



DIVISION V – INCIDENTAL CONSTRUCTION

SPECIAL PROVISION COPIED NOTES (SPCNs), SPECIAL PROVISION (SPs) and SUPPLEMENTAL SPECIFICATIONS (SSs)

VDOT web file users (“pdf”) may obtain more information and other resources by downloading the accompanying “zip” file (compressed WORD® files).

<http://www.virginiadot.org/business/resources/const/07ImpRev.zip>

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Global Web Access: <http://www.virginiadot.org/business/const/spec-default.asp>

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———— STANDARD 500 SERIES SPCNs, SPs and SSs ————

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GUIDELINES — FOR PROJECTS REQUIRING EXPOSED AGGREGATE FINISH FOR SOUNDWALLS, SIDEWALKS, CURB CUT RAMPS, CURBS AND/OR PARAPETS. WHEN THIS PROVISION APPLIES INCLUDE THE FOLLOWING IN THE PROPOSAL: SS21402 Hydraulic Cement and SS21706 Hydraulic Cement Concrete.

(c504c00-0708)

EXPOSED AGGREGATE FINISH shall be performed by wirebrushing, blasting or surface retarder unless another method is approved by the Engineer, except that surface retarder shall be used on exposed aggregate sidewalk.

Concrete for exposed aggregate finish shall conform to the requirements of Section 217 of the Specifications for the class specified, except gravel shall be tan or light brown in color.

The Contractor shall provide a sample of the exposed aggregate finish for approval by the Engineer prior to beginning work. The sample shall be at least 12 inches by 12 inches and approximately 2 inches in depth. The approved sample shall be kept at the work site for comparison to completed work.

When used for sidewalk, exposed aggregate will be measured and paid for in square yards, complete-in-place.

Payment will be made under:

Pay Item	Pay Unit
Exposed aggregate sidewalk	Square yard

3-26-92c, Reissued 7-2008c (SPCN)

GUIDELINES — ASPHALT RESURFACING PROJECTS ONLY WHEN THERE IS NO SEPARATE PAY ITEM FOR SUCH WORK.

(c510am1-1010)

LOCATING, REMOVING AND DISPOSING OF RECESSED PAVEMENT MARKERS AND RAISED SNOW-PLOWABLE MARKERS — 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.

10-17-10 (SPCN)

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

GUIDELINES — USE ONLY WHEN REQUESTED BY THE REGIONAL TRAFFIC ENGINEER FOR PROJECTS WITH PROJECT-SPECIFIC COMPLEX CPMs.

(c512hg0-0708)

CONTRACTOR PROPOSED ALTERNATIVE TRAFFIC CONTROL PLANS -

The Contractor may prepare his own Contractor Alternative Traffic Control Plan (CATCP) as an alternative to that shown in the Contract Documents. This alternative plan must be prepared in conformance with the requirements of AASHTO; the latest approved editions of the Manual of Uniform Traffic Control Devices (MUTCD) and the Virginia Work Area Protection Manual. The Contractor must provide, as part of this alternative plan, information and explanations consistent with, and to the same level of detail, as the project-specific Traffic Control plans in the Contract Documents prepared by VDOT or its consultants. The alternative plan must clearly demonstrate coordination with the Contractor's overall, comprehensive plan for prosecuting the work, through its various phases or stages of construction and sequencing. The plan must be supported by a detailed transportation network traffic operations analysis, consistent with the complexity of the project, using a methodology or computer software program approved by the Department. This analysis must satisfactorily demonstrate the operating conditions of the network, and particularly, the work zone given expected traffic volumes during the length of the construction schedule.

As a necessary and integral part of the plan, the Contractor shall be responsible for identifying all utilities and right of way that will be impacted by his proposed CATCP, to include but not be limited to: underground utility designations, securing any additional or supplemental permissions or permits required to construct the project and preparing all analyses, plans, summaries, specifications, special provisions, etc., necessary to secure approvals to construct the project according to his alternative plan. The analyses, plans, summaries, specifications, and special provisions shall be directly prepared by or prepared under the supervision of a Professional Engineer registered to practice civil engineering in the Commonwealth of Virginia who is trained and/or certified in traffic control analysis and design. All such documents shall be signed and sealed by the Professional Engineer.

The Department reserves the right to accept or reject any CATCP developed under the provisions of this specification. The Contractor must obtain the Engineer's written approval before beginning any work using a Contractor Alternative Traffic Control Plan for Maintenance of Traffic. The Engineer's written approval is required for all modifications to the accepted Contractor Alternative Traffic Control Plan. The Engineer will permit changes to the CATCP without proper documentation and authorization only in emergency situations where incident management is critical.

The Engineer's acceptance of the Contractor's Alternative Traffic Control Plan will not relieve the Contractor of his responsibility for all related project impacts, costs, delays, or damages, whether direct or indirect, resulting from Contractor initiated changes in the design or construction activities from those detailed in the original Contract specifications, design plans, including the Department's temporary traffic control plans or other Contract Documents and which effect a change in project work different from that shown in the plans, joint project agreements, or other project construction schedules. No additional compensation or extension of time for contract completion will be considered in conjunction with the Contractor's decision to proceed with use of a Contractor Alternative Traffic Control Plan that is approved by the Engineer.

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3-27-08, Reissued 7-2008 (SPCN)

GUIDELINES — PROJECTS REQUIRING POLICE PATROLS AS A STATE FORCE ITEM.

(c512i00-0708) **POLICE PATROLS** - The Contractor is advised that the Department will use Police patrols in construction work zones when traffic flow problems are anticipated, to enhance the safety of both the public and construction personnel, during the life of this contract.

4-25-88c, Reissued 7-2008 (SPCN)

GUIDELINES – FOR PROJECTS THAT MAKE REFERENCE TO THE TRAFFIC GROUPS LISTED IN THIS SPCN. NOT NEEDED IF S512L10 Maintaining Traffic -Sched S USED IN THE PROPOSAL.

(c512j00-0909) **TRAFFIC GROUPS** — 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

6-5-09 (SPCN)

GUIDELINES — FOR ANY PROJECTS REQUIRING TYPE III BARRICADES (TYPE 3 BARRICADES IN THE 2011 VWAPM, THE 2009 MUTCD and VA SUPPLEMENT).

(c512i00-1012) **TYPE III BARRICADE** — Type III barricades specified in this contract shall refer to the Type 3 barricades in the 2011 edition of the *Virginia Work Area Protection Manual*, the 2009 edition of the *MUTCD* and the current *Virginia Supplement to the MUTCD*. Materials, procedures, measurement and payment for the Type 3 barricades specified in these publications shall be in accordance with the Type III barricades specified in this contract.

10-3-12 (SPCN)

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GUIDELINES — PROJECTS REQUIRING TRAINEES. THE NUMBER OF TRAINEES MUST BE FILLED-IN.

(c518b00-0708)

SECTION 518.02(a) NUMBER OF TRAINEES is amended to replace the first sentence of the first paragraph with the following:

The number of trainees to be trained for this contract shall be **fill-in**.

6-20-01, Reissued 7-2008 (SPCN)

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

GUIDELINES — USE WHEN REQUESTED BY THE DESIGNER. THIS SPECIAL PROVISION CANNOT BE USED ALONE. THE VDOT "Special Provision for Asbestos Removal for Road Construction Projects" (A PROJECT SPECIFIC SPECIAL PROVISION) MUST BE INCLUDED IN THE PROPOSAL.

S500A00-0708

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
REMOVAL OR CONNECTION OF ASBESTOS CEMENT PIPE

November 7, 2005cc
Reissued July 2008c

I. GENERAL

The Contractor is advised that the existing pipe on this project that is scheduled for removal or for connection may contain asbestos. The Contractor shall assume any pipe designated on the plans as asbestos cement (A/C) pipe contains asbestos in a quantity sufficient to be a health hazard if found in a friable condition or made friable during removal or connection. A/C pipe is a "facility component" as defined in 40 CFR 61.141. The U.S. Environmental Protection Agency and the Virginia Department of Labor and Industry consider A/C pipe to be Category II non-friable asbestos-containing materials. Disposal of A/C is regulated by the Virginia Department of Environmental Quality.

II. PROCEDURES

Modifications of, connections to, or removal of A/C pipe that involve breaking, crushing, saw-cutting or abrading shall comply with the VDOT *Special Provision for Asbestos Removal for Road Construction Projects*.

This Special Provision applies to all removal modifications to A/C pipe where the A/C pipe is removed intact by disconnecting at the slip (bell) joint (with no breakage) and where any subsequent connections are made without disturbing the integrity of the existing pipe. If at any time the Contractor determines that the pipe cannot be removed without breakage, abrading, cutting or crushing, the Contractor shall cease work and resume operations in accordance with the VDOT *Special Provision for Asbestos Removal for Road Construction Projects*.

The Contractor shall spray and saturate pipe joints with amended water prior to disturbing any pipe.

No "T"-type connections shall be made to existing pipe by internally piercing or breaking existing potable water pipe without pre- and post-connection monitoring for asbestos fibers in water downstream of the connection. Any results that exceed 7 million fibers per liter (7MFL) shall be reported immediately to the Engineer.

VDOT, at its discretion, may employ an asbestos project monitor to observe and monitor removal operations of intact A/C pipe. If such monitoring determines that asbestos fibers are being released above the applicable action level or the pipe becomes friable, the Contractor shall cease operations on the pipe and take appropriate corrective action to comply with all applicable federal, state, and local regulations.

Removal, connection, hauling, and disposal shall be performed in accordance with 40CFR 61.140-61.157 (Subpart M-National Emission Standard for Asbestos), with 29 CFR 1926.1101 (Subpart Z-Toxic and Hazardous Substances), and with all state, regional, and local standards. The Contractor shall ensure that the intact A/C pipe sections remain intact during loading and hauling of the material to the licensed disposal facility. The Contractor shall double bag or wrap A/C pipe in plastic and seal and mark the materials. The Contractor shall only dispose of the

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material in a permitted landfill that provides daily soil cover and only after the Contractor has provided notification to the landfill that the material is non-friable/non-regulated ACM. Within 35 days of the deposit of the waste in the landfill, the Contractor shall submit to the Engineer a copy(s) of the certificate of disposal from the landfill. VDOT must receive all acceptable waste manifests/certificates of disposal prior to making payment to the Contractor.

With approval of the Engineer, abandoned portions of A/C pipe may be left in place of origin and backfilled provided that the pipe is not crushed; however, pipe that is scheduled to be abandoned may not be removed and re-deposited. With approval of the Engineer, the Contractor may pump grout into buried lines that are no longer in service to maintain the structural weight bearing capacity of the area. No on-site burial of crushed A/C pipe will be allowed.

III. MEASUREMENT AND PAYMENT

Connection to existing A/C pipe will be measured and paid for at the contract unit price per each for each connection.

Removal of existing A/C pipe (without disturbing integrity of pipe) will be measured and paid at the contract unit price per linear foot for the length of pipe actually removed (back to the closest joint).

Payment for these items shall include all material, labor, and equipment necessary for excavation, disassembly, tie-ins, backfill, line abandonment including grout, documentation and disposal of A/C pipe.

Payment will be made under:

Pay Item	Pay Unit
Connection to Existing A/C Pipe	Each
Remove Existing A/C Pipe	Linear Foot

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GUIDELINES — FOR PROJECTS REQUIRING CG-12 DETECTABLE WARNING SURFACE

S504B01-0314

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
CG-12 DETECTABLE WARNING SURFACE

September 18, 2013

I. DESCRIPTION

This work shall consist of providing all labor, tools, equipment, and materials required to furnish and install detectable warning surfaces in the location(s) specified on the plans or in the proposal. The Contractor shall perform the work according to the details shown on the plans or in this special provision, Section 504 of the Specifications, and as directed by the Engineer.

II. MATERIALS

Materials shall conform to the requirements of Section 504 of the Specifications except as follows:

Permanent, durable materials suitable for heavy traffic outdoor areas or concrete pavers approved by the Department may be used to construct the detectable warning surfaces where called for in the plans and other contract documents. Concrete paver units shall conform to the current ASTM C936 specifications and the details and requirements shown in the plans. Other durable materials shall be in accordance with Department approved manufacturer's design and specification requirements.

Products not on the Departments Materials Approved Product list shall be submitted to the Standards & Special Design Section and the appropriate District Materials Engineer for approval prior to use.

All detectable warning surfaces shall meet the ADA Standards as set forth by the United States Access Board.

The detectable warning shall be "safety yellow" unless otherwise noted in the plans or directed by the Engineer.

When visual contrast other than "safety yellow" is specified in the plans or contract documents, the *detectable warning* surfaces shall contrast visually with adjacent walking surfaces either light-on-dark, or dark-on-light. Verification of visual contrast is required prior to installation.

III. PROCEDURES

Construct sidewalk ramp according to Section 504 of the Specifications except for detectable warning/truncated domes that shall be furnished or constructed in accordance with the details in this specification, the manufacturer's recommendations, the Standard Drawings and the Plans.

All permanent installations of detectable warning surfaces shall be "wet set" in freshly placed concrete.

Surface mounted detectable warning surfaces are permitted only for temporary installations where the detectable warning will be in service 6 months or less.

The Contractor shall provide the Department with the manufacturers installation instructions.

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IV. MEASUREMENT AND PAYMENT

CG-12 Detectable Warning Surface will be measured in square yards and paid for at the contract unit price per square yard, complete-in-place. This price shall be full compensation for furnishing and installing approved truncated dome finished materials including but not limited to concrete pavers, other Department approved materials, integral visual contrast, dowels and all other labor, tools, equipment, materials and incidentals necessary to fully complete the work.

Payment will be made under:

Pay Item	Pay Unit
CG-12 Detectable Warning Surface	Square yard

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GUIDELINES — USE WHEN REQUESTED BY THE DISTRICT PAVEMENT ENGINEER. WHEN THIS SECTION APPLIES AND HYDRAULIC CEMENT CONCRETE IS REQUIRED INCLUDE THE FOLLOWING IN THE PROPOSAL: SS21402 Hydraulic Cement, SS21706 Hydraulic Cement Concrete and SS31601 Hydraulic Cement Concrete Pave. WHEN THIS PROVISION APPLIES AND HYDRAULIC CEMENT CONCRETE ADMIXTURES ARE REQUIRED INCLUDE THE FOLLOWING IN THE PROPOSAL: SS21501 Hydraul Cement Conc Admixtures. WHEN ASPHALT CONCRETE IS REQUIRED INCLUDE THE FOLLOWING IN THE PROPOSAL: SS21113 SuperPave - Asphalt Concrete and SS31510 SuperPave -Asphalt Conc Place.

S509B01-0110

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISIONS FOR
PATCHING HYDRAULIC CEMENT CONCRETE PAVEMENT

August 31, 2007

I. DESCRIPTION

This work shall consist of removing designated areas of defective concrete pavement, replacing subbase material where required, and placing concrete pavement with or without reinforcement in accordance with these provisions and in reasonably close conformity with the original lines and grades as shown on the plans or as established by the Engineer.

The following is a description of each patch type:

Jointed Concrete Pavement Patch, Type I patching shall consist of full depth, full lane width concrete pavement repairs equal to 6 feet in length and less than 15 feet in length. The patch is non-reinforced, with dowels at the transverse joints.

Jointed Concrete Pavement Patch, Type II patching shall consist of full depth, full lane width concrete pavement repairs 15 feet or greater in length. The patch is reinforced with steel wire fabric and has dowels at the transverse joints and longitudinal tie bars as shown in Figures 1 & 2 (Attached).

Jointed Concrete Pavement Patch, Type III patching shall consist of partial depth concrete pavement repairs that extend no deeper than one-third the slab thickness and extend no more than one-half the lane width. Type III patches shall not be used at existing joints or cracks.

Continuously Reinforced Concrete Pavement Type IV shall consist of full depth repairs. Patches shall be of the following types:

Type IV-A patches shall be full lane width and not less than 6 feet long.

Type IV-B patches shall be partial lane width and not less than 6 x 6 feet.

No tie bars will be required for Type IV-A patches or Type IV-B patches less than 15 feet in length.

II. MATERIALS AND EQUIPMENT

A. Materials

The Contractor shall prepare sufficient trial batches of the hydraulic cement concrete mix in the presence of the Engineer to verify the strength and workability of the mix design. The mix

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shall be shown to be capable of achieving a target opening to traffic strength of 2000 psi when tested in accordance with AASHTO T-23 and T-24.

Subbase material shall conform to the requirements of Section 208 of the Specifications.

Reinforcing steel, dowels, tie bars, hook bolts, and welded wire fabric shall conform to the requirements of Section 223 of the Specifications.

Joint sealer and filler shall conform to the requirements of Section 212 of the Specifications.

Load transfer devices shall be fabricated of steel and shall be of an approved type and design.

Curing materials shall conform to the requirements of Section 220 of the Specifications or be used in accordance with the manufacturer's recommendation.

Epoxy compounds shall conform to the requirements of Section 243 of the Specifications.

Asphalt concrete shall conform to the requirements of Section 211 of the Specifications, except that material may be accepted by certification and visually inspected at the job site by the Engineer.

B. Equipment

Saw cutting equipment shall be capable of sawing neat vertical faces along the patch boundaries. The use of a carbide-toothed wheel saw shall not be permitted for sawing the patch boundaries. A carbide-tipped wheel saw may be used for additional saw cuts provided that a minimum 3-inch clearance from the sawed boundary is maintained.

III. CONSTRUCTION METHODS

Designated defective pavement shall be removed full depth and undisturbed portions of the existing pavement adjacent to the area to be patched shall be left with straight vertical sides.

The existing pavement to be removed shall be sawed full depth along the transverse and longitudinal boundaries, including the lane and shoulder/lane joints as shown on the plans or as directed by the Engineer. Additional saw cuts inside the patch boundaries will be permitted to facilitate the concrete removal operation.

Concrete sawn full depth to be removed shall be lifted out by means of chains, lift-pins, or other approved devices. Concrete breaking in-place shall not be permitted. During the removal operations, utmost care shall be exercised to minimize disturbance and damage to the base material, and the adjacent pavement and shoulder.

Unsuitable subbase material, concrete and reinforcing steel shall be removed and disposed of off the project in accordance with Section 106.04 of the Specifications. After the old concrete has been removed from the patch area, the subbase shall be dressed to the satisfaction of the Engineer. When unsuitable subbase or subgrade material is encountered, it shall be removed, and if replaced brought to grade with specified material, and compacted to the satisfaction of the Engineer.

