shall include placing, grading, and compaction. This price shall also include removing and disposing of surplus, spilled, and tracked material resulting from the Contractor's operations.

Aggregate base material will be measured in tons and will be paid for at the contract unit price per ton. The price bid shall include furnishing and delivery.

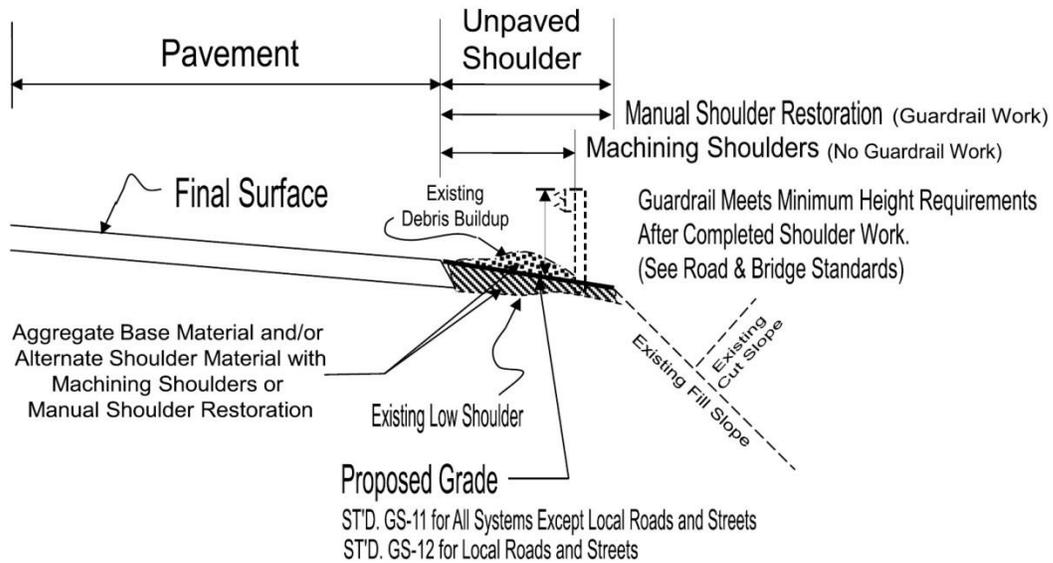
Alternate Shoulder Material, if requested and authorized for use, will be measured in tons and will be paid for at the contract unit price per ton as bid in Section 0002 of the Special Provision Copied Note for Alternate Category Bid Items and Award of Contract. The price bid shall include furnishing and delivery.

Tonnage for Alternate Shoulder Material will be based on certified weigh tickets from the source of supply, or when supplied directly from the field, will be computed on the basis of 110 pounds per inch of depth per square yard, converted to tons.

Payment will be made under:

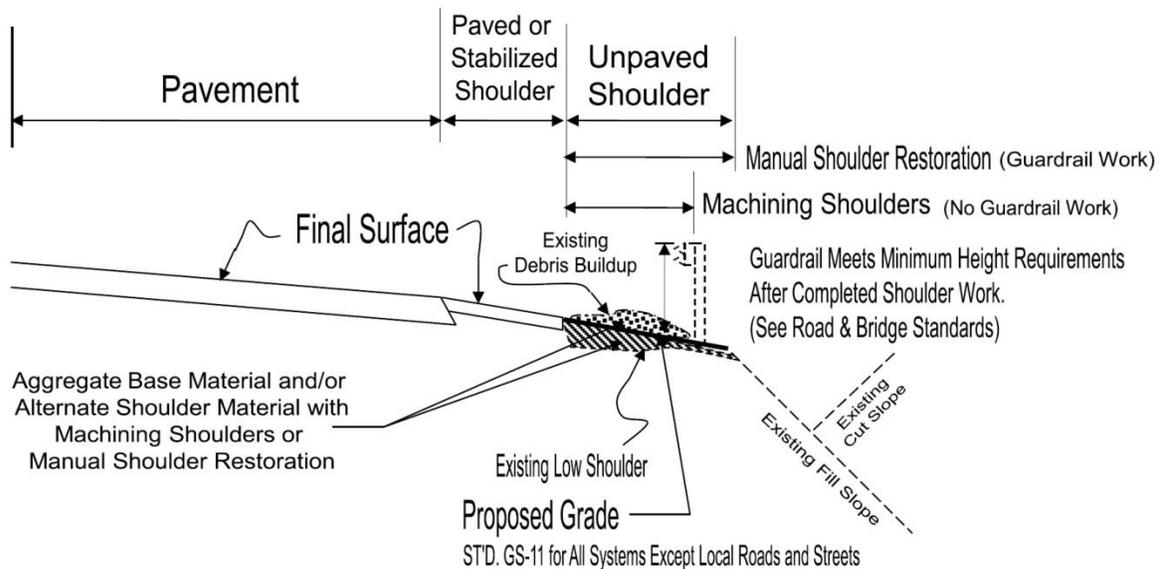
Pay Item	Pay Unit
Aggregate Base Material, Type (), No. ()	Ton
Machining Shoulders	Linear Foot
Manual Shoulder Restoration	Linear Foot
Alternate Shoulder Material	Ton

SHOULDER RENOVATION



Typical Section for Unpaved Shoulder

Not to Scale



Typical Section for Paved or Stabilized Shoulder

Not to Scale

VIRGINIA DEPARTMENT OF TRANSPORTATION
2007 ROAD AND BRIDGE SUPPLEMENTAL SPECIFICATIONS

SUPPLEMENTAL SECTION 245—GEOSYNTHETICS AND LOW PERMEABILITY LINERS

SECTION 245—GEOSYNTHETICS of the Specifications is completely replaced with the following:

SECTION 245—GEOSYNTHETICS AND LOW PERMEABILITY LINERS

245.01—Description

These specifications cover artificial fiber textile products to be used in transportation construction work, and low permeability liners for stormwater management facilities.

245.02—Shipping, Handling, and Storage Requirements

Geosynthetic shall be permanently marked with a clearly legible print showing manufacturing plant or plant Identification Code number, located on the roll edge at least every 16 feet. Rolls shall be labeled at both ends of the outside of the roll outer wrapping and both ends of the inside of the geotextile roll core, and labels shall list the roll number, production date, AASHTO M288 class(es) the product meets, and the product name; if the permanent marking contains this information, the labels may be omitted.

Each geosynthetic roll shall be wrapped or otherwise packaged in a manner that will protect the geosynthetic, including the ends of the roll, from damage due to shipment, water, sunlight, and contaminants. The protective wrapping shall be maintained during periods of shipment and storage.

During storage, geosynthetics rolls shall be elevated off the ground and adequately covered to protect them from the following: site construction damage; precipitation; extended ultraviolet radiation including sunlight; strong acids or strong bases; flames including welding sparks; temperatures in excess of 160 degrees F; and other environmental conditions that may damage the physical property values of the geosynthetic. Geosynthetics that are not properly protected may be subject to rejection.

245.03—Testing and Documentation

Each geosynthetic material provided to the project shall have a manufacture date within its current NTPEP product 3-year evaluation cycle. The manufacturer and any subsequent private labeler facility shall be listed as compliant by NTPEP within the current calendar year, or immediate past calendar year with an application for audit for the current calendar year.

VDOT may sample product from a facility or project at any time for verification sampling and testing. Failure may result in the product being rejected or removed from the Approved List.

Property values in these specifications represent minimum average roll values (MARV) in the weakest principal direction unless direction is otherwise specified; permittivity values specified are minimum; AOS and panel vertical strain values are maximum; or mass per unit area, UV degradation, and asphalt retention values are typical.

Product acceptance is determined by comparing the manufacturer test data against these specifications and using independent assurance testing, verification sampling and testing, and facility audits.

- (a) **Geotextile Fabric for Use in Silt Fences:** Geotextile shall be a woven fabric and function as a vertical, permeable interceptor designed to remove suspended soil from overland water flow. Fabric shall filter and retain soil particles from sediment-laden water to prevent eroding soil from being transported off the construction site by water runoff.

Physical Property	Test Method	Requirements
Filtering efficiency	ASTM D5141-11 and NTPEP Erosion Control Products Committee Work Plan	Min. 75%
Flow rate	ASTM D5141-11 and NTPEP Erosion Control Products Committee Work Plan	Min. 0.2 gal/ft ² /min

In addition to these requirements, the geotextile shall comply with the requirements of AASHTO M288 for temporary silt fence property requirements, Table 7, Temporary Silt Fence Property Requirements, for grab strength and ultraviolet stability.

- (b) **Geotextile for Use as Riprap Bedding Material:** Geotextile shall comply with the requirements of AASHTO M288 for separation geotextile properties, Table 3, for apparent opening size and ultraviolet stability and geotextile strength property requirements, Table 1, Class 2, for grab strength and puncture strength.
- (c) **Geotextile Fabric for Use in Drainage Systems (Drainage Fabric):** Drainage fabric shall be nonwoven and clog resistant, suitable for subsurface application, and thermally and biologically stable.

Polypropylene material is acceptable in environments with pH values between 3 and 12 inclusive; polyester material between 3 and 9 inclusive.

Physical Property	Test Method	Requirements
Permittivity	ASTM D4491	Min. 0.5 sec ⁻¹
Apparent opening size	ASTM D4751	Max. No. 50 sieve

In addition to these requirements, the geotextile shall comply with the requirements of AASHTO M288 for strength requirements, Table 1, Class 3, for grab strength.

- (d) **Geotextile for Use in Stabilization:** These are geotextiles used in saturated and/or unstable conditions to provide the functions of separation and reinforcement.

1. **Subgrade Stabilization Fabric:**

Physical Property	Test Method	Requirements
Apparent opening size	ASTM D 4751	Max. No. 20 sieve

In addition to this requirement, the geotextile shall comply with the requirements of AASHTO M 288 for strength property requirements, Table 1, Class 3, for grab strength, tear strength, and puncture strength.

2. **Embankment Stabilization Fabric Up to 6 Feet High:**

Physical Property	Test Method	Requirements
Apparent opening size	ASTM D 4751	Max. No. 20 sieve

Seam strength	ASTM D 4632	90% specified grab strength
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In addition to this requirement, the geotextile shall comply with the requirements of AASHTO M288 for strength property requirements, Table 1, Class 1 for grab strength, tear strength, and puncture strength.

- (e) **Prefabricated Geocomposite Pavement Underdrain:** Prefabricated geocomposite pavement underdrain shall consist of a polymeric drainage core encased in a nonwoven filter fabric envelope having sufficient flexibility to withstand bending and handling without damage. Prefabricated geocomposite pavement underdrain shall conform to the following:

1. **Core:** The drainage core shall be made from an inert, polymeric material resistant to commonly encountered chemicals and substances in the pavement environment and shall have a thickness of not less than 3/4 inch. Outer surfaces shall be smooth to prevent excessive wear of bonded filter fabric.

Physical Properties	Test Method	Requirements
Compressive strength panel vertical strain and core area change	ASTM D1621/D2412	Min. 40 psi at 20% deflection after 24 hrs at 0 deg F and at 125 deg F
Panel vertical strain and core area change at 22.7 psi	ASTM D6244	Max. 10% for core area and panel height
Water flow rate (after 100 hr at 10 psi normal confining pressure gradient of no more than 1.0)	ASTM D4716	Min. 15 gal/min/ft width for 12-in specimen length

2. **Filter Fabric:** Geotextile shall be bonded to and tightly stretched over the core. Geotextile shall not sag or block the flow channels, shall have a life equivalent to that of the core material, and shall conform to the requirements of (c) herein.

- (f) **Geocomposite Wall Drains:** Prefabricated geocomposite wall drain shall consist of a polymeric drainage core encased in a nonwoven filter fabric envelope having sufficient flexibility to withstand bending and handling without damage. Geocomposite wall drains shall conform to the following:

1. **Core:** The drainage core shall be made from an inert, polymeric material resistant to commonly encountered chemicals and substances in the roadway. Outer surfaces shall be smooth to prevent excessive wear of bonded filter fabric.

Physical Property	Test Method	Requirements
Compressive strength at 20% deflection	ASTM D1621/D2412	Min. 40 psi after 24 hrs at 0 degree F and at 125 degree F
Water flow rate (after 100 hr at 10 psi normal confining pressure and gradient of no more than 0.1)	ASTM D4716	Min. 15 gal/min/ft width (for 12-in specimen length)

2. **Filter Fabric:** Geotextile shall be bonded to and tightly stretched over both sides of the core. Geotextile shall not sag or block the flow channels, shall have a life equivalent to that of the core material, and shall conform to the requirements of (c) herein, except that grab strength requirement shall meet AASHTO M288 Table 1, Class 2.

- (g) **Geomembrane Moisture Barrier:** Geomembrane moisture barrier shall be resistant to biological attack. geomembrane shall be constructed of PVC and shall conform to the requirements of the PVC geomembrane Institute 1104 material specification for PVC geomembrane (Revision #1 effective April 15, 2008) and shall meet the following additional or more stringent requirements:

Physical Property	Test Method	Requirements
Thickness	ASTM D5199	Min. 30 mils
Tensile (1-in strip)	ASTM D882	Min. 0.80 kip/ft (ultimate)
Tear Strength (Die C)	ASTM D1004	Min. 8 lbf
Seam Seal Strength	ASTM D1004	Min. 0.18kip/ft

- (h) **Dewatering Bag:** A nonwoven geotextile sewn together to form a bag that can be used in lieu of a de-watering basin for the purpose of filtering out suspended soil particles. The bag shall be capable of accommodating the water flow from the pump without leaking at the spout and seams.

Physical Property	Test Method	Requirements
Grab strength @ Elongation >50%(CRE/Dry)	ASTM D4632	Min. 250 lb (min)
Seam strength	ASTM D4632	90% Specified grab strength
Puncture	ASTM D4833	Min. 150 lb
Flow rate	ASTM D4491	Min. 0.189 ft ³ /sec/ft ² (min)
Permittivity	ASTM D4491	Min. 1.2 sec ⁻¹
UV resistance	ASTM D4355	Min. 70% at 500 hr
AOS	ASTM D4751	Max. 100 sieve

- (i) **Pavement Interlayer:** Paving geosynthetics shall be used as an interlayer between pavement layers. Specific application of these paving interlayers shall be determined by the Engineer.
- Paving Fabric:** The geotextile shall conform to the requirements of AASHTO M288 Paving Fabric Property Requirements, Section 10.
 - Paving Mat:** The paving mat shall meet the requirements of ASTM D7239 Geosynthetic Paving Mat, Type 1.
- (j) **Low Permeability Liners for Stormwater Management Facilities:** SWM liner soil shall be classified as CL, CH or MH in accordance with ASTM D2487 and shall have a maximum coefficient of permeability of 1×10^{-6} cm/sec in accordance with ASTM D5084, after compaction. The maximum particle size shall be three inches in its largest dimension. Natural soils, which do not meet these specifications, may be blended with bentonite to provide the specified permeability characteristics.

Geosynthetic Clay Liner shall have a maximum coefficient of permeability of 1×10^{-8} cm/sec in accordance with ASTM D5887.

This specification is not intended for dam embankment material or clay core cut-off trench material.

VIRGINIA DEPARTMENT OF TRANSPORTATION
2007 ROAD AND BRIDGE SUPPLEMENTAL SPECIFICATIONS**SUPPLEMENTAL SECTION 501— UNDERDRAINS, CROSSDRAINS, AND EDGEDRAINS**

SECTION 501—UNDERDRAINS of the Specifications is replaced by the following:

501.01—Description

This work shall consist of constructing underdrains, crossdrains, edgedrains, and prefabricated geocomposite pavement edgedrains (PGPE), including outlet pipe, (collectively, “underdrains”) using pipe, aggregate, and geosynthetics, in accordance with these specifications, the VDOT Road and Bridge Standards, and in conformity to the lines and grades shown on the plans or as designated by the Engineer.

501.02—Materials

- (a) **Pipe** for underdrains shall conform to Section 232 of the Specifications.
- (b) **Fine Aggregate material** used to level and fill depressions in the bottoms of underdrain, crossdrain, and outlet pipe trenches shall conform to Section 202 of the Specifications.
- (c) **Coarse Aggregate material** used to backfill underdrain, crossdrain, and outlet pipe trenches shall conform to Section 203 of the Specifications and be No. 57 aggregate, No. 8 aggregate, or crushed glass conforming to No. 8 aggregate material gradation requirements.
- (d) **Geosynthetics**, including **geotextile drainage fabrics and prefabricated geocomposite pavement edge drains** shall conform to Section 245 of the Specifications.

501.03—Procedures

- (a) **Excavation:** The Contractor shall excavate trenches so that the walls and bottom are uniformly smooth and free of roots and unstable or jagged material. Fine aggregate shall be used to fill large depressions and level sharp contours and rises in the bottoms of underdrain, crossdrain and outlet pipe trenches. Excavated material shall be handled in a way that prevents contaminating clean aggregate material used to backfill the trench for the underdrain. Trench locations and grades shall be in accordance with the plans, the VDOT Road and Bridge Standards, and other contract documents.
- (b) **Placing Geosynthetics:** When geotextile drainage fabric or prefabricated geocomposite pavement edgedrain (PGPE) is required, these items shall be placed as shown on the plans and the VDOT Road and Bridge Standards. Torn or punctured fabric in either type of application shall be replaced at the Contractor’s expense. The Contractor shall correct or repair misaligned installation of geotextile fabric or inadequate overlaps at pipe joints or other locations prior to placing aggregate.

Splices, when required for PGPE, shall be made using splice kits furnished by the manufacturer and installed in accordance with the manufacturer’s written instructions. Spliced joints in PGPE shall not damage the panel or impede the open flow area of the panel, and shall maintain the vertical and horizontal alignment of the PGPE within 5 percent. The

Contractor shall construct splices in such a manner as to prevent infiltration of the backfill or any fine material into the water flow channel. Inspection ports for PGPE shall be constructed in accordance with details shown in the VDOT Road and Bridge Standards at locations as specified on the contract plans or other contract documents.

- (c) **Installing Pipe:** Perforated pipe shall be installed with the perforations facing downward on a bed of aggregate material. Pipe sections shall be joined with appropriate corresponding couplings, fittings, and plugs. Semi-round underdrain pipe shall be installed with the rounded section facing down.

The Contractor shall use concrete or other types of underdrain pipe having a minimum compressive strength of 100 psi wherever the depth of the trench is modified to a lesser depth than that shown on the VDOT Road and Bridge Standards. Pipe shall be placed with the bell end up grade. Open joints shall be wrapped with the same geotextile drainage fabric used for lining the excavation. Geotextile drainage fabric shall extend at least 18 inches in each direction past the open joint.

Upgrade ends of underdrain pipe, except for crossdrains, shall be closed with suitable plugs. The Contractor shall construct a suitable secure watertight connection through the wall of the manhole or catch basin where an underdrain connects with a manhole or catch basin.

After the Engineer has approved the underdrain pipe installation, the Contractor shall place and compact the aggregate backfill material. The Contractor shall exercise caution to ensure pipe and geotextile drainage fabric covering at open joint locations maintain their proper orientation and are not displaced during subsequent construction operations.

Outlet pipes shall be installed at the low points of sags in vertical alignment as detailed in the VDOT Road and Bridge Standards. Prior to video camera inspection, the underdrain system shall be filled with water to detect sags. The Contractor shall install outlet pipe in the trench with sections securely joined. The outlet pipe trench shall be backfilled with coarse aggregate material in layers not more than 6 inches in depth and thoroughly compacted by hand tamping, mechanical means or other Engineer-approved methods, but only after the Engineer has approved the outlet pipe installation.

Endwalls for outlet pipes shall be placed on a prepared surface that has been compacted to comply with the requirements of Section 303.04 of the Specifications. The Contractor shall make necessary repairs at the Contractor's expense if settlement of the outlet pipe or endwall occurs.

- (d) **Post-Construction Inspection:** The Contractor shall conduct a post construction video inspection of the installed system in accordance with Virginia Test Method 108 prior to requesting final acceptance of the underdrain or crossdrain system. The Engineer must approve the video camera, and borescope camera (if used for PGPE), prior to use. Video camera inspection(s) on all underdrains shall be conducted at all outlet locations including mainline longitudinal connections after all potentially damaging construction operations over, near, or adjacent to the underdrain system have been completed. Pipe underdrains, including outlet pipes, shall be inspected in 200 foot segments in both directions from the outlet pipe. PGPE shall be inspected at all inspection ports, if provided. The Contractor shall provide a copy of the inspection report, including any digital recording/photographs, etc., to the Project Inspector, the Area Construction Engineer, and the District Materials Engineer within 2 business days of the completion of the inspection. The report shall be made part of the project records.

The Engineer will review the report and communicate the Engineer's findings to the Contractor within 5 business days of the date of receiving the report. If the report identifies areas requiring remediation efforts on the part of the Contractor, and the Engineer agrees

with the proposed remediation measures submitted by the Contractor in the report, the Contractor shall be notified of such agreement and authorized to begin such work at no cost to the Department. Where the Engineer disagrees with the proposed remediation measures or identifies additional deficiencies that require remedial action by the Contractor, the Contractor will be notified of The Engineer's findings and advised to submit an amended remediation plan for review.

The Contractor shall re-inspect the deficient locations upon completion of the authorized corrective measures and satisfy the same criteria for acceptability as was used in the initial inspection for the new underdrain system. The Contractor shall continue with corrective measures and inspections at the Contractor's expense until the Engineer accepts the underdrain system at that location.

The Contractor shall remediate all deficiencies identified by the Engineer by repairing or removal and replacement of such areas at no cost to the Department. Any pavement settlement above the underdrain installation shall be repaired in kind to the satisfaction of the Engineer at the Contractor's expense

The following deficiencies are examples of unacceptable underdrain installations that require corrective action by the Contractor:

1. Crushed or collapsed pipe (including couplings, connections, or other pipe fittings) in non-PGPE underdrain, crossdrain, or outlet pipe applications that prevent passage of the 2 ½ inch diameter inspection camera.
2. Pipe that is partially crushed, deformed, splits or cracked for a length of 12 inches or greater, even if the deficiency allows the passage of the 2 ½ inch diameter inspection camera.
3. Any blockage or sediment buildup caused by rodent nests, open connections, cracks, or splits in the pipe.
4. Sags in the longitudinal profile of the underdrain pipe as evidenced by ponding of water for continuous lengths of 10 feet or greater. The Contractor shall flush the pipe run with water prior to checking for sags.
5. Blocked, partially blocked, and/or flattened PGPE panels that will not allow the passage of a 3/8 inch diameter borescope camera.
6. Outlet pipes that are installed with less than a 2 percent uniform positive grade sloped toward the outlet end.
7. Freeboard of less than 12 inches from the outlet pipe invert to the bottom of the ditch.
8. Pipe that has been penetrated, crushed, misaligned or otherwise damaged by the installation of guardrail posts, sign posts, delineator posts, etc. or similar construction.
9. Cracked endwalls, reverse sloped installations, separation of outlet pipe from the back of the endwall, missing rodent screens, and missing or improperly installed outlet markers where required.
10. Cavities or undermining of the backfill at the endwall evidenced by or leading to the instability of the endwall or erosion at the endwall or on the slope.