Where cement-stabilized material is present and is found to be sound, excavation below the top of the cement stabilized material will not be required.

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All excavated areas shall be patched the same day. In the event the excavated area has not been patched and cured within the lane closure time restriction, it shall be temporarily filled with asphalt concrete as approved by the Engineer.

The excavated area shall be thoroughly cleaned of loose material and debris and moistened prior to the placement of hydraulic cement concrete.

Existing pavements shall not be removed if such removal will result in hydraulic cement concrete being placed when the ambient air temperature is below 32° F, unless approved by the Engineer. The hydraulic cement concrete temperature at the time of placement shall not be less than 70° F and not more than 95° F, unless approved by the Engineer.

Hydraulic cement concrete shall be deposited on the sublayer, spaded, tamped, and internally vibrated so that it completely fills the area of the patch. Finishing of the plastic hydraulic cement concrete shall conform to the requirements of Section 316 of the Specifications, except that the final surface shall be textured similar to that of the adjoining pavement. The patch and the existing pavement shall be tested for smoothness by means of a 10-foot straightedge laid parallel to the centerline of the road surface, and irregularities in the patch in excess of ¼ inch shall be corrected.

Immediately after straight edging and texturing, the hydraulic cement concrete shall be moist-cured with wet burlap and insulating blankets.

When patching 2 lanes simultaneously, the longitudinal joint shall be reestablished by sawing. Joints shall be sealed with silicone unless otherwise permitted by the Engineer.

Within 24 hours after completion of a patch area, any bituminous concrete shoulders damaged during pavement repair operations shall be reconstructed in accordance with the requirements of Section 315 of the Specifications with full depth Type SM-9.5A asphalt concrete to match the finished shoulder grade. In the event traffic is to be permitted on the patch area prior to reconstruction of the shoulder, the Contractor shall first make such temporary repair to the shoulder as is necessary to avoid any hazardous condition.

The Department will stencil all patches with the date and project identification.

Additional construction methods specific to partial depth repairs are noted under the section headed Type III.

TYPES I AND II

Where the existing joint dowel assembly is to be removed, the existing concrete shall be saw cut full depth and removed a minimum of 1 foot on either side of existing transverse joints. Minimum length of removal shall be 6 feet in accordance with that shown in Figure 1. (Attached)

Oversawing into the adjacent slabs or shoulder shall be kept to the minimum amount necessary to ensure that full depth cuts in the corners have been achieved. All oversawing shall be cleaned and filled with joint sealant.

Any areas damaged during concrete sawing and removal operations shall be repaired to the satisfaction of the Engineer by extending the patch boundary or repairing spalls at the Contractor's expense. Spalls greater than ¼ inch wide and 2 inches long and over ½ inch in depth below the pavement surface shall be repaired using an approved epoxy mortar.

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Bond breaking material approved by the Engineer shall be placed at the longitudinal joint for Type I patches as shown in Figure 2 (Attached).

Type I and Type II patches shall be installed in accordance with the requirements of Standard PR-2 unless otherwise noted herein.

Where dowels are required, holes slightly larger than the diameter of the dowels shall be drilled 9 inches into the face of the existing slab starting 6 - 12 inches from either edge and then on 12 inch centers. There shall be four dowels placed in from each pavement edge for a total of eight per joint. The holes shall be located at a depth as shown in Figure 1. The dowels shall be carefully aligned (within $\frac{1}{4}$ inch) with the direction of the pavement and parallel to the plane of the surface. A quick setting, non-shrinking mortar or a high viscosity epoxy shall be used to anchor the dowels in the holes. The holes shall be completely filled around the dowels so as to minimize vertical movement of the dowels and ensure that the dowels are permanently fastened to the existing concrete. The epoxy or grout is to be put into the hole in sufficient quantity so that when the bar is inserted, the material completely fills the annular space around the bar. A grout retention ring shall be used as shown in Figure 1.

The surface edges of all patches shall be tooled, formed and/or sawed, and cleaned to result in a properly dimensioned reservoir for sealant. All transverse and longitudinal joints at pavement repair locations shall be filled with silicone in accordance with manufacturer's recommendations unless otherwise permitted by the Engineer. Joints at pavement repair locations shall be cleaned and sealed prior to the winter shutdown unless otherwise directed by the Engineer.

TYPE III

Partial depth patches shall be sawed a minimum depth of 2 inches around the perimeter of the patch area to provide a vertical face at the edges. Concrete within the patching area shall be broken out with a pneumatic hammer not heavier than a 35-pound class or by other methods approved by the Engineer. Edge spalls greater than $\frac{1}{4}$ inch wide and 2 inches long and over $\frac{1}{2}$ in depth below the pavement surface shall be repaired using an approved epoxy mortar. The area of failure shall be removed by equipment that will not damage the adjacent sound pavement. The exposed faces of the concrete shall be free of loose particles, oil, dust, and other contaminants before placement of patch material. All residues shall be removed just prior to placement of the concrete bonding agent. Bonding agent shall be an approved cement mortar mixture or any other approved agent.

TYPE IV-A&B

Care shall be taken to minimize damage to the adjacent concrete during concrete removal. Should excessive edge chipping occur during removal, it shall be the Contractor's responsibility to resaw, remove, and replace the damaged pavement at the Contractor's expense. Chipping or spalling that exceeds 2 inches wide and 3 inches long or chipping or spalling less than 2 inches wide and 3 inches long that affects more than 10 percent of the joint will be considered excessive.

Replacement will be in accordance with special provisions and standards for placing PR-3, PR-4, and PR-5 continuously reinforced (steel bar) concrete pavement. Transverse faces of all pavements shall be thoroughly cleaned and moistened prior to placement of new concrete.

Existing pavement shall be removed by sawing the exterior transverse patching limits to a depth of 2 to 3 inches. Care shall be taken to avoid saw cutting the steel reinforcement. Longitudinal limits shall be cut full depth. When necessary, the shoulders shall be cut a sufficient depth and width to facilitate forming paving edge. The concrete in the end sections

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shall be removed full depth by methods that will not bend nor gouge the reinforcing steel nor damage the adjacent concrete that is to remain in place as approved by the Engineer. Full depth interior saw cuts shall be used to cut the existing reinforcing steel and to define the limits of the end sections. The existing reinforcing steel shall be cut leaving at least 16 inches for steel overlap plus 2 inches for clearance between the lap and the existing pavement. The end sections shall be at least 18 inches long. The center section of concrete shall be removed full depth as shown elsewhere in this provision.

The reinforcement in the end sections shall be carefully straightened after the breakout of the concrete and cleaned of all concrete and rust scale prior to placement of the concrete. If 3 adjacent bars or more than 3 bars total are corroded or damaged, either a new exterior transverse saw cut extending the end sections to establish the appropriate end section lengths of undamaged steel or some other corrective method as approved by the Engineer shall be required. If damage to the reinforcement occurs due to the Contractor's operation, the corrective measures shall be performed at no cost to the Department.

IV. **WARRANTY**

The Contractor shall provide a one-year warranty from the date of final acceptance on all hydraulic cement concrete patches. The Department will stencil all patches with the installation date and project identification. The Department will monitor patches installed throughout the warranty period for compliance and acceptability. The Contractor shall remove and replace any patch that fails due to materials or workmanship before the end of the warranty period and shall do so within 14 days after Department notification unless otherwise directed by the Department. Failure of a patch is defined by the medium or high severity occurrence of longitudinal cracking, transverse cracking, transverse joint spalling, longitudinal joint spalling, corner breaks, joint faulting or other undesirable distress as described and measured in the 2003 Distress Identification Manual for the Long-Term Pavement Performance Program. The Engineer shall notify the Contractor of the date for the warranty inspection and the Contractor shall be present at the inspection.

If notified regarding a failed patch, the Contractor may request a review by the Department. This review will be conducted to determine if the patch failure is a result of materials or workmanship based on a visual inspection. Further inspection may be required as directed by the Department. Failures not related to materials or workmanship are excluded from this warranty.

V. **MEASUREMENT AND PAYMENT**

Patching hydraulic cement concrete pavement will be measured in square yards of pavement surface area, complete-in-place, and will be paid for at the contract unit price per square yard for the type and depth specified, which price shall be full compensation for saw cutting pavement to the required depth, removing and disposing of existing concrete, preparing of sublayer, furnishing and installing preformed expansion material, furnishing and installing steel dowels, furnishing and installing reinforcing steel as specified, furnishing, placing, finishing, and curing special design concrete, cleaning and sealing joints, patch area protection, and for all materials, labor, tools, equipment, and incidentals necessary to complete the work

Payment will be made under:

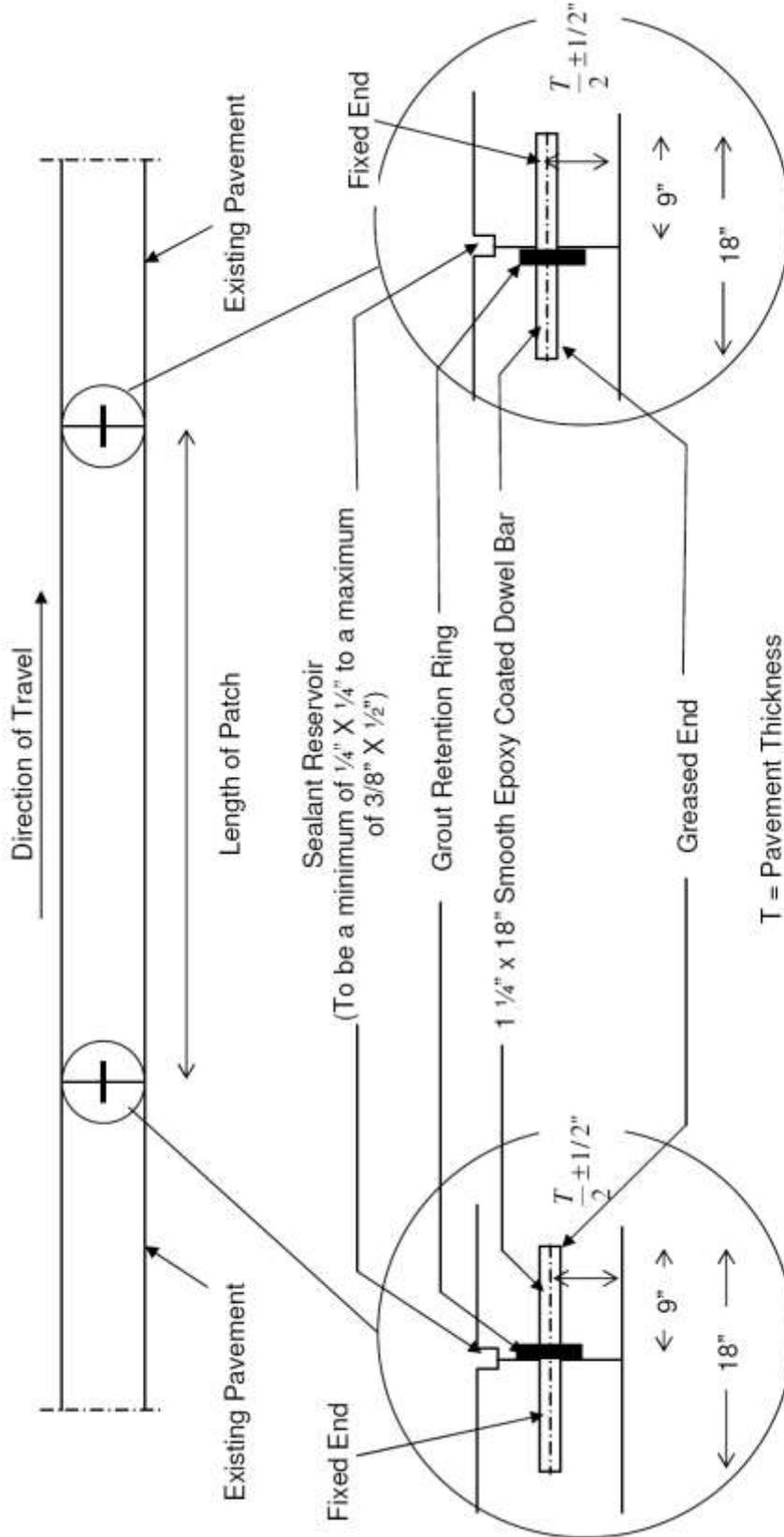
Pay Item	Pay Unit
Patching Hydraulic Cement Concrete Pavement (Type and Original Design Depth)	Square Yard

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

In areas where the Engineer deems the sublayer insufficient to support the patch, the sublayer shall be excavated to sound material and replaced with Aggregate fill-in type at a cost of \$ fill-in amount per ton. This shall be full compensation for excavation and disposal of unsuitable sublayer, and for furnishing, placing, and compacting aggregate material.

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TYPE I AND TYPE II JOINTED CONCRETE PATCHES

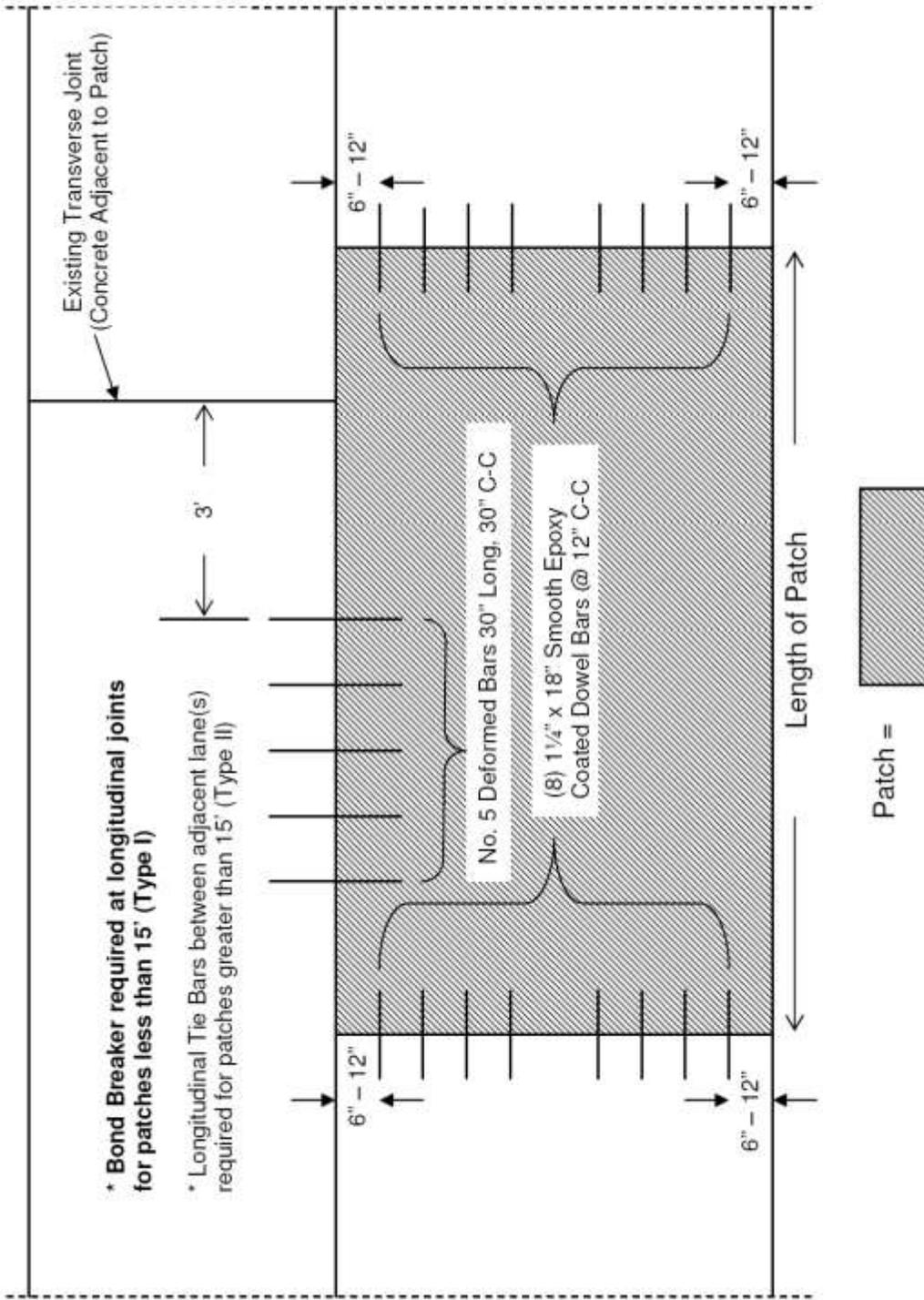


NOTE: If the length of patch is greater than 15 feet, re-establish joint in center of patch with the standard dowel basket and if the distance between remaining joints is greater than 15 feet, steel wire mesh shall be placed in a manner which will provide for a final location in the middle third of the slab thickness, maintaining a minimum of 2 inches of concrete cover.

FIGURE 1

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

TYPICAL TYPE I AND TYPE II PATCHES



* Bond Breaker required at longitudinal joints for patches less than 15' (Type I)

* Longitudinal Tie Bars between adjacent lane(s) required for patches greater than 15' (Type II)

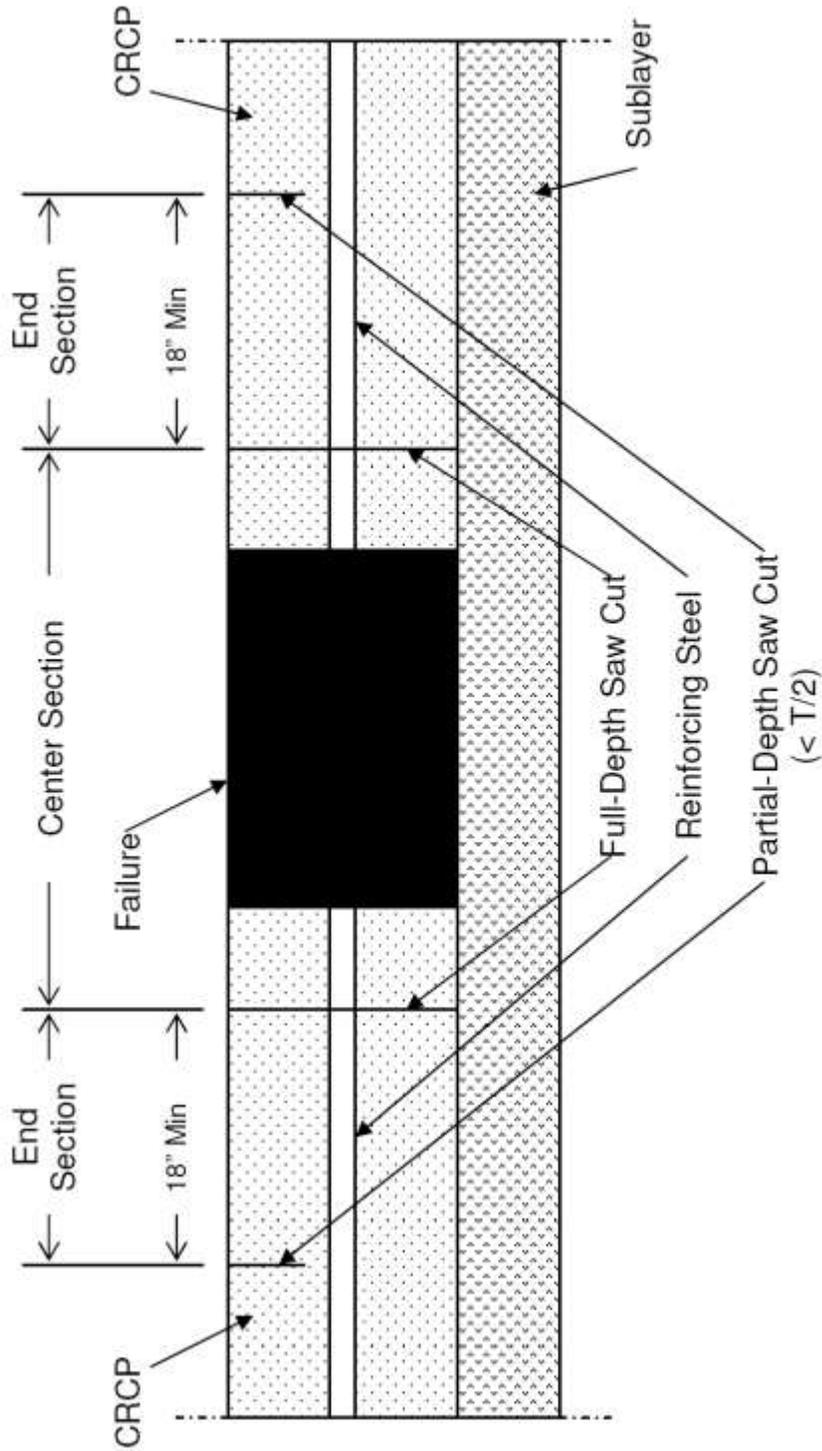
No. 5 Deformed Bars 30" Long, 30" C-C
(8) 1 1/4" x 18" Smooth Epoxy Coated Dowel Bars @ 12" C-C

Typical Load Transfer Steel Layout for Patching Jointed Concrete Pavement

FIGURE 2

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

TYPICAL SECTION ELEVATION VIEW OF TYPE IV-A&B PATCHES



NOTE: Longitudinal Tie Bars Necessary for Patches Greater Than 15'.
T = Pavement Thickness

FIGURE 3

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

GUIDELINES — USE ONLY WHEN REQUESTED BY THE REGIONAL TRAFFIC ENGINEER FOR PROJECTS WITH PROJECT-SPECIFIC COMPLEX CPMs.**S512KG0-0708****VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
WORK ZONE TRAFFIC CONTROL MANAGEMENT**

January 14, 2008

I. GENERAL DESCRIPTION

This work shall consist of providing work zone traffic control management in strict compliance with the contract, plans, specifications, the Virginia Work Area Protection Manual and the Manual on Uniform Traffic Control Devices (MUTCD), including supervision of personnel and the installation, inspection, and maintenance of all traffic control devices on the project.

II. REQUIREMENTS

The Contractor shall assign a traffic control supervisor (TCS) to provide work zone traffic control management for the project. If the Contractor assigns more than one TCS to provide work zone traffic control management, a weekly schedule identifying who will be in charge of providing work zone traffic control management on a daily basis shall be submitted to the VDOT Area Construction Engineer by the Contractor.

The TCS shall have a set of traffic control plans and a copy of the edition of the Virginia Work Area Protection Manual specified on the plan sheet or in the contract readily available at all times.

A. Certification

Prior to commencing work requiring work zone traffic control management, the Contractor shall submit to the Area Construction Engineer a valid copy of the Traffic Control Supervisor certificate (wallet size card) issued by the American Traffic Safety Services Association (ATSSA), or another similarly accredited agency or firm approved by the Department.

The Department will accept the certification by ATSSA or any approved agency or firm only if all of the following minimum requirements are met:

1. Successful completion of an Intermediate or Advanced work zone traffic control training course approved by the Department.
2. Passing a written examination given by the agency or firm on the approved work zone traffic control training course.
3. A minimum of two years full-time field experience in work zone traffic control. The experience may be verified by the Department at its discretion.

The TCS certification shall be renewed every four years by the TCS taking and passing a recertification test. The recertification test shall be taken through ATSSA or an agency or firm approved by the Department. Recertification shall be done in the fourth year prior to the expiration date.

B. Duties

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The TCS's main responsibility shall be work zone traffic control management. The TCS may have other assigned duties on the project as approved in writing by the Area Construction Engineer. The following is a listing of the TCS's primary duties:

1. The TCS(s) shall personally provide work zone traffic control management and supervision services at the project site.
2. The TCS(s) shall coordinate the training of flagging and signing personnel.
3. The TCS(s) shall supervise the flagging and signing personnel.
4. The TCS(s) shall coordinate all work zone traffic control operations for the duration of the contract, including those of subcontractors, utility companies, and suppliers, to ensure that all work zone traffic control is in place and fully operational prior to the commencement of any work.

The Department recognizes that the Contractor does not have direct control over the work zone traffic control operations of the utility companies. The coordination provided by the TCS when dealing with utility companies is for the purpose of coordinating concurrent utility work zone traffic control with any other construction/maintenance work zone traffic control to avoid conflicts.

5. The TCS(s) shall perform daily reviews of work zone traffic control when work activities are underway and document in the work zone traffic control daily diary activities taking place and any deviation from the traffic control plan, length and timing and mitigation of excessive traffic queues, and instances or conflicts or problems with the work zone traffic control and corrective actions taken. In addition, the TCS(s) shall perform weekly reviews of the work zone traffic control and document in detail using Forms TE-97001 and 97002. Every other detailed weekly review shall be performed during nighttime hours or as directed by the Area Construction Engineer.

The TCS shall inspect traffic control devices in use for compliance with the ATSSA Quality Standards for Work Zone Traffic Control Devices, the Road and Bridge Specifications, and the Virginia Work Area Protection Manual. The TCS shall provide for the immediate repair, cleaning, or replacement of traffic control devices not functioning as required to ensure the safety of the motorists and construction personnel.

The traffic control devices shall be inspected by the TCS during working and nonworking hours on a schedule approved in writing by the Area Construction Engineer, but as a minimum at the beginning and end of each work day or night and once during non-working weekends and holidays, and daily on restricted days due to inclement weather or during any work shutdown.

Traffic control devices in use longer than fourteen (14) days shall be inspected by the TCS at least once every other week during nighttime periods.

6. The TCS(s) shall prepare and submit statements concerning road closures, delays, and other project activities to the District Public Affairs office as required.
7. The TCS(s) shall be responsible for notifying the VDOT project Maintenance of Traffic (MOT) Coordinator or designee, of all accidents related to the project traffic control. The time and date of notification shall be documented in the daily diary.
8. The TCS(s) assigned to the project shall attend the preconstruction conference and any other meeting which involves traffic control.

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9. The TCS(s) shall be responsible for the maintenance, cleanliness, and replacement of traffic control devices of the existing traffic control plan during working and non-working hours.

C. Documentation - Traffic Control Diary

The TCS shall maintain a project work zone traffic control diary in a bound book. The Contractor shall provide a sufficient number of diaries for his or her use.

The TCS shall keep the work zone traffic control diary current on a daily basis, and shall sign each daily entry. Entries shall be made in ink in a format approved by the Area Construction Engineer, and there shall be no erasures or white-outs. Incorrect entries shall be struck out and then replaced with the correct entry. Photographs may be used to supplement the written text.

The work zone traffic control diary shall, at all times, be available for inspection by the VDOT Maintenance of Traffic Coordinator and a copy of the diary shall be submitted to the MOT Coordinator on a weekly basis.

The work zone traffic control diary(s) shall become the property of the Department at the completion of the project. Failure to submit the diary shall result in the withholding of final payment until the diary(s) is submitted.

D. Availability of TCS

Traffic control management shall be provided under the supervision and direction of the TCS on a 24-hour-per-day basis throughout the duration of the project.

The TCS shall be available on every working day—on call at all times—and available upon the Area Construction Engineer's request during normal working hours and during other than normal working hours in the case of emergency. The provisions for availability of the TCS shall also be met during times of partial or full project suspension. Contact telephone numbers for the TCS(s) shall be provided to Department project personnel, the Area Construction Engineer, the Residency Administrator, and the region Smart Traffic Center prior to the Contractor commencing work requiring work zone traffic control management.

E. Failure to Comply

The Area Construction Engineer may suspend all or part of the Contractor's operation(s) for failure to comply with the approved "Traffic Control Plan" or failure to correct unsafe traffic conditions within 24 hours for critical items and 72 hours for non-critical items after such notification is given to the Contractor in writing.

In the event that the Contractor does not take appropriate action to bring the deficient work zone traffic control into compliance with the approved traffic control plan or fails to correct the unsafe traffic conditions, the Department may proceed with the corrective action using its own forces, equipment, and material to maintain the project and such costs, plus 25 percent for supervisory and administrative personnel, will be deducted from the money owed to the Contractor for the project.

The Contractor shall not be relieved of the responsibility to provide work zone traffic control safety to the traveling public when a project is under full or partial suspension. When a project is under suspension due to the Contractor's failure to comply with this section, or when the contract is under liquidated damages, the Contractor shall continue

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to provide work zone traffic control management and no additional measurement or payment will be made.

If suspensions or partial suspensions are requested by the Contractor, the additional work zone traffic control management costs will be at the Contractor's expense.

III. **MEASUREMENT AND PAYMENT**

Work Zone Traffic Control Management will be paid for at the contract lump sum price. This price shall be full compensation for furnishing 24 hour services as specified, including preparing and furnishing Work Zone Traffic Control diaries.

When work zone traffic control management is paid for by the lump sum, monthly partial payments for work zone traffic control management will be made on a pro rata basis for the estimate period being vouchered for payment.

In the event the contract time is authorized to be extended in accordance with the provisions of Section 108.04 of the Specifications, the provisions of Section 104.02 of the Specifications will not apply. The payment for this item will be compensated on a daily basis by dividing the original lump sum bid amount by the number of calendar days in the original contract time and the resultant daily dollar value assigned to this item.

Payment will be made under:

Pay Item	Pay Unit
Work Zone Traffic Control Management	Lump Sum

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GUIDELINES — ASPHALT SCHEDULE PROJECTS ONLY (INCLUDES SURFACE TREATMENT, SLURRY/LATEX, AND PLANT MIX). IF, FOR A PARTICULAR PROJECT, A PRICE(S) IS JUSTIFIED TO BE DIFFERENT THAN WHAT IS STATED IN THIS SP, A SP CN MUST BE WRITTEN THAT SPECIFICALLY OVERRIDES THE COST FOR THAT PARTICULAR ITEM. WHEN MEASUREMENT AND PAYMENT OF ANY PAY ITEM IN THIS SPECIAL PROVISION IS DIFFERENT THAN WHAT IS SHOWN IN THE MEASUREMENT AND PAYMENT SECTION IN THIS SPECIAL PROVISION, AN SP CN FOR INCLUSION IN THE PROPOSAL MUST BE SUBMITTED TO AND APPROVED BY THE STATE CONTRACT ENGINEER. THIS SUBMISSION MUST INCLUDE SUPPORTING DOCUMENTATION.

S512L10-1215

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.

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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

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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

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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:

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

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

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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

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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

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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.

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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.

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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

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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

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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

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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 and 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

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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.

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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.

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- **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

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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

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

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.

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

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.

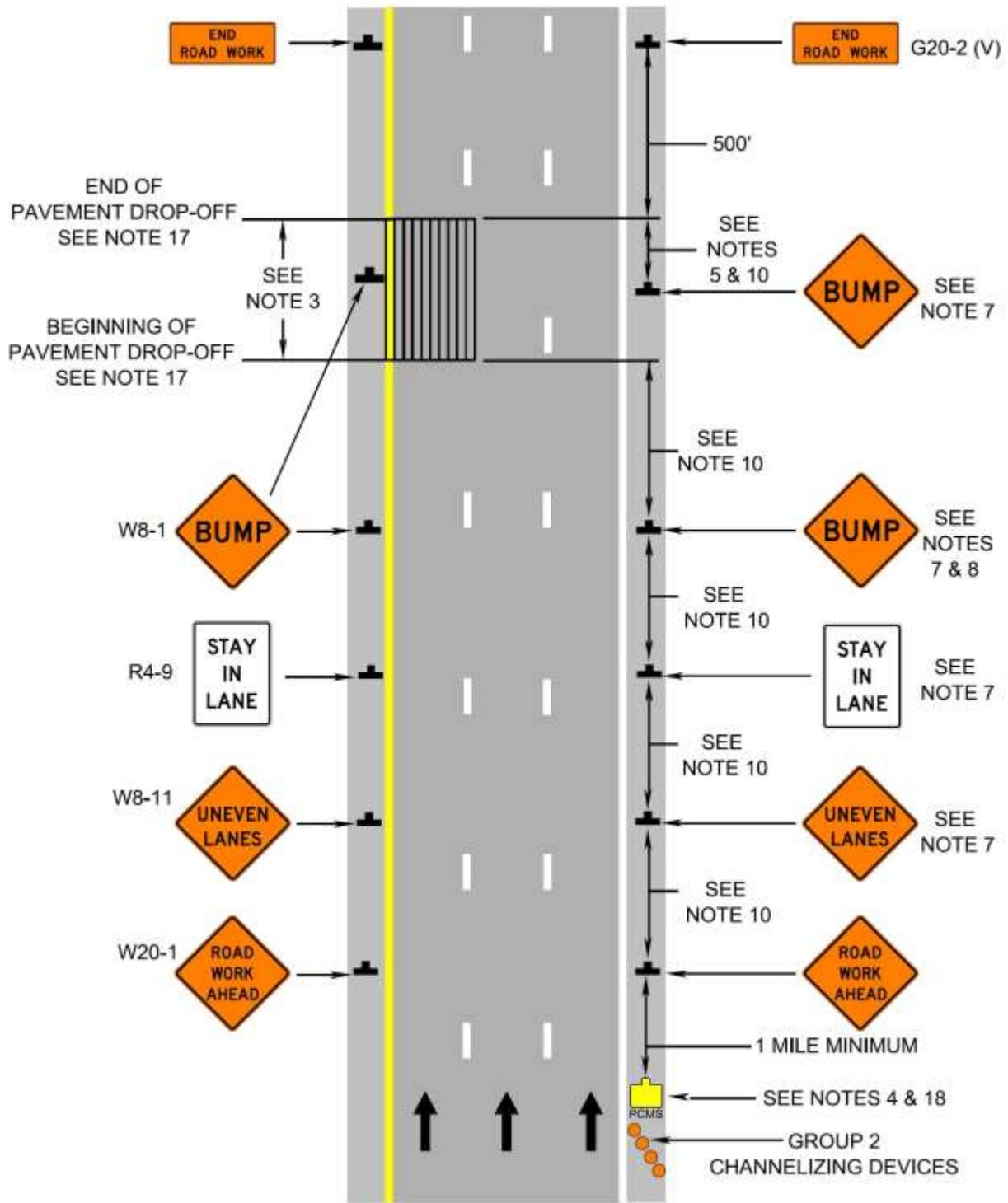
Option:

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.

*These SPECIFICATIONS REVISIONS are subject to change on short notice.



**End of Day Signing for Partial Road Width Plant Mix Paving Operations
on a Multi-Lane Highway (Uneven Travel lanes)
(Figure TTC-57.PS16)**

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

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.

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

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.