11. Cavities, undermining or contamination of the bedding or backfill at joints or couplings as evidenced by instability or erosion in the vicinity of joints or couplings, lack of or displacement of geotextile fabric, etc.

501.04—Measurement and Payment

Underdrains and crossdrains will be measured in linear feet, complete-in-place, and will be paid for at the contract unit price per linear foot for the standard specified. The contract unit price for underdrains and crossdrains installed at depths greater than those shown in the VDOT Road and Bridge Standards will be increased 20 percent for each 1-foot increment of increased depth. No adjustment in the contract unit price will be made for an increment of depth of less than 6 inches. The contract unit price shall include removing and replacing pavement in kind when underdrains or crossdrains are to be installed under pavement that is not constructed under the contract.

Prefabricated geocomposite pavement edgedrains (PGPE) will be measured in linear feet, complete-in-place, and will be paid for at the contract unit price per linear foot. This price shall include furnishing and installing edge drain including connections.

Outlet pipe for underdrain, crossdrain, and PGPE systems will be measured in linear feet, complete-in-place, and will be paid for at the contract unit price per linear foot.

These prices shall include furnishing and installing underdrain and outlet pipe (including couplings, fittings, and plugs), geotextile drainage fabric, aggregate materials, splice kits, inspection ports (if designated), and outlet markers (if used). These prices shall also include excavating or trenching, leveling or filling depressions, backfilling, compaction, disposing of surplus and unsuitable materials, and video inspection.

Payment will be made under:

Pay Item	Pay Unit
Underdrain (Standard)	Linear foot
Crossdrain (Standard)	Linear foot
PGPE (Standard)	Linear foot
Outlet pipe	Linear foot

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
**REPLACEMENT OF GUARDRAIL, MEDIAN BARRIER, IMPACT ATTENUATOR, AND GUARDRAIL
TO BRIDGE ATTACHMENTS**

November 4, 2011

I. DESCRIPTION

This work shall consist of repairing or replacing damaged guardrail, median barrier, impact attenuators and bridge/guardrail attachments, in accordance with this provision, the plans and as directed by the Engineer.

II. MATERIALS

Guardrail and guardrail components shall conform to Section 505 of the Specifications.

Impact attenuator repair shall use replacement parts from the original manufacturing company.

Sign Panels shall conform to Section 701 of the Specifications.

Guardrail Delineators shall conform to Section 702 of the Specifications.

III. PROCEDURES

The Contractor shall inspect the locations and prepare a list of materials and quantity needed for repair for the Engineers review prior to commencing work. The Engineer will notify the Contractor to repair the guardrail by components or to remove and replace sections of damaged guardrail.

The Engineer will preapprove all locations requiring the drilling of holes in bridge railings or fixed objects. The Contractor shall repair any spalling due to the drilling operations in concrete fixed objects or concrete bridge railings and existing holes in concrete shall be patched with materials conforming to Section 218 of the Specifications.

The Contractor shall perform work in accordance with Section 505 of the Specifications, the *Road and Bridge Standards* and the standard drawings for "Recommended Method for Attaching Guardrail to Bridge Rails" (BR-GR). The Contractor may need to modify the method of attachment due to field conditions with the approval of the Engineer.

The Contractor shall reconstruct impact attenuators in accordance with the manufacturers' recommendations.

Pay items with the designation "Install " are materials furnished by the Department for the Contractors use in repair of guardrail installations in accordance with Sections 505 and 510 of the Specifications and as directed by the Engineer. The Engineer will indicate per site the quantity and materials to be installed and the location of the materials for the Contractors use. The Contractor shall make arrangements with the Area Headquarters 48 hours prior to picking up the materials for installation. All sites designated for use of "Install" materials will be within 25 miles of an Area Headquarters.

Damaged and salvaged guardrail materials shall become the property of the Contractor and shall be disposed of in accordance with Section 106 of the Specifications, unless otherwise specified.

All unused or abandoned guardrail post holes shall be backfilled to existing ground level with approved material placed in layers not more than 4 inches in height. Each layer shall be compacted by tamping. All unused or abandoned post holes in paved shoulder shall be backfilled, compacted and sealed with a fine asphalt plant mix no larger than SM-9.5A. No measurement or payment will be made for this work all cost shall be included in other items of work.

Cracks in the shoulder as a result of driving or removing guardrail posts shall be repaired at no additional cost to the Department. In soil or aggregate stabilized shoulders, cracks and voids around the posts shall be filled with like material and thoroughly compacted. In asphalt paved or surfaced treated shoulders, cracks and voids around post shall be filled, compacted, and sealed with fine asphalt plant mix no larger than SM-9.5A. No measurement or payment will be made for this work all cost shall be included in other items of work.

The Contractor shall ensure all existing guardrail and end treatments left in place are correct and all bolts, are torqued properly and cables are taut.

All guardrail to be removed shall start at the run off end and proceed to the run on end terminal, unless otherwise approved by the Engineer.

Guardrail installation shall start at the run on end terminal and proceed to the run off end, unless otherwise approved by the Engineer.

All guardrail that is removed during the course of the work day shall be replaced the same work day, unless otherwise approved by the Engineer.

No fixed objects, which includes but not limited to bridge parapet walls, piers, blunt ends, sign structures, shall not be left unprotected. The Contractor shall use an approved NCHRP 350 approved, temporary guardrail terminal or impact attenuator service before the end of each workday to protect traffic from the fixed object. No measurement or payment will be made for temporary guardrail terminal or impact attenuator service, all cost shall be included in other items of work. The Contractor shall plan and prosecute the work accordingly.

No uncompleted sections of guardrail shall be left over weekends or holidays, unless otherwise approved by the Engineer. The Contractor shall plan and prosecute the work accordingly.

All aggregate and other material placed at the guardrail terminal end section shall be included in the pay item "guardrail terminal site preparation".

Build-up or debris under existing guardrail in areas where guardrail is to be replaced shall be removed to the original shoulder cross slope, in accordance with the contract Special Provisions.

Reset existing guardrail shall require the removal and disassembly of the existing w-beam and blockouts to redrill the post for the reassembly of the blockouts and w-beam to the required height specified. In the event the existing post or blockouts are determined non-compliance with the standard drawings or specifications new post or blockouts will be required and will be measured and paid for separately.

IV. MEASUREMENT AND PAYMENT

Guardrail, Reuse Guardrail, Radial Guardrail, Median Barrier, Radial Median Barrier, Cable Barrier, Guardrail Terminal, Median Barrier Terminal and Fixed Object Attachment will be measured and paid for in accordance with Section 505 of the Specifications.

Remove Guardrail, Reset Guardrail and Install Guardrail will be measured and paid for in accordance with Section 510 of the Specifications.

Sign Panel and Guardrail Delineator will be measured and paid for respectively in accordance with Sections 701 and 702 of the Specifications.

Drill Hole will be measured in units of each and will be paid for at the contract unit price per each, which unit price shall include drilling of hole, repairing spalled areas, and patching abandoned holes.

Re-Tension Existing Cable GR. will be measured in units of each per cable system and will be paid for at the contract unit bid price per each for the standard specified, which shall include re-tensioning the existing cable.

The items below will include removal and disposal of existing guardrail components in the unit price bid.

Guardrail Post, Guardrail Blockout and Offset Block will be measured in units of each for the type and standard specified and will be paid for at the contract unit price per each which price shall include furnishing and installing post, blockout and offset block and hardware.

W Beam Terminal Connector, W Beam End Section and Terminal Connector will be measured in units of each for the standard or type specified and will be paid for at the contract unit price per each, which shall include furnishing and placement, and mounting hardware.

Rubrail will be measured in units of linear feet for the type specified and will be paid for at the contract unit price per linear foot, which shall include furnishing and placement of type rubrail specified, and mounting hardware.

Guardrail Beam and Radial Guardrail Beam will be measured in units of linear feet for the type and standard specified and will be paid for in units of linear foot, which unit price shall include furnishing the type and standard beam specified, and mounting hardware.

Plate will be measured in units of each for the type and standard specified and which unit paid shall include furnishing and placing the specified plate and mounting hardware.

Cable will be will be measured in units of linear feet for the type and standard specified and will be paid for in units of linear foot, which unit price bid shall include furnishing the type and standard cable specified, and mounting hardware.

Realign Post will be measured in units of each and will be paid for at the contract bid price per each, which unit price bid shall include disconnecting and reconnecting rail and realigning the post.

BR-GR Attachment will be measured in units of each, for the type specified per attachment location and will be paid for at the contract unit bid price per each attachment, which shall include furnishing and installing guardrail, blockouts, connector, and hardware.

Steel Tube will be measured in units of each for the type and standard specified and will be paid for at the contract bid price per each, which shall include furnishing and placing of the steel tube, and excavation.

Assembly will be measured in units of each for the type and standard specified and will be paid for at the contract unit bid price per each, which shall include furnishing and placing the specified assembly.

Cable Assembly & Anchor Plate will be measured in units of each for the type and standard specified and will be paid for at the contract unit bid price, which shall include furnishing and installing the cable assembly and anchor plate for the type and standard specified, and hardware.

End Post Caps will be measured in units of each for the standard specified and paid for at the contract unit bid price per each, which shall include furnishing and installing end post caps, and hardware.

Hook Bolt will be measured in units of each for the standard specified and will be paid for at the contract unit bid price per each, which unit price bid shall include furnishing and installing hook bolts.

Angle will be measured in units of each for the type and standard specified and will be paid for at the contract unit bid price per each, which shall include furnishing and installing the specified angle, and hardware.

Soil Plate will be measured in units of each for the standard specified and will be paid for at the contract unit price per each for the standard specified, which shall include furnishing and installing the specified plate, and hardware.

Pipe Sleeve will be measured in units of each for the standard specified and will be paid for at the contract unit price per each for the standard specified, which shall include furnishing and installing the specified pipe sleeve, hardware and removal and disposal of existing pipe sleeve.

Cable Anchor Bracket will be measured in units of each for the standard specified and will be paid for at the contract unit price per each for the standard specified, which shall include furnishing and installing the specified cable anchor bracket, and hardware.

Strut will be measured in units of each for the standard specified and will be paid for at the contract unit price per each for the standard specified, which shall include furnishing and installing the specified strut, and hardware.

Guardrail Extruder will be measured in units of each for the standard specified and will be paid for at the contract unit price per each for the standard specified, which shall include furnishing and installing the specified guardrail extruder, and hardware.

Impact Attenuator Cartridge will be measured in units of each for the original manufacturers' replacement cartridge and will be paid for at the contract unit price per each for the original manufacturers replacement part and hardware, which shall include furnishing and installing in accordance with the manufacturers recommendations.

Nose Section will be measured in units of each for the original manufacturers' replacement nose section and will be paid for at the contract unit price per each for the original manufacturers' replacement part and hardware, which shall include furnishing and installing in accordance with the manufacturers recommendations.

Diaphragm will be measured in units of each for the original manufacturers' replacement diaphragm and will be paid for at the contract unit price per each for the original manufacturers' replacement part and hardware, which shall include furnishing and installing in accordance with the manufacturers recommendations.

Frame will be measured in units of each for the original manufacturers replacement frame and will be paid for at the contract unit price per each for the original manufacturers' replacement part and hardware, which shall include furnishing and installing in accordance with the manufacturers recommendations.

Side Panel will be measured in units of each for the original manufacturers' replacement side panel and will be paid for at the contract unit price per each for the original manufacturers' replacement part and hardware, which shall include furnishing and installing in accordance with the manufacturers recommendations.

Sand Barrel will be measured in units of each for the original manufacturers replacement sand barrel and will be paid for at the contract unit price per each for the original manufacturers replacement parts and hardware, which shall include furnishing and installing in accordance with the manufacturers recommendations.

Reset Existing Guardrail will be measured in units of linear feet and will be paid for at the contract unit price per linear foot. This price shall include removal of guardrail w-beam and blockouts, drilling new hole(s) in the existing post, reinstalling the w-beam and blockouts, with new hardware.

Remove and Relocate Existing Guardrail (Standard) will be measured in units of linear feet for the standard and type specified and will be paid for at the contract unit price per linear foot for the standard and type specified. This price shall include disassembly and removal of guardrail w-beam, post, blockouts, hardware, backfilling existing postholes, repairing damage to shoulders, curbing, curb backup material or concrete, transporting and storing; repairing and installing salvaged beam; and installing guardrail post, blockouts, w-beam, delineators, concrete, and new hardware.

Reuse Existing Guardrail W-Beam (Standard) will be measured and paid for at the contract unit price per linear foot. The price bid shall include salvaging and installing existing W-beam, transporting w-beam to the site, furnishing and installing new post, blockouts, delineators, new hardware.

Payment will be made under:

Pay Item	Pay Unit
(Type) Post (Standard)	Each
Guardrail Blockout	Each
Guardrail Beam	Linear Foot
Radial Guardrail Beam	Linear Foot
Cable (Standard)	Linear Foot
Offset Block (Type)	Each
Terminal Connector (Type or Standard)	Each
W Beam End Section (Type)	Each
Rubrail (Type)	Linear Foot
BR-GR Attachment (Type)	Each
Drill Hole	Each
(Type) Plate (Standard)	Each
Realign Post	Each
Steel Tube (Standard)	Each
(Type) Assembly (Standard)	Each
Cable Assembly & Anchor Plate (Standard)	Each
End Post Caps (Standard)	Each
Hook Bolt (Standard)	Each
(Type) Angle (Standard)	Each
Re-Tension Existing Cable GR. (Standard)	Each
Soil Plates (Standard)	Each
Pipe Sleeve (Standard)	Each
Cable Anchor Bracket (Standard)	Each
(Type) Strut (Standard)	Each

Guardrail Extruder (Standard)	Each
Impact Attenuator Cartridge	Each
Nose Section	Each
Diaphragm	Each
Side Panel	Each
Frame	Each
Sand Barrel	Each
Reset Existing Guardrail	Linear Foot
Remove And Relocated Existing Guardrail (Standard)	Linear Foot
Reuse Existing Guardrail W-Beam (Standard)	Linear Foot

SS22101-0412

January 6, 2012

VIRGINIA DEPARTMENT OF TRANSPORTATION
2007 ROAD AND BRIDGE SUPPLEMENTAL SPECIFICATIONS

SUPPLEMENTAL SECTION 221—GUARDRAIL

SECTION 221—GUARDRAIL of the Specifications is amended as follows:

Section 221.02(e)2 is replaced with the following:

2. **Sheet steel for fabricated shapes** shall conform to the requirements of ASTM A1011, Grade 36.

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
PEDESTRIAN ACCOMMODATION DURING PAVING OPERATIONS

October 6, 2015

Paving Schedule Operations are defined as Temporary Operations for the purposes of providing minimum temporary accommodation at existing curb ramps where a vertical rise greater than ¼ inch will be left at the end of the work hours at existing curb ramps.

Slopes specified herein shall be read as:

LENGTH : HEIGHT

If reasonable accommodations at the end of the work hours cannot be provided through alternative routing (e.g., pedestrian detour), then the Contractor shall place an asphalt wedge, an approved temporary wedge device, or an approved temporary ramp device at each affected curb ramp. This feature shall have a slope of at least 2:1 for the full limits of each curb ramp. Wedges and temporary devices locations, where temporary work zone devices cannot be placed, shall require a slope on the sides of the wedge at approximately 4:1 to allow for vehicles, motorcycles and bicycles to travel laterally over the wedge. Wedges and temporary devices shall be installed and maintained with a firm, stable and slip resistant surface and placed to minimize the deviations in rise or fall on the approach to and departure from the landing surfaces for the pedestrian. Incidental to the paving operation, the wedge and any temporary devices shall be removed and the ramp properly closed before the surface is prepared for paving operations at the location. The Engineer may waive the installation of the wedge, at locations with a tight corner radius or where a wedge would conflict with a bicycle lane, and shall instead require closure of the ramp with a barricade and sign at each ramp and placement of alternative routing if a practical and feasible routing exists.

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
**SECTION 512—MAINTAINING TRAFFIC
(ASPHALT SCHEDULES)**

December 10, 2015

SECTION 512—MAINTAINING TRAFFIC of the Specifications is replaced as follows:

512.01—Description

This work shall consist of maintaining traffic and protecting workers through temporary work areas, maintaining public and private entrances and mailbox turnouts, constructing and obliterating temporary traffic diversions, providing positive guidance to the traveling public within the limits of the work area and over approved traffic detours. All work shall be in accordance with the [Virginia Work Area Protection Manual with Revision Number 1 incorporated](#) (VWAPM), the Virginia Supplement to the MUTCD, the MUTCD, the VDOT Road & Bridge Standards, and the Contract documents, as directed by the Engineer.

512.02—Materials

- (a) **Materials** salvaged from the roadway shall be used in the maintenance of traffic insofar as possible. Material shall conform to the applicable specifications for the intended work or use.
- (b) **Signalization, barricades, channelizing devices, safety devices, and pavement markings** shall conform to the applicable specification requirements in Division VII, Traffic Control Devices, of the VDOT Road and Bridge Specifications and the VWAPM except where otherwise indicated. Retroreflective surfaces shall conform to Sections 235, 238, 247, and 702 of the Specifications as applicable.
- (c) **Temporary pavement markers** shall conform to Section 235 of the Specifications.
- (d) **Flexible temporary pavement markers (FTPMs)** shall be per the *Special Provision for SECTION 704—PAVEMENT MARKINGS AND MARKERS*.
- (e) **Temporary (Construction) pavement markings** shall conform to Section 246 of the Specifications.
- (f) **Temporary (Construction) signs** for traffic control during construction, maintenance, permits, utility, and incident management activities shall conform to Section 247 of the Specifications.

Sign substrates for rigid temporary (construction) signs mounted on posts and temporary (construction) sign panels for overlays shall be fabricated of aluminum at least 0.080-inch thick, which shall be smooth, flat, and free of metal burrs and splinters, or 0.4-inch-thick corrugated polypropylene, or 0.4-inch-thick corrugated polyethylene plastic, or 0.079-inch-thick aluminum/plastic laminate.

Sign substrate materials for signs mounted on drums, Type 3 barricades, and portable sign stands shall be as specified below and shall be the same material that was used when the device was tested and found to be in compliance with the requirements of *National*

Cooperative Highway Research Program (NCHRP) Report 350, Test Level 3, or of other materials allowed in the FHWA acceptance letter.

Sign Substrates for Type 3 Barricades and Portable Sign Stands

Rollup sign
 0.4 inch thick corrugated polypropylene or polyethylene plastic
 0.079 inch thick aluminum/plastic laminate

Sign Substrates for Drums

0.4 inch thick corrugated polypropylene or polyethylene plastic

512.03—Procedures

Traffic shall be maintained and protected in accordance with Section 105.14 of the Specifications. The Contractor shall schedule and perform the Work in a manner that provides minimum interference and maximum protection for public traffic. The Contractor's personnel, equipment, machinery, tools, and supplies shall be kept outside the clear zone (VWAPM Appendix A) and clear of active traffic lanes and active pedestrian and bicycle facilities except as necessary for progressively prosecuting active work. The Contractor shall build stabilized construction entrances in work areas where there is a potential for work vehicles to track material from the work site onto a paved surface. Material that is spilled or tracked onto the traveled pavement during prosecution of the work shall be promptly removed.

Traffic Groups based on the vehicles per day (ADT) are as follows:

Traffic Group	ADT	Traffic Group	ADT
I	0-9	X	2,000-2,999
II	10-24	XI	3,000-3,999
III	25-49	XII	4,000-4,999
IV	50-99	XIII	5,000-5,999
V	100-249	XIV	6,000-9,999
VI	250-399	XV	10,000-14,999
VII	400-749	XVI	15,000-19,999
VIII	750-999	XVII	20,000-29,999
IX	1,000-1,999	XVIII	30,000-39,999
		XIX	40,000 & over

The Contractor shall maintain traffic control devices throughout construction requiring their use, which shall include but not be limited to, repositioning displaced devices including traffic barrier service, replacing due to inadequate structural integrity including traffic barrier service, replacing due to loss of reflectivity, repairing defaced sheeting and legend, replacing broken supports, repositioning leaning signs so they are plumb and the sign face is perpendicular to the pavement edge, cleaning dirty devices, replacing and repositioning due to weather related conditions, and replacing stolen, vandalized or damaged devices. Safety and protective devices furnished by the Contractor shall remain the property of the Contractor and shall be removed from the project site upon completion of the work or as directed by the Engineer.

The Contractor shall inspect all temporary traffic control devices, barriers, and other safety devices daily and periodically throughout the day. Traffic switches/changes, repairs or adjustments to temporary traffic control devices shall be documented on the Work Zone Safety Checklist form. Nighttime reviews shall be conducted twice monthly on long-term stationary projects and documented on the Work Zone Safety Checklist form and a copy submitted to the Engineer.

Replacement and correction of ineffective work zone traffic control devices shall be accomplished in accordance with the *American Traffic Safety Service Association's (ATSSA) Quality Standards for Work Zone Traffic Control Devices* with the following additions and exceptions:

1. Replacing and correcting temporary (construction) pavement markings and markers shall conform to the requirements herein.
2. The categories for "Arrow Board (Flashing Arrow and Double Arrow Mode)" are replaced by the following:

Acceptable: No required lamps out in stem and arrow head(s), and dimming properly.

Marginal: No more than 1 required lamp out in the stem and no lamps out in the head(s), and dimming properly.

Unacceptable: Any lamp out in the head(s) or more than 1 required lamp out in the stem, or arrow board not dimming properly.

3. "Arrow Board (Chevron Mode)" is replaced by the following:

EVALUATION GUIDE - ARROW BOARD (Chevron Mode)

Acceptable: No lamps out in any chevron segment and dimming properly.

Marginal: Not more than 1 lamp out in a maximum of 1 chevron segment and dimming properly.

Unacceptable: 2 or more lamps out in any one chevron segment or 1 lamp out on 2 or more chevron segments or not dimming properly.

4. "Arrow Board (Caution Mode - Corners)" is replaced by the following:

EVALUATION GUIDE - ARROW BOARD (CAUTION MODE - CORNERS)

Acceptable: No lamps out and dimming properly.

Unacceptable: Any lamp out or arrow board not dimming properly.

Any operating lamp in an arrow board display that is misaligned and does not meet minimum visibility requirements will be considered nonfunctioning and out.

The Contractor shall correct "Unacceptable" arrow board conditions immediately.

The color of Automated Flagger Assistance Device trailers, arrow board trailers, portable traffic control signal trailers, ITS trailer equipment, and portable changeable message sign trailers and sign frames shall be either Virginia highway orange (DuPont Color No. LF74279 AT or color equivalent) or federal yellow. The back traffic facing trailer frame, where the signal and brake lights are located, shall be fully covered with 2 inch high retroreflective sheeting conforming to Section 247.02(c) of the Specifications. The sheeting shall have alternating 11 inch wide vertical red stripes and 7 inch wide vertical white stripes.