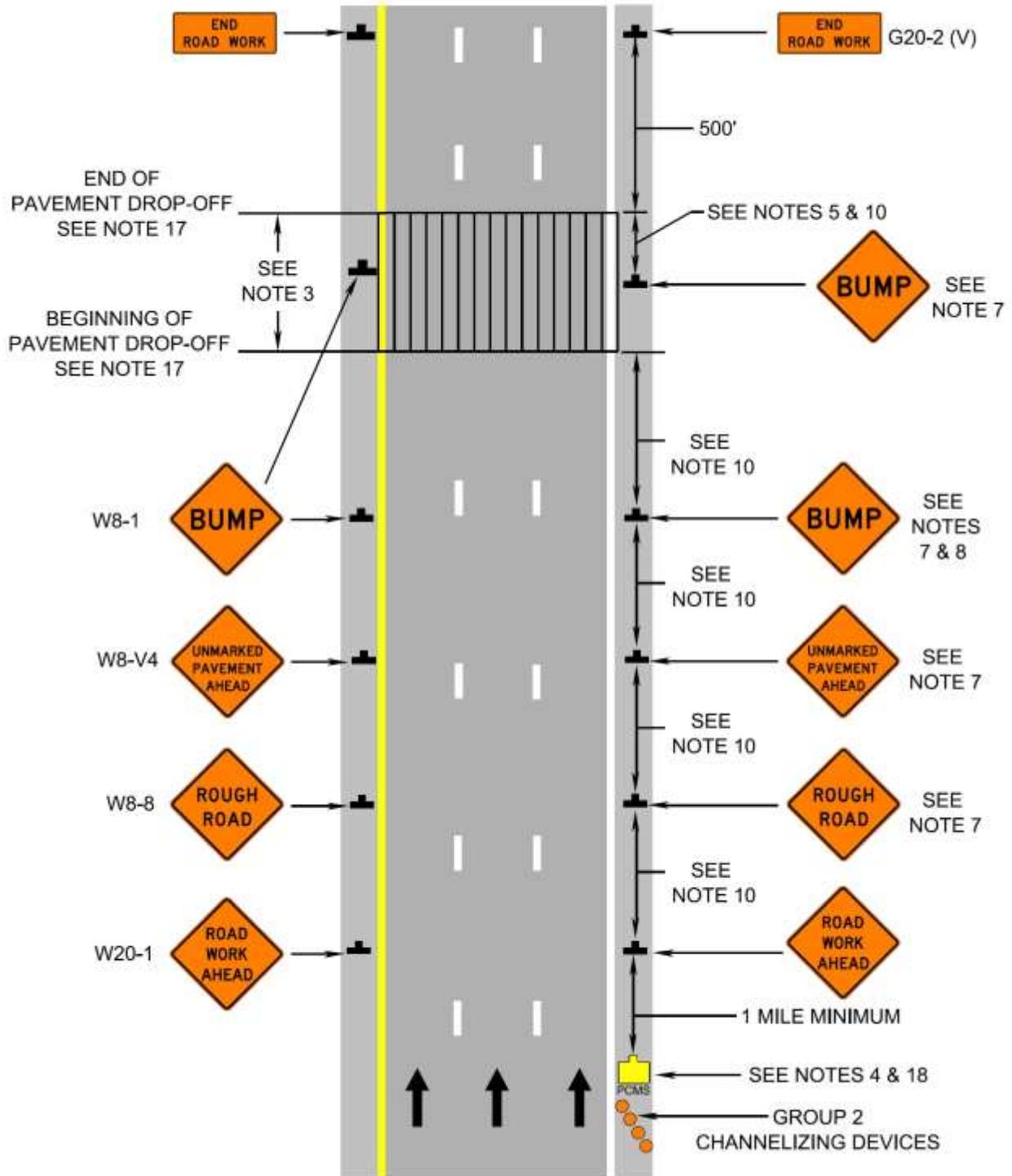
Option:

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.

*These SPECIFICATIONS REVISIONS are subject to change on short notice.



**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)**

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

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:

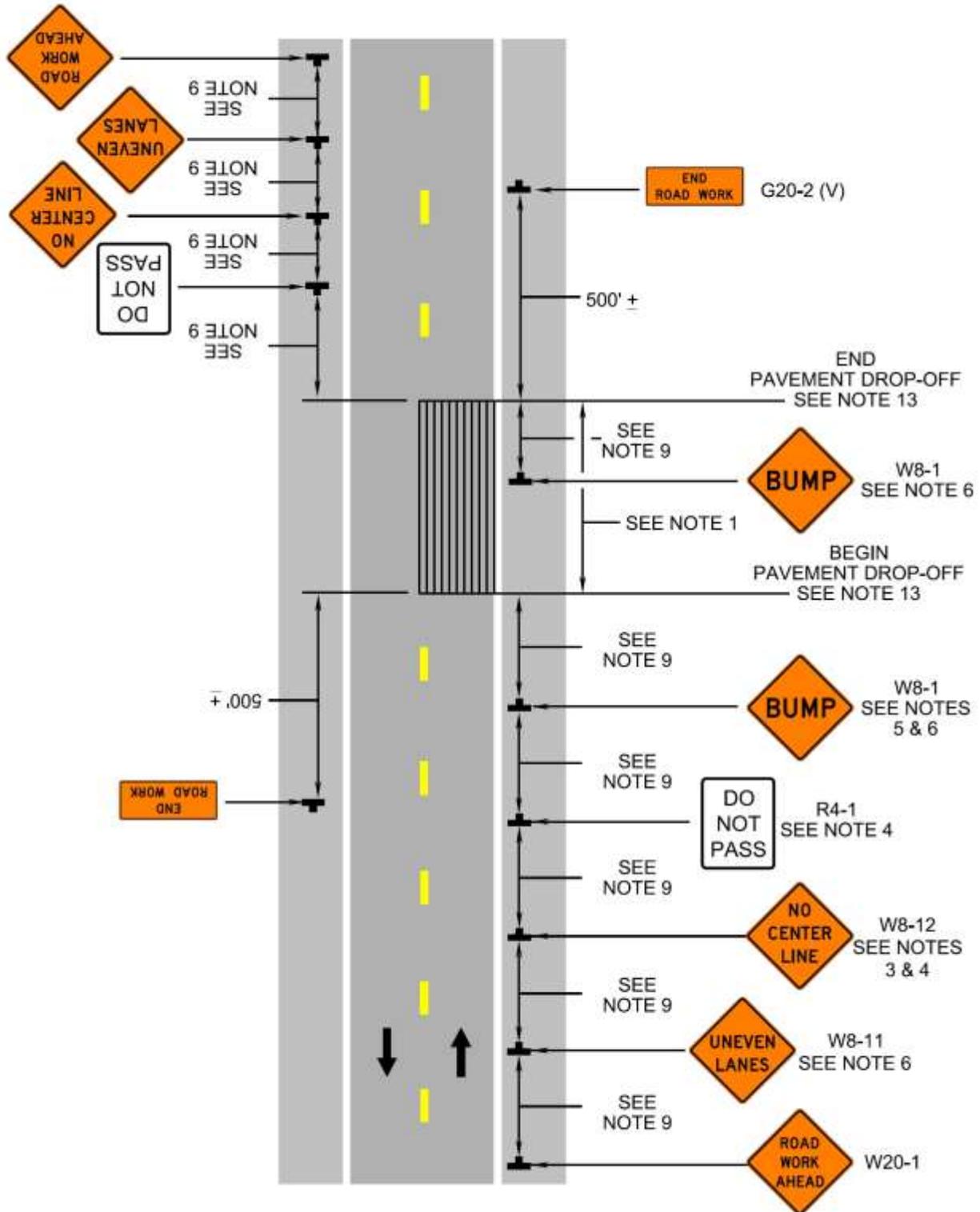
10. Only traffic control signing for pavement resurfacing is shown. Other devices may be used for the control of traffic through the work area.
11. The LOW SHOULDER (W8-9) sign may be used to warn of a shoulder condition where there is an elevation difference of less than 2 inches between the shoulder and the travel lane.

Standard:

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

- 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.**

*These SPECIFICATIONS REVISIONS are subject to change on short notice.



Typical Traffic Control
End of Day Signing for Plant Mix Paving Operations on a Two-Lane Roadway
(Figure TTC-59.PS16)

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

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:

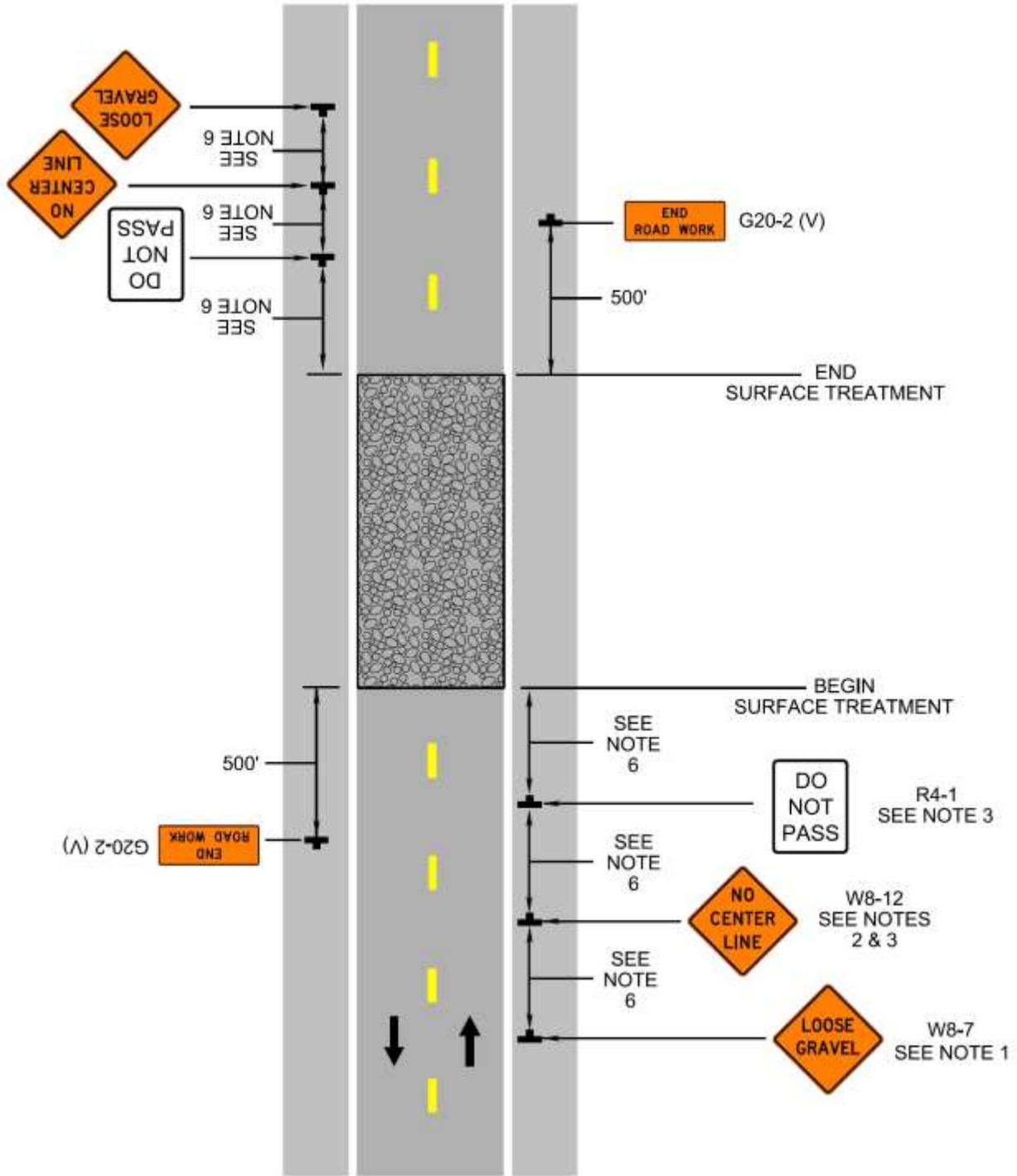
7. Only traffic control signing for surface treatment/slurry seal/latex emulsion treatment operations is shown. Other devices may be used for the control of traffic through the work area.
8. The advanced warning signs shown may also be used on multi-lane roadways, replacing the NO CENTER LINE signs with UNMARKED PAVEMENT AHEAD (W8-V4) signs and adding a ROAD WORK AHEAD (W20-1) sign as the first advanced warning sign.

Standard:

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

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.**

*These SPECIFICATIONS REVISIONS are subject to change on short notice.



**End of Day Signing for Surface Treatment,
Slurry Seal and Latex Emulsion Treatment Operations
(Figure TTC-64.PS16)**

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

GUIDELINES — THIS SP IS ONLY TO BE USED FOR NON-SCHEDULE PROJECTS WITH SIMPLE MAINTENANCE OF TRAFFIC REQUIREMENTS WHERE THE CONTRACTOR CAN EASILY DETERMINE WHAT HE WILL NEED AND ACCURATELY ESTIMATE THE COST. [EXAMPLE: BRIDGE REHAB(S) WHERE TRAFFIC IS SIMPLY CHanneled TO ONE SIDE UNTIL WORK ON THE OPPOSITE SIDE IS COMPLETED. ALSO, GUARDRAIL, OR PIPE REHAB(S) WHERE MAINTENANCE OF TRAFFIC ITEMS ARE SIMPLY MOVED ALONG IN A CONTINUOUS OPERATION AS WORK MOVES THROUGHOUT THE FULL LENGTH THE PROJECT UNTIL COMPLETE.] FOR BRIDGE PROJECTS, EACH MUST BE SPECIFIED IN THE CONTRACT BY STRUCTURE NO. AND AS LUMP SUM PAYMENT. FOR GUARDRAIL, OR PIPE REHAB(S) PROJECTS, THE ROUTE AND LOCATION(S) MUST BE SPECIFIED IN THE CONTRACT AS LUMP SUM PAYMENT. CONTACT SCHEDULING AND CONTRACT SPEC SECTION FOR GUIDANCE IN OTHER USES AND MODIFICATIONS. DO NOT ADD EXPENSIVE AND/OR DIFFICULT TO ESTIMATE ITEMS SUCH AS TEMPORARY SIGNALIZATION OR PORTABLE CHANGEABLE MESSAGE SIGNS (PCMS) AS ITEMS INCLUDED IN THIS COST. SUCH ITEMS MUST BE HANDLED WITH SEPARATE PAY ITEMS IN SECTION 512 AS APPROPRIATE.

S512MG0-1210

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 512—MAINTAINING TRAFFIC – NON-SCHEDULES (LUMP SUM)

June 25, 2010C

SECTION 512 of the Specifications is amended as follows:

Section 512.03—Procedures is amended to add the following:

The Contractor shall submit a plan, sequenced with his plan of operations, to the Engineer for maintenance of traffic for his review prior to commencement of work. The plan shall be designed and implemented in accordance with the *Virginia Work Area Protection Manual*, the *MUTCD* and the Department generated project-specific temporary traffic control plan or requirements provided in the Contract Documents. When the Department provides a sequence of construction in the Contract documents the plans or estimated quantities for maintenance of traffic items are for estimating purposes only.

Section 512.04—Measurement and Payment is replaced with the following:

Maintenance of traffic including flagger service, pilot vehicles, electronic arrows, warning lights, channelizing devices, traffic barrier service, traffic barrier service guardrail terminals, impact attenuator service, construction pavement markings, construction pavement message markings, temporary pavement markers, eradication of existing pavement markings, temporary detours, aggregate material, Type III barricades, construction signs, and truck mounted attenuators will be paid for on a lump sum basis as follows:

- (a) **Per structure** wherein, the lump sum price bid shall be for providing maintenance of traffic for a single structure identified in the Contract by its structure number. No measurement will be made.
- (b) **Per route and location(s)** wherein, the lump sum price bid shall be for providing maintenance of traffic for work at a specified location on a single specified route or, specified locations grouped together on a single specified route as one lump sum item. No measurement will be made as detailed in the Contract.

The Contractor's price bid shall include, but not be limited to; providing a person to meet the basic work zone traffic control and intermediate work zone traffic control requirements of Section 105.14 of the Specifications; furnishing, placing, maintaining, replacing, relocating, adjusting, aligning, removing, flagger service, pilot vehicles, warning lights, electronic arrow, channelizing devices, traffic barrier service, traffic barrier service guardrail terminals, impact attenuator service,

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

construction pavement markings, construction pavement message markings, temporary pavement markers, eradication of existing pavement markings, temporary detours, aggregate material, Type III barricades, construction signs, truck mounted attenuators, and all labor, material and equipment incidental to completing this work in accordance with the *Virginia Work Area Protection Manual* and traffic engineering guidelines and principles. Site specific adjustments to maintenance of traffic operations specified by the *Virginia Work Area Protection Manual* and the *MUTCD* such as quantity, location, or spacing of traffic control devices within construction limits or on any approaches to the project, required by the Engineer to improve traffic operation or safety shall be considered an alteration to the character of work in accordance with the provisions of Section 104.02 of the Specifications.

The Contractor will be paid 30 percent of the lump sum bid price upon satisfactory installation of the required maintenance of traffic items to commence construction operations and active prosecution of the work. Contingent upon active pursuit of the work, the Contractor will receive monthly payments for maintenance of traffic based on the daily dollar amount of the bid price for maintenance of traffic until 90 percent of the unit bid price is paid. The remaining 10 percent will be paid for after all maintenance of traffic items are removed at final acceptance of the Contract.

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 drawings in herein, and the Contract, will be measured and paid for as follows, therefore, the provisions of Section 104.02 will not apply:

- **Flagger service** shall include furnishing certified flagger, 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 Section 512.03(b)2. herein will not be measured as a separate pay item but will be considered incidental to the traffic control operations described.

- **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 amber 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

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

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 within the lane or from one lane to another 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.
- **Construction pavement markings** 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 marking materials, preparing the surface, adhesive, installation, maintaining, removing removable markings when no longer required, inspections, and testing.
- **Construction pavement message markings** will not be measured for separate payment. The cost thereof shall be included in the price for other appropriate pay items. This shall include marking materials, preparing the surface, adhesive, maintaining, and removing removable markings when no longer required.
- **Temporary pavement markers** 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 installing pavement markers, surface preparation, adhesive, and maintaining and replacement of lost or damaged markers and removing the pavement markers and adhesive when no longer required.
- **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 III 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 drawings herein, and such signs as **“Loose Gravel”**, **“Unmarked Pavement”**, and **“Low Shoulder”** 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

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

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 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 traffic control signal** will not be measured for separate payment. The cost thereof shall be included in the price for other appropriate pay items. This shall include portable traffic control signal equipment, installation, energy source, maintaining, adjusting, aligning, removing and relocating equipment.
- **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, and repositioning the unit(s).

Payment will be made under:

Pay Item	Pay Unit
Maintenance of traffic (Structure No.)	Lump sum
Maintenance of traffic (Route and Location[s])	Lump sum

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

GUIDELINES – PAVING PROJECTS THAT WILL OR MAY REQUIRE POLICE ASSISTANCE DURING PAVING OPERATIONS.**S512N00-1213**

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
POLICE ASSISTANCE FOR PAVING OPERATIONS

November 6, 2013

SECTION 512—MAINTAINING TRAFFIC of the Specifications is amended as follows:**SECTION 512.03—PROCEDURES** is amended to include the following:

- (s) **Police Assistance for Paving Operations:** Police assistance may be required at times for paving operations in work zones during the life of this contract to ensure the safety of the traveling public and construction personnel. The Contract will specify where police assistance is required in accordance with the following:
1. **Interstate Routes:** Where the Contract specifies State Police assistance is required, VDOT will notify the State Police contact person. VDOT will pay for the uniformed police officer(s).
 2. **Major Primary Routes (Traffic Groups XII and above):** Where the Contract specifies police assistance is required, VDOT will notify the police contact person. VDOT will pay for the uniformed police officer(s).
 3. **Other Primary Routes:** The Contract will list the locations where police assistance is required and whether it is the Contractor's responsibility or VDOT's responsibility to notify the police contact person and pay for the uniformed police officer(s).
 4. **Secondary Routes:** The Contractor will have the option whether to flag intersections or use uniformed police officers if this is not specified otherwise in the Contract. If the Contractor determines police assistance is necessary, he shall obtain this assistance at no cost to VDOT.

Where VDOT determines police assistance will be required on specific routes, the Contract will list the locations and whether it is the Contractor's responsibility or VDOT's responsibility to notify the police contact person and pay for the uniformed police officer(s). If the Contract does not state the responsible party, VDOT will be responsible.

If during the life of this contract the Engineer determines that police assistance is necessary at a specific location not listed in the Contract, VDOT will notify the police contact person. VDOT will pay for the uniformed police officer(s).

If during the life of this contract the Contractor determines that police assistance is necessary at a specific location not listed in the Contract, he shall notify the police contact person. The Contractor shall obtain this assistance at no cost to VDOT.

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

GUIDELINES — PROJECTS REQUIRING COLD PLANING (MILLING) OF ASPHALT PAVEMENT. WHEN THIS PROVISION APPLIES INCLUDE THE FOLLOWING IN THE PROPOSAL: SS51505 Planing or Milling Pavement

S515B03-1215

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

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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.

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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

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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 procede 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.

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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

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

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GUIDELINES — USE ON PROJECTS WHERE REMOVAL OF ASBESTOS FROM ANY STRUCTURE THAT WILL BE DEMOLISHED AND NOT RE-OCCUPIED IS REQUIRED. IF AN ASBESTOS REPORT IS AVAILABLE, A COPIED NOTE SHOULD BE CREATED DETAILING THE LOCATIONS, NESHAP CATEGORY, CONDITION, AND APPROXIMATE QUANTITIES OF ASBESTOS.

S516B00-0416

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
ASBESTOS REMOVAL FOR ROAD CONSTRUCTION DEMOLITION PROJECTS

November 19, 2015

I. DESCRIPTION

1. The Special Provision shall only apply to the removal of asbestos from structures that will be demolished and not re-occupied. Asbestos removal from any structure that is to be re-occupied (e.g. construction project offices, leased structures, etc.) shall comply with the requirements of the *Special Provision for the Removal of Asbestos for Re-Occupied Structures*.
2. The Contractor shall furnish all labor, materials, supplies, and equipment necessary to legally remove and dispose of the materials identified in the Department's asbestos inspection report(s), as required for removal/abatement.

All quantities are estimates. The bidder shall be responsible for ascertaining the exact amount of material to be removed and to base their bid on that quantity.

Payment shall be made for separate layers of similar Asbestos Containing Material (ACM) (e.g. floor tiles, roofing, etc.) only if it is physically separated by a layer(s) of non-ACM.

3. This work may require the removal of existing flashing and miscellaneous trim in order to remove asbestos containing materials.

II. DEFINITIONS AND ABBREVIATIONS

1. **ABATEMENT:** Procedures to control fiber releases from asbestos containing building materials. Includes securing the work area, removing the material, and clearing the area and disposal of the material.
2. **ABATEMENT CONTRACTOR:** The company or individual properly licensed in the Commonwealth of Virginia by the Virginia Department of Professional and Occupational Regulations who conducts asbestos abatement activities such as, but not limited to, removal, encapsulation or enclosure of asbestos-containing materials.
3. **ACM:** Asbestos-Containing Material(s).
4. **AIRBORNE ASBESTOS FIBERS:** Suspended, settling or moving asbestos fibers or fiber bundles in air.
5. **AIR LOCK:** A system for permitting ingress and egress with minimum air movement between a contaminated area and an uncontaminated area, consisting of two curtained doorways separated by a dead air space of at least four feet.

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6. **AIR MONITORING:** The process of measuring the fiber content of a specific volume of air in a stated period of time.
7. **AMBIENT AIR:** Air in an area outside of the asbestos containment area. Areas chosen for air sampling shall not be located near access/egress routes for the project, nor shall they be located in areas known to contain friable asbestos containing materials.
8. **AMBIENT SAMPLING:** Air sampling of an area performed under normal or "as found" activity conditions.
9. **AMENDED WATER:** Water containing a wetting agent or surfactant.
10. **AIHA:** American Industrial Hygiene Association.
11. **ANSI:** American National Standards Institute.
12. **ASBESTOS ANALYTICAL LABORATORY:** A laboratory accredited by the National Institute of Standards and Technology (NIST) and licensed by the Virginia Department of Professional and Occupational Regulation to perform analysis of asbestos samples.
13. **ASBESTOS-CONTAINING MATERIAL (ACM):** The material or product containing more than 1% asbestos.
14. **ASBESTOS CONTAINMENT AREA:** An area where an asbestos response action takes place.
15. **ASBESTOS DEBRIS:** Pieces of ACM that can be identified by an accredited inspector through color, texture, or composition, or particulate matter (i.e. dust) to contain more than 1.0% asbestos by volume.
16. **ASBESTOS REGULATED AREA:** An area where asbestos removal operations and some support activities are performed. This area is isolated by physical barriers with warning signs and includes regions where the airborne concentration of asbestos exceeds or can be reasonably expected to exceed the permissible exposure limit.
17. **AREA MONITORING:** Sampling of asbestos fiber concentrations within the asbestos regulated area. Sampling strategy must be designed to yield fiber counts representative of airborne fiber levels in the breathing zone.
18. **AUTHORIZED PERSON OR VISTOR:** The building Owners, or their authorized representative, or any representative of a regulatory, or other agency having jurisdiction over the project.
19. **CATEGORY I, NON-FRIABLE ACM:** Asbestos-containing resilient floor covering, asphalt roofing products, packings and gaskets, and asbestos-containing mastics.
20. **CATEGORY II, NON-FRIABLE ACM:** Asbestos-containing material, excluding Category I Non- Friable ACM, that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.
21. **CLASS I ASBESTOS WORK:** Activities involving the removal of Thermal System Insulation (TSI) and surfacing ACM and PACM.

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22. **CLASS II ASBESTOS WORK:** Activities involving the removal of ACM that is not TSI or surfacing material. This includes, but is not limited to, the removal of asbestos-containing wallboard systems, floor tile and sheeting material, roofing and siding shingles, and construction mastics.
23. **CLEARANCE AIR SAMPLING:** The measurement of airborne asbestos fibers using sampling filters to determine the adequacy and completeness of the asbestos removal actions.
24. **CLEARANCE LEVEL:** 0.01 or fewer asbestos fibers per cubic centimeter (0.01 f/cc) of air.
25. **COMPETENT PERSON:** An individual capable of identifying existing asbestos hazards in the workplace, selecting the appropriate control strategy for asbestos exposure and who has the authority to take prompt corrective measures to eliminate them.
26. **DEMOLITION:** Wrecking or taking out any load-supporting structural member and any related razing, removing, or stripping of asbestos products.
27. **ENCAPSULATION:** The treatment of ACM with a material that surrounds or embeds asbestos fibers in an adhesive matrix to prevent the release of fibers, as an encapsulate creates a membrane over the surface (bridging encapsulate) or penetrates the material and binds its components together (penetrating encapsulate).
28. **ENCLOSURE:** An airtight, impermeable, permanent barrier around ACM to prevent the release of asbestos fibers into the air.
29. **EQUIPMENT ROOM (CHANGE ROOM):** A contaminated room located within the decontaminated area that is supplied with the impermeable bags or containers for the disposal of contaminated protective clothing and equipment.
30. **FRIABLE ACM:** any material containing more than one percent asbestos as determined by polarized light microscopy that when dry, can be crumbled, pulverized, or reduced to powder by hand pressure.
31. **GLOVEBAG TECHNIQUE** (to be used following all OSHA and EPA rules and regulations): A method with limited applications for removing small amounts of friable asbestos- containing materials from HVAC ducts, short piping runs, valves, joints, elbows, and other nonplanar surfaces in a non-contained work area. The glovebag assembly is a manufactured or fabricated device consisting of glovebag (typically constructed of 6-mil transparent plastic), two inward projecting long sleeve rubber gloves, one inward projecting waterwand sleeve, and internal tool pouch and an attached-labeled receptacle for asbestos waste. The glovebag is constructed and installed in such a manner that it surrounds the object or area to be decontaminated and contains all asbestos fibers released during the removal process. All workers who are permitted to use the glovebag technique must be highly trained, experienced, and skilled in this method. Glovebags must be under negative air pressure during use.
32. **GOOD CONDITION:** condition of Category I non-friable asbestos-containing material wherein the binding of the material has not lost its integrity as indicated by the lack of peeling, cracking, or crumbling of the material.
33. **HEPA FILTER EQUIPMENT:** High efficiency particulate air filtered vacuuming equipment with a filter system capable of collecting and retaining asbestos fibers. Filters shall be

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99.97 % efficient for retaining particles and fibers with a minimum dimension of 0.3 micrometer.

34. **LOGBOOK:** A notebook or other book containing essential data and daily project information and daily project diary. This book is kept on the project site at all times.
35. **MINI-ENCLOSURE:** A method with limited applications for removing small amounts of friable asbestos-containing materials typical for small scale, short duration type projects.
36. **NEGATIVE AIR PRESSURE EQUIPMENT:** A portable local exhaust system equipped with HEPA filtration and capable of maintaining constant, low velocity airflow into the contaminated area from adjacent uncontaminated areas.
37. **NIOSH:** National Institute for Occupational Safety and Health.
38. **OSHA:** United States Occupational Safety and Health Administration and the Virginia Occupational Safety and Health Division of the Department of Labor and Industry.
39. **OWNER:** Virginia Department of Transportation.
40. **PACM:** Presumed ACM
41. **PAT PROGRAM:** Proficiency Analytical Testing Program
42. **PERMISSIBLE EXPOSURE LIMIT (PEL):** The contractor shall ensure that no employee is exposed to an airborne concentration of asbestos (1) in excess of 0.1 fiber per cubic centimeter of air as an eight (8) hour time-weighted average (TWA) or (2) in excess of 1.0 fiber per cubic centimeter over a 30 minute period (excursion limit), as determined by the method described in 29 CFR 1926.1101, Appendix A.
43. **PERSONAL MONITORING:** Sampling of asbestos fiber concentration within the breathing zone of an employee (i.e. attached to or near the collar or lapel near the worker's face).
44. **PHASE CONTRAST MICROSCOPY (PCM):** A laboratory analysis method for measuring airborne asbestos fibers (National Institute of Occupational Safety and Health Method 7400).
45. **PROJECT MONITOR:** Individual employed by the Department and licensed by the Virginia Department of Professional and Occupational Regulation to observe and monitor the activities of asbestos abatement contractors on asbestos projects to determine that proper work practices are used and that compliance with all federal, state, and local laws and regulations is maintained.
46. **RACM:** Regulated Asbestos Containing Materials includes:
 - A. Friable asbestos material
 - B. Category I non friable ACM that has become friable.
 - C. Category I non friable ACM that will be or has been subjected to sanding, grinding, cutting or abrading, and

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- D. Category II non friable ACM that has a high probability of becoming crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations.
47. **REMOVAL:** All herein-specified procedures necessary to remove asbestos containing materials from the designed areas and to dispose of these materials properly and legally at an acceptable site.
48. **RESPONSE ACTION:** A method, including removal, encapsulation, enclosure, repair, operations and maintenance, to abate asbestos hazards to human health and the environment.
49. **SHOWER ROOM:** A room between the clean room, and the equipment room in the worker decontamination unit with hot and cold or warm running water and suitably arranged for complete showering during decontamination. The shower room comprises an air lock between the contaminated and clean area. Shower water filtration system shall be used to remove asbestos fibers from wastewater.
50. **SURFACING ACM:** Any ACM that is sprayed, troweled on or otherwise applied to surfaces.
51. **SURFACTANT:** A chemical wetting agent added to water to improve penetration.
52. **TIME WEIGHTED AVERAGE (TWA):** Representative samples are required to establish the eight (8) hours time weighted average. The TWA is an eight- (8) hour time weighted average airborne concentration of fibers, as determined according to 29 CFR 1926.1101, Appendix A. Workshifts, which differ from eight- (8) hour duration, may require adjustments of the standard, which applies.
53. **TSI – Thermal System Insulation ACM**
54. **USEPA:** United States Environmental Protection Agency.
55. **VDOT:** Virginia Department of Transportation.
56. **VOSHA:** Virginia Occupational Safety and Health Act
57. **WASHROOM:** A room between the work area and the holding area in the equipment decontamination area. The washroom comprises an air lock.
58. **WASTE SHIPMENT RECORD:** The shipping document that is required to be originated and signed by the asbestos waste generator and that is used to track and substantiate the disposition of asbestos-containing waste material.
59. **WET CLEANING:** The process of eliminating asbestos-contamination from building surfaces and objects by using cloths, mops, or other cleaning tools which have been dampened with water, and after use, disposing of these tools as asbestos-contaminated waste.
60. **WORK AREA:** Designated rooms, spaces, or areas of the project in which asbestos abatement actions are to be undertaken or which may become contaminated as a result of abatement actions. A contained work area is a work area that has been sealed, covered in plastic and equipped with a decontamination enclosure system. A non-contained work area is an isolated or controlled-access work area that contains ACM,

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that has not been covered in plastic nor equipped with a decontamination enclosure system.

III. CONTRACT LIMITATIONS

1. Asbestos abatement contractors are not eligible to bid on projects in which individuals or firms employed by or financially affiliated with the Contractor performed the asbestos inspection or sample analyses during the time period in which these activities were completed.
2. Asbestos Project Monitors are not eligible to contract for asbestos inspection, project monitoring or clearance air monitoring work if they are financially affiliated with or employed by the project asbestos removal contractor. The Project Monitor shall only be accountable to Department officials.
3. All laboratories utilized to perform asbestos sampling analyses on projects shall not have a business relationship or any financial affiliation with the contractor(s) conducting the asbestos removal activities. Individuals performing clearance air sampling shall not be employed by, or have a financial affiliation with, the asbestos removal contractor conducting the asbestos abatement project.

IV. REGULATIONS

1. The Contractor shall comply with all applicable EPA, OSHA, VOSHA, and Virginia Department of Professional and Occupation Regulation (DPOR) regulations, and shall follow EPA, VOSHA, and OSHA workplace guidelines unless they are shown as not applicable. EPA workplace guidelines include (1) those pertinent sections of Part I and II, EPA guideline document 560/5-85-024, "Guidance for Controlling Asbestos Containing Materials in Buildings"; (2) EPA regulations 40 CFR Part 61 Subparts A and M; and (3) "*Demolition Practices Under the Asbestos NESHAP*" (TRC Environmental Corporation Work Assignment No. IA2-19). OSHA workplace guidelines include any currently applicable OSHA compliance directives or instructions. In any instance of conflict between the VOSHA and OSHA requirements, the VOSHA requirements shall take precedence. Any "de minimus" exemptions or reduced requirements for activities involving less than 25 linear feet or 10 square feet of ACM that are provided in the aforementioned references shall not apply to VDOT asbestos removal activities.
2. The Contractor is required to maintain at the job site copies of EPA, VOSHA, OSHA, and applicable state and local government regulations regarding the handling of ACM.
3. The Contractor shall remove, transport, and dispose of the ACM from the job site in accordance with Virginia Department of Environmental Quality (VDEQ) regulations and this special provision. The Contractor shall be responsible for generating and maintaining a waste shipment record in accordance with applicable local, state, federal, and disposal facility requirements and shall provide a copy to the Engineer for the Department's records.
4. The Contractor, its supervisors, and its employees shall be licensed for asbestos abatement activities in accordance with Virginia Department of Professional and Occupational Regulation (DPOR) requirements. A copy of valid license shall be included with the submittals.

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V. NOTIFICATIONS

1. Contractor shall make all required notifications at least twenty (20) days prior to beginning removal of asbestos-containing materials. Contractors also performing demolition activities shall also provide the requisite ten (10) day demolition notifications. Notifications should be addressed to:

Virginia Department of Labor and Industry
Asbestos Program
Powers-Taylor Building
13 South Thirteenth Street
Richmond, VA 23219

Land and Chemical Division
EPA Region III
LC62
1650 Arch Street
Philadelphia, PA. 19103
2. The twenty (20) day notification is only required for the removal of RACM or Category II nonfriable ACM that is expected to become, or becomes, friable during removal. If any Category I or Category II non-friable ACM becomes friable during removal, the Contractor shall stop work and make all notifications. The on-site project monitor will determine friability.
3. The Contractor shall give both a twenty (20) day and a three (3) full business day notification to the Asbestos Project Monitor, the VDOT Area Construction Engineer, the VDOT District Engineer, and VDOT Project Manager prior to work being performed.
4. If the Contractor is performing structure demolition, the required ten (10) calendar day demolition notification to the aforementioned addressees pursuant to § 61.145(b), irrespective of minimum quantity or other exclusions, shall be provided.

VI. COMPETENT PERSON

1. The Contractor shall have a "competent person" (as defined herein) present at all times while work on this contract is in progress. The competent person shall be thoroughly familiar and experienced with asbestos removal, related work, and shall monitor and enforce the use of all safety procedures and equipment and shall be knowledgeable of all EPA, OSHA, NIOSH, Virginia DPOR and Virginia Department of Labor and Industry VOSHA requirements and guidelines.
2. The competent person shall have a valid asbestos supervisor's license issued by the Virginia Department of Professional and Occupational Regulation in accordance with the provisions of Chapter 7.01 (54-145.4 et seq.) of Title 54.

VII. SUBMITTALS

Prior to commencing work, two copies each of the following items, with the exception of the landfill manifest receipts, logs and air monitoring results, shall be submitted to and approved by the Department:

1. **Asbestos Plan:**

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Submit a detailed plan of the work procedures to be used in the removal of the materials containing asbestos. Such plan shall include the location of the asbestos work areas, layout of change rooms, interface with other trades involved in this project, sequencing of asbestos-related work, disposal plan, type of wetting agent, asbestos sealer, air monitoring and detailed description of the methods to be employed in order to control air pollution. Prior to the start of any asbestos removal work, the Project Monitor must approve this plan. Prior to performing any deviations from the approved plan, the Contractor shall submit a written request to the Department for approval.

2. **Notification:**

Provide a copy of the required notification submitted to the Asbestos Control Clerk, Virginia Department of Labor and Industry.