Stationary Automated Flagger Assistance Devices, ITS equipment trailers, portable changeable message sign trailers and arrow board trailers located within the clear zone shall be delineated with a minimum of four (4) Group 2 Drums, installed in advance of the device and spaced appropriately for the posted speed limit. Four Group 1 Cones may be substituted for Group 2 Drums in advance of arrow board trailers in short-term stationary and short duration applications.

- (a) **Temporary (Construction) Signs:** The Contractor shall furnish, install, remove, relocate, and maintain temporary (construction) signs and/or sign panels necessary for prosecution of the work which shall include but not be limited to, maintenance of traffic, off project detour signs and begin and end of road work for construction, maintenance, permit, utility, and incident management activities. The Contractor shall also furnish and install those signs not listed in the *VWAPM*, the *Virginia Supplement to the MUTCD*, the *MUTCD*, or the Contract (such as "Turn Lane Open with arrow" and "Grooved Pavement Ahead") that may be required by the Engineer.

The Contractor shall fabricate or obtain signs which meet the design standards of the *Virginia Supplement to the MUTCD*, *VWAPM*, *Virginia Standard Highway Sign book*, the *MUTCD*, and the *Standard Highway Signs and Markings* book and its *Supplement*. The Contractor shall submit shop drawings for any regulatory or warning signs not found in these manuals to the State Traffic Engineer for approval prior to fabrication or installation. The shop drawing shall include sign size, legend, font, legend dimensions, radius, border, margins, sheeting type, and colors.

The Contractor shall relocate, cover, uncover, remove, and / or reinstall existing signs that conflict with the signs needed for maintenance of traffic. Covering existing signs shall be accomplished in accordance with Section 701.03(d) of the Specifications.

The Contractor shall ensure an unrestricted view of sign messages and legibility of the sign messages. The Contractor shall furnish and install flags for temporary (construction) signs, as directed by the Engineer; however, flags will not be required for use on portable sign supports.

Signs and their placement shall conform to the *VWAPM*, the *Virginia Supplement to the MUTCD*, the *MUTCD*, the Contract documents and as directed by the Engineer. When the sign layout is not provided in the plans, either by illustration or reference to a typical traffic control figure in the *VWAPM*, the Contractor shall submit a sketch of his proposed temporary (construction) sign layout to the Engineer for approval before installation. The Contractor shall furnish sign supports, i.e., wood posts, square tube posts, or alternate posts, barrier and wall attachments, and hardware for use with the temporary (construction) signs. Signs shall be installed and attached to wooden supports in accordance with Standard WSP-1 of the *VDOT Road and Bridge Standards* or to square tube sign posts. The top of the sign post may extend no more than two feet above the top of the sign. The size and number of supports shall be in accordance with the details in the Standards. Square tube sign posts used to support temporary (construction) signs may be spliced in no more than one location.

Retroreflective rollup sign base materials conforming to Section 247 of the Specifications may be used for both daytime and nighttime operations up to a maximum of three consecutive days (72 continuous hours).

The Contractor shall furnish portable sign stands for mounting temporary (construction) signs in accordance with the following:

1. Portable sign stands for sign installations, their placement, and the allowed time of use in lieu of post installation, shall conform to the *VWAPM*, the *Virginia Supplement to the MUTCD*, the *MUTCD*, the Contract documents and as directed by the Engineer.
2. Portable sign stands shall be used with signs having a substrate material of the type required in Section 512.02(f) of the Specifications and that were tested and found to be in compliance with NCHRP Report 350, Test Level 3, MASH, or otherwise accepted in an FHWA acceptance letter for the specific sign stand.

Portable sign stands shall conform to NCHRP Report 350, Test Level 3, and/or MASH, and shall be selected from those shown on the *VDOT NCHRP-350 Approved List*. The

Contractor shall submit a certification letter stating the brands and models of portable sign stands to be used along with a copy of the FHWA acceptance letter indicating compliance with NCHRP Report 350, Test Level 3, or MASH. Portable sign stands shall be self-erecting and shall accommodate signs of the shape planned for use on the project. Portable sign stands shall support a 20 square foot sign in sustained winds of 50 miles per hour or wind gusts of passing vehicles without tipping over, walking, or rotating more than ± 5 degrees about its vertical axis. Additional weight consisting of no more than one sandbag weighing approximately 25 pounds placed on each leg or no more than two drum collar weights positioned on the center of the sign stand and around the mast may be used to comply with this requirement. When used on uneven surfaces, the portable sign stand shall be capable of adjusting to such surfaces to allow the signs to be placed approximately plumb to their position ± 15 degrees. Portable sign stands shall include decals, stenciling, or some other durable marking system that indicates the manufacturer and model number of the stands. Such marking shall be of sufficient size so it is clearly legible to a person in a standing position.

When a portable sign stand is used to mount a temporary STOP (R1-1) sign, YIELD (R1-2) sign, EXIT OPEN (E5-2) sign, EXIT CLOSED (E5-2a) sign, EXIT (E5-V1) sign and TURN LANE (M4-V8L) sign, the sign shall be mounted at least 7 feet from the pavement surface to the bottom of the sign on intermediate-term, stationary operations or work operations of less work durations. For long term stationary projects, these signs shall be post mounted.

The Contractor shall cover the entire sign face with opaque material approved by the Engineer when temporary (construction) signs are required to be covered to prevent the display of the sign message. Plywood shall only be used to cover post mounted temporary (construction) signs. Sign covering material attachment methods shall be a durable construction that will prevent the unintentional detachment of the material from the sign. At no time shall a temporary (construction) sign on post or portable sign support be rotated to prevent the display of the message. The Contractor shall mount two ED-3 Type II delineators vertically on the posts of covered signs below the signs at a height of 4 feet to the top of the uppermost delineator. The bottom delineator shall be mounted 6 inches below the top delineator. The color of the delineator shall match the color of the pavement marking edge line. If no edge lines exist, the delineator shall be white.

- (b) **Flagger Service and Pilot Vehicles:** The Contractor shall provide flagger service in accordance with Section 105.14(c) of the Specifications.

The Contractor shall have no less than one flagger at the beginning and one flagger at the ending of each work site on roadways having less than 2,000 vehicles per day (ADT). The Contractor shall have no less than two flaggers at the beginning and two flaggers at the ending of each work site on roadways having over 2,000 ADT. When the Engineer determines additional flaggers are necessary at the work site, the Contractor shall furnish them. On a divided highway the Engineer will instruct the Contractor where flaggers shall be stationed. Pilot trucks in accordance with Section 512.03(e) of the Specifications shall be used on all roads where modified seal treatments, seal treatments using latex modified emulsified asphalt (CRS-2L) and other seal treatments on roads having more than of 49 ADT are being placed, unless otherwise directed by the Engineer.

Where necessary and approved by the Engineer, the Contractor shall provide pilot vehicles in conjunction with flagger service to maintain two-way traffic. Each vehicle shall be equipped with at least one roof mounted vehicle warning light and shall display required signs conforming to Chapter 6F of the VWAPM while in service.

- (c) **Automatic Flagger Assistance Device (AFAD):** An AFAD system consists of two or more paired AFAD devices of the same make and model, allowing the paired system to be

operated remotely by one or more operators. The trailers or carts and all mounted equipment shall be structurally adequate for unlimited normal operation in wind velocities up to 80 mph.

AFAD use shall conform to Sections 6E.04 and 6E.05 or 6E.06 of the VWAPM and this specification. AFADs shall not be used with multiple operators and/or for distances greater than 800 feet without prior approval by the Regional Traffic Engineer.

The Contractor shall submit proof of purchase and a letter certifying that their AFAD meets the requirements of the VWAPM.

All operators shall exclusively operate their AFAD in the AFAD system. The operating remote shall be capable of working the STOP/SLOW Sign AFAD and its flashing beacons or the CIRCULAR RED/YELLOW Lens AFAD and their intrusion alarm. The minimum communication range between the AFADs shall be one mile. The AFAD unit shall be equipped with a manual override system in case the remote fails.

The gate arm shall be made of a lightweight rigid material that deflects if an errant vehicle strikes the gate arm. The gate arm shall deflect and return to a functional position after the errant vehicle clears the gate arm. The height of the bottom of gate arm to the crown of the roadway shall be a minimum of 3.5 feet to a maximum of 4.5 feet.

Transition between STOP and SLOW Conditions - The gate arm shall begin descent to the down position no less than 2 seconds or more than 4 seconds after the AFAD unit displays the STOP face or Red Lens for approaching traffic to stop. The gate arm shall begin ascent to the upright position not less than 1 second or more than 2 seconds prior to display of the SLOW face or the Yellow Lens that allows stopped traffic to proceed.

STOP/SLOW AFAD Transition between STOP and SLOW Conditions:

Slow to Stop: The RED lens beacon shall enter a "flashing mode" at least 5 seconds before transitioning from the SLOW face to the STOP face. Immediately upon completion of the transition to display of the STOP face, the "flashing mode" of the RED lens beacon shall transition to a steadily illuminated condition.

Stop to Slow: The gate arm shall begin its ascent to the upright position not less than 1 second prior to the initiation of the transition from the STOP face to the SLOW face. The RED lens beacon shall cease to illuminate and the flashing YELLOW lens beacon shall begin to illuminate immediately upon completion of the transition of the STOP face to the SLOW face and the ascent of the gate arm to its completed upright position.

RED/YELLOW lens AFAD Transition between RED and YELLOW Conditions:

Yellow to Red: A flashing CIRCULAR YELLOW lens shall enter a steady illumination phase for a minimum of 5 seconds prior to transitioning to the steady illuminated Circular RED indication. The gate arm shall remain in the upright position during the display of the illuminated CIRCULAR YELLOW change interval.

Red to Yellow: The gate arm shall complete its ascent to the upright position within 1 to 2 seconds prior to flashing Circular YELLOW lens illumination. The illuminated Circular RED lens shall transition to the flashing Circular YELLOW lens. A change interval shall not be provided between the display of the CIRCULAR RED indication and the display of the flashing CIRCULAR YELLOW indication.

Portable Temporary Signals shall not be used in lieu of the AFAD.

(d) **Electronic Arrows:** Electronic arrows shall be electronic flashing amber arrow, sequential chevron amber arrow, or flashing amber four corner caution. Electronic arrows shall have dimmer controls and shall be mounted on suitable trucks or trailers. The Contractor shall maintain, deploy, and move electronic arrows as needed for traffic control.

(e) **Warning Lights:**

1. **Type A flashing lights** shall be used for advance warning signs and may be placed at hazardous locations on Group 2 channelizing devices in accordance with FHWA acceptance letter WZ-54, and shall be in operation during hours of darkness and low visibility.
2. **Type B flashing lights** shall be used when specified on the plans for advanced warning signs and at extremely hazardous locations as determined by the Engineer. A Type B flashing light shall be installed on traffic barrier service at the beginning of the barrier run and at the breakpoint where the barrier becomes parallel to the roadway. A Type B flashing light shall also be used to delineate the breakpoints of a pull-off area. On two-way roadways where one lane is closed to traffic with traffic barrier service, the Type B flashing lights shall face the barrier transition (flare rate) for both barrier breakpoint directions. Type B flashing lights shall be in operation at all times except when used by Contractors to notify motorists of increased fines in a work zone when workers are present.
3. **Type C steady burn lights** shall be used when specified on the plans for channeling traffic and may be placed on Group 2 channelizing devices in accordance with FHWA acceptance letter WZ-54. Type C steady burn lights shall be placed at intervals of 80 feet along tangent sections and 40 feet along bridges, transitions, and curves greater than 6 degrees.
4. **Type D 360 degree steady burn lights** shall be used when specified on the plans for channeling traffic and may be placed on Group 2 channelizing devices.

Type A, Type C and Type D warning lights shall be in operation from 30 minutes before sunset until 30 minutes after sunrise, on heavy overcast days, in fog, and during periods of darkness or low visibility, or as directed by the Engineer.

When Type A or C warning lights are used on Group 2 channelizing devices, they shall comply with FHWA acceptance letter WZ-54. Otherwise, a FHWA issued acceptance letter indicating compliance with NCHRP Report 350, Test Level 3, or MASH as required in (f) herein shall be submitted to the Engineer before being authorized for use on the project.

When Type D warning lights are used on Group 2 channelizing devices, the channelizing devices shall have been crash tested with the warning light and a FHWA issued acceptance letter indicating compliance with NCHRP Report 350, Test Level 3, or MASH as required in (f) herein shall be submitted to the Engineer being authorized for use on the project.

(f) **Channelizing Devices:** Channelizing devices shall conform to NCHRP Report 350, Test Level 3, or MASH. All retroreflective sheeting for channelizing devices shall conform to Section 247 of the Specifications. The Contractor shall provide catalog cuts/brochures of each brand and model and a certification letter stating the brands and models of channelizing devices conform to the specification and comply with the following before their use on the project.

1. **Channelizing devices except drums/cones with an auxiliary device attached and portable vertical panel assemblies:** The Contractor shall provide the Engineer a copy of a letter from the manufacturer certifying that the specific channelizing device is

crashworthy, i.e., that it will comply with the evaluation criteria specified in NCHRP Report 350 or MASH. This certification may be a one page affidavit signed by the manufacturer.

2. **Drums/cones with an auxiliary device attached, and portable vertical panel assemblies with or without an auxiliary device attached:** The Contractor shall provide the Engineer a copy of the FHWA acceptance letter indicating compliance with NCHRP Report 350, Test Level 3, and or MASH.

Spacing of all listed and non-listed channelizing devices shall be in accordance with the VWAPM.

- a. **Group 1 devices** shall consist of tubular markers and cones ranging from 36 inches to 42 inches in height conforming to the VWAPM. They shall be used as temporary channelizing devices. Tubular markers and cones shall be provided with retroreflective collars or sleeves conforming to Section 247 of the Specifications when used during hours of darkness.
- b. **Group 2 devices** shall be drums, vertical panels, directional indicator barriers, longitudinal channelizing devices or pedestrian channelizing devices.
 - 1) **Drums** shall be round or partially round; made from plastic; have a minimum height of 36 inches; have a cross-sectional width no less than 18 inches in any direction; have a closed top; and shall conform to the VWAPM. Drums shall be designed to allow for separation of ballast and drum upon vehicular impact but not from wind and vacuum created by passing vehicles. The base of the unit height shall not exceed 5 inches. Two-piece drums may have a flared drum foundation, a collar not exceeding 5 inches in height and be of suitable shape and weight to provide stable support. One-piece drums that comply with these requirements may be used.

Drum retroreflective sheeting shall be selected from the Department's Approved Products List 46 and conform to the VWAPM.

Drums shall be used in all unmanned work zone locations and shall also be used to delineate the locations of all non-crashworthy trailer mounted devices such as but not limited to intelligent transportation systems (ITS), Portable Changeable Message Sign, Highway Advisory Radio, Speed Trailers, CB Wizards, ITS cameras, Portable Traffic Control Signals, AFAD units, etc. as well as light towers. Drums shall be used to delineate merging tapers on limited access highways during nighttime operations and the location of Electronic Arrow Boards.

The Contractor shall furnish and install signs (Chevron, Keep Right, etc.) for drums as directed by the Engineer. Signs used on drums shall be tested for conformance with NCHRP 350, Test Level 3, and/or MASH requirements and shall be made of the same material used in the test. The Contractor may use other materials allowed by the FHWA acceptance letter when approved by the Engineer.

- 2) **Vertical panels** shall be selected from those shown on the *VDOT NCHRP 350 Approved List*.
- 3) **Direction indicator barricades** shall consist of a One Direction Large Arrow sign mounted above a diagonal striped, horizontally aligned, retroreflective rail. The One Direction Large Arrow shall be black on orange. The rail shall have alternating diagonal orange and white 4 inch stripes sloping downward at a 45 degree angle in the direction vehicular traffic is to pass. The sign and bottom rail shall have a length of 24 inches and a height of 12 inches.

- 4) **Longitudinal channelizing devices** shall be at least 36 inches in height. If used at night, longitudinal channelizing devices shall be interlocked and supplemented with retroreflective material for delineation.

All longitudinal channelizing devices used to guide pedestrians shall be interlocked barricades without gaps that allow pedestrians to stray from the channelized path; be free of sharp, splintered or rough edges with all fasteners installed below the surface and capped.

- (g) **Traffic Barrier Service:** Traffic barrier service shall be as per Section 512.03(f) of the Specifications and the VWAPM.
- (h) **Impact Attenuator Service:** Impact attenuator service shall be as per Section 512.03(g) of the Specifications and the VWAPM.

Impact attenuators shall be permanently identified with a device specific Manufacturers' identification number by stamping or marking with a durable weather resistant material in accordance with Section 33.274.1 of the Code.

- (i) **Traffic Signals:**—Temporary signalization shall be as per Section 512.03(h) of the Specifications and the VWAPM.
- (j) **Temporary (Construction) Pavement Markings:** Temporary (construction) pavement markings shall conform to the *Special Provision for SECTION 704—PAVEMENT MARKINGS AND MARKERS* in these contract documents. Temporary (construction) pavement markings are classified as Type F (temporary (construction) paint), Type D, Classes II and III (removable tape), and Type E (non-reflective black removable tape). Temporary (construction) pavement markings shall be used as follows:

1. **Type D, Class II or III pavement markings** may be used on final roadway surfaces or in areas where traffic patterns are subject to change before pavement is resurfaced. Type D, Class II pavement markings shall not be used on Limited Access highways. Type D, Class III pavement markings may be used in place of Type D, Class II pavement markings at the contract price for Type D, Class II pavement markings.

Type D markings shall be installed in accordance with manufacturer's installation instructions.

2. **Type E pavement markings** may be used to cover existing markings in accordance with (k) herein.
3. **Type F pavement markings** (temporary paint) shall be used where the roadway is to be resurfaced before changes in the traffic pattern or where pavement is to be demolished and traffic patterns will not change before demolition.

Flexible Temporary Pavement Markers (FTPMS) may be used in lieu of Type F-temporary paint as per the *Special Provision for SECTION 704—PAVEMENT MARKINGS AND MARKERS* included in these Contract Documents.

The Contractor shall maintain the temporary (construction) pavement markings and shall correct any deficient markings by reapplying markings as directed or needed. The Department considers deficient temporary (construction) pavement markings as any markings that do not provide adequate guidance to motorists due to inadequate retroreflectivity, color qualities, or adherence to the pavement. The Engineer will make a visual nighttime inspection of all temporary (construction) pavement markings to identify

areas of markings that have inadequate retroreflectivity qualities. Other deficient qualities may be identified by visual inspection at any time.

Those markings that no longer adhere to the pavement which will cause guidance problems for motorists, or that are inadequately retroreflective as determined by the Engineer, shall be replaced by the Contractor with the following exceptions:

- a. Reapplication of skip line temporary (construction) pavement markings is not required unless the pavement marking does not adhere or inadequate retroreflectivity qualities are present for at least two consecutive skip lines.
- b. Reapplication of centerline (except skip lines) or edge line temporary (construction) pavement markings is not required unless the pavement marking does not adhere or inadequate retroreflectivity qualities are present for a continuous section of at least seventy (70) feet.
- c. Reapplication of transverse markings is not required unless the pavement marking does not adhere or inadequate retroreflectivity qualities are present for a continuous section of at least three (3) feet.
- d. Reapplication of symbol/message markings is not required unless the symbol/message marking does not adhere or the average of three retroreflectivity measurement readings for the symbol/message is below 100 millicandelas per square foot per foot-candle.

All Type F pavement markings that no longer adhere to the roadway that may cause guidance problems for motorists shall be removed and replaced by the Contractor.

The Contractor may take retroreflectivity readings to counter visual observations by the Engineer as the basis for replacement of temporary (construction) pavement markings. These measurements shall be taken within forty eight (48) hours after the Contractor has been notified of the visual determination by the Engineer of deficient markings. The Engineer will grant additional time to the Contractor when inclement weather prevents accurate measurement of the temporary (construction) pavement markings.

The Contractor shall brush any form of debris from the marking before taking the retroreflectivity readings. Retroreflectivity measurements shall be taken in the presence of the Engineer using Contractor furnished equipment conforming to ASTM E 1710. A copy of the operating instructions for the reflectometer shall be furnished to the Engineer prior to taking the measurements. The Contractor shall operate the equipment in accordance with the manufacturer's instructions. The photometric quantity to be measured is the coefficient of retroreflected luminance (RL), which shall be expressed as millicandelas per square foot per footcandle. Measurements shall be taken at three (3) random locations within each area of markings that are suspected of being inadequately retroreflective. When the length of the questionable visually inspected area is greater than one (1) mile, the Contractor shall take measurements at three (3) locations per mile segment or portion thereof. Measurements for all lines shall be taken in the middle of the line horizontally. Measurements for skip lines shall be taken in the middle of their length. Measurements for transverse lines and symbol/message markings shall be taken outside of the wheel path locations. The Engineer will designate the locations along the line segments where the measurements shall be taken. The Contractor shall make a log of the measurements and their locations and provide a copy to the Engineer. When the average of the three (3) readings for an area is below 100 millicandelas per square foot per footcandle, the Contractor shall reapply the markings as indicated.

Removable Type D temporary (construction) pavement markings shall be replaced within the time frames recommended by the markings manufacturer to prevent the need for eradication.

The Contractor shall furnish the Engineer a copy of the manufacturer's installation instructions.

Temporary (construction) pavement markings found in need of reapplication in accordance with these requirements shall be reapplied by the Contractor at no additional cost to the Department.

Permanent pavement markings shall be placed in accordance with the time requirements of the *Special Provision for SECTION 704—PAVEMENT MARKINGS AND MARKERS* in these contract documents.

- (k) **Eradicating Pavement Markings:** Markings that may conflict with desired traffic movement, as determined by the Engineer, shall be eradicated as soon as practicable: either immediately before the shifting of traffic or immediately thereafter and before the conclusion of the workday during which the traffic shift is made.

The Contractor shall perform eradication by grinding, blasting, or a combination thereof. Grinding shall be limited to removal of material above the pavement surface except when removing thermoplastic and Type B, Class VI preformed tape markings, which may be removed by grinding alone. Blasting shall be used on both asphalt concrete and hydraulic cement concrete pavements to remove all other types of pavement markings.

The Contractor may submit other methods for eradication for the Engineer's approval. The Department will not permit obscuring existing pavement markings with black paint or asphalt as a substitute for removal or obliteration.

The Contractor shall minimize roadway surface damage when performing the eradication. The Contractor shall repair the pavement as directed by the Engineer if eradication of pavement markings results in damage to or deterioration of the roadway presenting unsafe conditions for road users including, but not limited to, motorcyclists and bicyclists.

The Contractor shall ensure workers are protected in conformance with *Occupational Safety and Health Administration's (OSHA)* standards as detailed in 29 CFR 1910 or 1926, whichever is the most stringent, when eradicating pavement markings. The Contractor shall collect the eradication residue during or immediately after the eradication operation; however, dust shall be collected during the entire operation. Eradication residue from the removal of any pavement markings is considered to be a nonhazardous waste material and shall be disposed of in a properly permitted waste disposal facility in accordance with applicable state and federal laws and regulations. The Department does not require Contractor testing of the eradication residue for the eight Resource Conservation Recovery Act metals.