3. **Testing Laboratory:**

Provide the name, address, and telephone number of the independent testing laboratory selected for the monitoring of airborne concentrations of asbestos fibers along with a copy of the Commonwealth of Virginia Asbestos Analytical Laboratory License. Also, include evidence that the laboratory is accredited to analyze airborne asbestos fiber counts.

4. **Monitoring Results:**

All monitoring results are to be received within 24 hours and retained at the work site where the Owner's representative may review them. Submit copies of these results at the completion of the project.

5. **Landfill**

Submit written evidence (copy of permit) that the landfill selected for disposal is approved for disposal of friable ACM (where friable materials are to be removed and disposed) and/or for disposal (where Non-friable ACM is to be disposed) by the USEPA and appropriate state or local regulatory agencies. Within thirty-five (35) days of the deposit of a load of ACM waste from this project at the designated landfill, the Contractor shall submit a copy of the certificates of disposal from the landfill to the Department. The Department shall have received all acceptable waste manifests and certificates of disposal prior to making any payments to the contractor.

6. **Certificate of Compliance**

A copy of the manufacturer's certificate of compliance with ANSI 9.2 for each brand and model of vacuum, ventilation and other equipment used by the Contractor to contain or remove asbestos fibers.

7. **Qualification of the Contractor's Personnel and Personnel Training**

Prior approval by the Department is required of all proposed asbestos removal personnel. Approval shall be based on review and acceptance of the Contractor's written submittals that all contractor personnel working on this asbestos project:

- A. Have a valid asbestos worker's or supervisor's license issued by the Virginia Department of Professional and Occupational Regulation in accordance with the provisions of Chapter 7.01 (54-145.4. et seq.) of Title 54;

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- B. Have been provided with a respirator fit test in accordance with 29 CFR 1926.1101 at the time of initial fitting, when facial conditions change, and at least annually thereafter for each employee wearing a negative pressure respirator; and
- C. Have been trained in the proper procedures to follow in case of an emergency.

8. **Medical Requirements**

Provide certification that the Contractor has an established medical surveillance program in compliance with OSHA regulations 29 CFR 1926.1101. This submittal shall include copies of the physician's statement that each employee (working on this project) is able to perform the required duties while wearing a respirator.

9. **Respirator Program**

Submit a copy of a written respirator program that complies with OSHA regulation 29 CFR 1910.134.

10. **Logs**

Copies of daily progress log and visitor's log.

11. **Material Safety Data Sheets (MSDS)**

Copies of Material Safety Data Sheets shall be provided for any chemical solvents that will be used.

VIII. PERSONNEL PROTECTION

1. **Respirators**

- A. Workers shall wear properly fitted respirators in the work area. Respirator selection shall be based on personal air monitoring as required by 29 CFR 1926.1101. All employees within the work zone shall have respiratory protection consistent with proper respiratory protection factors. Long sideburns, beards, etc., which interfere with proper respirator fit, will not be allowed. However, the Engineer may, at his discretion, allow the Contractor to provide a loose fitting, hood-type powered air purifying respirator (PAPR) for such employees.
- B. All work requiring the use of Class "C" supplied air respirators shall utilize C.G.A. Grade D breathing air or better from a certified air source and copies of the certifications shall be supplied to the Department or the Department's representative.
- C. Supplied air respirator systems must include a back-up provision approved for maintaining air flow long enough for escape and decontamination from a contaminated atmosphere in the event of loss of the primary source of breathing air.

2. **Exposure Control/Protective Clothing**

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

- A. Eating, gum/tobacco chewing, smoking, or drinking shall not be permitted in the asbestos control area.
- B. Workers shall wear protective clothing in accordance with 29 CFR 1926.1101. Use of protective clothing in the asbestos control area shall be mandatory and irrespective of airborne asbestos concentrations or removal quantities.
- C. Contractor shall make available to the Department's representative complete sets of personal protective equipment as required herein for entry to the asbestos control area at any time for inspection of the asbestos control area.
- D. Street clothing shall not be worn inside of the asbestos control area.
- E. All persons who enter the control area shall shower after leaving the control area.
- F. Personnel of other trades not engaged in the demolition and removal of asbestos materials shall not be exposed at any time to airborne concentrations of asbestos.

3. **Equipment**

All air handling equipment shall arrive at the job site in a clean (uncontaminated) condition and will be compliant with ANSI 29.2 specifications.

4. **Caution Signs and Labels**

Provide cautions signs at all approaches to the asbestos control areas containing concentrations of airborne asbestos fibers. Locate signs at such a distance that personnel may read the sign and take the necessary protective steps required before entering the area. Provide and affix caution labels to all asbestos materials, scraps, waste, debris and other products contaminated with asbestos.

- A. Caution signs shall be in a vertical format conforming to 29 CFR 1926.1101 with a minimum 20-inch by 14-inch size.
- B. Caution labels shall be provided of sufficient size to be clearly legible and conforming to requirements of 29 CFR 1926.1101 and 1910.1200(f).

5. **Decontamination Area**

- A. The Contractor shall set up a decontamination area in accordance with 29 CFR 1926.1101.
- B. The shower and any other decontamination water shall be drained and filtered to retain particles 5.0 microns or larger, to ensure that contaminated water is not released to uncontaminated areas; showers shall be drained after each use. If wastewater is inadvertently released, it shall be cleaned up as soon as possible to prevent any asbestos in the water from drying and becoming airborne in areas outside the work area. The Contractor shall be responsible for providing any necessary water source.

IX. PROCEDURES

1. **General**

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

- A. Wet removal procedures shall be utilized.
- B. Provide temporary power sources and equipment per applicable electrical code requirements and provide 24-volt safety lighting and ground-fault interrupter circuits as power sources for electrical equipment.
- C. Turn off all electricity to the work area other than that required in 1.B.

2. **Preparation of Work Areas**

- A. Work areas shall be prepared in accordance with EPA NESHAP Part 61 Subpart M regulations (as amended), applicable EPA guidance, OSHA 1926.1101 standards, any currently applicable OSHA compliance instructions, and any other applicable guidance.
- B. Contractor shall not begin removal procedures until the Project Monitor approves the preparation of work areas as meeting all applicable requirements.

X. **ASBESTOS REMOVAL PROCEDURES**

1. **General Procedures**

- A. Contractor shall comply with the applicable Class I and Class II work practices for the removal of ACM pursuant to 29 CFR 1926.1101.
- B. VDOT will provide (at its expense) a licensed asbestos project monitor to collect preabatement air samples and to inspect and approve the work area preparations before authorizing the Contractor to begin removal. The asbestos project monitor will also inspect and approve completeness of the removal and subsequent cleanup actions in the asbestos control area before the Contractor may remove any barricades. No removal of asbestos is to be conducted without the Project Monitor on-site. The Project Monitor does not have the authority to waive compliance with the requirements of this special provision.
- C. The Contractor shall provide personnel to perform air monitoring as required by OSHA (29 CFR 1926.1101) and/ or VOSHA regulations.

2. **Specific Work Procedures for Asbestos-contaminated Soil Removal**

Removal of contaminated soils may be required if ACM falls onto unprotected soil. Contamination shall be determined when fragments of ACM are visible as debris or when bulk sample analysis shows an asbestos fiber level in soil greater than 1%. Specific procedures shall be as follows:

- A. Construct a decontamination enclosure and seal all openings into the work area with at least one (1) layer of 6-mil minimum polyethylene sheeting.
- B. Install negative air system using approved equipment unless the use of negative air system is not practicable. The Department or its representative shall determine practicability.
- C. Lightly wet with a surfactant or diluted encapsulate any contaminated soil to be removed.

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- D. Remove contaminated debris and/or soil to a depth of 4" from the original surface or to hardpan and until all visible debris has been removed.
- E. Remove all remaining ACM in the area in conjunction with the contaminated soil removal in a manner as not to re-contaminate the cleaned areas.

3. **Pre- and Post-Removal Inspection/Clearance**

- A. The Project Monitor shall collect pre-abatement air samples and must inspect and approve the work area preparations before authorizing the Contractor to begin removal.
- B. Clearance for removal of transite exterior siding materials, roofing materials (if applicable), soil, and ACM removed through the use of glove bags shall be evaluated by the Department and shall be completed when all visible ACM has been removed and the area properly encapsulated (if applicable).
- C. Clearance for ACM removed in mini-enclosures, and all other removal operations not specifically listed in 4B. shall be achieved when the requirements of Part VII – CLEARANCE AIR MONITORING have been met.
- D. The Project Monitor shall inspect and approve removal and cleaning in the asbestos control area before the Contractor may remove barricades.
- E. The Contractor shall be held responsible for the cost of re-inspections if the work is determined to not be substantially complete.

4. **Air Monitoring**

- A. The Contractor shall perform daily personal air monitoring for asbestos exposure and shall cooperate with the Project Monitor in all testing and sampling activities.
- B. The Project Monitor shall inform the Contractor of any area samples outside the containment with results in excess of 0.01 fibers/cc. Contractor shall immediately discontinue operations until the violation is corrected.
- C. All laboratory analytical air monitoring results shall be posted at the work site entrance no later than 24 hours after sampling; and copies of the analytical results and signed "Certificates of Analysis" shall be transmitted to the Engineer. The form shall state:
 - (1) Date and time sampling began
 - (2) Flow rate of samples
 - (3) Sampling time elapsed
 - (4) Concentration of fibers
 - (5) Location of area where sample was taken (building, floor, room, area within room).
 - (6) Activity occurring during sampling (removal, clean up, clean-air, etc.).

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- (7) Name and phone number of person taking sample.
- (8) Name, phone number, and signature of person analyzing sample.
- (9) Name and phone number of contractor.

- D. Exposure records: The Contractor shall maintain records of any personnel or environmental monitoring required by this specification. Records shall be maintained for a period of at least 30 years and shall be made available upon request to the Secretary of Labor for Occupational Safety and Health, the Director of the National Institute for Occupational Safety and Health, and to authorized representatives of either.
- E. Copies of all exposure records and area monitoring records shall be submitted to the Owner at the conclusion of the project.

5. **Cleanup**

- A. All external work areas shall be cleared of all construction debris and left in a neat and orderly condition.
- B. For internal work areas, the Contractor shall remove visible accumulations of asbestos material and debris and wet clean all surfaces within the work area and clean any other contaminated areas with water and/or HEPA-filtered vacuum equipment.
- C. Contractor shall clean any sealed drums or equipment used in the work area and subsequently remove these from the work areas, via the equipment decontamination enclosure system.
- D. The Project Monitor shall make an initial visual inspection of the work area to ensure that the work area is free of visible asbestos debris and; once approved, the Contractor shall subsequently apply one coat of asbestos encapsulating sealer.
- E. Contractor shall keep the windows and doors sealed and the decontamination system operational until final clearance is certified. Air filtration/negative pressure systems and decontamination enclosure systems shall remain in operation until the time of the initial inspection and in an operational condition until final clearance is certified.
- F. The Project Monitor shall collect clearance air samples in accordance with the requirements in Part VII of this special provision.

6. **Site Inspection**

VDOT (or its representative) reserves the right to inspect all asbestos removal operations at any time. If any aspect of the work is found inconsistent with this special provision, a stop work order will be issued and operations will be immediately suspended. Until the inconsistency is corrected, any standby time and costs for corrective actions shall be at the Contractor's expense.

7. **Building Contamination**

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If the results of the air or surface dust samples indicate that building contamination has occurred as the result of Contractor negligence and/or poor work practices, the Contractor shall clean the premises at no additional cost to the Department. In addition, the Contractor shall be liable for any damage claims or other legal actions brought against VDOT or it's employees or brought by VDOT and/or any persons exposed to such contamination.

8. Disposal of Asbestos Waste

Procedures for hauling and disposal of waste shall comply with 40 CFR 61 (SUBPART M), state, regional, and local standards. All asbestos waste, scrap, debris containers, asbestos contaminated clothing and equipment that may produce airborne concentrations of asbestos fibers shall be collected and placed in sealed and properly labeled, 6 mil impermeable bags. Sealed impermeable bags of asbestos waste shall be temporarily stored in asbestos waste containers (drums, skips, etc.). This waste material shall be transported in sealed, properly labeled, DOT approved containers and disposed of only at an USEPA or State approved sanitary landfill permitted to receive friable ACM. The procedures for hauling and disposal shall comply with 40 CFR61 (SUBPART M), state, regional and local standards. Sealed plastic bags may be hand placed from containers into the burial site unless the bags have been broken or damaged.

Damaged bags shall remain in the container and the entire contaminated container shall be buried. Uncontaminated containers may be recycled.

9. Asbestos Cement (A/C) Pipe

A/C pipe shall not be ground, broken, crushed, sawed, abraded or handled in a manner which would cause asbestos material to become friable or airborne. Saw-cutting will only be allowed provided that specifically designed saws equipped with high efficiency particulate air filtered vacuums are used. Cuts shall be continuously sprayed with amended water during cutting and the water shall be collected and properly filtered or disposed of.

With the approval of the Engineer, abandoned portions of A/C pipe may be left in place of origin and back-filled, provided that the pipe is not crushed; however, pipe that is to be abandoned may not be removed and re-deposited. With approval of the Engineer, the Contractor may pump grout into the buried lines that are no longer in service to maintain the structural bearing capacity of the area. No on-site burial of crushed A/C pipe shall be allowed.

XI. Clearance Air Monitoring

Clearance air monitoring shall be conducted utilizing the specified sampling techniques whenever an asbestos containment area is utilized to control release of airborne asbestos fibers.

1. Limitations

Clearance air sampling techniques shall: (1) be used only in an asbestos containment area with effective negative air filtration; (2) be performed only by individuals meeting the licensing requirements described in Section D 1; and (3) not be initiated until a visual inspection is conducted and visible ACM and asbestos debris have been removed.

2. Equipment Requirements

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

- A. High volume air pumps with necessary peripheral equipment (hoses, connectors, etc) calibrated to draw from four to 10 liters of air per minute through the filter shall be used for air sampling.
- B. Filters shall be 25 millimeter mixed cellulose ester (MCE) filters with a 0.8-1.2 micrometer pore size if the filter is to be analyzed by PCM. Sampling cassettes shall have 50-millimeter extension cowls and shall not have been previously used.

3. **Sampling Procedures**

A. **Set up**

- (1)
 - (a) Ensure that the area inside the enclosure is visibly clean of all ACM, dust and debris;
 - (b) that spray encapsulate utilized for lockdown purposes has dried; and
 - (c) that the negative air system is and remains fully operational at a rate of four air changes per hour.
- (2) Place the air pumps and sampling cassettes such that each covers approximately the same square footage of floor area, and the exposed filter faces of the sampling cassettes are oriented approximately 45 degrees from the horizontal using tape and clips as necessary to position the sampling cassettes.
- (3) Start the pumps and sample for the required time; turning off the air pumps when sampling is completed.

B. **Number of samples**

The minimum required number of sample cassettes for each enclosure site is listed in the table below (each set of samples consists of inside air samples, field blanks, and a sealed blank):

Square Feet of Enclosure	Sample Cassettes (PCM Analysis)	Field Blanks*
Less Than 100	2	1
100-500	3	1
500-1000	4	1
1000-10,000	5	1
Greater than 10,000	5 + 1 sample per each 5,000 additional square feet	1

*The cap of each field blank cassette is to be removed for not more than 30 seconds and replaced (before air sampling is initiated) near the entrance to each abatement area.

C. **Sampling times**

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The run time for each air pump is calculated by dividing the flow rate (1ppm) of the pump into the minimum number of liters of air required to be collected (1200 liters for PCM analysis) to obtain the required number of minutes.

D. Recording

A floor plan indicating the locations of the collected sample cassettes, along with a data sheet indicating the project name, project monitor, location of project, date samples were collected, calibrated flows for each air pump, start and stop times for each air pump, the preferred method of analyses specified, and calculated number of liters drawn for each cassette sample, shall be transmitted to the laboratory with the cassette samples to be analyzed. The inclusion of these documents is required when generating reports on final clearance air sampling for the project.

E. Shipping

Air sample cassettes shall be shipped in separate containers from bulk samples to prevent sample cassette contamination. Avoid using expanded polystyrene and particle-based packaging materials.

4. Laboratory Analysis

- A. PCM analysis shall be conducted using the National Institute for Occupational Safety and Health (NIOSH) Method 7400 entitled "Fibers" published in the NIOSH Manual of Analytical Methods, (most current edition).
- B. The following minimum information shall be provided by the analytical laboratory to VDOT:
- (1) concentration in fibers per cubic centimeter (PCM);
 - (2) analytical sensitivity used for the analysis;
 - (3) area analyzed;
 - (4) volume of air samples;
 - (5) average grid size opening;
 - (6) number of grids analyzed;
 - (7) copy of the count sheet;
 - (8) type of asbestos;
 - (9) signature(s) of laboratory analyst;
 - (10) official laboratory identification; and
 - (11) floor plan indication location where samples were obtained.

5. Final Clearance

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

- A. Final clearance shall be achieved when the concentration of fibers for each of the samples is shown to be less than or equal to 0.01 fiber per cubic centimeter of air.
- B. If the results of the clearance samples are above the level specified in 5(A.), the abatement site must be re-cleaned, and new sets of sample cassettes collected and analyzed until the abatement area passes. This process must continue until the abatement area complies with the above standard.

XII. Measurement And Payment

For the purposes described herein, asbestos shall be identified by type as either friable, Category II nonfriable (Cat II NF) or Category I non-friable (Cat I NF) not in "good" condition.

Asbestos Removal will be measured and paid for at the contract unit per square foot or linear foot for the type specified. The price bid shall be full compensation for removal and disposal, sampling, testing, analysis, and encapsulation, if required, and for all required documentation and monitoring operations.

Payment for removal and disposal will be made under:

Pay Item	Pay Unit
Friable ACM	Square foot or linear foot
Cat II NF ACM	Square foot or linear foot
Cat I NF ACM (not in "good" condition)	Square foot or linear foot

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GUIDELINES — USE ON PROJECTS WHERE DEMOLITION OF STRUCTURES CONTAINING NON-FRIABLE ASBESTOS-CONTAINING MATERIALS (ACM) IS REQUIRED: ALSO, USE WITH THE SPECIAL PROVISION FOR ASBESTOS REMOVAL FOR ROAD CONSTRUCTION PROJECTS. IF AN ASBESTOS REPORT IS AVAILABLE, A COPIED NOTE SHOULD BE CREATED DETAILING THE LOCATIONS, NESHAP CATEGORY, CONDITION, AND APPROXIMATE QUANTITIES OF ASBESTOS.

S516C00-0416

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
**DEMOLITION OF STRUCTURES CONTAINING
NON-FRIABLE ASBESTOS CONTAINING MATERIALS**

November 19, 2015

I. DESCRIPTION

This work shall include the demolition of structures containing non-friable asbestos-containing materials (ACM) and in which all Regulated Asbestos-Containing Materials (RACM) have been removed. This special provision complements the Special Provision for Asbestos Removal for Road Construction Projects and Section 516 of VDOT Road and Bridge Specifications.

ACM that may be present in the structures to be demolished may include Category I Non-friable ACM in “good condition” (e.g. resilient flooring, asphalt roofing products, mastics), and certain Category II Non-friable materials (e.g. floor tile mastics) that do not have a high probability of becoming or will not become crumbled, pulverized or reduced to powder by the forces expected to act on the material in the course of demolition.

II. LIMITATIONS

1. The Demolition Contractor shall not be financially affiliated with the Project Monitor on the project. The project monitoring services shall be directly contracted for by VDOT and the monitoring personnel shall be accountable only to the Department.
2. The Contractor’s liability insurance or bonding shall not contain any pollution exclusion type of provisions.
3. No demolition of structures shall be performed by intentional burning when any amount of ACM is present in the structure.

III. DEFINITIONS

1. **ADEQUATELY WET:** means to sufficiently mix or penetrate with liquid to prevent the release of particulates. If visible emissions are observed coming from any asbestos containing material, then the material has not been adequately wet.
2. **AIR MONITORING:** The process of measuring the fiber content of a specific volume of air in a stated period of time.
3. **ASBESTOS:** The term asbestos includes Chrysotile, Amosite, Crocidolite, Tremolite, Anthrophyllite and Actinolite, and any of these minerals that have been chemically treated and/or altered.

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4. **ASBESTOS-CONTAINING MATERIAL (ACM):** Material or product containing more than 1% asbestos.
5. **CATEGORY I NON-FRIABLE ACM:** Asbestos-containing packings, gaskets, resilient floor covering and asphalt roofing products containing more than one percent asbestos as determined using the method specified in Appendix A, subpart F, 40 CFR Part 763, Section 1, Polarized Light Microscopy.
6. **CATEGORY II NON-FRIABLE ACM:** Any material, excluding Category I non-friable ACM, containing more than one per cent asbestos as determined using the specified in Appendix A, subpart F, 40 CFR Part 763, Section 1, Polarized Light Microscopy - containing material, that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.
7. **CUTTING:** To penetrate with a sharp-edged instrument and includes sawing, but does not include shearing, slicing, or punching.
8. **FRIABLE ACM:** Any material containing more than one percent asbestos as determined by polarized light microscopy that when dry, can be crumbled, pulverized, or reduced to powder by hand pressure.
9. **DEMOLITION:** The wrecking or taking out of any load-supporting structural member of a facility together with any related handling operations or the intentional controlled burning of a facility.
10. **GRINDING:** To reduce to powder or small fragments and includes mechanical chipping or drilling.
11. **IN POOR CONDITION:** The binding of the material is losing its integrity as demonstrated by peeling, cracking or crumbling of the material.
12. **PROJECT MONITOR:** Individual licensed by the Virginia Department of Professional and Occupational Regulation to observe and monitor the activities of the demolition contractor to determine that proper work practices are used and compliance with all federal, state and local laws and regulations are maintained.
13. **REGULATED ASBESTOS-CONTAINING MATERIAL (RACM):** Includes (1) friable asbestos material; (2) Category I nonfriable ACM that has become friable; (3) Category I nonfriable ACM that will be subjected to sanding, grinding, cutting or abrading, or (4) Category II nonfriable ACM that has a high probability of becoming or has become crumbled, pulverized or reduced to powder by forces expected to act on the material in the course of demolition or renovation operations.
14. **VISIBLE EMISSIONS:** Any emissions coming from asbestos-containing waste material that are visually detectable without the aid of instruments.
15. **WASTE SHIPMENT RECORD:** A shipping document required to be originated and signed by the waste generator and used to track and substantiate the disposition of asbestos containing waste material.

IV. NOTIFICATIONS

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

1. Contractors also performing any demolition activities shall provide the requisite 10-day demolition notifications pursuant to § 61.145(b), irrespective of any minimum quantity or other exclusions. Notifications should be addressed to:

Virginia Department of Labor and Industry
Asbestos Program
Powers-Taylor Building
13 South Thirteenth Street
Richmond, VA 23219

Land and Chemical Division
EPA Region III
LC62
1650 Arch Street
Philadelphia, PA 19103
2. The Contractor shall give a three (3) full business day notification to the Asbestos Project Monitor, the VDOT Area Construction Engineer, and the VDOT Project Manager prior to beginning work.

V. WORK PRACTICES

1. The Contractor shall keep all demolition materials and debris adequately wet so as to prevent the release of air borne particulates throughout the demolition and loading operations.
2. The Contractor shall perform demolition of structures in accordance with the requirements of Section 516 of the VDOT Road and Bridge Specifications and this special provision.
3. The Contractor shall perform demolition of structures containing non-friable asbestos-containing materials in accordance with all applicable EPA, OSHA and VOSHA regulations, and shall follow EPA and OSHA workplace guidelines unless they are shown to not be applicable. EPA workplace guidelines include (1) EPA regulations 40 CFR Part 61 Subparts A and M and (2) "Demolition Practices Under the Asbestos NESHAP" (TRC Environmental Corporation Work Assignment No. IA2-19). OSHA workplace guidelines include any currently applicable OSHA compliance directives or instructions. In any instance of conflict between the VOSHA and OSHA requirements, the VOSHA requirements shall take precedence. Any "de minimus" exemptions or reduced requirements for demolition activities involving certain minimum quantities of non-friable ACM that may be provided in the aforementioned references shall not apply to VDOT demolition activities.
4. No sanding, grinding, cutting or abrading of any non-friable ACM shall be allowed prior to or during demolition.
5. Where possible, the Contractor shall separate concrete and other masonry materials from other demolition materials and legally dispose of the debris separately.
6. Segregating materials by intentionally running over debris with tractor treads will not be permitted (e.g. separation of flooring from concrete).

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7. Waste consolidation efforts involving the use of pneumatic-hammers or other mechanical devices such as grinders to break up materials covered or coated with Category I non-friable ACM is prohibited.
8. Consolidating debris containing Category I non-friable ACM in the basement of a building and subsequently grinding or crushing is prohibited.
9. The use of cranes with clamshells or other heavy machinery with rakes or buckets to partially reduce debris-containing Category I non-friable ACM is permissible provided the material remains recognizable in its original form.
10. Concrete to which asbestos-containing resilient flooring is attached shall not be broken down using concrete-pulverizing machinery.
11. VDOT shall provide, at its discretion and cost, project monitoring that may include collection of air samples to ensure that demolition practices are performed in accordance with this special provision. The Contractor shall cooperate with the Project Monitor in all testing and sampling activities. The Project Monitor shall inform the Contractor of (1) any area samples outside of the containment with results in excess of 0.01 fiber/cubic centimeter and (2) any instance where the Contractor is using demolition methods prohibited by this section (the project Monitor shall also notify the VDOT Engineer). Where fiber counts are determined to exceed this standard, the Contractor shall immediately discontinue operations until the cause of the excursion can be identified and corrected. Where prohibited demolition practices are observed, the Contractor shall immediately discontinue such operations and employ proper work practices. The Contractor shall, at no additional expense to the Department, be responsible for the costs of any standby time and/or corrective measures if fiber counts exceed the standard or improper demolition practices are employed.

VI. DISPOSAL

1. The Contractor shall provide notification to the landfill that the debris contains non-friable/non-regulated ACM and shall only dispose of debris containing non-friable ACM in a permitted landfill that provides daily soil cover.
2. The Contractor shall remove, transport, and dispose of ACM from the job site in accordance with Virginia Department of Environmental Quality (VDEQ) regulations and other applicable federal, state, and local regulations.
3. The debris shall be transported in covered DOT-approved containers.
4. The Contractor shall be responsible for generating and maintaining waste shipment records, irrespective of whether the ACM-containing debris is, or is not, RACM.
5. Within thirty-five (35) days of the deposit of a load of waste at the designated landfill, the Contractor shall submit a copy of the certificate of disposal from the landfill to the Engineer. VDOT must receive all acceptable waste manifests and certificates of disposal prior to making any payments to the Contractor.

VII. MEASUREMENT AND PAYMENT

Demolition with ACM will be paid for at the contract lump sum price per structure. This price shall include coordinating and performing all work associated with disconnecting utilities,

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employing appropriate demolition and loading practices, disposal of materials and cleaning up. The Contractor shall take into consideration any salvage value of any material removed and shall include the same in the lump sum bid price.

Payment will be made under:

Pay Item	Pay Unit
Demolition with ACM (Structure)	Lump Sum

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GUIDELINES — ALL PROJECTS REQUIRE PARTNERING. THIS SP IS USUALLY FOR ASPHALT SCHEDULE PROJECTS AND SOMETIMES SIMPLE PROJECTS WHERE IT IS CERTAIN THAT ONLY INFORMAL PARTNERING IS REQUIRED. THIS IS NOT TO BE USED WITH SS52200 Partnering, IT IS TO BE USED INSTEAD OF SS52200 Partnering. THIS SP MUST NOT BE USED WITH PAY ITEM "25561 Formal Partnering".

S522B00-1109

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
INFORMAL PARTNERING

January 14, 2008

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 Scheduling and Contract 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.

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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.

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

GUIDELINES — FOR PROJECTS REQUIRING UNDERDRAINS, CROSSDRAINS, AND EDGEDRAINS.

SS50102-1215

June 15, 2015

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.

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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

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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.

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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 edge drains 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

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

GUIDELINES — ALL PROJECTS.

SS51202-0909

June 11, 2009

VIRGINIA DEPARTMENT OF TRANSPORTATION
2007 ROAD AND BRIDGE SUPPLEMENTAL SPECIFICATIONS**SUPPLEMENTAL SECTION 512—MAINTAINING TRAFFIC****SECTION 512—MAINTAINING TRAFFIC** of the Specifications is amended as follows:**Section 512.03(a) Signs** is amended to replace the last paragraph with the following:

When construction signs are covered to prevent the display of the message, the entire sign shall be covered with silt fence or other materials approved by the Engineer such that no portion of the message side of the sign shall be visible. Plywood shall be used on ground-mounted construction signs only. Attachment methods used to attach the covering material to the signs shall be of a durable construction that will prevent the unintentional detachment of the material from the sign. At no times shall a construction sign and/or post be rotated to prevent the display of the message. In addition, the posts where the signs are being covered shall have two ED-3 Type II delineators mounting vertically on the post below the signs at a height of 4 feet to the top of the topmost delineator. The bottom delineator shall be mounted 6 inches below the top delineator.

Section 512.03(b) Flagger Service and Pilot Vehicles is amended to replace the last paragraph with the following:

Portable traffic control signals conforming to the requirements of Section 512.03(h)2 of the Specifications may be used in lieu of flagger service when specified or approved by the Regional Traffic Engineer. When portable traffic control signals are used in lieu of flagger service, the portable traffic control signals will be measured and paid for separately.

Section 512.03(e)b. Group 2 devices is amended to replace the first paragraph with the following:

- b. **Group 2 devices** shall be drums or vertical panels. Drums shall be round, or partially round with no more than one flat side; made from plastic; have a minimum height of 36 inches, have a cross-sectional width no less than 18 inches in any direction; and conform to the requirements of the *Virginia Work Area Protection Manual*. 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. Drums of two-piece design, i.e., drum and associated base, shall utilize sufficient amounts of enclosed sand at the base in accordance with the manufacturer's recommendations to provide stable drum support. The base shall be not greater than 5 inches in height. Two-piece drums may also utilize a flared drum foundation and collar of not more than 5 inches in height and of suitable shape and weight to provide stable support. One-piece drums may be used provided they comply with these above requirements.

Section 512.03 Procedures is amended to add (r) **Work Zone Traffic Control** as the following:

- (r) **Work Zone Traffic Control:** The Contractor shall provide individuals trained in Work Zone Traffic Control in accordance with the requirements of Section 105.14 of the Specifications.

Section 512.04 Measurement and Payment is amended to add the following:

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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.

Section 512.04 Measurement and Payment is amended to replace the pay item and corresponding pay unit for “**Eradication of existing pavement markings**” with the following:

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. 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.

Payment will be made under:

Pay Item	Pay Unit
Eradication of existing pavement marking	Linear foot
Eradication of existing nonlinear pavement marking	Square foot

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

GUIDELINES — USE ON PROJECTS REQUIRING A FIELD OFFICE.

SS51401-0609

March 6, 2009

VIRGINIA DEPARTMENT OF TRANSPORTATION
2007 ROAD AND BRIDGE SUPPLEMENTAL SPECIFICATIONS

SUPPLEMENTAL SECTION 514—FIELD OFFICE

SECTION 514—FIELD OFFICE of the Specifications is amended as follows:

Section 514.02—Procedures of the Specifications is amended to replace (j) with the following:

- (j) **Miscellaneous Items:** The field office shall also include the following:
1. A certification that the office is free of asbestos and other hazardous material.
 2. A broom, dust pan, mop, mop bucket, general cleaning supplies, and trash bags.
 3. An all weather parking area for either twelve vehicles (for a Type I office) or six vehicles (for either a Type II or a Type III office), and all weather graveled access to the public roadway. The Contractor shall maintain the parking area and graveled access such that it is passable with a compact sedan without causing vehicular damage. The parking lot shall be sufficiently lighted to illuminate all areas of the lot.
 4. Security measures for the Field Office during other than normal working hours shall be equivalent to that used by the Contractor for his job site and office facilities.

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GUIDELINES— PROJECTS REQUIRING PLANING OR MILLING OF FLEXIBLE OR RIDGID PAVEMENT. WHEN THIS PROVISION APPLIES TO ASPHALT SCHEDULES INCLUDE THE FOLLOWING IN THE PROPOSAL: S515B03 Cold Planing Asphalt Operations

SS51505-1211

September 27, 2011

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

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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

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

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

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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

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GUIDELINES — ALL PROJECTS REQUIRE PARTNERING. THIS SP IS FOR PROJECTS THAT REQUIRE OR MAY REQUIRE FORMAL PARTNERING. THIS IS NOT USED WITH S522B00 Informal Partnering, IT IS USED INSTEAD OF S522B00 Informal Partnering.

SS52200-0708

January 14, 2008

VIRGINIA DEPARTMENT OF TRANSPORTATION
2007 ROAD AND BRIDGE SUPPLEMENTAL SPECIFICATIONS

SUPPLEMENTAL SECTION 522—PARTNERING

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. PARTNERING STRUCTURE

It is the business intent of the Department that partnering will be required on all projects, either in the formal sense or informally where 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 both types of 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 Scheduling and Contract Division of VDOT.

Where formal partnering is specifically required as a pay item in the contract, partnering efforts shall be promoted by a professional facilitator trained in partnering principles. 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.

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Informal partnering need not require the services of a professional facilitator and may be conducted by the actual partnering participants themselves. Informal partnering will also 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 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.

A. Formal Partnering

Pre-Partnering Meeting

The Contractor's Project Manager or designee and the VDOT District Administrator or designee shall mutually schedule a Pre-Partnering meeting prior to the Partnering Workshop as soon as possible after the Department's award of the contract. During the Pre-Partnering meeting these individuals or their representatives shall develop an agenda for the workshop, select a facilitator, decide on those individuals and entities associated with or affected by the Construction contract that should be invited to participate and extend appropriate notice in sufficient time to arrange attendance and meaningful participation. The selection of the facilitator must be mutually acceptable to both the Department and the Contractor.

Partnering Workshop

Generally, the Partnering Workshop will be scheduled after the pre-construction conference. Formal partnering efforts require that the Contractor be responsible for employing a facilitator trained in the recognized principles of partnering to conduct the first preconstruction partnering workshop, known as the Formal Partnering Kick-Off Workshop. The facilitator will lead all parties through the Partnering Workshop agenda and the VDOT Field Guide to Partnering during the kick-off workshop. The extent of the formal partnering preconstruction workshop and agenda will be predicated on project complexity, size, number of potential stakeholders, potential outstanding issues, and local needs, etc. The Formal Partnering Kick-Off Workshop will establish the specific frequency and general schedule for further Partnering meetings.

B. Informal Partnering

Where informal partnering is applicable, 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 either formal or informal partnering efforts the Contractor shall provide a location for regularly scheduled partnering meetings during the construction period. Such meetings will be scheduled

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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

Formal Partnering (Kick-Off Workshop) will be measured per day and will be paid for at the contract unit price per day which price shall include providing the partnering facilities, professional facilitation, and other miscellaneous costs including copying fees and refreshments. Subsequent follow-up partnering workshops are not considered a pay item, unless the Contractor and the Engineer mutually agree in advance it is appropriate to hold additional formally facilitated workshop(s), in which case the method of measurement and basis of payment will be the same as for the Formal Partnering (Kick-Off Workshop). The maximum daily value for this pay item shall not exceed \$5,000 unless otherwise specified.

In 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., informal partnering shall 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.

Payment will be made under:

Pay Item	Pay Unit
Formal Partnering	Day

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———— CNSP SELECT USE 500 SERIES SPCNs and SPs ————

The following are Select Use Special Provisions. None have been through the Department's complete Specifications Committee review/comment/acceptance process and are not part of the Standard Specifications. They are to be considered as project-specific and may be subject to modifications required to meet specific project conditions or requirements for Federal funding. Anyone making modifications is responsible for obtaining the appropriate expertise in the discipline applicable to the modification. If modifications are made the date must also be changed to reflect the current date. Please send a copy of the modified special provision with the new date and specific project number to David.Gayle@VDOT.Virginia.gov so it may be added to the Specifications Stockpile.