When markings are removed for lane shifts, transitions, or other areas or conditions required in the VWAPM, 100 percent of the pavement marking shall be removed.

Non-reflective removable black temporary (construction) pavement marking (Type E) may be used to cover existing markings instead of eradication on asphalt concrete surfaces when its use will not be required for more than 120 days or when specified as a pay item. The Contractor shall use this material to cover markings as indicated in the plans or as directed by the Engineer. Non-reflective removable black temporary (construction) pavement marking shall be applied in accordance with the manufacturer's recommendations.

- (l) **Aggregate Material:** Aggregate material shall be placed at crossovers, private entrances, mailbox turnouts and where specified by the Engineer.
- (m) **Type 3 Barricades:** Type 3 barricades shall conform to NCHRP Report 350, Test Level 3, or MASH, and be at least 4 feet wide with each barricade rail approximately 8 inches to 12

inches wide. Type 3 barricades shall be selected from those shown on the *VDOT NCHRP 350 Approved Products List*. The Contractor shall provide a certification letter stating the brands and models of Type 3 barricades from the list that will be used on the project. Instead of using Type 3 barricades on that listing, the Contractor may use other brands and/or models provided that he submits a copy of the FHWA acceptance letter indicating their compliance with NCHRP Report 350, Test Level 3, or MASH before their use.

The Contractor may provide additional weight to provide the required ballast by placing one sandbag weighing no more than approximately 50 pound on each leg of the frame of the Type 3 Barricade as flat to the ground as possible.

- (n) **Truck-mounted or trailer-mounted attenuators:** Truck-mounted and trailer-mounted attenuators shall conform to NCHRP Report 350, Test Level 3, or MASH.

The Contractor shall submit catalog cuts/brochures of the Truck/Trailer-mounted attenuator and a copy of the FHWA's acceptance letter documenting acceptance of the specific Truck/Trailer-mounted attenuator before their use on the project. Truck-mounted and trailer-mounted attenuators shall be permanently identified with a device specific Manufacturers' identification number by stamping or marking with a durable weather resistant material in accordance with Section 33.274.1 of the Code.

The weight of the support vehicle shall be as recommended by the manufacturer of the Truck/Trailer-mounted attenuator. The Contractor shall provide a copy of the manufacturer's recommendations to the Engineer, a copy of the original weigh ticket for the support vehicle and a self-certification letter stating the support vehicle has not been altered since the original weight ticket was issued. The weigh ticket shall contain adequate information to associate the ticket with the applicable support vehicle. A copy of the self-certification and weigh ticket shall be available in the support vehicle at all times.

Additional weight may be added to the support vehicle to achieve the range recommended by the manufacturer of the Truck/Trailer-mounted attenuator provided the total weight is properly balanced without overloading any one axle and is within the Gross Vehicle Weight Recommendation of the support vehicle. The added weight shall be securely attached to the support vehicle to prevent movement during an impact or movement of the vehicle. The additional weight and attachment method shall be self-certified by the Contractor and a copy of the self-certification letter shall be with the support vehicle at all times or a final stage manufacturer's certification sticker may be placed on the inside door of the altered vehicle.

The Truck/Trailer-mounted attenuator shall be no less than 72 inches wide and no more than 96 inches wide.

The rear panel shall have alternate 6 to 8 inch wide orange and black or yellow and black chevron (inverted V) stripes. Stripes shall be sloped at a 45 degree angle downward in both directions from the upper center of the rear panel. Stripes shall be fabricated from fluorescent orange or yellow prismatic lens reflective sheeting conforming to Section 247 of the Specifications.

The support vehicle shall have at least one rotating amber or one high intensity amber flashing vehicle warning light (visible for 360 degrees) functioning while in operation in accordance with the VWAPM. When allowed by the VWAPM, an electronic arrow operated in the caution mode may be used with the vehicle warning light. When installing and removing lane closures on a multilane roadway as well as when performing mobile operations, the support vehicle shall be equipped with a vehicle warning light and an arrow board.

The support vehicle shall be operated and parked in accordance with the manufacturer's recommendations.

Limitations: Traffic control devices shall not be installed from or removed to the Truck/Trailer-mounted attenuator support vehicle. When the Truck/Trailer-mounted attenuator is deployed there shall be no unsecured material in the bed of the support vehicle except the additional secured weight or truck-mounted devices such as an arrow board, a changeable message sign, or truck mounted signs. There shall also be no additional devices such as signs, lights, and flag holders attached to the Truck/Trailer-mounted attenuator except those that were tested on the Truck/Trailer-mounted attenuator and provided by the manufacturer of the Truck/Trailer-mounted attenuator.

If the Truck/Trailer-mounted attenuator is impacted, resulting in damage that causes the unit to be ineffective, all work requiring the use of the Truck/Trailer-mounted attenuator shall cease until such time that repairs can be made or the Contractor provides another acceptable unit.

- (o) **Portable Changeable Message Sign (PCMS):** Units shall be self-contained, including message board and power supply, whether trailer or vehicle mounted. The controller head shall have a backup system to prevent loss of memory.

The sign shall be capable of sequentially displaying at least 2 phases of 3 lines of text each with appropriate controls for selection of messages and variable off-on times. The message board text shall be formed of characters at least 18 inches high for trailer mounted PCMS or at least 10 inches for vehicle mounted CMS or they should consist of a full matrix display. Each line shall be composed of at least eight characters. The message shall be composed from keyboard entries. The message shall be legible in any lighting condition. Motorists should be able to read the entire PCMS message twice while traveling at the posted speed.

The sign panel support shall provide for an acceptable roadway viewing height that shall be at least 7 feet from bottom of sign to crown of road.

The Contractor shall determine from its plan of operations or work schedule the most efficient and effective use of the PCMS units based on its plan of operations, maintenance of traffic sequencing, or traffic control operations. PCMS messages for daily operations are in Appendix D of the VWAPM. PCMS signs shall be periodically checked by the Contractor for compliance with manufacturer's requirements for operation and functions, and shall be ready for immediate use once deployed to the project.

During emergency situations the Contractor shall make every effort to deploy units it has assigned to the project. However, if the number of units shown on the plans are already in operation and cannot be reassigned to handle the emergency situation, the Contractor shall immediately contact the Engineer. The Engineer will then make a determination as to the most expeditious manner in which to deploy units for emergency use, whether by using Department supplied units, directing the Contractor to reassign those units he has committed to the project, or having the Contractor supply additional units as needed. In these circumstances, the cost for such additional units that are authorized by the Engineer shall be paid for in accordance with the requirements of Section 512.04 herein.

If the Engineer determines the use of additional units beyond the number of those identified in the plans is required due to reasons attributable to the Contractor or his manner of operations, and no units are available, the Contractor shall furnish such additional unit(s) to the project within two (2) hours of the Engineer's request or the Department will move to provide such units as necessary and deduct the cost from any monies due the Contractor. This action by the Engineer, if necessary, shall in no way relieve the Contractor of the responsibility for controlling, maintaining, and completing the work.

- (p) **Portable Temporary Rumble Strip (PTRS):** Portable Temporary Rumble Strip (PTRS) is a transverse rumble strip that consists of intermittent, narrow, transverse areas of rough-textured or slightly raised or depressed surface that extends across the travel lane to alert drivers to unusual vehicular traffic conditions.

A PTRS may be made of rubber or recycled rubber and the color shall be orange or black. It shall have a recessed, raised or grooved design to prevent movement and hydroplaning.

A PTRS shall consist of interlocking or hinged segments of equal length that prevent separation when in use. The combined overall usable length of the PTRS shall be between 10' 9" and 11 feet. The width of the PTRS shall be 12 to 13 inches. The maximum height of the PTRS shall be 1 inch; and the minimum height shall be 5/8 inch. The weight of each roadway strip shall be a minimum of 100 lbs. to a maximum of 120 lbs. The leading and departing edge taper shall be between 12 and 15 degrees.

The PTRS shall be installed without the use of adhesives or fasteners. Each roadway length of the PTRS shall have either a minimum of one cutout handle in the end of the rumble strip, or an interlocking segment which can be used as a handle for easy deployment or removal.

The manufacturer of the PTRS shall provide a signed affidavit that states the PTRS is able to withstand being run over by an 80,000 pound vehicle and retain its original placement with minor incidental movement of 6 inches or less during an 8 hour deployment. Incidental movement of the PTRS shall be parallel with other rumble strips in an array but shall not move so that its placement compromises the performance and safety of the other rumble strips, workers or the traveling public.

The PTRS shall be used in arrays of three rumble strips spaced 5 to 8 feet center to center, placed transverse across the travel lane. Only one set of PTRS should be used in the work zone's advance warning area per direction.

- (q) **Work Zone Traffic Control:** The Contractor shall provide individuals trained in Work Zone Traffic Control in accordance with Section 105.14 of the Specifications.

512.04—Measurement and Payment

Maintenance of Traffic in accordance with traffic control layout detail items required by the VWAPM, the "Typical Traffic Control" notes and drawings herein, and the Contract will be paid for at the lump sum price per schedule as designated in the Contract. Such traffic control shall include furnishing, erecting, installing or employing and maintaining traffic control devices. Payment for traffic control will be made incrementally as a percentage on the lump sum price based on the percentage of tonnage or square yards (as with slurry seal, latex emulsion and surface treatment contracts) and placed on the schedule for the payment period covered by the appropriate progress estimate.

Additional traffic control layout detail items that are determined and authorized by the Engineer to be necessary to ensure the safety of the traveling public and are **in addition to the number required** by the traffic control layout details in the VWAPM, the "Typical Traffic Control" notes and drawings herein, and the Contract, will be measured and paid for as follows, therefore, the provisions of Section 104.02 of the Specifications will not apply:

- **Flagger service** shall include furnishing certified flagger, **STOP/SLOW** paddles and safety equipment. Where additional flagger service is required, as determined and authorized by the Engineer, flagger service will be measured in hours and paid for at the rate of **\$15** per hour of use.

When flagger service is used for the Contractor's convenience, such as for ingress and egress of construction equipment or materials, payment will not be made. **Note:** The required flaggers described in the two flagging conditions in 512.03(b) herein will not be measured as a separate pay item but will be considered incidental to the traffic control operations described.

When approved by the Engineer, Automatic Flagger Assistance Devices (AFADs) may be used for flagger service. No separate payment will be made for use of the AFAD device. This price shall include furnishing or mobilizing the AFAD to the project, services of trained AFAD operator(s), channelizing devices, safety equipment, fuel, necessary warning devices and maintenance. Separate payment for the certified flagger operating the AFAD will not be made.

- **Pilot vehicles** shall include furnishing vehicles, necessary warning devices, drivers, fuel and maintenance. Where additional pilot vehicles are required as determined and authorized by the Engineer, such vehicles will be measured in hours of actual use and will be paid for at the rate of **\$23** per hour of employed use.
- **Electronic arrows** shall include furnishing arrow panels, fuel, maintenance, and a truck or trailer having flashing vehicle warning lights for mobility of the electronic arrow. Where additional electronic arrows are required as determined and authorized by the Engineer, electronic arrows will be measured in hours of actual use and will be paid for at the rate of **\$5** per hour for each hour of employed use.
- **Warning lights** for use on sign panels or installed on traffic barrier service will not be measured for separate payment. The cost thereof shall be included in the price for other appropriate pay items. This shall include maintaining, relocating, and removing.
- **Group 1 channelizing devices** will not be measured for separate payment. The cost thereof shall be included in the price for other appropriate pay items.
- **Group 2 channelizing devices**, not designated in the Contract as a separate pay item but where additional Group 2 channelizing devices are required as determined and authorized by the Engineer, these will be measured in days and paid for at the rate of **\$1** per day per device. This price shall include furnishing and maintaining devices, removing devices when no longer required and signs. When group 2 channelizing devices are moved to a new location or are removed and re-installed at the same location, they will be measured for separate payment. However, when group 2 channelizing devices are moved laterally within the lane or from one lane to another or from a shoulder into a lane by simply moving the devices across the lane edge line without removal from the roadway, no additional payment will be made.
- **Traffic barrier service** will not be measured for separate payment. The cost thereof shall be included in the price for other appropriate pay items. This shall include warning lights, delineators, barrier vertical panels, fixed object attachments, patching restraint holes, fixed object attachments used on traffic barrier service in locations where existing guardrail is in place including restoring existing guardrail to its original condition, maintaining, and removing traffic barrier service when no longer required.
- **Traffic barrier service guardrail terminal** will not be measured for separate payment. The cost thereof shall be included in the price for other appropriate pay items. This shall include furnishing, installing, moving to a new location as directed or approved by the Engineer, and removing when no longer needed.

- **Impact attenuator service** will not be measured for separate payment. The cost thereof shall be included in the price for other appropriate pay items. This shall include Impact attenuators used with barrier openings for equipment access.
- **Aggregate material** will not be measured for separate payment. The cost thereof shall be included in the price for other appropriate pay items. This shall include preparing the grade and furnishing, placing, maintaining, and removing material as required.
- **Type 3 barricades** will not be measured for separate payment. The cost thereof shall be included in the price for other appropriate pay items. This shall include furnishing and placing barricades, retroreflective sheeting, maintaining, relocating to new locations and removing when no longer required.
- **Construction signs** except those already required by the Contract (which includes those signs required by the *VWAPM*, the “Typical Traffic Control” notes and drawings herein, and such signs “**Grooved Pavement Ahead**,” “**Begin Right Turn Lane**,” “**Begin Left Turn Lane**” that may be required by the Engineer to ensure the safety of the traveling public due to the nature of the Contractor’s operations) when determined and authorized by the Engineer, will be measured in square feet and paid for at **\$20** per square foot. This payment, based on square footage, shall be compensation for furnishing, placing, relocating, covering, uncovering, and removing the sign(s) when no longer needed for the duration of the project; multiple payments for the same sign used more than once will not be allowed. Such extra signs will consist of either a greater number of the standard signs already listed in the applicable traffic control layout details in the *VWAPM*, the “Typical Traffic Control” notes and drawings herein, and the Contract, or other signs included in the *VWAPM* but not originally considered applicable for use on this Contract.
- **Truck mounted attenuators**, not designated in the Contract as a separate pay item but where additional Truck Mounted Attenuators are required as determined and authorized by the Engineer, these will be measured in hours of actual use required, and will be paid for at the rate of **\$22** per employed hour. This price shall include furnishing the truck mounted attenuator, mounting vehicle, lights, electronic arrows, if allowed but not required, and maintenance. When electronic arrows are used at the option of the Contractor in lieu of the rotating or high intensity amber strobe light, the cost of the electronic arrow shall be included in the price for truck mounted attenuators. When electronic arrows are required and authorized as determined by the Engineer and not incidentally mounted (and permitted) on such truck mounted attenuator support vehicles, they will be paid for separately as specified herein.
- **Portable Changeable Message Signs (PCMS)**, not designated in the Contract as a separate pay item but where additional Portable Changeable Message Signs are required as determined and authorized by the Engineer, these will be measured in hours of actual use and paid for at the rate of **\$15** per hour for each hour of employed use. This price shall be full compensation for furnishing or mobilizing the unit(s) to the project, maintenance, operation, repositioning the unit(s) and providing four (4) Group 2 drums for delineation.

Portable Temporary rumble strip (PTRS) will be measured in units of each and will be paid for at the contract unit price per each array consisting of three rumble strips. This price shall include installing, maintaining, removing and relocating throughout the life of the project.

Eradication of existing pavement markings will be measured in linear feet of a 6-inch width or portion thereof as specified herein. Widths that exceed a 6-inch increment by more than 1/2 inch will be measured as the next 6-inch increment. Measurement and payment for eradication of existing pavement markings specified herein shall be limited to linear pavement line markings.

Eradication of existing pavement markings will be paid for at the contract unit price per linear foot. This price shall include removing linear pavement line markings and disposing of residue.

Eradication of existing nonlinear pavement markings will be measured in square feet based on a theoretical box defined by the outermost limits of the nonlinear pavement marking, in accordance with Standard PM-10 of the *VDOT Road and Bridge Standards*. Nonlinear pavement markings shall include but not be limited to stop bars, arrows, images and messages. Eradication of existing nonlinear pavement markings will be paid for at the contract unit price per square foot. This price shall include removing nonlinear pavement markings and disposing of residue.

Basic Work Zone Traffic Control – Separate payment will not be made for providing a person to meet the requirements of Section 105.14 of the Specifications. The cost thereof shall be included in the price of other appropriate pay items.

Intermediate Work Zone Traffic Control - Separate payment will not be made for providing a person to meet the requirements of Section 105.14 of the Specifications. The cost thereof shall be included in the price of other appropriate pay items.

Temporary construction pavement markings, including flexible temporary pavement markers (FTPMs) used in substitution of temporary construction pavement markings, will be measured and paid for in accordance with the *Special Provision for SECTION 704—PAVEMENT MARKINGS AND MARKERS* included in the Contract.

Payment will be made under:

Pay Item	Pay Unit
Maintenance of Traffic (Schedule)	Lump Sum
Eradication of existing pavement marking	Linear foot
Eradication of existing nonlinear pavement marking	Square foot
Portable Temporary Rumble Strips	Each

Typical Traffic Control
End of Day Signing for Partial Road Width Plant Mix Paving Operations
on a Multi-Lane Highway (Uneven Travel Lanes)
(Figure TTC-57.PS16)

NOTES

Standard:

1. On roadways having a median wider than 8', right and left sign assemblies shall be used. Median barrier is considered to be part of the shoulder and its measurement shall be used to determine the total width of the shoulder.
2. The maximum pavement edge drop-off between traffic lanes shall be 2.0 inches or less.
3. Open travel lane(s) shall not be exposed to more than 2 to 4 mile sections of milled or uneven surface.
4. Appropriate messages shall be used on the portable changeable message sign (PCMS) from Appendix D of the VWAPM.
5. A BUMP (W8-1) sign shall be placed in advance of the end of the pavement drop-off.
6. The Regional Traffic Engineer shall determine speed reductions.
7. The UNEVEN LANE (W8-11), STAY IN LANE (R4-9) and BUMP (W8-1) signs shall be adjusted daily with the work operation and their sign stands shall be weighted with a 25 ± pound sand bag on each leg or two (2) drum collar weights positioned on the center of the sign stand. Additional UNEVEN LANES signs shall be installed every 2 miles and on entrance ramps.
8. Where conditions warrant, ROUGH ROAD (W8-8) and BUMP signs shall be installed 500'+ in advance of the affected roadway surface on entrance ramps and BUMP signs shall be installed 500'+ in advance of the unaffected roadway surface on exit ramps.
9. All signs shall be post mounted at locations after 72 consecutive hours of non-work activities.

Guidance:

10. *Sign spacing distance should be 1300'-1500' for Limited Access Highway, and on all other roadways 500'-800' where the posted speed limit is greater than 45 mph, and 350'-500' where the posted speed limit is 45 mph or less.*
11. *Portable barrier mounted sign stands should be considered for use on median barrier to meet requirements of Note 1 for double indicating signs.*

Option:

12. Only traffic control signing for partial road width pavement resurfacing resulting in uneven travel lanes is shown. Other devices may be used for the control of traffic through the work area.
13. The LOW SHOULDER (W8-9) sign may be used to warn of a shoulder condition where there is an elevation difference of less than 2 inches between the shoulder and the travel lane.

Standard:

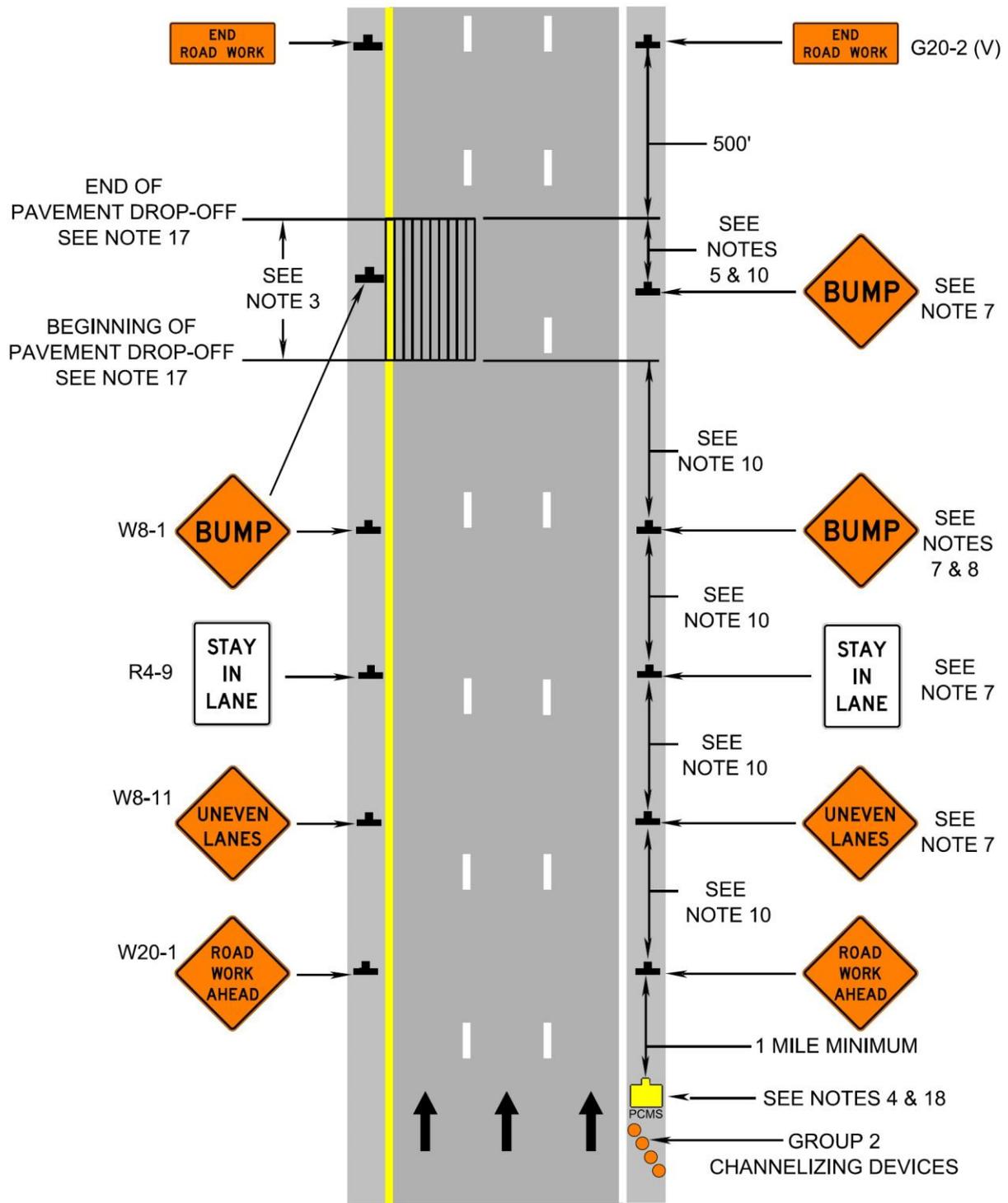
14. If used, the **LOW SHOULDER** sign shall be repeated at 1-mile intervals if the condition extends over a distance in excess of 1-mile.
15. The **SHOULDER DROP OFF (W8-V5)** sign shall be used to warn of a shoulder condition where there is an elevation difference of 2 inches or greater between the shoulder and the travel lane. Where the condition extends over a distance in excess of 1 mile, the sign shall be repeated at 1 mile intervals.