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

cu505000a Guardrail Terminal ID**GUIDELINES — ALL PROJECTS WITH GUARDRAIL AND IMPACT ATTENUATORS:**

SECTION 505.03—PROCEDURES is amended to add the following to the last paragraph:

All end terminals shall be from manufacturers on the Materials Division's Approved Products List 12 and the FHWA NCHRP 350 or MASH approved list linked in List 12. New Type I Re-Directive Impact Attenuators and Guardrail Terminals (GR-7 & GR-9) shall be permanently identified by die stamping or engraving in a location readily visible for inspection that is not susceptible to damage. The identification shall include Manufacturer, Date and Site of Manufacture, and Model Number.

3-18-16a (SPCN)

cu512000a Notice to Remove Parked Vehicles

GUIDELINES — USE ONLY IN PROJECTS WITH ROUTES IN RESIDENTIAL AREAS HAVING PARKED VEHICLES THAT INTERFERE WITH OR MAY BE DAMAGED BY THE WORK BEING PERFORMED AND THE DEPARTMENT SUPPLIES THOSE SIGNS AND/OR NOTICES FOR THIS PURPOSE.)

NOTICE TO REMOVE PARKED VEHICLES - Unless otherwise specified elsewhere in the contract documents, the Department will furnish upon request, street signs for posting or printed notices for distribution, by the Contractor that notifies residents in residential areas to remove parked vehicles from the roadway prior to the Contractor performing work.

9-21-07a (SPCN)

cu512002a Traff Controls (Fairfax)

GUIDELINES — FAIRFAX RESIDENCY PROJECTS ONLY. (INCLUDES SURFACE TREATMENT, SLURRY/LATEX, AND PLANT MIX).

TRAFFIC CONTROLS FOR FAIRFAX RESIDENCY — The Contractor shall furnish and post temporary "No Parking" signs at least 72 hours prior to commencing work. If the construction date follows a holiday or weekend, the 72 hours shall be in addition to the weekend or holiday. Temporary signs shall contain dates and times of parking restrictions, which shall contain the exact wording as the example furnished by the Department.

The Contractor shall also hand deliver Department furnished notices of construction and the "No Parking" restrictions to all homes and businesses adjacent to the construction area. In the case of apartment buildings, the notice shall be delivered to the management.

The Contractor shall notify the Fairfax County Police Traffic Safety Division Commander at (703) 280-0550 after the signs have been posted and notices delivered. The Contractor shall provide a copy of the notice to the Traffic Division Commander.

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.

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

The Contractor shall contact the Fairfax County Police Traffic Safety Division at (703) 280-0550 to request enforcement and towing from the approved construction site. Holiday and weekend requests shall be directed through the Fairfax County Public Safety Communication Center, phone (703) 691-2131.

10-2-08a (SPCN)

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

cu512003a Uniformed Flaggers

GUIDELINES — USE WHEN SIGNALIZED INTERSECTION CONTROL EQUIPMENT WILL BE BECOME NON-OPERATIONAL AND TRAFFIC MUST CONTINUE TO FLOW.

UNIFORMED FLAGGERS - The Contractor shall utilize off-duty uniformed police officers for control of traffic through signalized intersections during periods when the control equipment is non-operational. It is expressly understood that the work under this pay item exceeds the requirements and duties typically associated with flagger service. Off duty police officers will not be required to have VDOT flagger certification to perform this work. Police assisted flagger service will be measured and paid for in hours of in duty service. This price will be full compensation for furnishing uniform officers and all associated costs.

Payment will be made under:

Pay Item	Pay Unit
Uniformed Flaggers	Hours
9-29-08a (SPCN)	

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

SU500000A Patch Road and Shlder with Asphalt**GUIDELINES — FOR PROJECTS WITH CEMENT CONCRETE ROADWAYS AND ASPHALT SHOULDERS THAT REQUIRE PATCHING AND ONLY ASPHALT MATERIAL IS USED FOR THE PATCHING.**

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
**PARTIAL DEPTH ASPHALT PATCHING OF EXISTING CONCRETE PAVEMENT AND FULL DEPTH
ASPHALT PATCHING OF EXISTING ASPHALT SHOULDERS**

June 7, 2010a

I. DESCRIPTION

This work shall consist of repairing specified sections of existing pavements by removing all or part of the defective materials in the sections and replacing them with asphalt concrete paving material. The locations of the repairs will be specified in the Contract document and specific locations as directed by the Engineer.

II. SCOPE OF WORK

Patching repair shall consist of the removal of areas of unsound pavement material as determined by the Engineer and replaced with asphalt concrete.

Partial Depth PCC Patching shall consist of the removal of areas of unsound PCC pavement material to a depth of no more than 50 percent of the maximum pavement thickness and replace with asphalt concrete as specified in the Contract document and as directed by the Engineer. The pavement thickness is defined as the thickness of the Portland Cement Concrete (PCC).

Shoulder Patching shall consist of the removal of specified areas of the full thickness of the pavement section in the shoulder only to the top of the base material (bound or un-bound) and replace with asphalt concrete as specified in the Contract documents or as directed by the Engineer.

In the event a Shoulder Patch or Partial Depth PCC Patch fails prior to overlay, the Contractor will be responsible for removing and replacing the failed patch at no cost to the Department.

III. MATERIALS AND EQUIPMENT**A. Materials**

All asphalt concrete shall conform to the requirements of Section 211 of the specifications and shall be IM-19.0D, unless otherwise approved by the Engineer.

B. Equipment

Saw cutting equipment shall be capable of sawing neat vertical faces along the patch boundaries. The use of a carbide-toothed wheel saw shall not be permitted for sawing the patch boundaries in rigid pavements. A carbide-tipped wheel saw may be used for additional saw cuts provided that a minimum 3-inch clearance from the sawed boundary is maintained.

Material in the areas identified for shoulder patching may be removed by a milling machine, backhoe, or other excavating equipment as approved by the Department.

IV. PROCEDURES

Asphalt patches shall be placed in accordance with the requirements of Section 315 of the Specifications. The existing pavement shall be removed with a minimum disturbance to the base

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

material and the faces of the remaining pavement shall be cut to a smooth, vertical face without ragged edges.

The existing pavement shall be removed by milling, grinding, saw cutting or any other approved method to the specified depth for the full perimeter of the designated area. A tack coat of CRS-2 (or other asphalt material approved by the Engineer) at a rate of 0.2 gallon per square yard shall be applied to surface and vertical faces of exposed pavement. Exposed base material shall be primed with liquid asphalt CRS-2 at an application rate of 0.4 gallon per square yard.

PCC pavement to be removed shall be sawed along the transverse and longitudinal boundaries, including the lane and shoulder/lane joints as shown on the plans or as directed by the Engineer. Additional saw cuts inside the patch boundaries will be permitted to facilitate the concrete removal operation. During the removal operations, utmost care shall be exercised to minimize disturbance and damage to the reinforcing steel, and the adjacent pavement and shoulder. Prior to application of the patch, the bottom of the excavation of all patches shall be cleaned of all loose and foreign materials.

Manual placement will be permitted for installation of the asphalt concrete. Control strip and pavement profile measurements will be waived. Variation between surfaces at the run on and run off joints shall not be more than 1/4 inch when tested with a 10-foot straight edge.

The existing pavement materials that are removed shall be hauled away from the repair site immediately, and disposed of properly by the Contractor in accordance with Section 106.04 of the Specifications.

V. MEASUREMENT AND PAYMENT

Partial Depth PCC Patching will be measured and paid for at the contract unit price per ton for the mix specified. The payment shall be full compensation for furnishing materials and installing pavement patches complete in place. The work shall include, but not be limited to supplying materials, saw cutting, milling, grinding, removing and disposing of existing material, the cost to haul and place asphalt concrete, and all labor, equipment, tools, supervision, fuel and incidentals necessary to complete the work.

Shoulder Patching will be measured and paid for at the contract unit price per ton for the mix specified. The payment shall be full compensation for furnishing materials and installing pavement patches complete in place. The work shall include, but not be limited to supplying materials, saw cutting, milling, grinding, removing and disposing of existing material, the cost to haul and place asphalt concrete, and all labor, equipment, tools, supervision, fuel and incidentals necessary to complete the work.

Main Line Patching will be measured and paid for at the contract unit price per ton for the mix specified. The payment shall be full compensation for furnishing materials and installing pavement patches complete in place. The work shall include, but not be limited to supplying materials, saw cutting, milling, grinding, removing and disposing of existing material, the cost to haul and place asphalt concrete, and all labor, equipment, tools, supervision, fuel and incidentals necessary to complete the work.

Liquid asphalt tack or prime will not be measured for separate payment and the cost thereof to furnish and apply the liquid asphalt shall be included in the bid price for patching.

Payment will be made under:

Pay Item	Pay Unit
Partial Depth PCC Patching (Asphalt Patch Mat. Type IM-19.0D)	Ton
Shoulder Patching (Shoulder Patch Mat. Type IM-19.0D)	Ton

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Main Line Patching (Patch Mat. Type IM-19.0D)

Ton

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SU503000A RW Monument (Contractor Stkout)

GUIDELINES – FOR PROJECTS REQUIRING THE CONTRACTOR TO PROVIDE THE SETTING OF RIGHT-OF WAY MONUMENTS AND FINAL BOUNDARY STAKEOUT.

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
RIGHT-OF-WAY MONUMENTATION AND FINAL BOUNDARY STAKEOUT

December 2, 2009a

The number of **right-of-way monuments** to be set for this contract are **fill-in**.

The Contractor shall furnish right-of-way monuments and ensure the setting of such monuments and final boundary stakeout is performed by or under the direct responsibility, control and personal supervision of a Land Surveyor currently licensed and able to practice in the Commonwealth of Virginia.

SECTION 503 is added to the Specifications as a complete section as follows:

SECTION 503—RIGHT-OF-WAY MONUMENTS

503.01—Description

This work shall consist of furnishing and setting right-of-way monuments at locations shown on the plans or as designated by the Engineer in accordance with the requirements of the Standard Drawings and the Department's Survey Manual.

503.02—Materials

Right-of-way monuments shall conform to the requirements of Section 219 of the Specifications.

503.03—Procedures

Monuments shall be placed at locations designated on the plans, by the Engineer or as required by the Department's Survey Manual

Excavation shall be kept to the minimal for installation so as minimize the disturbance of in-situ material and compaction and backfill efforts. Backfill shall be thoroughly compacted in a manner that will not displace the monument.

503.04—Measurement and Payment

Right-of-way monuments will be measured in units of each, complete-in-place, and will be paid for at the contract unit price per each. This price shall include furnishing, installing, excavating, backfilling and compaction.

Payment will be made under:

Pay Item

Pay Unit

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

Right-of-way monument (Standard)

Each

SECTION 517—CONTRACTOR CONSTRUCTION SURVEYING of the Specifications is amended as follows:

Section 517.02—General Requirements is amended to add the following:

- (e) location, final boundary stakeout, and final right of way monumentation

Section 517.04(i) Right of way and boundary stakeout affecting property ownership is amended to replace the last sentence with the following:

Final boundary stakeout shall be performed in accordance with the Department's Survey Manual by or under the direct responsibility, control and personal supervision of a Land Surveyor currently licensed and able to practice in the Commonwealth of Virginia.

Section 517.04(j) Locating and setting right-of-way monuments is replaced with the following:

- (j) **Locating and setting right-of-way monuments:** Final right of way monumentation shall be performed in accordance with the Department's Survey Manual and Section 503 herein by or under the direct responsibility, control and personal supervision of a Land Surveyor currently licensed and able to practice in the Commonwealth of Virginia.

Hub and tack points for RM-1 right-of-way monuments shall be set in accordance with the Road and Bridge Standards. The Contractor shall furnish RM-2 right-of-way monuments and locator posts. The Department will furnish the required caps for installation by the Contractor. Surveying work and drawings shall be in accordance with the requirements of *Sample Figure 4 in Chapter 8—Construction Surveys* of the Survey Manual. Where required by the Department's Survey Manual all drawings, layouts, field notes, documentation, etc shall be signed and sealed by the licensed Land Surveyor. The Certified record drawings, field notes, and computations shall be submitted to the Engineer.

Upon completion of the project, the Contractor shall provide the Engineer with all original surveying drawings, field notes, layouts, computations, sketches and drawings in the format approved by the Engineer. All electronic copies submitted shall be in a format fully compatible with the Department's existing computer hardware and software.

Section 517.05(h) Right of way and boundary stakeout affecting property ownership is amended to replace the last sentence with the following:

Final boundary stakeout shall be performed in accordance with the Department's Survey Manual by or under the direct responsibility, control and personal supervision of a Land Surveyor currently licensed and able to practice in the Commonwealth of Virginia.

Section 517.05(i) Setting right-of-way monuments is replaced with the following:

- (i) **Setting right-of-way monuments:** Final right of way monumentation shall be performed in accordance with the Department's Survey Manual and Section 503 herein by or under the direct responsibility, control and personal supervision of a Land Surveyor currently licensed and able to practice in the Commonwealth of Virginia.

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Hub and tack points for RM-1 right-of-way monuments shall be set in accordance with the Road and Bridge Standards. The Contractor shall furnish RM-2 right-of-way monuments and locator posts. The Department will furnish the required caps for installation by the Contractor. Surveying work and drawings shall be in accordance with the requirements of *Sample Figure 4 in Chapter 8—Construction Surveys* of the Survey Manual. Where required by the Department's Survey Manual all drawings, layouts, field notes, documentation, etc shall be signed and sealed by the licensed Land Surveyor. Certified record drawings, field notes, and computations shall be submitted to the Engineer.

Upon completion of the project, the Contractor shall provide the Engineer with all original surveying drawings, field notes, layouts, computations, sketches and drawings in the format approved by the Engineer. All electronic copies submitted shall be in a format fully compatible with the Department's existing computer hardware and software.

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SU505000A Guardrail Repair Terminal**GUIDELINES – FOR PROJECTS REQUIRING REPAIR OR REPLACEMENT OF DAMAGED GUARDRAIL, MEDIAN BARRIER, IMPACT ATTENUATORS AND BRIDGE/GUARDRAIL ATTACHMENTS.**

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
**REPLACEMENT OF GUARDRAIL, MEDIAN BARRIER, IMPACT ATTENUATOR, AND GUARDRAIL
TO BRIDGE ATTACHMENTS**

March 18, 2016a

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.

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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. **GR-9 end treatments with 4" channel shall not be repaired, but shall be replaced with new terminals that conform to Section 505.03 of the Specifications.**

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.

*These SPECIFICATIONS REVISIONS are subject to change on short notice.

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.

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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.

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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

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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

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SU512002A 512 Maintaining Traffic**GUIDELINES — ALL PROJECTS WITH GUARDRAIL AND IMPACT ATTENUATORS:**

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 512—MAINTAINING TRAFFIC

March 18, 2016a

SECTION 512—MAINTAINING TRAFFIC of the Specifications is amended as follows:

Section 512.03(a) Signs is amended to replace the last paragraph with the following:

When construction signs are covered to prevent the display of the message, the entire sign shall be covered with silt fence or other materials approved by the Engineer such that no portion of the message side of the sign shall be visible. Plywood shall be used on ground-mounted construction signs only. Attachment methods used to attach the covering material to the signs shall be of a durable construction that will prevent the unintentional detachment of the material from the sign. At no times shall a construction sign and/or post be rotated to prevent the display of the message. In addition, the posts where the signs are being covered shall have two ED-3 Type II delineators mounting vertically on the post below the signs at a height of 4 feet to the top of the topmost delineator. The bottom delineator shall be mounted 6 inches below the top delineator.

Section 512.03(b) Flagger Service and Pilot Vehicles is amended to replace the last paragraph with the following:

Portable traffic control signals conforming to the requirements of Section 512.03(h)2 of the Specifications may be used in lieu of flagger service when specified or approved by the Regional Traffic Engineer. When portable traffic control signals are used in lieu of flagger service, the portable traffic control signals will be measured and paid for separately.

Section 512.03(e)b. Group 2 devices is amended to replace the first paragraph with the following:

- b. **Group 2 devices** shall be drums or vertical panels. Drums shall be round, or partially round with no more than one flat side; made from plastic; have a minimum height of 36 inches, have a cross-sectional width no less than 18 inches in any direction; and conform to the requirements of the *Virginia Work Area Protection Manual*. 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. Drums of two-piece design, i.e., drum and associated base, shall utilize sufficient amounts of enclosed sand at the base in accordance with the manufacturer's recommendations to provide stable drum support. The base shall be not greater than 5 inches in height. Two-piece drums may also utilize a flared drum foundation and collar of not more than 5 inches in height and of suitable shape and weight to provide stable support. One-piece drums may be used provided they comply with these above requirements.

Section 512.03(f)1 Guardrail service and terminal treatments is amended to include the following:

All end terminals used in conjunction with guardrail barrier service shall be from manufacturers on the Materials Division's Approved Products List 12 and the FHWA NCHRP 350 or MASH approved list linked in List 12. New Guardrail Terminals (GR-7 & GR-9) shall be permanently identified in a location readily visible for inspection that is not susceptible to damage by die stamping or engraving. The identification shall include Manufacturer, Date and Site of Manufacture, and Model Number.

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Section 512.03 (g) Impact Attenuator Service is amended to include the following:

New impact attenuators shall be permanently identified in a location readily visible for inspection that is not susceptible to damage by die stamping or engraving. The identification shall include Manufacturer, Date and Site of Manufacture, and Model Number.

Section 512.03 (p) Truck-mounted Attenuators is amended to include the following:

New truck-mounted and trailer-mounted attenuators shall be permanently identified in a location readily visible for inspection that is not susceptible to damage by die stamping or engraving. The identification shall include Manufacturer, Date and Site of Manufacture, and Model Number.

Section 512.03 Procedures is amended to add (r) **Work Zone Traffic Control** as the following:

- (r) **Work Zone Traffic Control:** The Contractor shall provide individuals trained in Work Zone Traffic Control in accordance with the requirements of Section 105.14 of the Specifications.

Section 512.04 Measurement and Payment is amended to add the following:

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.

Section 512.04 Measurement and Payment is amended to replace the pay item and corresponding pay unit for “**Eradication of existing pavement markings**” with the following:

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. 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.

Payment will be made under:

Pay Item	Pay Unit
Eradication of existing pavement marking	Linear foot
Eradication of existing nonlinear pavement marking	Square foot

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