Option:

16. The SHOULDER DROP OFF sign may be eliminated if a 6:1 (desirable) to 4:1 (minimum) wedge is used between the travel lane and the shoulder.

Standard:

17. A temporary pavement wedge shall be constructed of surface mix asphalt a minimum of three (3) feet in length for every inch of depth of pavement milling on the approach and departure end of the milled travel lane(s).
18. A minimum of four (4) Group 2 channelizing devices shall be placed on the shoulder in advance of the PCMS in a taper for delineation.
19. If temporary construction or permanent pavement markings cannot be installed in accordance with the *Special Provision for SECTION 704—PAVEMENT MARKINGS AND MARKERS* then flexible temporary pavement markers (FTPMS) spaced at 20-foot centers for two-way traffic shall be placed in between the two centerlines stripes or three FTPMS shall be installed per skip line for lane division lines. No Edge line markers will be required.



End of Day Signing for Partial Road Width Plant Mix Paving Operations on a Multi-Lane Highway (Uneven Travel lanes)
 (Figure TTC-57.PS16)

Typical Traffic Control

End of Day Signing for Plant Mix Paving Operations Across the Entire Width of a Multi-Lane Highway **(Figure TTC-58.PS16)**

NOTES

Standard:

1. On roadways having a median wider than 8', right and left sign assemblies shall be used. Median barrier is considered to be part of the shoulder and its measurement shall be used to determine the total width of the shoulder.
2. The maximum pavement edge drop-off between traffic lanes shall be 2.0 inches or less.
3. Open travel lane(s) shall not be exposed to more than 2 to 4-mile sections of milled or uneven surface.
4. Appropriate messages shall be used on the portable changeable message sign (PCMS) from Appendix D of the VWAPM.
5. A BUMP (W8-1) sign shall be placed in advance of the end of the pavement drop-off.
6. The Regional Traffic Engineer shall determine speed reductions.
7. The ROUGH ROAD (W8-8), UNMARKED PAVEMENT AHEAD (W8-V4) and BUMP signs shall be adjusted daily with the work operation and their sign stand shall be supported with a sand bag weighing approximately 25-pounds on each leg or two (2) drum collar weights positioned on the center of the sign stand. Additional ROUGH ROAD and UNMARKED PAVEMENT AHEAD signs shall be installed every 2 miles.
8. Where conditions warrant, ROUGH ROAD and BUMP signs shall be installed 350'± in advance of the affected roadway surface on entrance ramps and BUMP signs shall be installed 500'+ in advance of the unaffected roadway surface on exit ramps.
9. All signs shall be post mounted at locations after 72 consecutive hours of non-work activities.

Guidance:

10. *Sign spacing distance should be 1300'-1500' for Limited Access Highways, and on all other roadways 500'-800' where the posted speed limit is greater than 45 mph, and 350'-500' where the posted speed limit is 45 mph or less.*
11. *Portable barrier mounted sign stands should be considered for use on median barrier to meet requirements of Note 1 for double indicating signs.*

Option:

12. Traffic control signing for multiple lane full roadway width pavement resurfacing is shown. Other devices may be used for the control of traffic through the work area.
13. The LOW SHOULDER (W8-9) sign may be used to warn of a shoulder condition where there is an elevation difference of less than 2 inches between the shoulder and the travel lane.

Standard:

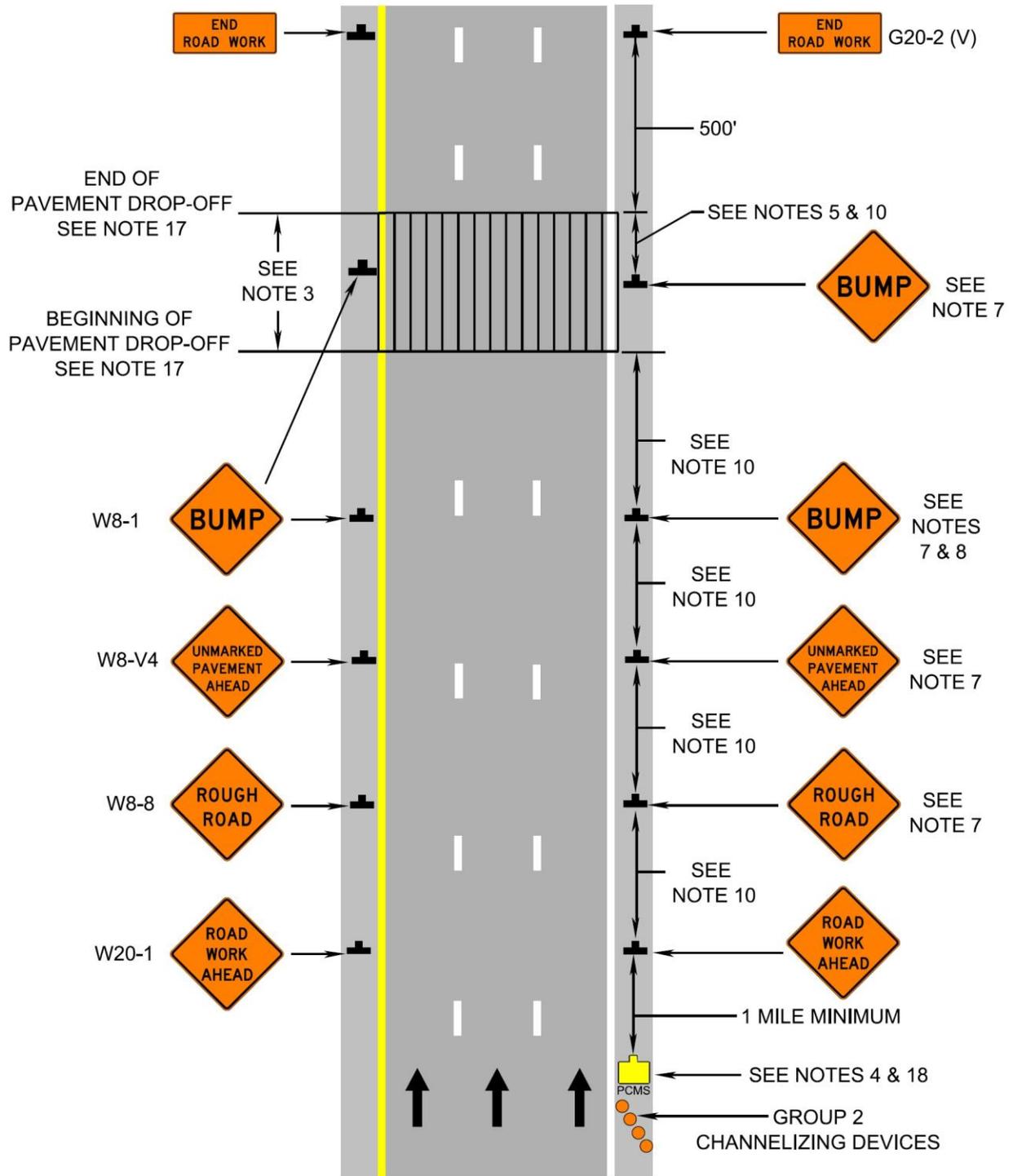
14. If used, the **LOW SHOULDER** sign shall be repeated at 1-mile intervals if the condition extends over a distance in excess of 1-mile.
15. The **SHOULDER DROP OFF (W8-V5)** sign shall be used to warn of a shoulder condition where there is an elevation difference of 2 inches or greater between the shoulder and the travel lane. Where the condition extends over a distance in excess of 1 mile, the sign shall be repeated at 1 mile intervals.

Option:

16. The SHOULDER DROP OFF sign may be eliminated if a 6:1 (desirable) to 4:1 (minimum) wedge is used between the travel lane and the shoulder.

Standard:

17. A temporary pavement wedge shall be constructed of surface mix asphalt a minimum of three (3) feet in length for every inch of depth of pavement milling on the approach and departure end of the milled travel lane(s).
18. A minimum of four (4) Group 2 channelizing devices shall be placed on the shoulder in advance of the PCMS in a taper for delineation.
19. If temporary construction or permanent pavement markings cannot be installed in accordance with the *Special Provision for SECTION 704—PAVEMENT MARKINGS AND MARKERS* then flexible temporary pavement markers (FTPMS) spaced at 20-foot centers for two-way traffic shall be placed in between the two centerlines stripes or three FTPMS shall be installed per skip line for lane division lines. No Edge line markers will be required.



Typical Traffic Control
End of Day Signing for Plant Mix Paving Operations Across the
Entire Width of a Multi-Lane Highway
(Figure TTC-58.PS16)

Typical Traffic Control
End of Day Signing for Plant Mix Paving Operations on a Two-Lane Roadway
(Figure TTC-59.PS16)

NOTES

Standard:

1. Open travel lane(s) shall not be exposed to more than 2 to 3 mile sections of milled or uneven surface.
2. The maximum pavement edge drop-off shall be 2.0 inches or less.
3. NO CENTER LINE sign (W8-12) shall be installed whenever the centerline has been obliterated or until permanent pavement markings have been installed. The sign shall be installed in both directions when the centerline is not present. Their sign stands shall be weighted with a 25 ± pound sand bag on each leg or two (2) drum collar weights positioned on the center of the sign stand. In addition, NO CENTER LINE signs shall be installed every mile if the unmarked area is less than 3 miles, or every 2 miles if the unmarked area is longer than 4 miles.
4. A DO NOT PASS sign (R4-1) shall be used when the centerline has been obliterated or until pavement markings have been installed and their sign stands shall be weighted with a 25 ± pound sand bag on each leg or two (2) drum collar weights positioned on the center of the sign stand. The DO NOT PASS sign shall be installed after the NO CENTER LINE sign and their sign stand shall be supported with a sand bag weighing approximately 25-pounds on each leg or two (2) drum collar weights positioned on the center of the sign stand. Thereafter the DO NOT PASS sign shall be installed every mile if the unmarked area is less than 3 miles or every 2 miles if the unmarked area is longer than 4 miles.
5. In the vicinity of a turning lane, a BUMP sign (W8-1) shall be installed.
6. The UNEVEN LANE sign (W8-11) and BUMP sign shall be adjusted daily with the work operation and their sign stands shall be weighted with a 25 ± pound sand bag on each leg or two (2) drum collar weights positioned on the center of the sign stand. Additional UNEVEN LANES signs shall be installed every mile.
7. Signs shall be post mounted at locations after 72 consecutive hours of non-work activities.

Guidance:

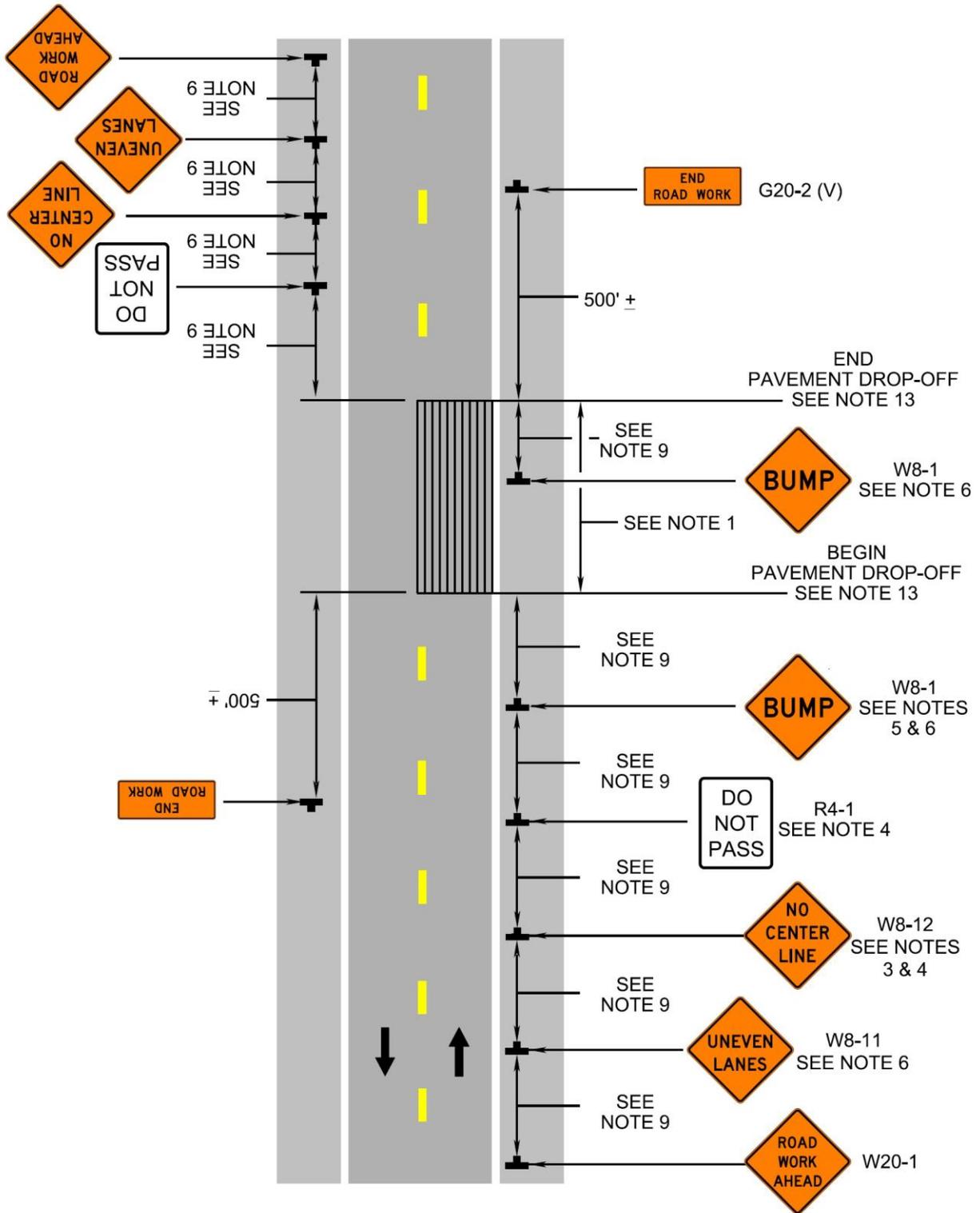
8. *(Reserved for future use.)*
9. *Sign spacing distance should be 350'-500' where the posted speed limit is 45 mph or less and 500'-800' where the posted speed limit is greater than 45 mph.*

Option:

10. Only traffic control signing for pavement resurfacing is shown. Other devices may be used for the control of traffic through the work area.
11. The LOW SHOULDER (W8-9) sign may be used to warn of a shoulder condition where there is an elevation difference of less than 2 inches between the shoulder and the travel lane.

Standard:

12. The LOW SHOULDER sign shall be repeated at 1 mile intervals where there is an elevation difference of less than 2 inches between the shoulder and the travel lane extends over a distance in excess of 1 mile.
13. A temporary pavement wedge shall be constructed of surface mix asphalt a minimum of three (3) feet in length for every inch of depth of pavement milling on the approach and departure end of the milled travel lane(s). Refer to Standard ACOT-1 of the Road and Bridge Standards for details.
14. If pavement marking cannot be installed in accordance with Section 704.03 of the Road and Bridge Specifications, then yellow temporary pavement markers spaced at 10 foot centers for two-way traffic shall be placed along the centerline for lane division. No edge markers will be required.



Typical Traffic Control
End of Day Signing for Plant Mix Paving Operations on a Two-Lane Roadway
(Figure TTC-59.PS16)

Typical Traffic Control
End of Day Signing for Surface Treatment,
Slurry Seal and Latex Emulsion Treatment Operations
TTC-64.PS16
NOTES

Standard:

1. **LOOSE GRAVEL (W8-7) signs shall be installed on surface treated roadways and shall be removed when the roadway has been swept or loose gravels have been removed from the roadway. The LOOSE GRAVEL sign stand shall be supported with a sand bag weighting approximately 25-pounds on each leg or two (2) drum collar weights positioned on the center of the sign stand.**
2. **NO CENTER LINE (W8-12) signs shall be installed whenever the centerline has been obliterated or until permanent pavement markings have been installed. The sign shall be installed in both directions when the centerline is not present. In addition, NO CENTER LINE signs shall be installed every mile if the unmarked area is less than 3 miles, or every 2 miles if the unmarked area is longer than 4 miles.**
3. **A DO NOT PASS (R4-1) sign shall be used when the centerline has been obliterated or until pavement markings have been installed. The DO NOT PASS sign shall be installed after the NO CENTER LINE sign and their sign stand shall be supported with a sand bag weighing approximately 25-pounds on each leg or two (2) drum collar weights positioned on the center of the sign stand. Thereafter, the DO NOT PASS sign shall be installed every mile if the unmarked area is less than 3 miles or every 2 miles if the unmarked area is longer than 4 miles.**
4. **Signs shall be post-mounted at locations after 72 consecutive hours of non-work activities.**
5. **If temporary construction or permanent pavement markings cannot be installed in accordance with the *Special Provision for SECTION 704—PAVEMENT MARKINGS AND MARKERS*, then yellow flexible temporary pavement markers (FTPMs) spaced at 20-foot centers for two-way traffic shall be placed along the centerline for lane division. No edge markers will be required.**

Guidance:

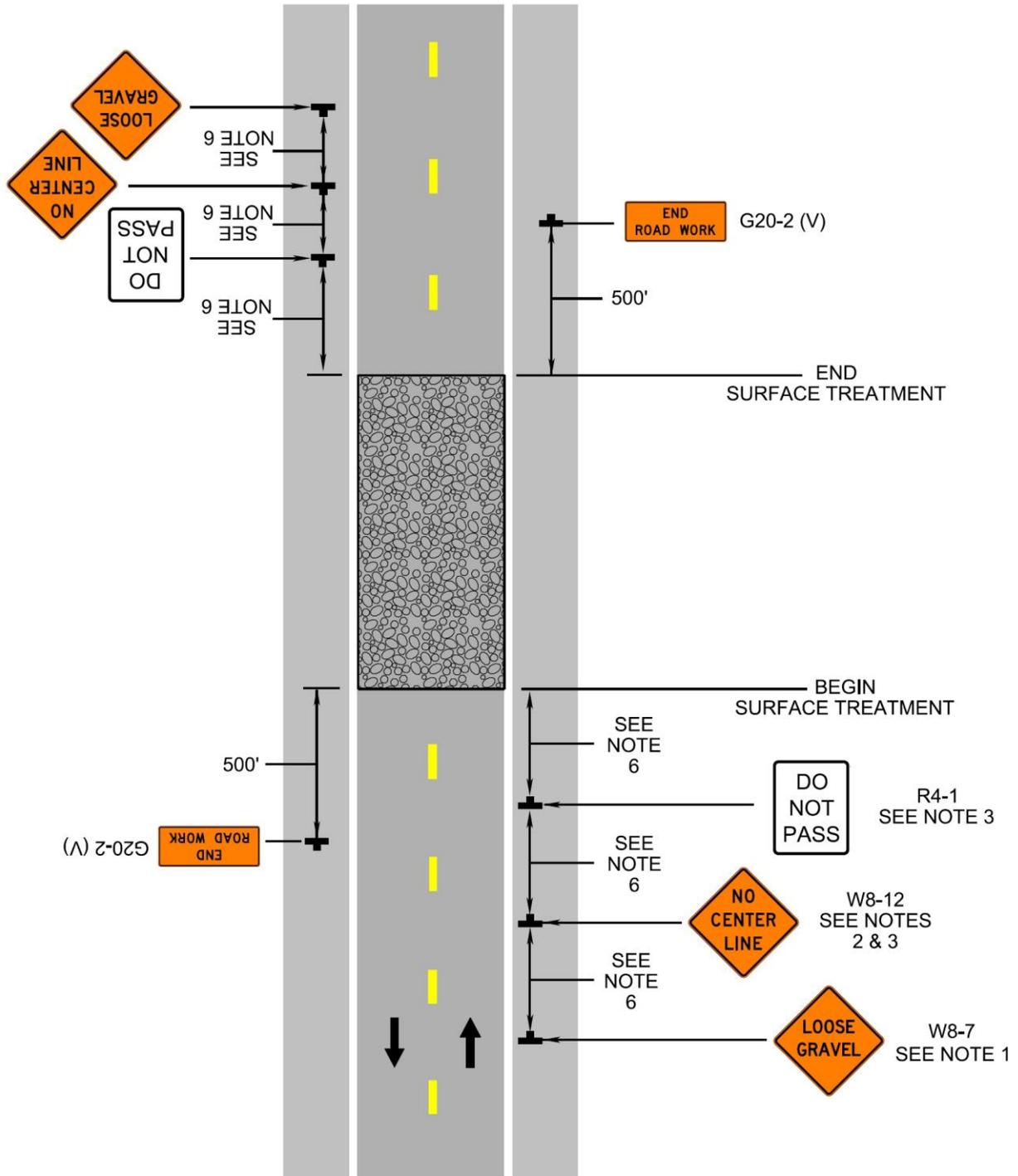
6. *Sign spacing distance should be 350'-500' where the posted speed limit is 45 mph or less, and 500'-800' where the posted speed limit is greater than 45 mph.*

Option:

7. Only traffic control signing for surface treatment/slurry seal/latex emulsion treatment operations is shown. Other devices may be used for the control of traffic through the work area.
8. The advanced warning signs shown may also be used on multi-lane roadways, replacing the NO CENTER LINE signs with UNMARKED PAVEMENT AHEAD (W8-V4) signs and adding a ROAD WORK AHEAD (W20-1) sign as the first advanced warning sign.

Standard:

9. The UNMARKED PAVEMENT AHEAD sign stand shall be supported with a sand bag weighing approximately 25-pounds on each leg or two (2) drum collar weights positioned on the center of the sign stand.



End of Day Signing for Surface Treatment, Slurry Seal and Latex Emulsion Treatment Operations (Figure TTC-64.PS16)

VIRGINIA DEPARTMENT OF TRANSPORTATION
2007 ROAD AND BRIDGE SUPPLEMENTAL SPECIFICATIONS

SUPPLEMENTAL SECTION 234—GLASS BEADS FOR REFLECTORIZING TRAFFIC MARKINGS

SECTION 234—GLASS BEADS FOR REFLECTORIZING TRAFFIC MARKINGS of the Specifications is completely replaced with the following:

234.01—Description

This specification covers glass beads applied on the surface or incorporated into traffic-marking materials so as to produce a retroreflective surface.

234.02—Detail Requirements

Beads shall be manufactured from glass of a composition designed to be highly resistant to traffic wear and weather. Glass beads shall conform to the requirements of AASHTO M247, Type 1-5, except that at least 80 percent of the beads shall be round when tested in accordance with the requirements of ASTM D 1155, Procedure B.

The contractor shall provide a written certification that each batch of glass beads used in or on VDOT pavement markings conform to AASHTO M247 including the total concentration limit of lead and arsenic.

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 704—PAVEMENT MARKINGS AND MARKERS

December 9, 2015

SECTION 704—PAVEMENT MARKINGS AND MARKERS of the Specifications is replaced with the following:

704.01—Description

This work shall consist of establishing the location of and installing temporary pavement markings; and installing permanent pavement markings and pavement markers in accordance with the MUTCD and Virginia Supplement to the MUTCD, these specifications, the Contract Documents, and as directed by the Engineer.

704.02—Materials

All pavement marking materials shall be selected from the VDOT Materials Division's *Approved Products List* for the specified types of marking materials as noted herein.

The Contractor shall use a Department-approved inventory tracking system for all materials received from the manufacturer. Shipment of materials from such inventory shall be accompanied by a signed Form C-85 containing the following certification statement: *Material shipped under this certification has been tested and approved by the Department as indicated by the laboratory test numbers (MS#) listed hereon.*

- (a) **Pavement Markings** shall conform to Section 246 of the Specifications.
- (b) **Glass Beads** shall conform to Section 234 of the Specifications.
- (c) **Pavement Markers** shall conform to Section 235 of the Specifications.
- (d) **Flexible Temporary Pavement Markers (FTPMS)** shall conform to Section 235. All FTPMs shall be new product. FTPMs are suitable for use up to one year after the date of manufacture when stored in accordance with the manufacturer's recommendations.

The color of FTPM units and their reflective surfaces shall be the same color (white or yellow) as the temporary pavement markings they are being used in substitution for.

Flexible Temporary Pavement Markers (FTPMS) shall consist of products from the VDOT Materials Division's *Approved Products List*. FTPMs shall include a removable material covering the reflective lens to protect the lens from being obscured or damaged during the paving operation.

TABLE VII-3

Pavement Marking Materials Type	Class	Name	Temporary/Permanent	Surface Temp. at Time of Application	Film Thickness (mils)	Approved List No.	Application Limitations
A		Traffic Paint	Permanent	50°F+ (Note 6)	15 ± 1 when wet	20	May be applied directly after plant mix operations
B	I	Thermoplastic Alkyd	Permanent	(Note 6)	90 ± 5	43	May be applied directly after plant mix operations
	I	Thermoplastic Hydrocarbon	Permanent	(Note 6)	90 ± 5 when dry	43	Do not apply for less than 30 days after plant mix operations
	II	Preformed Thermoplastic	Permanent	(Note 6)	120-130	73	(Note 3)
	III	Epoxy Resin	Permanent	(Note 6)	20 ± 1 when wet	75	(Note 3)
	IV	Plastic-backed Preformed Tape	Permanent	(Note 6)	60 - 120	17	(Note 3)
	VI	Patterned Preformed Tape	Permanent	(Note 6)	20 min (Note 1) 65 min (Note 2)	17	(Note 4)
	VII	Polyurea	Permanent	(Note 6)	20 ± 1	74	(Note 3)
D	II	Removable Tape	Temporary	(Note 6)	(Note 3)	17	
	III	Wet Reflective Removable Tape	Temporary	(Note 6)	(Note 3)	17	
E		Removable Black Tape (Non-Reflective)	Temporary	(Note 6)	(Note 3)	17	Pavement marking for covering existing markings (Note 7)
F	I & II	Temporary Pavement Markings Paint	Temporary	(Note 6)	15 max when wet (Note 5)	48	
FTPM		Flexible Temporary Pavement Markers	Temporary	(Note 6)		22	(Note 3)

Note 1: Thinnest portion of the tape's cross section.

Note 2: Thickest portion of the tape's cross section.

Note 3: In accordance with manufacturer's installation instructions.

Note 4: In accordance with the manufacturer's installation instructions, except that Type B, Class VI markings on plant mix overlay surfaces shall be inlaid in the freshly installed asphalt surface and not surface applied.

Note 5: When Type F paint is used as a temporary marking on the final surface prior to installation of permanent markings, the film thickness shall be 8-10 mils when wet except lane lines on arterial roads 10,000 or greater with posted/statutory 45 mph or greater may be 10 to 15 mils if expected to be in service for greater than 14 days.

Note 6: Surface temperature at time of application shall be in accordance with manufacturer's installation instructions. If the installation instructions do not specify minimum surface temperature, then the markings shall not be installed unless surface temperature at time of application is 50 degrees F or higher.

Note 7: Type E pavement markings shall not be used on hydraulic cement concrete.

704.03—Documentation of Existing Markings and Markers

The Contractor shall provide construction field staking in the field that documents, at a minimum: any changes in passing zones on undivided roads, exact placement of all aerial speed enforcement markings, and placement of railroad crossing markings. Any changes to these markings that are specified in the contract documents shall be staked, as appropriate, to identify the proposed location of the new permanent markings instead of existing markings placement. All staking shall be completed and the Engineer notified at least 14 days prior to the scheduled start of resurfacing operations.

The Contractor shall reference this staking when installing temporary markings (if required as specified herein), and for the premarking to be done in advance of permanent marking installation. The stakes shall be removed at the conclusion of the project.

All existing markings shall be replaced with permanent markings of the same width, color, size, and location unless otherwise directed in the Pavement Marking (PM) Series of the VDOT *Road and Bridge Standards*, the contract documents or by the Engineer. All existing markers shall be replaced with new markers of the same color unless otherwise directed in the contract documents or by the Engineer.

704.04—Temporary and Permanent Pavement Marking Installation

Pavement markings shall be white or yellow markings (unless otherwise specified) as required by the MUTCD or the Virginia Supplement to the MUTCD for the specific location or as specified by the Engineer. The sizes and shapes of preformed symbols/characters, or the templates used to create such symbols/characters for non-preformed markings, shall match the size and shape specified in the VDOT *Road & Bridge Standards* and in the Contract Documents. Hand-drawn or "stick" symbols/characters are not allowed.

Once received by the Contractor, all pavement marking materials shall be stored in accordance with the manufacturer's requirements until the day of installation, unless the Engineer otherwise authorizes. Pavement marking materials shall not be installed if the material has exceeded its shelf life, has been improperly stored, has deteriorated or is otherwise damaged.

The markings shall be installed in accordance with Table VII-3 (Pavement Marking Materials) unless otherwise recommended by the manufacturer and approved by the Engineer. The Contractor shall furnish a copy of the manufacturer's installation instructions to the Engineer prior to installation.

Glass beads shall be applied at the rate specified herein, and shall be evenly distributed over the entire surface of the marking. The Contractor shall apply beads to the surface of liquid markings with a bead dispenser attached to the applicator. The applicator shall uniformly dispense beads simultaneously on, and in the just-applied marking. The bead dispenser shall be equipped with a cut-off control synchronized with the cut-off control of the applied marking material so that the beads are applied throughout the completed marking. Beads shall be applied while the liquid marking is still fluid. Approximately 70 percent of beads shall be completely buried in the marking, and the remaining 30 percent shall be 50 to 60 percent embedded in the marking's surface. Beads installed on crosswalks and stop lines on roadways with curbs only (no gutter) may be hand-applied for two feet at the end of each line next to the curb with 100 percent of the beads embedded 50 to 60 percent into the marking's surface.

The Contractor shall exercise caution and protect the public from damage while performing pavement marking operations. The Contractor shall be responsible for the complete preparation of the pavement

surface, including but not limited to removing dust, dirt, loose particles, oily residues, curing compounds, concrete laitance, residues from eradication, and other foreign matter immediately prior to installing pavement markings.

Liquid markings shall be applied so as to prevent splattering and overspray and shall be protected from traffic until track-free by the use of traffic control guarding or warning devices as necessary. If a vehicle crosses a pavement marking and tracks it or if splattering or overspray occurs, the affected marking and resultant tracking, splattering, or overspray shall be removed and new markings shall be applied at the Contractor's expense.

Equipment shall also be thoroughly cleaned between changes in colors or types of materials.

Temporary and Permanent Pavement Markings shall have clean and well-defined edges without running, bleeding, overspray or deformation. Temporary markings to be covered by permanent pavement markings shall be completely covered by the permanent markings or shall be eradicated at no additional cost to the Department. Markings shall be uniform in appearance; free of waviness (waviness is defined as the edge of the marking shall not vary from a straight line more than ¼ inch in three feet or more than one inch in fifty feet for a maximum distance of 500 feet); shall be straight on tangent alignment; and shall be on a true arc on curved alignment. Message and symbol markings shall be free of overlaps.

The widths of pavement markings shall not deviate more than 1/4 inch on tangent nor more than 1/2 inch on curves from the required width. The length of the gap and the length of the individual stripes that form skip lines shall not deviate more than 2 inches from their required lengths. The length of the gap and individual skip line shall be of such uniformity throughout the entire length of each that a normal striping shall be able to repeat the pattern and superimpose additional striping upon the existing marking.

(a) Maximum Allowable Time Limits for Unmarked Roads:

Existing markings that are obscured, covered, or eradicated by resurfacing operations (including existing symbol/message markings where the need for temporary symbol/message markings has been identified in the Contract Documents) shall be replaced with either temporary or permanent markings within the time limits established in the Time Limits for Unmarked Roads in Table VII-4, unless an extension is approved by the Engineer.

If the Contractor begins the next resurfacing operation within the time limits specified in Table VII-4 for a non-final surface, then the time limits shall be recalculated as starting at the end of the work day from the time of that next resurfacing operation. For the straight segments of non-limited access road posted/statutory limit less than 45 mph, if all the lanes are delineated by the milled surface or asphalt overlay and "Unmarked Pavement Ahead" or "No Center Line" warning signs are properly installed, the Engineer may further extend the time limit for temporary markings on straight segments of non-freeway roads. The Engineer may approve an extension of the time limits, and set conditions, for roads posted/statutory limit less than 45 mph as follows:

- By up to 12 hours for 10,000 ADT or greater roads,
- Up to 24 hours for 9,999 to 3000 ADT roads and,
- Up to 48 hours for less than 3000 ADT roads,
- Or allow FTPM's to be installed for lane delineation in curved segments and in straight segments where lane delineation on the interim surface is not clear to the drivers.

For final surfaces (including but not limited to plant mix operations, surface treatment, slurry seal, and latex emulsion surfaces) the Contractor shall determine if the permanent markings can be installed within these time limits, based on the installation requirements for that permanent marking material on that type of surface, and the weather conditions. If the permanent markings will not be installed within these time limits, then temporary markings shall be installed.

Table VII-4: Time Limits for Unmarked Roads

Road Type	Maximum allowable duration for unmarked roads	Note(s)
Interstates and other freeways (limited access roads) posted at 55 MPH or greater (including interstate/freeway ramps)	<p>All lane line markings, at a minimum, shall be temporarily or permanently installed before opening the lane to traffic.</p> <p>Application of temporary markings on surface treatment, slurry seal and latex emulsion shall be as soon as the surface has cured enough to hold the temporary markings (the texture has weathered-in).</p> <p>All other markings shall be temporarily or permanently installed within 24 hours after the end of the workday when the corresponding existing markings were obscured, removed, or eradicated.</p>	Note 1
Non-freeway roads with ADT of 10,000 or greater (Traffic Groups XV and above)	<p>All lane line and center line markings shall be temporarily or permanently installed within 24 hours after the end of the workday when the corresponding existing markings were obscured, removed, or eradicated.</p> <p>Application of temporary markings on surface treatment, slurry seal and latex emulsion shall be as soon as the surface has cured enough to hold the temporary markings.</p>	Note 2 Note 3
Non-freeway roads with ADT between 3,000 and 9,999 (Traffic Groups XI through XIV)	All lane line and center line markings shall be temporarily or permanently installed within 48 hours after the end of the workday when the corresponding existing markings were obscured, removed, or eradicated.	Note 4
Non-freeway roads with ADT less than 3,000 (Traffic Groups I - X)	All lane line and center line markings shall be temporarily or permanently installed within 72 hours after the end of the workday when the corresponding existing markings were obscured, removed, or eradicated.	Note 5

Note 1: For the purposes of this Special Provision, freeways shall be defined as any fully limited-access, divided roadway with two or more travel lanes in each direction and 55 mph or greater speed limit.

Note 2: If an approach to a signalized intersection, has two or more approach through lanes, 45 mph or greater speed limit, greater than 3000 ADT and all markings on the approach are obliterated, then all lane lines and centerlines within 250 feet of the location of the stop line location shall be temporarily or permanently marked within **24 hours** of opening the approach to traffic, unless a time extension is approved by the Engineer and “Unmarked Pavement Ahead” or “No Center Line” warning signs were properly installed when the unmarked approach was first opened to traffic as per the Virginia WAPM.

Note 3: If the Contract Documents require temporary symbol/message markings or temporary edge line markings, unless a time extension is approved by the Engineer, those markings shall be temporarily or permanently marked within **72 hours** after the end of the workday when the corresponding existing markings were obscured, removed, or eradicated on non-freeway roads with 10,000 or greater ADT and **96 hours** on less than 10,000 ADT non-freeway roads.

Note 4: If the milled surface or new pavement provides delineation of the lanes or if the next resurfacing operation will obliterate the temporary markings within approximately **24 hours**, the Engineer may approve an extension of time if the posted/statutory limit is less than 45 mph and scheduling of the next interim surface is documented, and all “Unmarked Pavement Ahead” or “No Center Line” warning signs were properly installed when the unmarked approach was first opened to traffic.

Note 5: When Type F paint is used as a temporary marking on the final surface prior to installation of permanent markings, the film thickness shall be at least 8-10 mils when wet except lane lines on Interstate and Limited Access Roadways with AADT of 10,000 or greater with posted/statutory 45 mph or greater may be 10 to 15 mils if expected to be in service for greater than 14 days

(b) Temporary Pavement Markings:

Premarking, dotting or layout marking shall NOT be used as a substitute for temporary pavement marking.

Temporary pavement markings specified in the Contract Documents, including longitudinal lines and message markings, shall be installed at the same locations that the permanent pavement markings are to be installed.

Type D-removable tape shall be installed and removed in accordance with manufacturer's installation instructions.

Type F paint shall be installed in accordance with the manufacturer's installation instructions and as follows:

	Milled Surface	Intermediate Lifts or Final Surface
Thickness	15 mils	8 to 10 mils**
Glass Bead Application Rate	6 lbs. of glass beads per gallon of material	3 lbs. of glass beads per gallon of material for 8 to 10 mils and 6 lbs. per gallon for 11 to 15 mils
Long Line Width	Same width as the permanent markings	75% of the permanent marking width
Skip Line Pattern	10-foot line segments / 30-foot gaps (approx.)	8-foot line segments / 32-foot gaps (approx.)

** Type A paint at approximately 15 mils thickness with 6 lbs. of glass beads per gallon will be permitted for the temporary lane line markings provided that the Type A is worn down to no more than 10 mils thickness prior to permanent marking installation. The contractor shall assess how long the temporary lane line, center-line and edge line temporary markings will be in service and may increase the thickness based upon the duration and expected wear.

Temporary Type F pavement markings on final surfaces shall be arranged and spaced so that they will be completely covered by the subsequent installation of permanent pavement markings atop those temporary paint markings.

The following Temporary markings location and placement shall comply with the following:

1. Skip- and solid- lane line markings shall be required at all locations unless directed otherwise in the Contract Documents.
2. Centerline markings shall be required at all locations unless directed otherwise in the Contract Documents. Temporary passing zone markings shall be at the same location and pattern as the permanent markings.
3. Edgelines shall be required only when specified in the Contract Documents and only after the surface has reached a condition to support the markings and the equipment, or when directed by the Engineer. Temporary edgelines are not required when the shoulder surface is in a milled condition.
4. Dotted Line Extensions that delineate turning paths or offset lane alignments through intersections shall be required only when specified in the Contract Documents.

5. Stop lines shall be required only when specified in the Contract Documents. Temporary stop lines shall be 12 inches wide unless specified otherwise.
6. Turn Arrows shall be required only when specified in the Contract Documents.
7. Lane Drop Arrows and "MERGE" markings shall be required only when specified in the Contract Documents, or when directed by the Engineer.
8. Railroad Crossing Symbols shall be required only when specified in the Contract Documents, or when directed by the Engineer.
9. Crosswalks shall be required only when specified in the Contract Documents. Temporary crosswalks shall be parallel 6 inch white lines unless otherwise specified.
10. Other markings shall be required only when specified in the Contract Documents.

Temporary lane lines, centerlines, and edge lines may be marked with Type D removable tape, Type F-temporary paint, or FTPMs. All temporary symbol/message markings and other types of temporary markings (including dotted line extensions, stop lines, and crosswalks) may be marked with Type D-removable tape or Type F-temporary paint with at least 3 lbs. of glass beads per gallon.

The VTM-94 moisture test is not required for temporary pavement marking. However, if the VTM-94 moisture test is not performed, the Contractor shall make a qualitative surface wetness assessment and note the results on the Form C-85.

If the surface is visibly dry (does not have puddling or free-standing water present), the Contractor is responsible for installing and maintaining the temporary pavement markings. If the Contractor opts not to perform the VTM-94 moisture test and the temporary markings applied to a visibly dry surface do not sufficiently adhere to the surface, no additional payment will be made by the Department for temporary pavement marking reapplication (including Maintenance of Traffic costs associated with temporary pavement marking reapplication).

If the surface has puddling or free-standing water present, or if a VTM-94 moisture test result indicates that the condition of the surface is not suitable for temporary pavement marking application, the Engineer may direct the Contractor to install temporary pavement markings on the surface in order to avoid having traffic operate on an unmarked road. In such circumstances the Department may direct the Contractor to install one subsequent reapplication of the temporary markings once the surface has dried, if the previous installation did not satisfactorily adhere to the road. In such circumstances the Contractor will be compensated at the contract bid price for those temporary markings.

The Contractor may employ approved methods of drying the pavement surface that will not damage the pavement. Methods that may damage the pavement, such as "torching" of the pavement, will not be allowed. Any drying of pavement will be at no extra cost to the Department.

While in place, temporary pavement markings sizes, shapes and retroreflectivity shall be maintained at adequate visibility and retroreflectivity, as defined in Section 512 of the Specifications, until the permanent markings are installed. No additional application (refreshing) is required as long as the temporary markings continue to meet these requirements.

If Type D-removable tape fails the visual evaluation or is deficient in any other respect prior to the installation of permanent markings, the tape shall be removed and new Type D-removable tape or Type F-temporary paint shall be reapplied. Under such circumstances, no additional payment will be made by the Department for temporary pavement marking reapplication, including Maintenance of Traffic costs for reapplication.

If temporary pavement markings are Type F and do not meet the requirements of Section 512 of the Specifications prior to the installation of permanent markings, such temporary markings shall be refreshed by the application of a lighter application (applied so as to enhance visibility but not as to require eradication before application of permanent markings) of Type F-markings at the Contractor's expense as directed by the Engineer.

Permanent pavement markings shall not be installed atop Type F-markings if the paint exceeds the maximum specified thickness in Table VII-3, or is not fully dry. If the temporary pavement markings are not located directly underneath the location where the permanent markings are to be installed, they shall be 100% eradicated prior to installation of permanent markings. No additional payment will be made for eradication of excess temporary pavement markings, including Maintenance of Traffic costs, when eradication is required prior to installation of permanent markings.

(c) Premarking:

When establishing the location of pavement markings, the Contractor may mark the locations of proposed permanent markings on the roadway by installing premarking materials. Premarkings may be accomplished using Type D removable tape, chalk, or lumber crayons; except symbol/message pavement markings such as stop lines, crosswalks, messages, hatching, etc., shall be premarked using chalk or lumber crayons. Premarkings shall be of the same general color as the pavement markings being premarked.

When tape is used as a premarking material, premarking shall consist of 4- inch by 4-inch-maximum squares or 4-inch-maximum diameter circles spaced at 100-foot minimum intervals in tangent sections and 50-foot-minimum intervals in curved sections. At locations where the pavement marking will switch colors (e.g. gore marking) the ends of the markings may be premarked regardless of the spacing.

When the Contractor uses chalk or lumber crayon as premarking, the entire length of the proposed pavement marking may be premarked.

Premarkings shall be installed so their installation will not affect the adhesion of the permanent markings. When Type D tape is used as the premarking material and the lateral location of such premarkings to the final pavement markings exceeds 6 inches, the Type D premarkings shall be removed at no additional cost to the Department.

(d) Eradication:

Eradication of existing pavement markings shall be in accordance with Section 512 of the Specifications, except where new markings will cover the existing markings, at least 90 percent removal of the existing markings is required.

(e) Permanent Pavement Markings:

The pavement surface shall be clean and dry at the time of permanent pavement marking installation as tested in accordance with VTM-94. The Contractor shall be responsible for providing the apparatuses that are needed to perform the moisture test prior to application.

Permanent markings shall not be installed directly over longitudinal pavement joints except to cross the joint perpendicularly or at an angle.

All permanent linear and message/symbol markings on (a) Interstate and Limited Access Roadways posted at 55 MPH or greater, (b) all other roadways with 10,000 ADT or greater and posted or statutory speed limit of 45 mph or greater, shall be placed within the following time limits:

- 1) For Plant Mix operations:
 - a. All Type B Class VI shall be inlaid the same day as the final surface is placed as specified herein.
 - b. All other permanent markings shall be completed within 30 days after the end of the last workday of continuous paving on that section of roadway.
- 2) For Latex Emulsion and Surface Treatment operations:

- a. The contractor shall evaluate the pavement surface between 14 and 18 days after the end of the last workday of continuous paving on that section of roadway.
- b. If that evaluation ascertains that the pavement surface meets the markings manufacturer's requirements and specifications for application of permanent markings, the texture is weathered-in on the edges, and the temporary marking is worn down to 10 mils or less, then the Engineer shall be notified that the surface meets the markings manufacturer's specifications. The permanent markings shall be installed between 14 days and 30 days after the end of the last workday of continuous paving on that section of roadway. Otherwise the contractor shall notify the Engineer why the pavement surface does not meet the markings manufacturer's requirements and all permanent markings shall be completed between 30 days and 45 days after the end of the last workday of continuous paving on that section of roadway.

On all other roadways (non-interstate and non-limited access/non-freeway) roads with less than 10,000 ADT or posted/statutory speed less than 45 MPH), all permanent linear and message/symbol markings shall be installed within 30 days on plant mix surfaces and between 30 and 45 days on surface treatment/slurry seal/latex emulsion surfaces, after the end of the last workday of continuous paving on that section of roadway. Exceptions will be granted by the Engineer only when pavement curing time or weather conditions prohibit installation or the texture is not weathered-in on the edges and the pavement surface does not meet the markings manufacturer's requirements.

Any necessary refreshing and/or replacement of temporary pavement markings or FTPMs shall not affect the allowable time limit for completion of permanent pavement marking installation.

Permanent pavement markings shall be of the material specified in the Contract Documents.

Permanent pavement markings shall not be installed atop surface-treatment/slurry seal/latex emulsion surfaces until at least 14 days (and up to 30 days if Type B Class VI is installed) after completion of the paving operation, and only after the contractor determines that the surface has sufficiently cured (weathering-in of the texture) to support the permanent pavement markings in accordance with the manufacturer's written instructions. The Contractor shall thoroughly sweep surface-treated, slurry seal and latex emulsion roadways prior to installation of permanent pavement markings. Any loose aggregate remaining on the surface shall be blown-out with an air compressor or other approved method.

Permanent pavement message and symbol markings shall be installed using Type B, Class I or Class II thermoplastic material as specified in the Contract Documents. Messages and symbol markings shall include, but not be limited to: crosswalks, yield lines, stop lines, school markings, railroad crossing markings, accessible (handicapped) parking symbols, arrows, word messages, etc.

1. **Type A Markings:** Paint shall be applied as per the manufacturer's installation instructions. Paint shall not be applied over existing pavement markings of other materials unless the existing marking is at least 90 percent worn away or eradicated. Paint may be applied over existing Type A paint markings if the existing paint is clean and well adhered.

The Contractor shall apply paint with a line painting machine that is capable of hot spraying paint and glass beads directly onto the pavement surface for widths of 4 through 8 inches. The machine shall be capable of simultaneously applying two pavement stripes, either solid or skip, at the same time when double line markings are required. Paint tanks on the equipment shall be equipped with a mechanical agitator and paint shall be thoroughly mixed and heated such that it will not track within 60 seconds after its application.

Non-truck mounted equipment shall be self-propelled and regulated to allow for calibration of the amount of material applied.

Glass beads shall be applied by the application equipment to the entire surface of the paint at the minimum rate of 6 pounds per gallon of paint, unless specified otherwise in the VDOT Materials Division's *Approved Products List*.

2. **Type B Markings (General):** Type B markings shall be applied in accordance with the manufacturer's installation instructions. Type B markings shall not be applied over existing pavement marking materials unless the existing marking is at least 90 percent worn away or eradicated.

The Contractor shall furnish a properly calibrated infrared instrument for the purpose of measuring the actual temperature of molten thermoplastic material. Multi-component material shall be applied using internally injected guns for the proper mixing of components.

Truck mounted equipment for application of liquid long line Type B markings shall be capable of hot spraying liquid applied markings and glass beads uniformly over the entire surface of the marking for widths of 4 through 8 inches. Equipment tanks shall be equipped with a mechanical agitator and materials shall be thoroughly mixed, heated and applied in accordance with the manufacturer's installation instructions. Equipment shall be capable of applying two pavement stripes, either solid or skip, at the same time when double line markings are required.

3. **Thermoplastic (Type B, Class I) Markings:** Material shall be applied by screed extrusion, ribbon gun, or spray equipment. Alkyd thermoplastic may be applied directly to plant mix surfaces after the paving operations if the paved surface can support the equipment; however, hydrocarbon thermoplastic shall be applied between 30 and 45 days after the paving operations.

Alkyd and hydrocarbon materials shall not be mixed together. Equipment shall be thoroughly cleaned before color or types of material are changed.

Thermoplastic shall only be applied over existing thermoplastic markings if the existing thermoplastic marking is clean, chalk-free (not powdery), and well-adhered; or over previously-applied Type F-paint that is fully dry and is at a thickness of 10 mils or less.

Glass beads shall be applied by the application equipment to the surface of the marking at the minimum rate of 7 pounds per 100 square feet, unless specified otherwise in the VDOT Materials Division's *Approved Products List*.

Non-truck mounted equipment for application of thermoplastic material shall be of the screed extrude type with a screw drive and shall be self-propelled and regulated to allow for calibration of the amount of material applied.

Type B, Class I hydrocarbon thermoplastic material shall not be used for the installation of messages or symbols.

Alkyd thermoplastic material shall only be applied by screed extrude application equipment for the installation of messages or symbols.

4. **Preformed Thermoplastic (Type B, Class II) Markings:**

When markings are installed on hydraulic cement concrete pavement, a primer/sealer shall be first applied in accordance with manufacturer's installation instructions.

Additional glass beads shall be applied evenly at the rate of 7 pounds per 100 square feet to flood the entire surface of the preformed thermoplastic material immediately after installation and while the material is still molten.

5. Epoxy Resin (Type B, Class III) Markings:

Markings shall be applied per the manufacturer's recommendations. Epoxy resin shall not be applied over existing pavement markings unless the existing marking is at least 90 percent worn away or eradicated. Non-truck mounted equipment for application of epoxy resin material shall be self-propelled and regulated to allow for calibration of the amount of material applied.

6. Plastic-Backed Preformed Tape (Type B, Class IV) Markings:

Markings shall be installed per the manufacturer's installation instructions and as denoted herein.

Unless otherwise specified, Tape applied to freshly paved asphalt surfaces shall be inlaid on the freshly installed asphalt surface before the pavement mat has cooled below 100 degrees F.

Surface preparation primer/adhesive shall be used to enhance adhesion in accordance with the manufacturer's recommendations, except when tape is inlaid immediately following the final rolling of the new asphalt concrete surface.

New surface treatment, slurry seal, and latex emulsion surfaces shall be fully cured and temporary markings worn in accordance with manufacturer recommendations prior to installation of the primer/adhesive and surface application of the Tape.

Tape for pavement line markings shall be applied by an application cart as recommended by the manufacturer. Tape shall be tamped into place with a tamper cart with a weight as recommended by the manufacturer. Vehicle wheels may be used to tamp line markings if recommended by the manufacturer's installation instructions. If vehicle wheels are used to tamp the markings, then the Contractor shall ensure that the vehicle tires ride true down the length of the tape marking.

Markings that are improperly inlaid during the pavement operations shall be completely eradicated and reapplied via non-embedded surface application at the Contractor's expense.

7. Patterned Preformed Tape (Type B, Class VI) Markings:

Pre-approved material shall be installed either under the guidance of the manufacturer's representative or by the contractor's employee that is approved as an installer by the manufacturer. If the material is no longer approved for Surface Treatment applications (Latex Emulsion, Slurry, etc.) at the time of bid advertisement, the material shall not be installed on Surface Treatment applications (Latex Emulsion, Slurry, etc.).

The pavement marking tape shall be warranted by the manufacturer against failure resulting from improper installation and material defects regardless of method of manufacturer's prescribed application or pavement type. The material shall be warranted to retain its color, retroreflectivity, adherence to the pavement and shall be free of other obvious defects or failures.

All pavement marking tape that has failed to meet the warranty conditions shall be replaced at no additional cost to the Department. The warranty shall cover all pavement striping materials (regardless of method of installation), labor, equipment, mobilization\demobilization,

tools, and incidentals required to remove (eradicate) and replace the pavement striping, including maintenance of traffic during the removal and reinstallation operations. The warranty shall include the following:

- Retroreflectivity: White and Yellow longitudinal pavement marking tape shall remain effective for its intended use under normal traffic conditions and meet the minimum Coefficient of Retroreflected Luminance (RL) of 100 millicandelas per square foot per foot-candle [(mcd·ft²)·fc⁻¹] when measured in accordance with the requirements of ASTM E 1710 for six years.
- Color: Longitudinal pavement marking tape shall remain effective for its intended use under normal traffic conditions and meet the minimum Daytime and Nighttime color including Luminance Factor (Cap Y) per ASTM D 6628 for six years when inlaid on new asphalt concrete pavement or surface applied on existing asphalt concrete pavement or hydraulic cement concrete.
- Material Loss for Solid Longitudinal Lines: more than five percent of the substrate is exposed in any 2000 ft. section of pavement marking or 50 ft. or more of continuous loss.
- Material Loss for Skip Line: more than five percent of the substrate is exposed in any 2000 ft. section of pavement marking, or the loss of two consecutive skips.

When Type B, Class VI markings are specified for a paving schedule route that includes a concrete bridge deck greater than 75 feet in length within the paving schedule's limits, Type B Class VI contrast (black-bordered) tape shall be surface-applied on the concrete bridge deck for the lane lines and edge lines unless otherwise specified in the Contract Documents or directed by the Engineer.

Plant Mix Surfaces: Type B, Class VI markings applied to plant mix overlay surfaces shall be installed as per manufacturer's installation instructions, except that non-embedded (adhesive) surface application will not be permitted; the markings shall be inlaid in the freshly installed asphalt surface before the pavement mat has cooled. The temperature of the asphalt mat shall be between 100 and 180 degrees. The Type B, Class VI markings shall be inlaid with a roller (minimum 2 tons) operating in a non-vibratory mode when the asphalt mat is between 100 and 180 degrees. The Contractor shall ensure that markings are not degraded by subsequent paving and shoulder operations.

Markings that are improperly inlaid during the pavement operations shall be completely eradicated and reapplied via non-embedded surface application at the Contractor's expense.

Non-Plant Mix Surfaces: The Contractor shall install Type B, Class VI markings on existing asphalt concrete roadway surfaces, hydraulic cement concrete surfaces, and existing or new surface treatment, slurry seal, and latex emulsion surfaces in accordance with the manufacturer's installation instructions for pavement surface preparation, sweeping, and installation techniques for non-embedded (adhesive) surface applications and splicing.

When Type B, Class VI markings are to be installed on latex emulsion or other approved surface treatment, the selected marking material shall be a material that is warranted by the manufacturer and pre-approved by the Department for application on slurry seal/latex emulsion surfaces.

Prior to tape installation on new latex emulsion surfaces, the following shall occur:

- The surface shall cure for at least 30 days unless otherwise documented that the pavement surface has sufficiently cured as specified herein.

- The surface shall be swept clear of all loose aggregate immediately prior to applying (spraying) surface preparation primer adhesive.
- The primer adhesive shall be applied (sprayed) uniformly at the correct thickness (shall not exceed the maximum thickness specified by the manufacturer), and cured in accordance with the manufacturer's installation instructions.

After proper application of the surface preparation primer adhesive, the tape shall be tamped to the road using a 200 pound minimum tamper cart and vehicle wheels. The Contractor shall ensure that the vehicle tires, if used, ride true down the length of the tape marking and in accordance with manufacturer instructions.

8. Polyurea (Type B, Class VII) Markings:

Markings shall be installed in accordance with the manufacturer's installation instructions, either under the guidance of the manufacturer's representative or by a Contractor's technician that has received manufacturer's certification.

704.05—Pavement Markers

The type, installation procedures, time limits, ambient air temperature, ambient moisture condition, and pavement surface condition for pavement markers shall be in accordance with manufacturer's installation instructions. A copy of those installation instructions shall be provided to the Engineer prior to installation.

The front side (the side facing oncoming traffic) of pavement markers retroreflectors shall be the same color as the adjacent pavement marking. The backside of the pavement marker retroreflectors shall be as follows:

- One-way markers: The backside (the side facing wrong-way traffic) shall be red for pavement markers with a white retroreflector on the front side.
- Two-way markers: The backside shall match the color of the adjacent pavement marking.

The bonding material shall be from the VDOT Materials Division's *Approved Products List* for the specific marker listed.

The Contractor shall prepare the pavement surface by air blowing or a thorough brushing as necessary to ensure that the pavement surface is free of dirt, dust, debris, moisture, scale, oil, and any contaminant that might reduce bonding.

The retroreflector surface shall be kept free of moisture, scale, dirt, oil, grease, and other contaminants that might reduce the retroreflectivity of the retroreflector.

Permanent markers shall not be installed until after the installation of the adjacent permanent line marking.

(a) Flexible Temporary Pavement Markers (FTPMS):

The Contractor may choose to substitute FTPMS in lieu of Type F-temporary paint or in lieu of Type D temporary pavement markings. Prior to installing FTPMS the Contractor shall submit a plan for substituting FTPMS for temporary pavement markings to the Engineer for approval. The Contractor's plan for FTPMS shall be in accordance with the requirements and the *Typical Plan for FTPM Placement* drawings included herein.

When FTPMs are used to simulate temporary edgelines, the FTPMs shall be placed on 20-foot centers and shall match the color of the line markings being simulated.

FTPMs shall be installed at the same locations that permanent pavement markings will be installed.

For surface treatment, slurry seal or latex emulsion treatment operations, the appropriate FTPMs with protective covering shall be installed prior to placing the new treatment. The lens protective covering shall be kept in place during the final surface placement to protect the lens from being obscured or damaged by the paving operation. Upon completion of surface treatment, slurry seal or latex emulsion treatment placement, the Contractor shall remove the protective covering from the reflective lens of the FTPMs prior to leaving the work site. Failure to remove such covering shall result in the non-payment for that portion type (skip or solid) of temporary pavement marking.

For plant mix operations, the appropriate FTPMs shall be installed on the newly-placed pavement after the pavement is thoroughly compacted and has cooled to the FTPM manufacturer's recommended temperature for installation.

The Contractor shall maintain the FTPMs until the permanent pavement markings are installed. Damaged or missing FTPMs shall be immediately replaced at the Contractor's expense with new FTPMs of the same manufacturing type, color and model. No more than one FTPM may be damaged or missing out of every skip line simulated segment. No two consecutive FTPMs may be damaged or missing on a simulated solid line application, and no more than 30 percent of the FTPMs may be damaged or missing on any measured 100-foot segment of simulated solid line.

Once applied, FTPMs will be considered for a single use. If a FTPM requires replacement, it shall be properly disposed of and replaced with a new FTPM at no additional cost to the Department. FTPMs may remain in place, undamaged, after installation for up to 14 consecutive days. When FTPMs are applied prior to final surface placement (such as with surface treatment, slurry seal, or latex emulsion operations) this 14 -consecutive-day time limit shall begin at the time of actual installation of the FTPMs, not at the time of surface placement. The Engineer may approve an extension of the 14 days if all damaged FTPMs are replaced and the remaining FTPMs are maintained.

FTPMs shall be removed and properly disposed of when permanent pavement markings are installed. Used FTPMs removed from the pavement, including all containers, packaging, damaged FTPMs and all other miscellaneous items of waste, shall be appropriately disposed of in accordance with Section 106.04 of the Specifications.

(b) Snow-plowable Raised Pavement Markers (SRPMs):

SRPMs shall be installed by cutting two parallel grooves into the pavement at the depth and dimensions recommended by the marker manufacturer. Grooves shall be parallel to the adjacent pavement marking. Grooves shall be cut with saw blades having a diameter to match the curvature of the steel casting bottom and keels. Keel surfaces and the cut grooves shall be free from moisture, scale, dirt, oil, grease, debris, or any other contaminant that might reduce bonding.

SRPMs shall be located at least two inches away from any joint, crack, or seam.

Casting keels shall be bonded in the saw-cut grooves in accordance with the manufacturer's installation instructions. Front and rear keel tips of the casting shall be installed flush with or below the pavement surface. The installed height of the raised pavement marker shall be approximately ¼ inch to ½ inch above the pavement surface.

The top of retroreflectors shall be mounted flush with or below the top of the casting.

If the SRPM retroreflectors are dirtied or damaged during installation (including dirtying from adhesive residue), they shall be replaced by the Contractor at no additional cost to the Department.

All SRPMs on plant mix surfaces shall be installed within 30 calendar days after the end of the last workday (final surface) of continuous paving on that section of roadway. All SRPMs on surface treatment, slurry seal, or latex emulsion surfaces shall be installed within 14 calendar days after the final markings are installed, unless a time extension is approved by the Engineer. Time extensions will be granted when weather conditions prohibit installation or other operations on the project would damage the markers.

The time limit for installation of SRPMs shall be determined as follows:

- On a two-lane roadway, the time limit commences for the entire roadway at the end of the last workday that the final surface is placed on a continuous section of that roadway.
- On a divided highway or a multi-lane undivided highway, the time limit commences for the entire roadway at the end of the last work day that the final surface is placed on a continuous section for that portion [direction] only. The time limit for the entire roadway in the opposite direction does not commence until at the end of the last work day that plant mix or surface treatment is placed on a continuous section for that opposite direction.

(c) Raised Pavement Markers:

Raised pavement markers shall be bonded to the pavement surface in accordance with the manufacturer's installation instructions.

(d) Pavement Marker Retroreflector Replacement:

Replacement of existing retroreflector lenses shall be in accordance with the manufacturer's installation instructions. If the new retroreflectors are dirtied or damaged during installation they shall be replaced at no additional cost to the Department. Properly dispose of the existing retroreflectors in accordance with Section 106.04 of the Specifications.

704.06—Quality Control

The Contractor shall have a certified Pavement Marking Technician present during all temporary and permanent pavement marking operations and marker installation operations, except FTPM operations.

The Contractor shall maintain a daily log (Form C-85) for both temporary and permanent markings and markers. The C-85 form shall not be modified, all entries in the log shall be in ink, the log shall be legible and complete, and the log shall be signed by the Contractor and delivered to the inspector at the end of each workday. If the Form C-85 is in electronic format, it shall be kept current with VTM-94 testing throughout the day and a printed copy signed by the Contractor shall be delivered to the Inspector at the end of each workday. The Contractor shall also provide a printed or electronic copy of the signed Form C-85 to the Materials Quality Assurance Technician for materials notebook verification.

The Contractor shall perform quality control testing for application thickness and glass bead rate in accordance with VTM-94 at the beginning of each workday and every 3 hours thereafter. The Contractor shall be responsible for providing the apparatuses indicated in VTM-94 that are needed to perform the quality control testing. Testing for compliance with VTM-94 shall be performed in the presence of the Engineer and shall be documented on the Form C-85 immediately after testing is completed. If requested by the Engineer, the Contractor shall provide a Quality Control (QC) test plate and the provision of the test plate shall be documented on Form C-85.

The Engineer will make a visual evaluation of the permanent markings and markers to assess the condition, retroreflectivity, and color of the pavement marking material, after installation but prior to final acceptance. If problem areas are found, a further inspection will be made by the Department, the Contractor, and marking manufacturer's representative to identify specific areas of concern. When required by the Engineer, the suspect areas shall be tested by the Contractor in the presence of the Engineer in accordance with VTM-125 to define the evaluation sections and the number of measurements needed. The test results shall meet the requirements for retroreflectivity and color specified in Section 246 of the Specifications. Those markings found to be less than the Initial Approval values in Section 246 of the Specifications shall be eradicated and immediately replaced by the Contractor at no cost to the Department. Pavement markings that exhibits signs of significant tearing, roll back, lifting, shrinkage, or other signs of poor adhesion shall be immediately replaced by the Contractor at no cost to the Department.

All costs associated with testing the marking material for retroreflectivity, color, and adhesion shall be borne by the Contractor. The Contractor will be paid for Maintenance Of Traffic during this testing at the contract unit price for the Maintenance Of Traffic items used.

Commercially standard material guarantees that are furnished by the manufacturer shall be obtained by the Contractor and assigned to the Commonwealth in writing prior to final acceptance.

704.07—Measurement and Payment

Pavement line markings will be measured and paid at the contract unit price per linear foot for the type and/or class and width specified. This price shall include furnishing and installing the pavement marking material, surface preparation, premarking, documentation and staking of existing markings, quality control tests, daily log, guarding devices, primer/adhesive, glass beads, and manufacturer's warranty.

The Schedule of Items may contain permanent pavement marking bid items designated as "Bonus" in addition to the regular permanent pavement marking bid items. This "Bonus" designation indicates an adjustment of 1.25 to be made to the regular Contract unit bid price for the designated item in accordance with Section 102.05 of the Specifications which is to be paid to the Contractor if the conditions specified herein are met. For items with the "Bonus" designation the Contractor will be paid at the adjusted price instead of at the regular bid price for the linear foot of permanent pavement marking installation completed if the following conditions are met:

- **Plant Mix:** Pavement markings (not including Type B, Class VI) are installed on Plant Mix surfaces within 14 days or less after the last day of paving.
- **Non-Plant Mix:** Pavement markings (not including Type B, Class VI) are installed on Plant Mix surfaces within 21 days or less after the last day of paving.

Pavement message markings will be measured and paid for at the contract unit price per each per location or linear foot as applicable for the message, size, and type and/or class specified. This price shall include furnishing and installing the pavement marking material, surface preparation, premarking, documentation and staking of existing markings, quality control tests, daily log, guarding devices, primer/adhesive, glass beads, and manufacturer's warranty.

Temporary pavement line markings will be measured and paid for at the contract unit price per linear foot for the type and/or class and width specified. This price shall include furnishing, installing, and maintaining the pavement marking material, surface preparation, quality control tests, daily log, guarding devices, primer/adhesive, glass beads, and disposal.

If temporary line markings require refreshing, reapplication, or replacement before the final surface or the permanent markings are installed, all cost for refreshing, reapplication, or replacement shall be at the

Contractor's expense, unless the Contractor was directed to apply the temporary markings to a visibly wet surface at the direction of the Engineer as specified herein.

In the event the Contractor uses FTPMs in lieu of Type F-temporary paint to simulate a longitudinal line marking as allowed herein, the Contractor will be paid at the linear foot pay unit for the length of simulated line marking at the Type F-temporary paint unit price. That measurement shall represent all FTPMs required for that simulated line marking. This cost shall include furnishing, installing and maintaining the FTPMs, removable covers, surface preparation, quality control tests, daily log, guarding devices, FTPMs removal, and disposal.

Temporary pavement message markings will be measured and paid for at the contract unit price per each per location or per linear foot as applicable for the message, size and type and/or class specified. This price shall include furnishing, installing, and maintaining the pavement marking material, surface preparation, quality control tests, daily log, guarding devices, primer/adhesive, glass beads and disposal.

If temporary pavement message markings require refreshing, reapplication, or replacement before the final surface or the permanent markings are installed, all cost for refreshing, reapplication, or replacement (including Maintenance of Traffic costs) shall be at the Contractor's expense unless the Contractor was directed to apply the temporary markings to a visibly wet surface at the direction of the Engineer as specified herein.

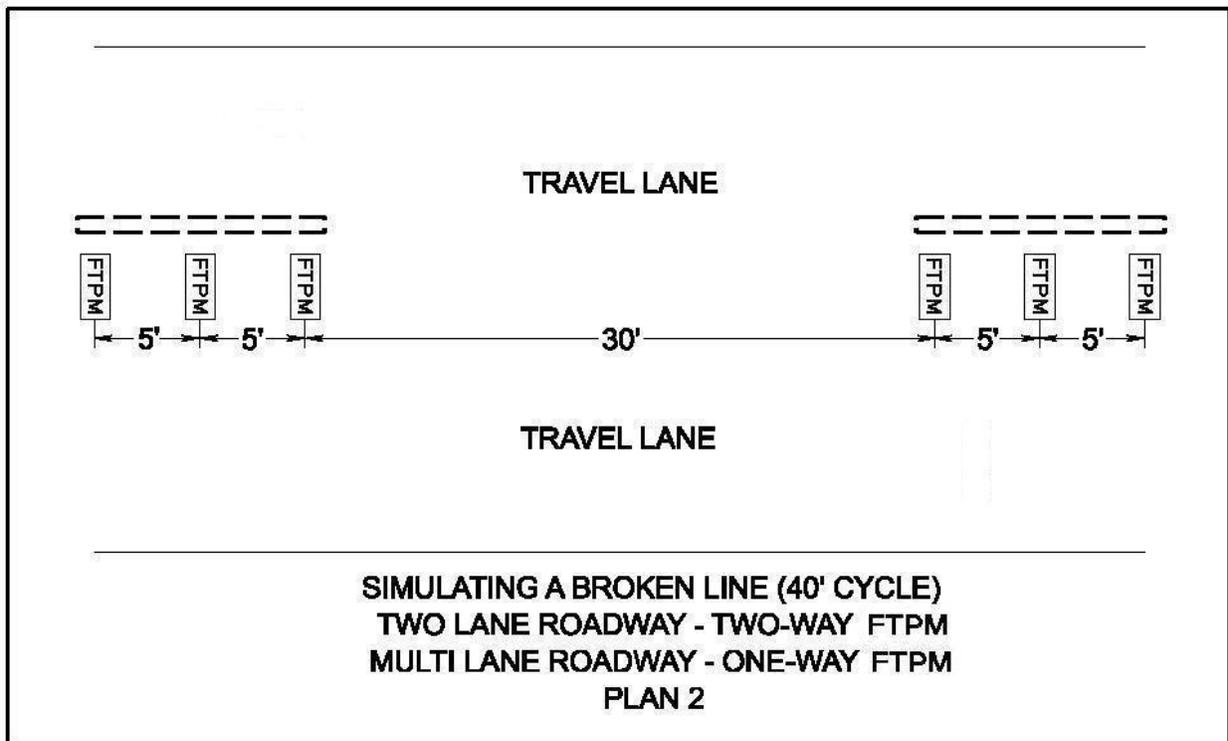
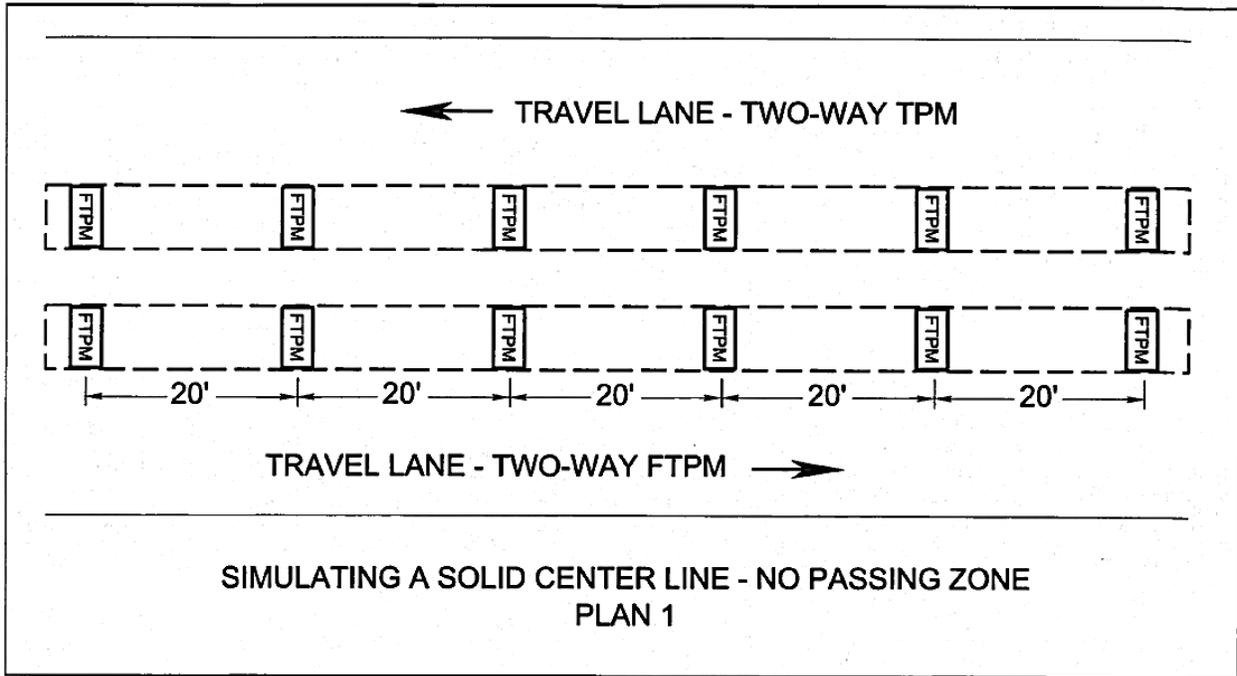
Pavement Markers will be measured and paid for at the contract unit price per each for the type specified. This price shall include surface preparation, furnishing and installing prismatic retroreflectors and castings, pavement cutting, adhesive, guarding devices, quality control tests, daily log, and manufacturer's warranty.

Pavement Marker Retroreflector Replacement will be measured and paid for at the contract unit price per each for the type specified. This price shall include furnishing retroreflectors, removal and disposal of the existing retroreflector, cleaning of the existing casting, adhesive, installation of the new retroreflector, quality control tests, daily log, and manufacturer's warranty.

Payment will be made under:

Pay Item	Pay Unit
Pavement line marking (Type and/or class and width)	Linear foot
Pavement message marking (Message, size, type and/or class)	Each or linear foot
Temporary pavement line marking (Type and width)	Linear foot
Temporary pavement message marking (Message, size, type and/or class)	Each or linear foot
Pavement marker (Type, []-way, and/or type pavement)	Each
Pavement marker retroreflector replacement (Type)	Each

TYPICAL PLAN FOR FTPM PLACEMENT



VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
**REPLACEMENT OF PAVEMENT LINE MARKINGS,
PAVEMENT MARKERS AND LOOP DETECTORS**

September 27, 2011

Certain plant mix line items will be designated to have traffic engineering items (pavement markings, pavement markers and loop detectors) replaced under this contract. Replacement of pavement line markings, pavement markers and loop detectors will have the same time limits or restrictions that apply to the plant mix line items and shall be performed in accordance with the following, unless otherwise specified:

1. Pavement Markings shall be installed in accordance with Section 704 of the Specifications, and in accordance with the procedures and within the time limits set forth elsewhere in the Contract.
2. Pavement Markers shall be installed within 30 calendar days after the affected area is resurfaced. Pavement Markers shall not be installed prior to the installation of such pavement markings as centerline and lane-division pavement line markings.
3. Loop Detectors shall be installed in accordance with the requirements of Section 703 of the Specifications.

When replacement of loop detectors is included in the Contract, the Contractor will be required to install new loop detector items within the planed surface prior to the placement of new plant mix or new loop detector items may be installed through the finished riding surface.

Loop detectors installed prior to overlay operations shall be installed 3 inches below the planed surface. Loop detectors installed after the final overlay shall be installed no more than 4.5 inches and no less than 4 inches below the top elevation of the final riding surface.

Loops shall be installed with loop detector cable enclosed in tubing (IMSA 51-5). Loop cable and loop sealant shall be from the Virginia DOT Pre-approved Traffic Control Device Listing. Link: http://www.vdot.virginia.gov/business/resources/APPROVED_product_LISTING.pdf

New loop detectors shall be of the same size, configuration and locations as existing loop detector(s) unless otherwise indicated.

When an existing loop detector is taken "out of service" as a result of the Contractor's planing operation the Contractor shall have the new loop detector items installed and operational within 96 hours of the "out of service" time and date, unless otherwise stated in the Contract. In no case shall any loop detector be "out of service" for more than 96 hours. If the Contractor chooses to install new loop detector items through the final riding surface, all loop detector items shall be installed and operational within 96 hours after completion of the paving operations in the affected intersection. PLEASE NOTE: Installation of loop detectors shall be performed in the presence of the Engineer.

The Contractor shall notify the Engineer at least 72 hours prior to planing at locations that contain loop detectors.

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
TYPE B, CLASS VI PAVEMENT LINE MARKING TAPE

October 21, 2011

I. DESCRIPTION

This work shall consist of furnishing and installing a profiled (non-flat), permanent, white or yellow preformed pavement line marking tape at locations shown on the plans and as directed by the Engineer.

II. MATERIALS

Marking tape shall be a retro-reflective pliant polymer material consisting of a mixture of polymeric materials, pigments and glass beads (reflective optics) distributed throughout its cross-sectional area with a reflective layer of beads (reflective optics) embedded into the surface. The surface of the tape shall exhibit raised areas resulting in a profiled (non-flat) surface.

The shelf life of the tape for use on facilities constructed or maintained by the Department shall be one year from the date of manufacture when stored in accordance with the manufacturer's requirements.

The marking tape shall not be formulated with any compounds of the heavy metals listed in 40 CFR 261.24 Table 1, except that barium sulfate is allowed. Total heavy metals, with the exception of barium sulfate, shall not exceed 20 times the specified regulatory limits. Materials that must be heated for application shall not exude fumes that are toxic or injurious to persons or property when heated to the application temperature.

The marking tape shall be capable of conforming to pavement contours, breaks and faults through the action of traffic at normal range of pavement temperatures. The marking tape shall be capable of application to new and existing asphalt or hydraulic cement concrete at pavement surface temperatures of 45 to 180 degrees Fahrenheit. Where installed with adhesive, the adhesive shall be per the manufacturer's instructions. The marking tape shall also be capable of being inlaid during installation of the final riding surface during paving operation on new, dense, or open-graded asphalt concrete and shall be ready for traffic immediately after application.

Marking tape shall be weather resistant and after installation shall show no significant tearing, roll back, lifting, shrinkage, or other signs of poor adhesion, nor appreciable bleeding or discoloring (fading), which will impair the intended use of the marking tape throughout its intended service life.

The marking tape shall not deteriorate because of contact with sodium chloride, magnesium chloride, calcium chloride, mild alkalies and acids, or other ice control materials, oils in the pavement material, or oil and gasoline drippings from vehicles.

When the pay item specifies Type B, Class VI Contrast pavement marking tape, the tape shall be an additional 3 inches minimum wider than the width specified in the pay item. This additional tape width shall be black non-reflective with 1 ½ inches minimum on both sides of the white.

A. Initial Approval Requirements:

Marking tape products will be included on the Department's Materials Division Approved Products List after the Department determines conformance to these specifications.

Determination of conformance will include, but will not be limited to, the evaluation of initial and one year test data from AASHTO’s National Transportation Product Evaluation Program (NTPEP) on a northern deck or other VDOT approved facilities.

If tested through AASHTO/NTPEP, the marking tape shall have been installed, tested, and met the following requirements on asphalt and concrete surfaces. If tested on another VDOT approved facility, VDOT reserves the right to test and approve tapes based upon in-service performance data on either asphalt or hydraulic cement concrete or both types of concrete surfaces.

AASHTO/NTPEP Testing – Test data values used for approval shall be based upon the data generated per the NTPEP, Pavement Marking Material (PMM) Work Plan.

VDOT Test Facility – Test data values used for approval shall be based upon the data generated by following the testing requirements in Virginia Test Method (VTM)-125 to define the evaluation sections and number of measurements needed. VDOT reserves the right to evaluate durability, skid resistance, and no Track Time based upon field (in-service) performance, VDOT lab testing, or third party testing.

The manufacturer shall certify each batch or lot of material supplied is the same product (binder and reflective optics) that was tested and approved on the NTPEP or VDOT test facility in accordance with the Materials Division, Manual of Instructions for Certification II materials.

1. Retroreflectivity

Tapes shall have the following retroreflectance values after installation when measured in accordance with the requirements of ASTM E 1710. The reflectance values for NTPEP acceptance will be determined from outside of the wheel path. The photometric quantity to be measured shall be Coefficient of Retroreflected Luminance (R_L) and shall be expressed as Millicandelas per square foot per footcandle $[(mcd \cdot ft^{-2}) \cdot fc^{-1}]$.

Coefficient of Retroreflected Luminance(R_L) ($mcd \cdot ft^{-2} \cdot fc^{-1}$)		
Color	New	1 Year
White	500	300
Yellow	300	200

2. Day and Nighttime Color:

Daytime and Nighttime Color including Luminance Factor (Cap Y) shall conform to the requirements of ASTM D 6628 when initially installed and then after 1 year. Color and Luminance Factor values for NTPEP acceptance will be determined from outside of the wheel path. Night color may be measured in accordance with VTM-111 or with portable night color instrumentation per ASTM D 6628.

3. Durability Rating:

No tape line shall be displaced, torn or missing. The tape shall have a durability rating of at least 4 (40% retained) when evaluated in the wheel path area after 1 year when tested in accordance with NTPEP, PMM Work Plan.

4. Skid Resistance:

The surface of the tape shall provide an initial minimum skid resistance value of 45 BPN when tested in accordance with ASTM E 303.

III. INSTALLATION

Marking configurations shall be installed in accordance with the latest edition of the "Manual on Uniform Traffic Control Devices" (MUTCD), the Virginia Supplement to the MUTCD and the Virginia Work Area Protection Manual (latest edition).

Markings shall be installed either under the guidance of the manufacturer's representative or by the manufacturer's certified installer.

Markings to be installed on existing asphalt concrete roadway surfaces or existing and new hydraulic cement concrete surfaces shall be applied in strict accordance with the manufacturer's recommendations for pavement surface preparation and installation techniques for non-embedded surface applications.

Upon delivery of the material to the Contractor, the Contractor shall store all tape in accordance with the manufacturer's requirements until the day of installation, unless otherwise approved. Tape shall not be installed if the material has exceeded its shelf life, has been improperly stored, has deteriorated or is otherwise damaged.

Type B, Class VI markings to be inlaid in new asphalt surfaces shall be installed in accordance with the manufacturer's recommendations for surface preparation and installation techniques. Temperature requirements of the asphalt concrete and the type and size of roller allowed shall be in accordance with the tape manufacturer's recommendations. The Contractor shall maintain the road design cross section unless otherwise modified by the contract requirements and ensure that markings are not degraded by the paving operations.

Markings shall not be installed directly over longitudinal pavement joints or existing markings.

IV. POST-INSTALLATION EVALUATION

Following installation, and prior to final acceptance, a visual evaluation will be made to assess the condition, retroreflectivity, and color of the marking tape. If problem areas are found, an inspection will be made by the Department, the Contractor, and tape manufacturer's representative to identify specific areas of concern. If needed, the suspect areas shall be tested by the Contractor and/or VDOT representative in accordance with VTM-125 to define the evaluation sections and the number of measurements needed. Acceptable test result shall meet the requirements for reflectivity and color specified in Section II, Initial Approval Requirements. Those markings found to be less than the values listed in Initial Approval Requirements for Retroreflectivity and Day and Nighttime Color (1 Year) shall be eradicated and replaced by the Manufacturer at no cost to the Department. Tape that exhibits signs of significant tearing, roll back, lifting, shrinkage, or other signs of poor adhesion will be replaced by the Contractor at no cost to the Department. All costs associated with testing the marking tape for retroreflectivity, color, and adhesion, including the cost of maintenance of traffic, shall be borne by the Contractor.

V. WARRANTY

The pavement marking tape shall be warranted against failure resulting from material defects regardless of method of manufacturer's prescribed application or pavement type. The material shall be warranted to retain its color, retroreflectivity, adherence to the pavement and shall be free of other obvious defects or failures. All pavement marking tape that has failed to meet the warranty conditions shall be replaced with no additional payment.

The warranty shall cover all pavement striping materials (regardless of method of installation), labor, equipment, mobilization\demobilization, tools, incidentals required to remove (eradicate) and replace the pavement striping including maintenance of traffic during the removal and reinstallation operations.

Material guarantees that are given by the manufacturer shall be obtained by the Contractor and assigned to the Commonwealth in writing prior to final acceptance.

A. Retroreflectivity

White and Yellow longitudinal pavement marking tape shall remain effective for its intended use under normal traffic conditions and meet the minimum Coefficient of Retroreflected Luminance (R_L) of 100 millicandelas per square foot per footcandle [$(\text{mcd}\cdot\text{ft}^{-2})\cdot\text{fc}^{-1}$] when measured in accordance with the requirements of ASTM E 1710 for the following duration:

Longitudinal Marking Tape Retroreflective Warranty Period

New Asphalt Concrete Pavement (Inlay)	6 Years
Existing Asphalt Concrete Pavement (Overlay)	6 Years
Portland Cement Concrete (PCC) Surfaces	6 Years

B. Color

Longitudinal pavement marking tape shall remain effective for its intended use under normal traffic conditions and meet the minimum Daytime and Nighttime color including Luminance Factor (Cap Y) per ASTM D 6628 for the following duration:

Longitudinal Marking Tape Color Warranty Period

New Asphalt Concrete Pavement (Inlay)	4 Years
Existing Asphalt Concrete Pavement (Overlay)	4 Years
Portland Cement Concrete (PCC) Pavement Surfaces	4 Years

C. Material Loss

Solid Longitudinal Line – more than five percent of the substrate is exposed in any 2000 ft section of pavement marking or 50 ft or more of continuous loss.

Broken Line – more than five percent of the substrate is exposed in any 2000 ft section of pavement marking or the loss of two consecutive skips.

VI. MEASUREMENT AND PAYMENT

Type B, Class VI pavement line marking tape will be measured in linear feet for the width specified and will be paid for at the contract unit price per linear foot, which price shall be full compensation for furnishing and installing pavement line markings, surface preparation, and testing and warranty.

Payment will be made under:

Pay Item	Pay Unit
Type B, Class VI pavement line marking (Width)	Linear foot
Type B, Class VI contrast pavement line marking (Width)	Linear foot

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
TYPE B, CLASS VII POLYUREA PAVEMENT MARKINGS

October 17, 2011

I. Description

This work shall consist of furnishing and installing white and/or yellow polyurea pavement line markings at locations shown on the plans and as directed by the Engineer.

II. Materials

Polyurea pavement line markings shall be a retro-reflective polymer material consisting of a mixture of polymeric materials, pigments and glass beads and/or reflective optics.

The polyurea material shall not be formulated with any compounds of the heavy metals listed in 40 CFR 261.24 Table 1 except that barium sulfate is allowed. Total heavy metals, with the exception of barium sulfate, shall not exceed 20 times the specified regulatory limits.

The polyurea coating shall be formed by the reaction of at least two components (Part A and Part B). The components shall be formulated such that the proper cure occurs when they are mixed at the times of the application.

The polyurea material shall be capable of application on new and existing asphalt and hydraulic cement concrete surfaces at pavement surface temperatures of 40 degrees Fahrenheit and above. The polyurea material shall maintain its original dimensions and placement without chipping, spalling, shrinking, cracking, bleeding or discoloring (fading) or other signs of poor performance which will impair the intended use of the marking throughout its intended service life.

The polyurea material shall not deteriorate due to contact with sodium chloride, magnesium chloride, calcium chloride, mild alkalies and acids, or other ice control materials, oil in the pavement material, or oil and gasoline drippings from vehicles.

Materials that must be heated for application shall not exude fumes that are toxic or injurious to persons or property when heated to the application temperature.

A. Initial Approval Requirements:

Specific Polyurea pavement markings will be included on the Department's Materials Approved Products List # 74 after the Department determines conformance to these specifications. Determination of conformance will include, but will not be limited to, the evaluation of test data from AASHTO's National Transportation Product Evaluation Program (NTPEP) on a Northern region test deck or other VDOT approved facilities.

If tested through AASHTO/NTPEP, the polyurea material shall have been installed, tested, and met the following requirements on both asphalt and concrete surfaces. If tested on another VDOT approved facility, VDOT reserves the right to test and approve based upon in service performance data on either asphalt, hydraulic cement concrete, or both surfaces.

AASHTO/NTPEP Testing - Test data values used for approval shall be based upon the data generated per the NTPEP, Pavement Marking Material (PMM) Work Plan.

VDOT Test Facility – Test data values used for approval shall be based upon the data generated by following: Virginia Test Method (VTM)-125 to define the evaluation sections and number of measurements needed, evaluation of Durability, and No Track Time based upon field performance, VDOT lab testing or third party testing for compliance.

The manufacturer shall certify each batch or lot of material supplied is the same product (binder and reflective optics) that was tested and approved on the NTPEP or VDOT test facility in accordance with the Materials Division, Manual of Instructions for Certification II materials.

1. Retroreflectivity:

Markings shall have the following retroreflectance values when measured in accordance with the requirements of ASTM E 1710 (outside of the wheel path). The photometric quantity to be measured shall be Coefficient of Retroreflected Luminance (R_L) and shall be expressed as millicandelas per square foot per foot-candle $[(mcd \cdot ft^{-2}) \cdot fc^{-1}]$.

Coefficient of Retroreflected Luminance (R_L) ($mcd \cdot ft^{-2} \cdot fc^{-1}$)		
Color	New*	1 Year In-Service
White	400	300
Yellow	300	200

* New Coefficient of Retroreflected Luminance value may be either the 0 or the 1 month reading, whichever is higher.

2. Day and Nighttime Color:

Daytime and Nighttime color including Luminance Factor (Cap Y) shall conform to the requirements of ASTM D 6628 initially and after 1 year. Color and Luminance Factor values for NTPEP acceptance will be from outside of the wheel path. Night color may be measured in accordance with VTM-111 or with portable night color instrumentation per ASTM D 6628.

3. Durability Rating:

The marking shall have a durability rating of at least 4 (40% retained) when determined in the wheel path area after 1 year when tested in accordance with NTPEP guidelines.

4. No Track Time:

When applied in accordance with manufacturer's instructions at 20 +/- 1 mils wet film thickness with reflective optics, the polyurea shall exhibit a no-track time of 10 minutes maximum when tested in accordance with ASTM D711.

III. INSTALLATION:

Marking configurations shall be in accordance with the latest edition of the "Manual on Uniform Traffic Control Devices". Markings shall be applied in strict accordance with the manufacturer's recommendations either under the guidance of the manufacturer's representative or by the manufacturer's certified installer. Markings shall not be installed directly over longitudinal pavement joints.

IV. POST-INSTALLATION EVALUATION

Following installation and prior to final acceptance, a visual evaluation will be made by the Engineer to assess the condition, retroreflectivity and color of the polyurea marking material. If problems areas are found, an inspection will be made by the Department, the Contractor, and the polyurea manufacturer's representative to identify the specific areas of concern. If needed, the suspect areas shall be tested by the Contractor and/or VDOT representative in accordance with VTM-125 to define the evaluation sections and number of measurements needed. Acceptable test results shall meet the requirements for retroreflectivity and color specified in Section II, A – Initial Approval Requirements. Those markings found to be less than the values listed in Initial Approval Requirements for Retroreflectivity and Day and Nighttime Color (1 Year, In-Service) shall be eradicated and replaced by the Contractor at no cost to the Department. All costs associated with testing the pavement marking for retroreflectivity,color, and adhesion, including the cost of maintenance of traffic, shall be borne by the Contractor.

VI. MEASUREMENT AND PAYMENT

Type B, Class VII, Polyurea pavement line marking will be measured in linear feet for the width specified and will be paid for at the contract unit price per linear foot, which price shall be full compensation for furnishing and installing pavement line markings, surface preparation, and testing.

Payment will be made under:

Pay Item	Pay Unit
Type B, Class VII Polyurea pavement line marking	Linear foot

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STANDARD PROVISIONS:
2016 PLANT MIX SCHEDULES
